



**Australian Government**  
**Productivity Commission**

# Marine Fisheries and Aquaculture

# Productivity Commission Inquiry Report

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### **Publications enquiries**

Media and Publications, phone: (03) 9653 2244 or email: [maps@pc.gov.au](mailto:maps@pc.gov.au)

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The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website ([www.pc.gov.au](http://www.pc.gov.au)).



**Australian Government**  
**Productivity Commission**

*Canberra Office*

4 National Circuit, Barton  
Canberra ACT 2601

GPO Box 1428  
Canberra ACT 2601

Telephone 02 6240 3200

Facsimile 02 6240 3399

*Melbourne Office*

Telephone 03 9653 2100

[www.pc.gov.au](http://www.pc.gov.au)

19 December 2016

The Hon Scott Morrison MP  
Treasurer  
Parliament House  
CANBERRA ACT 2600  
Dear Treasurer

In accordance with Section 11 of the *Productivity Commission Act 1998*, we have pleasure in submitting to you the Commission's final report into *Marine Fisheries and Aquaculture*.

Yours sincerely

A handwritten signature in cursive script, appearing to read 'Melinda Cilento'.

Melinda Cilento  
Presiding Commissioner

## **Disclosure of interests**

The *Productivity Commission Act 1998* specifies that where Commissioners have or acquire interests, pecuniary or otherwise, that could conflict with the proper performance of their functions during an inquiry they must disclose the interests.

Ms Melinda Cilento has advised she is the director of a number of public and private companies, none of which participated in any way in this inquiry.

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# Terms of reference

I, Scott Morrison, Treasurer, pursuant to Parts 2 and 3 of the Productivity Commission Act 1998, hereby request that the Productivity Commission undertake an inquiry into the regulatory burden imposed on the Australian marine fisheries and aquaculture sectors.

## **Background**

Commonwealth, State and Territory governments are responsible for the management of Australian fisheries within their respective jurisdictions. Regulations are used to implement controls, such as limits on catch or effort levels, and regulate fishing methods in order to manage Australia's fisheries in a way that meets social and economic considerations and ecological sustainability objectives.

Except where agreement is reached to the contrary, state/territory laws apply to coastal waters (up to three nautical miles) and Commonwealth laws apply from those waters out to the limit of the Australian fishing zone (200 nautical miles). As most recreational and traditional indigenous fishing activity occurs in waters within state/territory jurisdiction, state/territory administrations generally manage these forms of fishing activity.

As a result, Australia's commercial fisheries are governed by a total of eight jurisdictions (the Commonwealth, states and the Northern Territory), with each jurisdiction developing specific regimes for fisheries management, fisheries research, reporting and environmental protection. In addition, there are 59 separate arrangements under the Offshore Constitutional Settlement that determine how cross-jurisdictional stocks are to be managed. There are also four joint fisheries authorities. This regulatory environment oversees an industry that has a gross value of production of \$1.3 billion per annum. It is also an industry that has been the subject of a large number of recent inquiries and reviews at many levels.

While Australia's fisheries are regarded as sustainable, reliable and safe, there is scope to improve the management of fisheries through effective and coordinated regulatory and management arrangements. This includes the streamlining of regulations, rationalising jurisdictional and offshore constitutional settlement arrangements through improved cross jurisdiction and multi-jurisdictional regulatory regimes, information and service sharing, and harmonisation of environmental, management and compliance arrangements.

While aquaculture is within scope, it was the subject of a Productivity Commission research paper in 2004 which examined existing planning and environmental regulatory arrangements. The Commission should use the findings of this research as a basis to,

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inform its current inquiry rather than commencing a new investigation into issues impacting the aquaculture sector.

### **Scope of the inquiry**

The inquiry will identify opportunities to increase productivity and cut unnecessary and costly regulation, including where regulations are poorly coordinated between jurisdictions. The inquiry will therefore consider whether there are opportunities to improve fisheries regulations without compromising fishery policy and environmental objectives. Consideration would be given to regulatory simplification, streamlining and consistency of arrangements across multiple jurisdictions, alternative more efficient regulatory models, the practices of the various regulators and removing unnecessary restrictions on competition.

In doing so, the inquiry will consider the value of strengthened relationships and effective and coordinated management of our fish stocks with a view to reducing the regulatory burden incurred by business, and consumers.

In undertaking the inquiry, the Commission is to have particular regard to impediments to increasing productivity and market competitiveness of the Australian fishing and aquaculture industries, including:

1. The extent to which enhanced and improved use of cross jurisdiction and multi-jurisdictional regulatory regimes, information and service sharing can improve the economic efficiency and the ecologically sustainable use and management of fisheries resources.
2. The extent to which harmonisation or integration of environmental, management and compliance arrangements could improve the effective and efficient operation of the fishing industry and delivery of fisheries policy and environmental outcomes.
3. The extent to which accreditation schemes or recognition of equivalency could reduce the regulatory burden and increase productivity.
4. The extent to which greater use of cost recovery arrangements is applicable and informs the cost of delivering fishery production, conservation and other community service obligations.
5. The extent to which fisheries management regimes align with and protect the interests of the wider community (in particular, the balance between commercial, recreational, indigenous fishing and conservation interests, and consumers' interests).
6. The extent to which fisheries management regimes support greater participation of Indigenous Australians, provide incentives to Indigenous communities to manage their fisheries, and incorporate their traditional management practices in the fishing industry.

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7. The degree to which cross jurisdictional regulatory arrangements are transparent, accountable, proportionate, consistent, effective and targeted.

8. The degree to which cost effective and practical non-regulatory mechanisms could be expanded to achieve fisheries management outcomes.

The primary focus of this review will be on Commonwealth, state and territory regulation of wild capture marine fisheries. This will include the interaction of fisheries specific regulation within Commonwealth and State/Northern Territory jurisdictions. It will also need to have regard to the role of the Environment Protection and Biodiversity Conservation Act (1999) and other fisheries- related environmental legislation that are directly relevant to Australian marine fishing.

### **Process**

The Commission is to undertake an appropriate consultation process including holding hearings, inviting public submissions and releasing a draft report to the public.

The Commission will consider the submissions and reports of all recent relevant inquiries and government responses. The Commission is to take into account the initiatives at the jurisdictional level relevant to the scope of the inquiry.

The final report should be provided within twelve months of the receipt of these Terms of Reference.

Scott Morrison

Treasurer

[Received 23 December 2015]

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# Abbreviations

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
AFMA	Australian Fisheries Management Authority
AFMF	Australian Fisheries Managers Forum
AFZ	Australian Fishing Zone
CCSBT	Convention for the Conservation of Southern Bluefin Tuna
CPUE	Catch per unit effort
CRIS	Cost Recovery Implementation Statement
CSIRO	Commonwealth Scientific and Industrial Research Organisation
FAO	Food and Agriculture Organisation of the United Nations
FRDC	Fisheries Research and Development Corporation
GVP	Gross value of production
IC	Industry Commission
ITE	Individual transferable effort
ITQ	Individual transferable quota
IUU	Illegal, unreported and unregulated (fishing)
MAC	Management Advisory Committee
MoU	Memorandum of understanding
OCS	Offshore Constitutional Settlement
OECD	Organisation for Economic Cooperation and Development
PC	Productivity Commission
PIRSA	(Department of) Primary Industries and Regions (SA)
RBC	Recommended biological catch
SARDI	South Australian Research and Development Institute
SBT	Southern bluefin tuna
SESSF	Southern and Eastern Scalefish and Shark Fishery (Cth)

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SETFIA	South East Trawl Fishing Industry Association
SPF	Small Pelagic Fishery (Cth)
TAC	Total Allowable Catch
VMS	Vessel Monitoring System
WAFIC	Western Australian Fishing Industry Council

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# OVERVIEW

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## Key points

- Following past over-fishing, Australian governments have applied policies that generally have improved sustainability. Only 6 per cent of stocks are today overfished.
- But policy settings are not maximising the value of fisheries to the community. In particular:
  - most commercial fisheries are managed primarily through controls over fishing methods, which can inhibit fishers from introducing more innovative and cost-effective practices
  - understanding of recreational and Indigenous customary fishing activity is limited despite widespread participation and increasing competition for some fish stocks
  - differences between the fishery management techniques adopted by governments add to the costs faced by fishers operating in cross-jurisdictional fisheries and to risks in managing the sustainability of stocks.
- The allocation of access to fisheries should address social and cultural benefits, as well as economic benefits.
- Recreational fishing, long viewed as having a minimal impact on fisheries, is having a material impact on some high-value stocks.
- The better use of existing recreational fishing licensing systems, and the introduction of low-cost licensing in jurisdictions where it is not presently used, would provide the means for gathering evidence to better meet the future needs of recreational fishers and support environmental objectives in the long term.
  - A sound evidence base is not presently available to guide decisions on access and facilities for recreational fishers.
- Prospects for the commercial fishing sector would be improved by governments providing greater certainty on access and the permitted intensity of fishing.
- Governments should adopt individual transferrable quota systems as the default management technique for commercial wild catch fisheries. This will provide greater confidence on stock sustainability, more scope for innovative and efficient fishing practices and facilitate structural adjustment.
- Arrangements between governments for the management of cross-jurisdictional fish stocks should be streamlined to improve their effectiveness and reduce costs. This will require governments to prioritise and dedicate sufficient resources to reform.
- Additional improvements to marine fisheries management include making standards for protected species clearer, streamlining some environmental approvals, delegating more operational decisions to fishery managers and limiting cost recovery to cover only efficient costs.
- Indigenous customary fishing is not clearly recognised or managed in fishery laws. This has resulted in uncertainty over the rights and obligations of customary fishers and tensions between sectors in some high-demand fisheries. Indigenous Australians have limited input into fishery management, and there is little information on customary catch and practices.
  - Clarifying what constitutes Indigenous customary fishing and who is eligible to fish, and incorporating customary catch and practices into fisheries management regimes would help resolve these issues.
- There has been little change in the regulation of aquaculture over the past 10 years but this has generally not impeded the sector's growth. The major producing States have had key best practice regulatory features in place for some time and other States have faced challenges that are predominantly non-regulatory in nature.

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# Overview

## **Inquiry context**

Fish are a renewable, but not inexhaustible, resource. They are subject to the well-recognised potential for a ‘tragedy of the commons’, where the unregulated efforts of individual fishers deplete the resource. Governments must therefore limit catches to sustainably manage resources and, where there is competition between fishers, determine how access is to be shared.

There are around 165 commercial wild capture fisheries spanning Australia’s Exclusive Economic Zone (which is larger than the land area of Australia) generating around \$1.6 billion in revenue. Millions of Australians fish recreationally for food and enjoyment. Coastal Indigenous communities have long been users and custodians of Australia’s marine environment, and continue to have strong cultural associations and concerns for the sea and its resources. Australia’s fish resources also provide non-extractive value, such as for the tourism sector, for which viewing native fish and the marine environment are significant drawcards.

The central aim of Australian marine fishing laws is to strike a balance between exploiting and maintaining the value of fish resources for the community, now and in the future. The complex and dynamic nature of fish and marine ecosystems, the multiple and changing uses of marine resources, and the different benefits derived by varying users from access can make the achievement of this goal challenging. Further, each fishery is different (with different species, marine environments and nature of demand) and requires localised management arrangements.

Marine fisheries management is also complicated by the fact that, despite its large size, Australia’s fishing territory has relatively low biological productivity. Aquaculture has grown in importance as a source of seafood, with its share of total production by value now about 40 per cent. Overall, Australia accounts for less than 0.2 per cent of global commercial production (by tonnage), although we have a higher share of global product by value (1 per cent) reflecting the concentration of production in high value species such as rock lobster and abalone.

There will always be scientific uncertainty about the marine environment and differing views on the risks arising from marine-based activities, including fishing, as well as the degree to which governments can and should act to mitigate these risks. Governments recognise that information that reduces uncertainty and guides improvements in management methods has potentially high payoffs. Such information can be difficult and

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costly to obtain, so the gains from management improvements have to outweigh these costs to justify its collection.

Given these challenges, and past experiences of mismanagement, where overfishing resulted in environmental degradation and temporary closures of previously viable fisheries, governments now err on the side of sustainability when making regulatory decisions.

The regulation of marine fisheries involves three core tasks: research and/or the collection of data to inform management; the development and implementation of controls over activity; and enforcement of those controls. Australian fishery laws control two main matters:

1. the taking of fish, such as where people can fish, the species that can be caught, how many and by what means
2. who can fish where there is competition for access — and, where access to the resource is divided between fishing sectors (recreational, commercial and Indigenous customary), the nature of limits on each sector.

Effective management requires the adaptation of regulatory controls to reflect new information on fish and their marine environments, their effectiveness in practice, as well as changing preferences for the use of marine resources over time.

## **Management arrangements — wild capture fisheries**

The Commonwealth, States and the Northern Territory each regulate marine fisheries. The States and Northern Territory are generally responsible for fisheries that lie within three nautical miles from Australia's coastline, and the Commonwealth those that lie between three and 200 nautical miles from the coastline.

As recreational and Indigenous customary fishing have traditionally been undertaken close to shore, only the States and Northern Territory presently regulate these forms of fishing (excepting in the Torres Strait). All jurisdictions regulate commercial fishing. In addition, a number of fish stocks spanning jurisdictional borders are subject to intergovernmental management arrangements. At the international level, fisheries management is guided by agreements and conventions relating to matters such as countries' rights within their exclusive economic zones, the management of migratory species and responsible fisheries management.

Although there are many similarities in the fishery laws of each Australian jurisdiction, there are also significant differences, particularly in relation to the management of fishing sectors (commercial, recreational and Indigenous customary). Australia's waters are thus governed by multiple fishery laws, and domestic fisheries regulations comprise a complex array of interrelated regimes governing commercial, recreational and Indigenous customary fishing.

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## At the fishery level

All commercial fisheries are limited-entry fisheries, as ‘open access’ policies have historically led to over-expenditure on fishing activities relative to yield. Non-commercial fisheries remain largely open access.

Where overall catch limits are employed in fisheries, governments are converging towards best practice methods for determining them. These include the use of quantitative assessments of fish populations, and harvest strategies to define the desirable level of resource use and/or points at which changes in management are required so as to meet policy objectives. Limits may be set with reference to the quantity or weight of fish caught (output controls) and/or fishing methods, for example, fishing gear, boat sizes and days fished (input controls). In Australia, total catch limits are set predominantly for commercial fisheries, reflecting the historical focus of regulators on this sector.

Controls must suit the type of species targeted and be cost-effective. However, best practice strongly favours the use of output controls as the primary method of regulating aggregate catch. Output controls directly target the amount of fish caught and hence provide confidence on the achievement of sustainability goals. They also impose fewer constraints on methods of catching fish and allow for improvements in the efficiency of fishing practices over time.

Where output controls are used, quotas for individual fishers are most commonly determined as a share of allowable catch from the fishery. The setting of quotas as shares allows their automatic adjustment when total catch limits are changed. Quotas also have the advantage of minimising incentives to ‘race to fish’, spreading the catch over the fishing season and raising average utilisation rates of equipment. Tradeable quotas facilitate structural adjustment by making it easier for fishers to enter and exit the industry, which helps to increase the value of the industry as more efficient fishers are able to purchase quota from less efficient fishers.

Input controls do not offer many of these efficiency benefits, but are presently considered a more practical option for managing stocks for which it is difficult to set total catch limits (for example, because the target species have very short lives). Some jurisdictions use individual transferable effort (ITE) systems, which allow input-controlled fishing entitlements to be traded in full or part and therefore some of the efficiency benefits noted above to be realised. As technology changes, the calculation of allowed effort needs to be revised to ensure the total catch remains sustainable.

Controls over aggregate catch in commercial fisheries are usually complemented by other controls, such as gear restrictions or bycatch exclusion devices, to minimise the impact of fishing on non-target species and the broader environment.

There has been a shift to managing commercial harvest through output controls over the past 15 or so years, with individual transferable quota systems presently used in about a quarter of fisheries. The remainder are managed through input controls, with ITE systems

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forming a small minority of these. Although reform efforts are continuing, past input-based management techniques and allocations of fishing entitlements, which encouraged over-investment, have proven difficult and costly to unwind.

Recreational fishers are generally not subject to limits on aggregate catch given their diversity in activity and the large area over which they fish. Rather, they are regulated primarily via controls over gear, and bag and size limits. As recreational fishing has historically been viewed as less consequential than commercial fishing, it is subject to significantly less monitoring.

Indigenous customary fishing is subject to Indigenous laws and customs but is generally also regulated through possession limits and gear restrictions. There is limited documentation of the extent and nature of customary fishing, but the information available suggests it is widely practiced. Total catch is assumed to be relatively small for most species, reflecting the small share of Indigenous Australians in the population, although the take of certain species can be more significant.

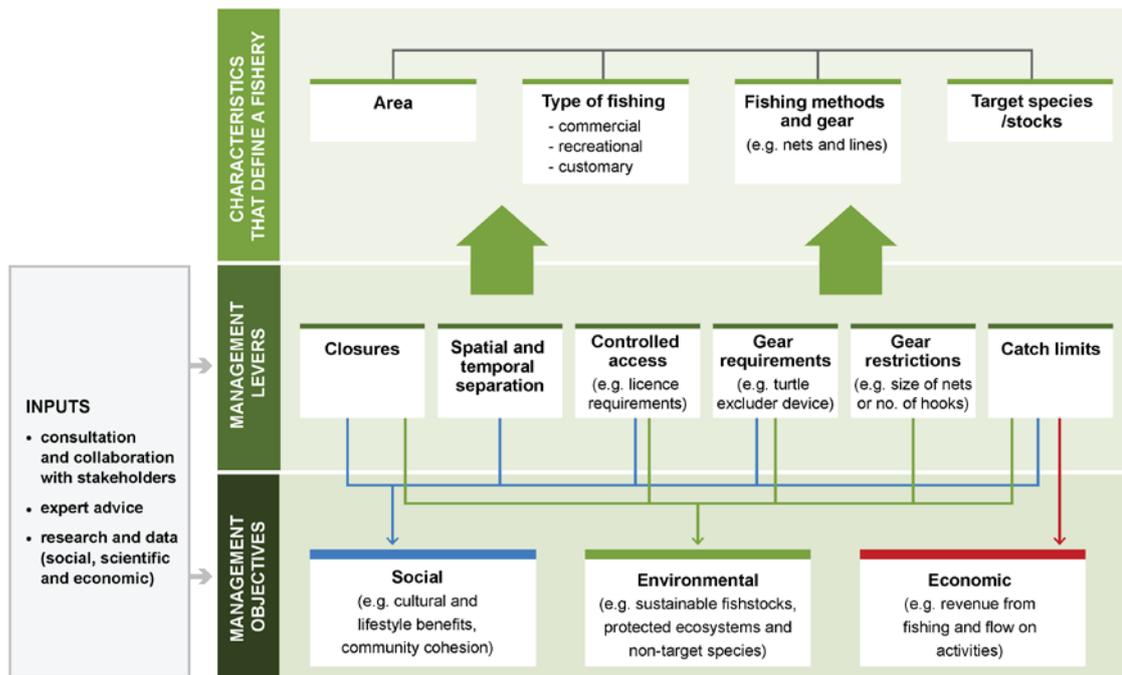
## **How controls are set**

The limits on catch and fishing practices needed to meet environmental objectives are largely technical matters determined by scientific research. In better-practice fisheries, harvest control rules and other requirements to meet fishery policy goals are implemented through management plans for each fishery, which are developed and enforced by fisheries authorities. Typically, harvest controls focus on the sustainability of the target stock, although in Commonwealth fisheries they are also designed to maximise economic returns.

Decisions on who may access fisheries reflect governments' objectives for the use of fishery resources. Objectives vary across the jurisdictions, and may include economic and social, as well as environmental, aims. Where there is competition for the same fishing stock, allocation decisions (where made) reflect government judgments on the value of access to the different fishing sectors and the community. Governments use a range of methods for sharing access, including spatial or temporal separation of fishing groups and allocations of catch shares to sectors out of a total allowable catch limit.

In short, there is a range of tools in regulators' and fisheries managers' 'tackle boxes' that can be used to achieve fishery policy goals (figure 1). The principal goal of governments should be to make efficient and effective regulatory decisions on resource use, drawing on contemporary information about impacts, and recognising that the degree of data collection, research and other regulatory effort should reflect the value of fisheries to the community.

Figure 1 Fisheries management tools



## Aquaculture

Aquaculture has grown in overall importance as wild-caught production in Australia has declined. Aquaculture is regulated to mitigate the industry’s impact on the environment, provide access to publicly owned land and water, and manage potential conflicts with other users of these resources. Given their jurisdiction over most planning and local environmental matters, State and Territory Governments are primarily responsible for the management and regulation of aquaculture.

The primary modes of control (and facilitation) are the grant of leases on land and waters so as to provide secure tenure to a site, and the issuing and administration of various development and operating approvals. These approvals may stipulate conditions such as restrictions on the type of infrastructure that can be employed and requirements to maintain the quality of water to a specified level. Regulations also usually seek to control harm to other wildlife, such as seals and seabirds.

## How well are fisheries regulations working?

Reforms aimed at rectifying overfishing in wild capture fisheries have generally been successful in producing better environmental outcomes and underwriting an economically sustainable industry over the longer run. As one indicator, some 6 per cent of fishing stocks in Australia (for which a status has been determined) are classified as overfished,

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compared to 30 per cent of the world's fish stocks. In recent years, Australian authorities have sought to standardise and increase the coverage and frequency of stock surveys to obtain a more accurate picture of risk and to target regulatory effort.

However, there is scope to reduce unnecessary costs, better support the ongoing achievement of environmental objectives, and ensure that the community gets maximum value from its resources. Particular concerns include:

- the outlook for the commercial fishing industry, where there are concerns about the slow pace of reform in some jurisdictions and the impact of fisheries regulation on competitiveness, investment and innovation
- that the management of some (mostly commercial) fisheries spanning jurisdictional borders is ineffective and inefficient due to multiple and sometimes inconsistent regulatory regimes
- the adequacy of current fisheries management regimes in dealing with community expectations and preferences for the use of fishery resources
  - including concerns about the impact of the recreational sector on fishing stocks and the need to better acknowledge the sector's interests — with catch now estimated to rival or exceed commercial catch for a range of key species (and likely to continue to do so)
  - there is longstanding concern that Indigenous customary fishing is insufficiently recognised in fishery management regimes, an issue that should be taken out of the too-hard basket
- that decisions on where fishing can occur and by whom are being made in an arbitrary way in several jurisdictions, with significant adverse impacts on current users.

## **The Commission's approach**

This report identifies reform areas that are of high priority and common interest to jurisdictions. It focuses on the frameworks for determining access to fishery resources and managing each fishing sector, given that it is these higher-level policies that fundamentally shape day-to-day management and outcomes. The report also considers the management of cross-jurisdictional fisheries, developments in the aquaculture sector and the efficiency of core fishery management tasks.

## **Access arrangements**

### **Access to fishing grounds**

Governments must make decisions on access to and use of marine resources, balancing the interests of different users.

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From a national perspective, fishing laws do not unreasonably limit the establishment of new commercial fisheries or new recreational fishing grounds. But broader decisions on the use of marine environments can frustrate the establishment of fisheries and/or limit activities in existing fisheries. There are justifiable concerns about the adverse impacts on fishing of coastal developments, marine infrastructure and the declaration of marine park areas.

### Land and marine developments

Outflows and runoff associated with land-based developments, and marine infrastructure, such as artificial reefs, can adversely affect fisheries, particularly for commercial fishers. Even small changes in the location of developments can significantly affect the viability of fishing areas or commercial fishers' costs.

Notwithstanding this, most States do not require coastal and marine development proposals to consider their impacts on fishing, a defect that should be corrected.

### Marine park areas

Marine park areas are established for biodiversity conservation reasons and, by intention, may affect access to fishing grounds and the types of fishing that can take place, if fishing is permitted at all.

Better practice in some jurisdictions, for example, the Commonwealth and South Australia, incorporates consultation on proposed marine parks and zoning arrangements to better understand and, where practicable, mitigate impacts on fishers, communication of the reasons for decisions, and evaluation of outcomes against objectives. The wider adoption of such processes would promote better outcomes. Beyond this, issues related to marine parks are outside the scope of this inquiry.

## Determining limits in fisheries

Harvest strategies set out stock management responses given acceptable levels of risk, and so are central to the adaptive management process that constitutes sound fisheries management. In addition to providing predictability on how fishery stocks will be managed, they guard against ad-hoc decisions on fishery controls.

Most commercial fisheries have fishery-specific harvest strategies. At present, there is limited use of stock assessments and harvest strategies for fisheries that are mostly used by recreational fishers, and limited incorporation of the recreational sector in commercial fishery harvest strategies where recreational fishers are understood to take significant catch. The lack of data on recreational fishing makes it difficult to comment on where applying such tools may be useful.

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All jurisdictions should continue to adopt harvest strategies as the primary tool for managing commercial fishing stocks. Where recreational fishing forms a significant part of the overall take in commercial fisheries, this activity should be better counted and managed in relevant harvest strategies.

### Harvest strategy policies

There is an important distinction between harvest strategies (particular approaches for controlling the intensity of fishing) and the overarching policy for such strategies, which can provide coherence to those strategies.

A harvest strategy policy describes how government fishing policy should be incorporated into the harvest strategies for each fishery, including setting out governments' policy priorities, acceptable levels of risk, and preferred methodologies for guiding both utilisation of fish stocks and changes in management responses. Such a policy ensures that harvest strategies across all of a government's fisheries are consistent with desired standards, and reduces the time and the degree of contention involved in setting specific strategies. Thus, the existence of a harvest strategy policy makes it more likely that a government's fishing policy goals will be met and met efficiently, and places greater accountability on fishery managers to follow the policy or justify deviations from it. Harvest strategy policies also better facilitate review of the overarching goals and outcomes of fishery management.

Only the Australian, South Australian, Western Australian and Northern Territory Governments have harvest strategy policies. The governments of New South Wales, Victoria, Queensland and Tasmania should implement them.

### Determining allocations between fishers

Fish cannot be fenced, and so different sectors sometimes compete for access to common stocks. Unsurprisingly, the arrangements for allocating access are highly contentious as they can affect livelihoods and social amenity.

The basis for allocation is often opaque, uncertain and/or of questionable efficiency, which provides fertile grounds for disputes. The stated policy objectives of governments include multiple and sometimes competing goals that often provide limited guidance on how judgements should be made. Where governments have stated their policy aims, it is not clear that they have been determined to maximise the value of fishery resources to the community as a whole.

Effective decision making on resource allocation across sectors is constrained in all jurisdictions by the absence of regularly collected representative information on the demand, catch and value of recreational and Indigenous customary fishing.

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There needs to be a clearer and less contested basis for allocating access to different fishing sectors. The guiding principle should be allocation of fishing resources to the highest value uses across competing parties.

The value obtained from fisheries resources is specific to some sectors, can have different facets and take different forms. For example, value could be economic (revenue from fishing and flow on activities), social (recreational enjoyment, community cohesion) and/or cultural. Many of these values are hard to measure. As most allocation decisions in Australia do not involve a previously unallocated fishery, decision makers have to determine whether a reallocation in favour of one group at the expense of another will increase the overall value gained by the community from the fishery. That is, the marginal (extra) value derived from additional access for some will need to be weighed against that lost by those with reduced access.

Allocation decisions can be aided by techniques for identifying and valuing the marginal value of access to fisheries, as discussed below. Given the investment required, the use of these techniques is more likely to be worthwhile in highly contested cases. In view of information gaps, particularly in the short term, and the need to take into account the impact and costs of change in any reallocation, governments should seek to draw on the best available information and make decisions in consultation with affected fishers. Some processes may involve incremental changes over a period.

In some cases, governments may be able to play a facilitative, rather than directive, role in resolving allocation disputes where parties are willing. In this case, the negotiated outcome could be taken to reflect the value of access to each party and consequent sectoral shares or limits that would maximise community value (reflecting collective preferences for use).

Basing allocation decisions purely on the level of expenditure by fishing groups (as proposed by some) would be poor policy. The low-cost extraction of fish for high value uses would perversely be trumped by higher-cost methods, an aberration in its own right, but one that would also create incentives for cost-padding.

### Valuing access to the fishing sectors

The value of marginal access to commercial fishers can be estimated through the costs of producing and purchasing fish, and the price of fish sold in markets. However, there are no equivalent markets for valuing access by recreational and Indigenous customary fishers, which complicates allocation to these groups.

While imperfect, it is nevertheless possible to construct proxies for the value of additional recreational fishing opportunities based on indirect estimates of recreational fishers' willingness to pay (for example, as revealed by people's willingness to incur travel costs to go fishing, or through surveys). Such calculation methods can be complex, but provide a basis and benchmark for objective and evidence-based decision making on this element.

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Qualitative information on benefits from access can also usefully inform judgements, when they are described and the community's views on priorities are sought, especially where measuring benefits is difficult.

### *Customary fishing*

Customary fishing by Indigenous Australians has cultural dimensions that make its value very difficult to quantify. It is much harder to see customary fishing through the prism of the separate preferences of individual fishers. Indigenous customary fishing has values associated with connection to country and community that would not necessarily be well captured by a 'willingness to pay' measure for each individual. As Campbell (2002) describes:

Difficulties exist in valuing the rights of Aborigines and Torres Strait Islanders to fisheries resources because the intertwining of material uses (consumption of seafood) with a community's culture, spiritual laws and custom means that these two (or more) sources of value are difficult to disaggregate. (p. 176)

Given this collective community aspect, cultural benefits are challenging (if not impossible) to measure and compare with other types of benefits. To the extent that they preserve unique traditions, they are also not replaceable. For these reasons, it is not feasible to allocate catch shares to the customary fishing sector based on a measurement of its relative marginal value. Rather, a minimum acceptable level of access is required.

Governments should set aside a level of catch in overall allocations sufficient for local Indigenous communities to maintain their customs. This would, in practice, accord priority to Indigenous customary fishing take. The level of the allocation should be informed by advice from Indigenous communities and data collected on customary practices and use.

Providing a level of allowable catch sufficient to cover cultural use by Indigenous communities — reflecting their particular laws and customs — is unlikely to significantly affect access for other fishers as customary fishing is understood to comprise a small share of the total catch in most fisheries. Providing explicit allocations in managed fisheries will also enable better accounting and enforcement of each sector's shares.

Customary fishing, as for other sectors, should be subject to overarching fishery management goals, including the sustainable utilisation of fish stocks. As such, allocations to the Indigenous customary sector should be binding and not exceed the limits required to meet policy aims. The distribution of the customary allocation within the community should be a matter for the relevant local Indigenous communities to determine.

Customary fishing activities are conducted in accordance with Indigenous laws and customs and are therefore regulated by those laws and customs in the first instance. However, conservation and public interest considerations, such as community safety, may necessitate additional fishing controls (for example, gear restrictions) over customary fishing.

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To ensure that the customary allocation and any controls over customary fishing activities are culturally sensitive and do not conflict with native title rights, it is important they be developed in collaboration with Indigenous communities. Customary fishing by Indigenous Australians is further discussed below.

### Allocation policies

Governments should have a clear allocation policy that spells out the processes that will be followed when a change in allocation is being considered and the key factors that will have a bearing on decisions, including how they will prioritise policy objectives. Governments should be transparent in their application of the policy and ensure to the extent possible that decisions are evidence-based.

Governments should give high priority to collecting better information, particularly for highly-contested fisheries.

Ultimately, policies should seek to ensure that there is a gain to the community from any reallocations of access — for example, the benefits to recreational fishers and local economic activity from transferring some of the allocation from commercial to recreational fishers should exceed the losses to commercial fishers and related activity.

Those governments that do not have allocation policies — the Australian, Victorian, Queensland and Tasmanian governments — should institute them.

### Scope to move to inter-sectoral trading

Pragmatism requires that, for the moment, governments continue to facilitate or determine allocations between sectors. However, there may be scope to extend existing arrangements for the trading of fishing access rights in the commercial sector to include the recreational sector.

Transferable rights systems set limits on the total amount of allowed catch or effort for a particular fishery within a period, and apportion tradeable entitlements to fish within these limits. Such price-based mechanisms for allocating access across sectors have the advantages of avoiding subjective decisions and transferring access to those who value it most (and have a capacity to pay).

Inter-sectoral trading systems are relatively costly to administer, as they require the monitoring of take and enforcement of strict trading rules. However, examples (such as in Canada) show that these systems can work effectively where stock is highly valued by several sectors. The inclusion of the recreational sector in transferrable quota or effort systems is worth considering in the longer term, but, given the transaction costs involved, probably only in the case of higher-value fisheries.

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Indigenous customary fishing rights should not be tradeable or transferrable between sectors, recognising the unique characteristics of the associated cultural benefits and that these benefits are exclusive to the community concerned.

## **Improving commercial sector prospects**

Output, value and employment in the commercial sector have been trending down for well over a decade. In part, this trend reflects constraints on activity due to past overfishing, but also competition and limited price growth, restrictions on access to fishing grounds or stocks in favour of other fishing sectors or marine uses, and management frameworks. Notably, a small proportion of fishing businesses take the majority of catch by value, and most of the sector comprises small businesses operating in low-value fisheries.

The institution of more predictable and sound bases for decisions on access to and utilisation of fishery resources will be critically important for the viability of the sector. In addition, other measures discussed in this report, including streamlining cross-jurisdictional fishery management and clarifying environmental standards will help to reduce regulatory burdens and uncertainty.

With respect to specific management systems for commercial fisheries, the use of input controls (controls over how fishing occurs) as the primary management technique in Australia has contributed to poor sector performance. Input controls can suppress productivity improvement, encourage over-investment and discourage structural adjustment. For this reason, Commonwealth fisheries have been under a standing direction since 2005 to move their fisheries to individual transferrable quota (ITQ) systems unless this is demonstrated to be technically impractical or not cost effective.

Experience shows that output controls, in particular, individual transferable quota systems, provide greater certainty on environmental outcomes. In addition, they provide greater scope for innovative and efficient use of fisheries resources because fishers have greater freedom to adapt business practices, and provide for more secure property rights, which can facilitate investment. All governments should employ ITQ systems unless technically impractical or not cost effective, in which case ITE systems, which allow for full trading of fishing entitlements, should be pursued as the next best approach.

## **Market-based controls**

The jurisdictions with the highest use of ITQ systems are generally those whose fisheries had characteristics that made them more immediately amenable to reform (see below) — the Commonwealth, South Australia and Tasmania. However, all jurisdictions have retained some input-controlled fisheries because of the perceived value (on the part of fishers) attaching to existing entitlements.

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Impediments to the use of ITQ systems have included concerns about their relatively higher administrative costs and technical suitability to some stocks and fisheries.

ITQ systems do require more sophisticated monitoring systems. However, advances in monitoring technologies have made ITQs more cost effective, and lower-cost monitoring methods can be applied where risks to the sustainability of the fishery are lower. Notably, the Commonwealth and South Australia are now using ITQs in fisheries targeting lower-value fish, which suggests that the case to re-examine cost effectiveness exists, and should be determined on a case by case basis.

ITQ systems can be challenging to implement in fisheries where multiple fish species are targeted and for fish that are short lived or have highly variable annual recruitment (where the amount of growth in fish biomass bears little relationship to the previous year's fish stocks). However, jurisdictions are developing innovative approaches to multi-species fisheries (for example, having a different basis for setting total allowable catch limits for lower-value fish in a fishery relative to high-value fish) that improve prospects for application of ITQ-based management.

Experience suggests that certain characteristics make fisheries more easily amenable to management by ITQs or implementation less costly. These include where the fishery targets only one or small number of target species, where there is a predictable and reliable basis for setting the total allowable catch and there is not significant access to the fishery by the non-commercial sectors.

However, ITQ systems have been applied more broadly in practice, and there does not appear to be a single characteristic that would definitively preclude their use. Technical or cost-related challenges are increasingly being addressed by fishing managers in pragmatic and innovative ways.

Governments should assess the costs and benefits of alternative management arrangements for input-controlled fisheries, with a presumption in favour of ITQ systems, and consciously select the approach that would best promote the fishery's long-term viability.

### Transitional and distribution effects

Transition to ITQ systems involves costs, including the revision of business models for fishers, because ITQ systems require the imposition of explicit, usually lower, limits on catch and dissolve existing rights to fish in favour of new, tradeable, rights. Once operational, they may facilitate structural adjustment through easier entry and exit to the sector, and shifts to more efficient fishing practices. This may have flow-on impacts on industry composition (including consolidation), as well as supplier businesses, local employment and communities.

When assessing the potential impacts of changes to fisheries policies, it is important to acknowledge that there has already been a reduction in the number of commercial fishers,

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the number of vessels and the number of fishing ports being used, reflecting surplus capacity in the industry and shifts in technology and market conditions. Importantly, the trend decline in sector value is likely to continue if there are no reforms to fisheries management. That is, the sector will continue to face threats to its long-term viability if management systems are not reformed to enable greater efficiency, innovation and structural adjustment.

As in other areas of reform, the costs of transitioning to new ITQ (or ITE) systems should be taken into account in designing reform processes. Governments can also act to ensure that the ‘surplus’ generated from the better utilisation of fisheries is shared by both rights holders and the community, for example by charging resource rents, where feasible.

The task of instituting reforms and transitioning to new systems could also be made easier by improving processes for allocating rights under ITQ systems, as outlined below.

### Dealing with (underlying) latent effort

Reforms have been partially frustrated by the existence of entitlements to fish that are not routinely used or are not intended to be utilised (underlying latent effort). This situation arises when, for example: people have left the industry or are consistently fishing less than they used to in transition to retirement but have not sold or leased their entitlements; and/or when people speculatively buy fishing entitlements in the hope that they can later sell them at a higher price. These unused entitlements inflate the ‘demand’ for the fishery and complicate the allocation of new entitlements. Jurisdictions have periodically sought to buy out entitlements to reduce their number. The prospect of future buyouts is encouraging some people, however, to remain in commercial fishing (or to maintain their rights to commercially fish).

The Commission has been advised that, at a practical level, any restructure of rights without compensation will be unworkable. However, the sector also needs to be realistic about future prospects and the need for reform to enable improvements in productivity and value.

In implementing ITQs, governments have most commonly allowed a short period of trading in historical entitlements to enable businesses to exit the industry or adjust their business models. Such market mechanisms tend to be very complex, and require that fishers have high levels of business sophistication to participate or ready access to expert advice.

Removing or reducing underlying latent effort before adopting ITQs (or ITEs) would simplify the process of allocating new entitlements and increase the likelihood that fishers would receive sufficient entitlements for them to operate viably.

The experience in Australia and overseas suggests that a better approach would be to separate the process into two steps: 1) rescind all fishing rights or reduce latent effort

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through a bidding system; and 2) only once entitlements have been reduced (or removed) permit fishing businesses to participate in a market process to trade rights.

### Scope for conditional bidding

Governments implementing reforms that fundamentally alter the nature and mix of entitlements for commercial fishers should consider trading systems that allow some conditional bidding. This would allow fishers to make their offers conditional on a desired outcome — such as the ability to sell all of their entitlements or to purchase a minimum package of rights. Without the ability to make conditional offers, commercial fishers may be unable to purchase enough entitlements to support the viability of their business, or to exit the industry. Either situation risks an increase, or continuation, in latent effort and inefficiency (at least in the short run).

### Reducing regulatory costs and imposts

Governments have closely regulated commercial fishing for over 30 years. Over that time, regulatory challenges and objectives have changed, but the regulatory response has typically been to overlay additional requirements onto existing fisheries management practices.

In addition to statutory reviews of fisheries laws, fisheries regulators should regularly review whether the specific controls and management arrangements applying to fisheries are still appropriate for each fishery. There seems scope for some streamlining and simplification:

- market mechanisms (as described above) require less prescriptive arrangements
- new technologies (including electronic data collection systems) allow more efficient monitoring of fisheries.

### Other issues

Some participants raised concerns about food security and Australia's self-sufficiency in wild caught seafood. Australia is not at risk of food insecurity as there is no lack of fish availability. In fact, global fish production (including aquaculture) is outstripping population growth and international seafood prices are declining.

Self-sufficiency is an inefficient and ultimately costly objective from a national perspective. Self-sufficiency could be achieved by restricting local consumption, increasing local production or a combination of the two. There is no benefit in limiting the volume or type of seafood consumed by the Australian community to that produced domestically when access to overseas seafood provides consumers with greater choice of product and the quality and price benefits associated with competition. At the multilateral

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level, the benefits of access to other countries' product (and other countries' access to Australia's) are well-accepted grounds for trade, and more broadly, the allocation of resources to nations' areas of comparative advantage, where gains from trade can be made.

While there is scope for domestic production levels to increase, there is little merit in the argument that production should be pegged to growth in domestic consumption (or vice versa) given other market opportunities and sources of supply.

The commercial fishing industry has a comparatively poor safety record and inquiry participants expressed some uncertainty about which agencies have regulatory responsibility for reviewing workplace safety.

The transfer of responsibility for maritime safety from the States and Northern Territory to the Australian Government has intensified concerns about the supervision of safety matters. Governments should ensure that there are good linkages between work health and safety and maritime regulators (including in relation to sharing of information on incidents) and clarify which agencies are responsible for different types of incidents. Commercial fishers and regulators should also work closely together to regularly review safety regulations so that they remain practical and effective in reducing the risks of injury and fatality in the sector.

## **Recreational fishing**

Recreational fishing is sometimes, but inaccurately, seen as an inconsequential adjunct to commercial fishing. This neglects the scale of recreational activity and its large social value to the community, with millions of Australians fishing each year. There is also a local economic flow-on effect in servicing this recreational activity, from accommodation and boat servicing to bait supply. And recreational catch can be significant — catches now rival or exceed commercial catches for some species, and recreational fishing practices can have adverse effects on non-target species (bycatch) and ecosystems. The rising sophistication and affordability of scanning technology and vessels has particularly increased recreational fishers' ability to fish further from shore and more intensively.

The demand for access to certain fishing areas or species by the recreational fishing sector has contributed to significant tension in some fisheries and jurisdictions. The extent of competition for resources is hard to assess as there is relatively little information on shifts in activity and catch. This limits the scope to objectively reflect demand for recreational fishing in decisions on access to marine resources, and in the provision of services for recreational fishers.

The management of recreational fishing should be based more on evidence about its extent, nature, impact and value to the community. This would contribute to improved management of catch-constrained stocks, and more generally support the development of

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fishing controls that are proportionate to environmental risks (that is, neither too stringent or lax) as well as predictable, transparent decision making.

## **Licensing**

A well-designed licensing (permit) system is a key step for better understanding and managing recreational fishing. While some States have a licensing system in place, these could be better used to collect information about, and better manage and support, activity.

Licensing provides a:

- more accurate measure of participation
- sampling frame for surveys to monitor catch, effort, gear used, expenditure, social impacts and the value derived from recreational fishing, which should factor into decisions on access, management of recreational fishing activity and services
- better basis for monitoring effort and allocating access to fishery resources
- means for directly conveying and enforcing access conditions
- means to better target information and services (for example, ramps and educational resources) for recreational fishers.

Further, licensing systems can provide a source of government revenue to improve services and facilities for recreational fishers, although this should be a secondary objective to their use to gather information on and manage resource use.

The purpose of licensing is not to restrict participation in recreational fishing, but to get a more comprehensive picture of activity. Licences should therefore be readily available at low cost for the vast majority of fishers.

The Queensland, South Australian and Northern Territory Governments should introduce licensing systems for individual recreational fishers. The experience of jurisdictions that do have licensing systems shows that they need not entail significant regulatory burden or high costs for fishers (for example, licences can be obtained online at a low fee and issued for short or longer term periods).

For maximum efficiency, licensing systems should have high coverage rates. Governments may exempt certain groups from the payment of fees for welfare reasons, but there should be few, if any, exemptions from being 'counted' and contributing data. The New South Wales, Victorian, Western Australian and Tasmanian Governments should modify their licensing systems to this end. The Australian Government should consider licensing if it assumes greater responsibility for the management of recreational catch.

Charter fishers should be required to keep records on catch and effort (like commercial fishers) given their greater incentives to maximise take. Records should be the subject of compliance review.

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All jurisdictions should have comprehensive recreational fishing licensing systems in place within three years of this report being released. This will enable licensing to be used as a sampling frame for a coordinated or national survey of recreational fishers (below).

### **Other management controls**

It is harder to control the overall catch of recreational fishers than commercial fishers. This is because of the sheer number of recreational fishers, the diversity of their activity, Australia's large coast-line, and the capacity for fishers to rapidly respond to available fish stocks. Current management approaches vary, but can include size, bag, boat and possession limits, restrictions on the types of gear that may be used, and temporal and spatial closures. The efficacy of controls varies depending on the fishery and species.

While data inadequacies make it difficult to be definitive about the broader effectiveness of controls, where research is available, size, bag and gear limits appear to be generally effective.

It is clear that in a few fisheries — primarily where there are limits on catch and the stock is contested by both recreational and commercial fishers — existing restrictions are not effective. Where practical, controls on the aggregate catch of recreational fishers should be implemented in these cases. More restricted licenses where numbers may be capped to limit effort and/or have special conditions attached, or harvest tagging systems, which set a harvest limit over a period and provide for the tagging of catch as a condition of possession, should be considered.

Returning a live fish to the water after capture ('catch and release' fishing) is a common practice in recreational fisheries. While catch and release fishing is generally viewed as helpful in conserving stocks of inshore fish, emerging research suggests that these methods are associated with higher mortality rates for deep-water species. Further research is required in this area to consider whether alternative approaches are needed.

### **Recreational fishing surveys**

Prudent fishery management requires that all sources of fish mortality be counted in stock assessments and allocation decisions. Information on fishing methods and the value of recreational fishing to the community is also important for managing and developing Australia's recreational fisheries. The existing ad hoc jurisdictional and regional surveys do not provide adequate information for these purposes. Regular and systematic collection of evidence on recreational fishing is required.

While jurisdictions have recently agreed to explore opportunities to harmonise and share information and to develop data collection approaches for the long term, more decisive action needs to be taken to address requirements in this sector. There should be a two-step approach:

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- The Australian Government should conduct a national survey in 2018-19 using a comparable method to the 2000-01 *National Recreational and Indigenous Fishing Survey*, with States and the Northern Territory contributing to the cost of this survey.
  - From 2023-24, all governments should undertake surveys of recreational fishers every five years, whether at the national level or on a coordinated jurisdictional basis.

Survey information should be publicly available.

## **Compliance with recreational fishing controls**

Education and information campaigns have been, and continue to be, an important part of raising awareness and promoting compliance with fishing restrictions. The introduction of licensing, as proposed in this report, will enable more targeted educational efforts.

The diversity and expanse of recreational fishing activity makes enforcement difficult and the risk of being caught low. Given limits to resources, applying more visible forces for enforcement in high-risk areas may assist to ensure greater compliance. Penalties should support deterrence and be proportionate to the level of harm posed to fisheries.

## **Indigenous fishing**

Fishing is a significant activity for many Indigenous Australians, providing an important food source as well as ceremonial, communal and spiritual benefits when undertaken in accordance with Indigenous laws and customs. Because of the unique attributes of customary fishing, governments treat this sector differently from commercial and recreational fishing.

### **Indigenous customary fishing should be better incorporated into fishery management**

For management purposes, most jurisdictions either exempt Indigenous customary fishers from licensing requirements, but subject them to some gear and possession requirements, or exempt them from management frameworks altogether. Although this provides a form of special recognition, largely exempting customary fishing from fishery management laws has meant that the interests and impacts of Indigenous customary fishers are not always considered in fishery management regimes.

Ambiguity in relation to customary fishers' rights and obligations under fisheries laws has led to uncertainty for both customary fishers and other users of the resource and, perhaps unsurprisingly, tension and conflict in some high-demand fisheries. The lack of effective recognition of Indigenous customary fishing is also likely to have contributed to low levels of involvement by Indigenous Australians in fisheries management and undermined the

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collection of information on customary fishing. Although all governments have expressed a desire to better incorporate Indigenous customary fishing into fisheries management regimes, there has generally been slow progress.

### Clearer recognition of Indigenous customary fishing

Customary fishing by Indigenous Australians should be recognised as a sector in its own right in fishery management regimes. This recognition should provide for fishing by Indigenous Australians in accordance with their laws and customs. The specific rights enjoyed by a customary fisher will stem from customary practice in that fisher's community.

#### *Customary fishing should not be limited to native title holders*

All customary fishing activity, whether or not pursued in the exercise of native title or land rights, should be recognised in fisheries management regimes for both equity reasons and to support sound management.

Native title requires standards of proof that some Indigenous Australians may be unable to satisfy and, in some instances, the ability to claim native title has been affected by settlement. As the value of customary fishing to Indigenous fishers and to the broader community does not depend on the legal means by which they access a fishery, the right to fish should not be defined in these terms. Rather, the right to undertake customary fishing should be available to all Indigenous Australians with a connection to sea country and a desire to fish in accordance with their laws and customs.

However, customary fishing rights should not limit the rights and interests of native title holders. This means that the definition of customary fishing under fisheries laws should not be inconsistent with the *Native Title Act 1993* (Cth).

Ideally, traditional owners should determine who can undertake Indigenous customary fishing on their country. Presently, some Aboriginal land councils, representing local Indigenous communities, determine who can fish and the proof required to demonstrate this right, by issuing 'fishing cards'. These cards can only be obtained where the council is satisfied that the applicant is of Indigenous descent, identifies as Indigenous and is accepted by the community as such.

The idea of requiring/providing evidence of the right to undertake customary fishing has merit, particularly as a way of quickly resolving questions in contested fisheries. The use of such permits may not be supported in all fisheries. Where it is not, the scope for conflict over contested resources must inevitably be higher.

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### *Recognition of commercial fishing undertaken in accordance with laws and customs*

The definition of customary fishing in most jurisdictions' fisheries laws excludes fishing for commercial purposes, but the laws and customs of some Indigenous communities provide for the taking of fish for commercial purposes. In contrast to fisheries laws, there have been native title determinations recognising the right of those native title holders to fish for any purpose (including commercial purposes).

Consistent with the proposed recognition of the sector, the definition of customary fishing in fishery laws should not preclude fishing for commercial purposes where this is part of Indigenous laws and customs.

This does not mean that customary fishing for commercial purposes is or should be unrestricted, given the incentives to exploit fishery resources for profit. While the Native Title Act can provide an exemption from some regulatory requirements (such as licences and permits) for those exercising native title rights for a non-commercial purpose, the same exemption does not extend to commercial activities. As a result, native title holders seeking to sell fish are subject to the commercial fishing laws and requirements applying to all other citizens. It is therefore open to governments to apply existing commercial laws to customary fishing for commercial purposes and, with due judgment, they should do so.

Currently, the selling of fish for money, regardless of amount, distinguishes commercial from other fishing activity. Given that customary fishing for commercial purposes is undertaken for cultural, as well as private commercial benefit, a blanket rule should not apply in this case.

Transactions that have a commercial aspect but are overwhelmingly customary in nature, such as small-scale sale, exchange and barter of fish, should be regulated in accordance with laws governing customary fishing (recognising the value in preservation of customary practice). Significant commercial fishing transactions should be subject to general commercial fishing laws. Significance should be determined by reference to matters including:

- the quantity and value of catch sold; and/or
- the nature of trade — for example, any sale of fish into conventional supply/processing chains should be subject to commercial fishing laws.

The thresholds at which the trade of fish is deemed to be significant should be set by governments in collaboration with Indigenous communities and other stakeholders, recognising that what may be required to preserve and maintain customary practices will be particular to each community.

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### *The importance of genuine collaboration*

Better recognition and incorporation of Indigenous customary fishing, knowledge and management practices into fishery management frameworks will require good-faith engagement between fisheries managers and customary fishers and preparedness by customary fishers to share information. Genuine and ongoing collaboration is essential to ensure the success of any reforms. Collaboration on the design, implementation and enforcement of any controls is also essential to ensure that native title rights are not inadvertently infringed when governments seek to apply contemporary fisheries management practices to customary fishing.

## **Cross-jurisdictional stock management**

Marine fisheries that span Commonwealth, State and/or Northern Territory borders are a consequence of the marine jurisdictions defined by the Offshore Constitutional Settlement (OCS).

Management of cross-jurisdictional fisheries is more costly due to the existence of multiple regulatory systems. Where the rules of those systems are inconsistent or do not sufficiently consider each other, there are also higher risks of over- and under- fishing, unequal treatment of fishers, administrative inefficiency and compliance costs. The risks mainly relate to the management of 26 stocks and here, the degree and nature of detriment varies widely.

Regulatory stasis seems to pervade the reform of cross-jurisdictional fisheries. Given the costs and complexity of instituting major reforms, there have been few attempts, and several have faltered. For example, negotiations on the Commonwealth and New South Wales trawl fisheries have been occurring for nearly 10 years and the ‘on again, off again’ attempts to reform the southeast Australian scallop fishery have been going on for 30 years.

Given limited resources, governments should:

- focus on higher value and at-risk fish stocks that are subject to inconsistent management arrangements, and hence vulnerable to significant cost escalation or diminution in value if poor management arrangements continue
- consider whether transfer of management responsibility to one jurisdiction or shared management with a better alignment of management arrangements would produce the greater net benefits.

High priority candidates for reform include management of southern bluefin tuna, east coast snapper and the fishing stocks managed in the Commonwealth and New South Wales trawl fisheries. Well-recognised risks with the management of these stocks suggest that the:

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- Australian Government should set allowable catch limits of southern bluefin tuna for all fishing sectors. Catch limits should be in place for the southern bluefin tuna fishing season commencing on 1 December 2018
  - New South Wales, Victorian and Queensland governments should ensure the joint stock assessment project for the east coast biological snapper stock proceeds as an immediate priority
  - New South Wales Offshore Trawl Fishery should be absorbed into the Commonwealth Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery by the end of 2018.

Governments should make reform of the specified cross-jurisdictional fisheries arrangements a collective priority, and dedicate sufficient resources to implementing reforms.

The rigidly defined geographic boundaries specified in many OCS fisheries arrangements are ill-suited to changing fish populations and distributions arising from climate change as well as being inimical to adaptive fishery management. The costs and risks of shared fishery management will be reduced if all governments adopt known best practice approaches to core tasks (such as stock assessments and harvest controls), routinely seek to implement reciprocal or consistent arrangements in relation to catch controls and data collection, and regularly review the terms of intergovernmental agreements underpinning shared management.

These tasks should be the subject of joint Ministerial direction to agencies.

## **Environmental regulations**

### **Regulatory efficiency**

Around 80 per cent of fisheries are regulated under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Responsibility for achieving environmental objectives for these fisheries rests with both fishery managers, which develop and implement plans for managing fisheries in accordance with environmental standards, and the Commonwealth Department of the Environment, which assesses the efficacy of these plans against the standards and requirements outlined in the Act. Some participants consider the involvement of multiple government agencies in environmental regulation to be duplicative and that, in practice, the roles of the parties are not clearly distinguished.

There is scope to streamline and lessen the regulatory burden involved in environmental assessment processes.

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The guiding principle should be that the degree of regulatory scrutiny faced by individual fisheries reflects the level of risk created by fishing activity. While it is prudent that high-risk fisheries are subject to regular and close independent scrutiny by the Department of Environment, lower-risk fisheries need not be subject to this model if alternative arrangements can provide the necessary assurance.

The Department of Environment has recognised this by moving to 10-yearly rather than five-yearly accreditations under the Act for some fisheries assessed as lower risk. However, this could be extended further.

The Australian Government should not compulsorily require the accreditation (or periodic renewal of accreditation) of management plans for fisheries that pose a low environmental risk. The Government should determine which fisheries would be eligible for this lighter-handed treatment but take into account, among other things, the underlying environmental risks posed by the fishery, whether management response have been successful in addressing these risks over time and whether sound management frameworks are in place to anticipate and deal with risks in the future. Under this model, fishery managers (who also have a statutory obligation to promote sustainable use of fisheries) would still develop management plans and annually report on the environmental performance of the fishery. The Department of the Environment would retain its ability to intervene (including reinstating standard accreditation requirements) should indicators show sustainability is at risk.

### Third-party accreditation schemes

Several participants sought the streamlining of, or exemption from, environmental approvals for fisheries that have achieved certification from third parties.

While some third-party schemes may apply more rigorous standards for sustainability, it does not automatically follow that these standards can be taken as fulfilling regulatory standards. For this to occur, governments would have to approve third-party schemes. It is not practical, nor desirable, for governments to vet and approve third-party certification schemes, their quality and diligence or ongoing consistency with domestic regulatory objectives and requirements.

To reduce regulatory burdens, environment agencies should, to the extent practicable, use the information provided to the third-party certification body for their assessments or vice versa where the information requirements are similar.

## Regulatory effectiveness

The environmental standards and assessment processes employed to mitigate risk in fisheries appear, on the whole, to be meeting their objectives. Despite this, there is a public perception that the sustainability of fisheries is at risk, resulting in the increasing take-up of

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third-party certification schemes and some pressure to increase the stringency of regulation. Both can unduly increase regulatory burden and costs.

Greater public awareness and concern about overfishing and marine environments are partly a consequence (or the cost) of poor practices and overfishing in the past. These have heightened public expectations of governments, and underscored the need for ‘social license’ to operate in addition to compliance with government standards. The policy concern is that misinformation and/or public misperceptions undermine the value of regulation and lead to higher costs for fishers through unnecessarily stringent regulations raising production costs or reducing catch (where there is no scientific case for doing so), both of which could flow through to higher prices for consumers.

The Commission’s analysis indicates that environmental standards for fisheries are set conservatively. To the extent that there are misperceptions, the industry itself has a role in correcting these. But governments should also do more to make standards and outcomes more transparent. This includes:

- the Australian Government publishing the annual reports that fisheries produce on their performance against accreditation requirements, which would provide useful information to the public and enable fishers to more readily point to their ‘credentials’
- clarifying and more transparently reporting against standards for the regulation of protected species.

## Regulation of protected species

Fishing brings a risk of interactions with threatened, endangered or protected (TEP) species in some areas. Regulators do not always specify their appetite for such risks and, in some cases, set the standard for mortalities effectively at zero.

The question is one of balance. Controls can minimise mortalities but in some fisheries may not reduce these to zero. Where this is acceptable in terms of the fishery’s conservation goals — whether this is to sustain the TEP population at current levels or increase it — it would be better to specify mortality limits (for example, over a season), and require fishers to not exceed these limits and take measures to minimise interactions and mortalities, rather than leave the implication that mortalities are to be an implausible zero.

Limits can also be useful in prompting any review of the effectiveness of existing mitigation measures — for example, a review would occur if fishers are consistently reaching mortality limits.

All jurisdictions require fishers to report interactions with TEP species, but only the Australian and South Australian Governments make information on these interactions readily accessible (online). All governments should make information on interactions with

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TEP species publicly available, in conjunction with any limits. This will inform the adjustment of limits and strengthen accountability for meeting them.

The Australian Government should also:

- clarify the purpose of the Marine Species List established in Part 13, Division 4 of the Environment Protection and Biodiversity Conservation Act, and the criteria for adding or removing species from the list
- consistent with their conservation status, amend the Environment Protection and Biodiversity Conservation Act to allow the take of species listed in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention) subject to the existence of management arrangements demonstrating that the take will not be detrimental to the survival of the species.

## **Downstream processing**

Around 90 per cent of the seafood produced in Australia by volume is sold as fresh or frozen product. The majority of seafood processing therefore adds little value to the product, with the value added resting in correct handling and timely delivery to local and overseas markets. There is no evidence to indicate that regulation has resulted in significant negative impacts on the operations of the downstream sector.

## **Country of origin labelling and regulation of fish names**

Some industry participants advocated the extension of mandatory country-of-origin labelling to seafood sold for immediate consumption. This is unnecessary for public policy (food safety and consumer protection) reasons, which are adequately dealt with under existing law. To the extent consumers value this information and are willing to pay more for local product, it is the interests of industry to provide this and to pursue any country of origin labelling scheme through a voluntary industry-initiated arrangement.

Some participants also requested that the Australian Government mandate Australian Fish Name Standards (AS 5300 -2015) — a voluntary standard introduced in 2007 that specifies the prescribed fish name for fish sold to consumers or for wholesale, export and import. Making the standard mandatory would require agreement across all jurisdictions on all names; a costly and difficult exercise. As current arrangements do not appear to be having significant negative impacts on consumers or businesses that would outweigh the cost of a mandated standard, the standard should remain voluntary.

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## **Seafood processor licence and accreditation fees**

There is considerable variation in fee setting for processor licences and accreditation across jurisdictions. Some jurisdictions apply a flat fee for all processors while others differentiate by the type of species being processed or by the size and scale of the premises.

Fees should reflect the efficiently-incurred costs of regulating facilities. Using a tiered fee structure based on the complexity of licensing or accreditation checks would better reflect and efficiently deal with differences between processors, including reducing the scope for smaller, less complex, businesses to cross subsidise the regulation of larger businesses.

## **Aquaculture**

### **Regulation has played a minor role in recent shaping of the industry**

There is little evidence suggesting that regulations have systematically impeded the viability or growth of aquaculture businesses (for example, by preventing investment, experimentation and hence advancement in the key drivers of nutrition, fish and marine health, and genetics). Notably, Australia's aquaculture output growth rate over the past decade — underpinned by growth in salmon — was similar to those of the dominant producer countries in Asia. Its growth rate in value terms was second only to Norway among OECD countries.

The development of the industry has been shaped more by technological, geographic and other non-regulatory influences.

- Amongst species farmed for many years, there has been limited growth other than in salmon and barramundi production due to changes in consumer tastes, competition from imported products, and other activities or requirements affecting the suitability of new sites.
- Newer species have faced technical and biological challenges in ensuring fish health and growth in a controlled production environment. Only a few have achieved sustained commercial viability. Most ventures in marine areas have failed due to weather events, disease, unexpected predators, as well as poor business planning. Anecdotally, these failures have made it harder for new projects to access financing.

### **Adapting aquaculture regulation for the future**

Nevertheless, the regulatory environment can be improved.

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## Greater use of spatial planning — where needed

The future growth of the aquaculture industry faces several challenges. These include coastal development and increasing competition for access to coastal land and waters, environmental concerns and access to infrastructure.

There are few, though prominent, examples of regulatory arrangements that have stymied proposed aquaculture developments. These include land-based developments adjacent to the Great Barrier Reef, where environmental requirements have effectively prevented any aquaculture development.

Where there are viable prospects, the use of spatial planning to designate zones for aquaculture development will continue to be very important. Spatial planning helps to establish the legitimacy of businesses by addressing the actual and perceived risks associated with fish farming and to reduce the red tape associated with environmental impact assessments and public consultations for new developments. South Australia and Tasmania, which have well-established industries, have long used spatial planning.

The Queensland Government has announced that it will identify aquaculture development areas, including around the Great Barrier Reef. It will also specify conditions on aquaculture developments to avoid and mitigate any environmental impacts and any required environmental offsets. The Western Australian Government recently introduced aquaculture zoning to foster development of the sector in the Kimberley and mid-west regions.

Whether other jurisdictions should institute spatial planning regimes and related policies depends on prospects for aquaculture development. This should be determined in consultation with industry and so avoid the ‘catch 22’ situation of a lack of a regulatory framework deterring potential investors and a lack of projects meaning that the regulatory framework is not developed.

## Addressing community concerns

Community concern about the environmental impacts of aquaculture is growing in Tasmania, in common with other developed countries that have established industries, such as Canada, New Zealand, Norway and Scotland. As has been the experience of the wild caught sector, the sector is requiring a ‘social licence’ to operate in addition to regulatory assurance.

Community concerns in Tasmania centre on the perception of regulatory capture. They have been fuelled by the fact that, until recently, the functions of regulating and promoting the industry rested in a single minister and agency, and views that the Tasmanian Government is unwilling to regulate in a way that might limit the growth of an industry that has become a major driver of economic activity and employment in the State. In response to these concerns, the Tasmanian Government has separated regulatory and

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industry development functions to a considerable extent. As noted in the Commission's 2004 study into aquaculture, there should ideally be separate agencies for industry development and for regulation to remove potential conflicts of interest and improve public confidence in environmental protection, resource planning, operating conditions and enforcement.

## **Other areas for improvement**

In addition to improving fisheries management frameworks, there is scope to improve the undertaking of certain core tasks and activities that support fisheries management.

### **Decision-making by executive government vs fishery managers**

Decisions on fisheries controls can broadly be categorised as either strategic or operational. Strategic decisions influence the objectives of fisheries, while operational decisions are those required to put policy intentions into effect.

Under harvest strategy frameworks, many operational decisions in fisheries are technical matters and can be made more efficiently at the agency/fishery manager level. Recent events and reviews in Australia suggest there is a high level of political involvement in operational decisions in some jurisdictions, resulting in adverse outcomes for fisheries. Governments should delegate operational decisions to the relevant fishery management authorities to the extent possible.

### **Consultation and collaboration with stakeholders**

Consultation is central to the design and effective implementation of fisheries management controls, including allocation decisions. In some cases, fisheries management tasks can be undertaken more efficiently and effectively through co-management.

There are particular concerns about the use of advisory groups in fisheries, including lack of clarity in their roles, sufficiency of expertise, the adequacy of representation of views and transparency in processes. These can be mitigated by clear terms of reference, a conflict of interest policy, clear descriptions of members' roles and required expertise (and transparent appointment processes), fixed membership terms, and performance assessment regimes.

The scope for co-management arrangements varies by fishery, but past experience has demonstrated that the expertise of stakeholder groups and willingness of both stakeholders and governments to work together are essential prerequisites.

Policies on co-management need to provide practical guidance to stakeholders on the types of activities governments will consider collaborating on or delegating, and required

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capability standards of stakeholder groups. Such guidance would aid identification and advancement of suitable co-management opportunities in fisheries.

## **Enforcement**

All governments follow risk-based approaches to enforcement. There appears to be generally high compliance with most regulations. Concerns remain in some quarters about illegal, unreported and unregulated fishing, although the full extent to which this occurs for most species is uncertain.

All governments provide easily accessible channels through which the public can advise of illegal fishing activity. To make the best use of this information, agencies should be sufficiently resourced to enable timely and proportionate follow-up action.

## **Cost recovery and contestability**

The efficiency and equity benefits of cost recovery systems are well known. But there are also pressing imperatives for good cost recovery arrangements in fisheries management for other reasons, including to:

- support the provision of essential regulation and other services to fishers; and
- increase the accountability of fisheries managers to fishers about what and how services are delivered — which will help to ensure that regulatory effort is proportionate to the value of the fishery.

There is scope to adopt or improve cost recovery arrangements for commercial fishing in all States and the Northern Territory. Full cost recovery arrangements may not be viable in some jurisdictions (or fisheries) until intended major policy reforms have been implemented (such as in New South Wales).

In principle, the costs of administering recreational fisher licensing systems should be recovered from recreational fishers. Reflecting the low marginal cost of issuing each licence, recreational fishing licences are expected to be available at low cost for the majority of fishers. As noted earlier in regard to licensing, the objective of the regulatory action should determine the scope of any charging.

It is unlikely that cost recovery could be implemented cost effectively or in a way that does not undermine other policy objectives in the Indigenous customary sector.

Efficiency in fisheries management can also be enhanced by making processes such as research, consultation and data management contestable, and governments should actively pursue these opportunities.

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# Recommendations and findings

## Chapter 2: Access to fisheries resources

### RECOMMENDATION 2.1

The State and Northern Territory Governments should amend relevant planning instruments so that planning and land-/marine use proposals take into account their potential impacts on marine fishing activities.

### RECOMMENDATION 2.2

The New South Wales, Victorian, Queensland and Tasmanian Governments should adopt the practice of other jurisdictions and develop and implement a harvest strategy policy. Harvest strategy policies should be developed with regard to the *National Guidelines to Develop Fishery Harvest Strategies*.

### RECOMMENDATION 2.3

The Australian, Victorian, Queensland and Tasmanian Governments should adopt the practice of other jurisdictions and develop a policy to guide the allocation of access to fisheries stocks between different sectors.

The allocation policies of all governments should seek to promote the best use of fishery resources and provide confidence in relation to the processes involved in determining resource shares. At a minimum these policies should outline:

- triggers for review of existing allocations between sectors
- the review process, including how consultation will occur
- key considerations that will guide decisions.

These policies should be publicly available.

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#### FINDING 2.1

Decisions by governments on the allocation of marine fishery resources are severely constrained by a lack of comprehensive and current data on the participation, effort and take of the recreational and Indigenous customary fishing sectors.

#### RECOMMENDATION 2.4

All governments should consider a move to trading of access rights between the commercial and recreational sectors in the longer term for suitable, higher value fisheries. Policy makers should observe the performance of overseas inter-sectoral trading models, with a view to understanding how similar models can be applied in Australia.

## Chapter 3: Commercial fishing

#### FINDING 3.1

Output controls, in particular, individual transferable quota systems, provide greater confidence on the achievement of sustainability goals. In addition, they provide greater scope for innovative and efficient use of fisheries resources because:

- fishers have greater freedom to adopt improvements in business practices and take advantage of market opportunities
- they provide more secure property rights, which can facilitate investment.

While individual transferable quota systems will not be appropriate for all fisheries, there is scope for governments to increase their take up.

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#### RECOMMENDATION 3.1

The State and Northern Territory Governments should establish individual transferable quotas as the default management system for each of their fisheries.

If this is not technically feasible or would not be cost effective, governments should adopt individual transferrable effort systems, or otherwise a management approach that permits as much flexibility as practicable in the trading of fishing rights.

The Australian Government should complete the move of its fisheries to either individual transferable quota or individual transferable effort systems.

Governments should publicly release reasons for the management approach taken for each fishery.

#### RECOMMENDATION 3.2

All governments should regularly review commercial fishing regulations and fishery-specific controls to ensure that they only impose the minimum restrictions necessary to meet policy objectives.

## Chapter 4: Recreational fishing

#### RECOMMENDATION 4.1

Within the next three years all jurisdictions should require recreational fishers to obtain licences to fish in marine waters.

- The Queensland, South Australian and Northern Territory Governments should introduce licensing for independent recreational marine fishing.
- The New South Wales and Victorian Governments should improve the comprehensiveness of existing schemes by removing exemptions.
- The Western Australian and Tasmanian Governments should broaden the scope of licensing to include all recreational fishing activity.
- The Victorian and Tasmanian Governments should introduce licensing for marine fishing charter boat operators.
- The Australian Government should consider licensing of recreational fishers if it takes on greater responsibility for the management of recreational catch.

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#### RECOMMENDATION 4.2

Governments should consider implementing harvest tagging or restricted licences to manage valuable at-risk species when conventional management controls (such as bag and size limits) are ineffective in achieving sustainability goals or meeting set harvest allocations.

#### RECOMMENDATION 4.3

The State and Northern Territory Governments should review penalty regimes for marine recreational fishing to ensure that penalties support deterrence and are proportionate to the level of harm posed to the fishery.

#### RECOMMENDATION 4.4

The Australian Government should conduct a national survey of recreational fishing in 2018-19, using a comparable approach to the 2000-01 national survey. The cost of the survey should be shared by all governments.

From 2023-24 all governments should undertake five yearly surveys of recreational fishers, whether at the national level or on a coordinated jurisdictional basis.

Surveys should be consistent across jurisdictions and focus on participation, catch and effort, identification of species important to recreational fishers and information on the value of recreational fishing. The information should be made publicly available.

## Chapter 5: Indigenous fishing

#### FINDING 5.1

Most fisheries laws do not recognise the taking of fish for commercial purposes in the rights afforded to customary fishers, although the laws and customs of some Indigenous communities provide for such purposes (in addition to the purposes of satisfying personal, domestic and non-commercial communal needs).

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RECOMMENDATION 5.1

Fisheries management regimes should recognise Indigenous customary fishing as a sector in its own right.

This recognition should provide for fishing by Indigenous Australians in accordance with the laws and customs of their community (including fishing for commercial purposes, where provided for by these laws and customs).

Customary fishing rights should not be limited to native title holders.

RECOMMENDATION 5.2

Indigenous customary fishing for commercial purposes that is: i) significant in terms of the quantity and/or value of fish sold, bartered or exchanged, and/or ii) sold into conventional supply or processing chains should be regulated by the commercial fishing laws applying to all other citizens.

The specific thresholds at which the trade of fish is deemed to be significant should be set by governments in collaboration with relevant Indigenous communities and other stakeholders.

RECOMMENDATION 5.3

Where there is a need for resource sharing arrangements, governments should set aside a level of catch for local Indigenous communities that is sufficient to maintain their customs before allocating access to other sectors.

The level of catch should be agreed between Indigenous customary fishers and fisheries managers, but should be subject to overarching fishery management goals, including the sustainable utilisation of fish stocks.

RECOMMENDATION 5.4

In designing laws consistent with the recommendations in this report, any controls over Indigenous customary fishing activities should be developed, implemented and enforced in collaboration with Indigenous communities.

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## Chapter 6: Fisheries spanning jurisdictions

### RECOMMENDATION 6.1

In reforming cross-jurisdictional fisheries, all governments should:

- focus first on higher value and at-risk fish stocks that are subject to inconsistent management arrangements
- consider whether the transfer of management responsibility to one jurisdiction or shared management with a better alignment of management arrangements would produce the greater net benefits.

### RECOMMENDATION 6.2

The Australian Government should set allowable catch limits of southern bluefin tuna for all fishing sectors. Sectoral allowances should be in place in advance of the southern bluefin tuna fishing season commencing on 1 December 2018.

In consultation with fishers, the Australian and State Governments should negotiate the nature of, and responsibility for, day-to-day management of recreational fishers catching southern bluefin tuna.

### RECOMMENDATION 6.3

The New South Wales Southern Fish Trawl Restricted Fishery should be absorbed into the Commonwealth Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery by the end of 2018.

### RECOMMENDATION 6.4

The New South Wales, Victorian and Queensland Governments should ensure the joint stock assessment project for the east coast biological snapper stock proceeds as an immediate priority.

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DRAFT RECOMMENDATION 6.5

The management arrangements for cross-jurisdictional fisheries and supporting memoranda of understanding should be reviewed regularly by governments to ensure they remain fit for purpose.

The *Principles Guiding Revision of the OCS Fisheries Arrangements* should be amended to include an intention to limit the extent of shared jurisdiction over expanses of water and fishing methods wherever possible.

RECOMMENDATION 6.6

The task of reviewing and developing reforms to reduce the costs of cross-jurisdictional fisheries should be the subject of a joint Ministerial direction to agencies.

All governments should make the reform of cross-jurisdictional fisheries a collective priority and issue a joint reform strategy within 12 months of the release of the Commission's final report. Progress against the strategy should be reported annually over its term.

## Chapter 7: Managing the environmental impact of fisheries

RECOMMENDATION 7.1

The Australian Government should publish online the annual reports that fisheries produce as part of their accreditation requirements under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

RECOMMENDATION 7.2

The Australian Government should reduce the regulatory burden involved in environmental approvals by:

- continuing to move fisheries that represent lower environmental risk to 10-yearly approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
- not requiring fisheries to be accredited or their accreditation to be periodically renewed if satisfied that they present low environmental risk.

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#### RECOMMENDATION 7.3

All governments should expand the use of explicit bycatch mortality limits for fisheries that have a high risk of interaction with threatened, endangered and protected species. Explicit mortality limits should be used in conjunction with cost-effective and reasonable controls on fishing to minimise interactions with threatened, endangered and protected species in the first place.

#### RECOMMENDATION 7.4

Governments that do not already do so should make summaries of information on interactions with protected species publically available (online).

Summaries should be provided on a fishery by fishery basis and at a minimum include the:

- species with which there was an interaction
- gear type used
- consequence of the interaction
- total number of fishing days undertaken in the fishery across the duration of the reporting period.

#### RECOMMENDATION 7.5

The Australian Government should clarify the purpose of the List of Marine Species established in Part 13, Division 4 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and provide further information on the criteria against which species are added to or removed from this list.

#### RECOMMENDATION 7.6

Consistent with recommendation 17 of the Hawke Review (2009), the Australian Government should modify Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) to allow the take of species listed in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals subject to management arrangements demonstrating that the take would not be detrimental to the survival of the species.

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## Chapter 8: Aquaculture

### FINDING 8.1

The development of aquaculture requires access to suitable sites. Spatial planning assists in the efficient identification of these locations. Spatial planning may also provide regulatory predictability and a more streamlined approval process for investors.

### FINDING 8.2

The regulatory arrangements for aquaculture have not significantly changed since the Commission's 2004 study. Regulation has not been a significant impediment to the growth of the aquaculture industry in Australia, except in the case of land-based prawn farming in North Queensland.

This reflects that the major aquaculture-producing States already had many best-practice regulatory features and other jurisdictions have faced challenges that are predominantly non-regulatory in nature.

### FINDING 8.3

Concerns about the environmental and amenity impacts of aquaculture developments highlight the tensions for governments in both regulating and promoting industry growth. These concerns could be minimised by having separate agencies responsible for regulatory and industry development functions.

## Chapter 9: Downstream processes

### RECOMMENDATION 9.1

Governments should not extend mandatory country-of-origin labelling to seafood sold for immediate consumption.

Any country-of-origin labelling scheme for seafood sold for immediate consumption should be a voluntary, industry-initiated arrangement.

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RECOMMENDATION 9.2

The Australian Fish Names Standard (AS 5300-2015) should continue to be used on a voluntary basis. The Fisheries Research and Development Corporation should continue to develop the standard in accordance with the needs of industry and the preferences of consumers.

RECOMMENDATION 9.3

All governments should ensure that licence and accreditation fees for seafood processors reflect the efficiently-incurred costs of regulating these facilities.

## Chapter 10: Other areas for improvement

RECOMMENDATION 10.1

All governments should ensure that operational decisions are delegated to the relevant fishery management authorities to the extent possible.

RECOMMENDATION 10.2

The governance arrangements of advisory groups formed under fisheries laws should include: clear terms of reference; a conflict of interest policy; clear role descriptions and requirements for members; fixed membership terms; performance assessment regimes; and reporting arrangements.

Ministers or departments should have the power to dismiss advisory group members who breach the terms of their engagement.

RECOMMENDATION 10.3

All governments should have clear policies on co-management in marine fisheries. These policies should provide practical guidance to stakeholders on where governments are willing to collaborate or delegate responsibilities. The policies should include details of the capability and governance standards that are expected of stakeholders seeking to enter into a co-management arrangement.

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RECOMMENDATION 10.4

The State and Northern Territory Governments should implement best practice cost recovery arrangements for the commercial fisheries sector. Cost recovery charges should be linked as closely as possible to the efficiently-incurred costs of essential regulatory services.

All governments should transparently disclose the services or regulatory activities for which costs are recovered, and the amount and extent of costs recovered.



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# 1 About this inquiry

The Australian Government has asked the Productivity Commission to undertake an inquiry into the regulation of Australia’s marine fisheries and aquaculture sectors, which is under the control of the Australian, State and Northern Territory Governments. This chapter provides background to the inquiry, including why fisheries are regulated and the nature of fisheries regulation, the context for this inquiry and how the Commission has approached its task.

## 1.1 The nature of fisheries regulation

Fisheries are subject to the well-recognised potential for a ‘tragedy of the commons’, where unrestricted access to a common pool resource can result in a range of suboptimal outcomes (box 1.1). Effective regulation helps to ensure that fisheries are sustainable and provide maximum value to the community.

### Box 1.1 Why marine fisheries are regulated

Unrestricted access to fishing and fisheries can threaten the sustainability of targeted species, and can pose a threat to the ecosystem more generally by damaging marine habitats or impacting on non-targeted or threatened species.

While it is in fishers’ own interests for fisheries to be used sustainably over time, the incentives facing individual fishers to do so may be muted without limits that are also observed by others, and limited property rights over the resource. It is also difficult for individuals to monitor and secure the sustainability of the shared resources (for example, by researching and monitoring fish stocks and biology and enforcing limits on access).

Experience also shows that where there is open access to — and competition for — fishery resources, there will almost inevitably be too much expenditure and effort relative to yield — too many boats, too much gear and too many fishers. This leads to poor productivity, resulting in the loss of potential profits for the commercial sector, and raises doubts about whether fishery resources are being shared and used in a way that is maximising the benefits to the community as a whole.

The more complex the fishery, the less clearly defined its boundaries and the more dispersed and diverse the fishers, the harder it is to manage the common resources efficiently. The public ownership of fish resources means that management of the resource is usually supervised, if not conducted, by governments.

There are around 165 commercial wild catch fisheries spanning Australia’s exclusive economic zone. Millions of Australians fish recreationally, with the ability to ‘wet a line’

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for recreation and leisure viewed by many as part of the Australian way of life. Coastal Indigenous communities have been users and custodians of Australia's marine environment for many thousands of years, and continue to have strong cultural associations and concerns for the sea and its resources. Australia's fish resources also provide non-extractive value, such as for the tourism sector, for which viewing native fish and the marine environment are significant drawcards.

## **Productivity of waters**

The area of Australia's exclusive economic zone is the third largest in the world (after the United States and France) and larger than the land area of Australia (Gullet 2008), with responsibility shared between all State governments, the Northern Territory and the Australian Government. Despite its large size, Australia's marine territory has relatively low biological productivity by global standards, due to its shallow continental shelf and lack of nutrient-rich currents (Ridge Partners 2015).

The commercial production of fish in Australia is affected by limits on aggregate catch aimed at ensuring the sustainability of fish stocks and economic returns, as well as market conditions. Australia's commercial wild catch sector has sought to create value by targeting high-value fish, such as abalone, rock lobster and certain species of prawns, which attract a premium in export markets. Aquaculture has also grown in importance as a source of seafood. Its share of fish production by value in Australia increased from under 30 per cent in 2001-02 to around 40 per cent in 2013-14. Overall, Australia makes up less than 0.2 per cent of global seafood production by tonnage, but 1 per cent of value (ABARES 2015a; ABARES 2015c, FAO 2014; Savage and Hobsbawn 2015).

## **Fishing is affected by other uses of the marine environment**

As Australia's marine environment is used for a variety of purposes, other activities (for example, recreational activities, oil exploration, conservation) can affect the scope and nature of fishing activity and vice versa. Similarly, coastal developments may affect fishing activity through their impacts on fishing grounds, demand for fishing or changed preferences for the broader use of marine resources. No jurisdiction manages all marine uses and impacts in an integrated way. Instead, activities in marine areas are largely regulated on an industry by industry basis.

Fisheries regulation focuses on controls on fishing activity, and may seek to balance the demands of different users of fishery resources (for example commercial and recreational fishers) in a particular area.

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## International obligations

Australian marine fishing laws are subject to a number of international instruments concerning fisheries. These include the 1982 United Nations Convention on the Law of the Sea, which sets member nations' rights in relation to their exclusive economic zones, and various Food and Agriculture Organisation codes and plans relating to illegal fishing, overfishing and bycatch. Australia is also a party to agreements on migratory species such as the Convention for Conservation of Southern Bluefin Tuna.

## Regulatory arrangements

Marine fisheries are subject to management frameworks that reflect obligations established by international agreements, the fisheries and environment legislation of each jurisdiction, and guidance from governments on how certain policy aims should be interpreted and met, for example, on ecologically sustainable development and cost recovery.

Sitting beneath these, each fishery has a specific management framework. These frameworks specify systems for controlling catch and other arrangements necessary to manage the fishery. For example, access sharing arrangements where there is competition between fisher groups, co-management arrangements and research strategies (Sloan et al. 2014). They are usually described in fishery plans and policies and/or regulations.

## Fisheries jurisdictions

Australia's marine fisheries jurisdictions are defined by the Offshore Constitutional Settlement (OCS) agreed between the States, Northern Territory and the Commonwealth (chapter 6). The OCS provides for State and Northern Territory jurisdiction over waters up to three nautical miles seaward of the low water mark, and Commonwealth jurisdiction over waters from three nautical miles to the edge of Australia's exclusive economic zone (200 nautical miles seaward of the low water mark).

## What is regulated?

Fishing broadly includes any activity concerned with the taking, culturing, processing, storing, transporting or sale of fish or fish products (Ridge Partners 2015). The definition of 'fish' for the purposes of fisheries laws generally includes both vertebrate and invertebrate species (for example, finfish, sharks, crustaceans, molluscs, squid and sometimes plants such as algae), but excludes marine mammals or reptiles (Gullet 2008).

The four main regulated fishing groups ('sectors') in Australia are:

- commercial wild catch fishers — in this review, 'commercial fishing' or 'commercial fishers' describe wild catch only
- recreational fishers, who fish for personal consumption, sport or other enjoyment

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- Indigenous customary fishers, who fish in accordance with the relevant laws and customs of their community; and
  - aquaculture producers.

As recreational and Indigenous customary fishing have historically occurred close to shore, only the State and Northern Territory governments regulate these sectors, while both the Australian Government and the State and Northern Territory governments regulate commercial fishers. A range of intergovernmental agreements exist to manage fisheries or fishing stocks that traverse jurisdictional borders, the most prominent of these being OCS fisheries arrangements.

A 'fishery' is a construct/concept established to allow fishing activities to be treated as a unit for management purposes. For example, fisheries may be defined with reference to the people involved (for example, the South Australian Charter Boat Fishery), target species (for example, the Blue Crab Fishery), spatial boundaries (for example, the Coral Sea Fishery) and/or the method of fishing (for example, the Western Deepwater Trawl Fishery). Often, a combination of these characteristics is used. The connectivity of marine ecosystems and, sometimes, changing distributions of fish populations, mean that the characteristics that define a fishery may change over time.

All commercial fishing activities are currently managed in accordance with a defined fishery. Other wild catch fishing activity not undertaken within an established fishery is regulated with reference to the user group, whether recreational or Indigenous customary fishing.

Aquaculture activity is mostly regulated by State and local governments, as it has, to date, largely occurred on State and Territory-controlled land and water.

### Fishery policy objectives

All governments have their own separate marine fishing laws, reflecting the particular objectives and management preferences of their jurisdictions. All jurisdictions aim to utilise fish resources in a manner consistent with the principle of ecologically sustainable development.<sup>1</sup> Other objectives range from promoting the value of fisheries (whether to specific sectors or the broader community) to promoting safe fishing practices.

There will always be scientific uncertainty about the magnitude of environmental risks and differing views on the degree to which governments should act to, and can effectively,

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<sup>1</sup> The National Strategy for Ecologically Sustainable Development suggests the following definition: 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased' (Ecologically Sustainable Development Steering Committee 1992).

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mitigate these risks. The consequences of overfishing are, however, commonly viewed to include:

- the cost to fishers, consumers and the broader community of lost opportunities to fish
- impacts on ecosystems, for example where the over-fished target species is a key food source for other species
- damage to fishers' 'social licence' to operate due to community concerns about the sustainability of fishing activity, which can be difficult to repair. This can, in turn, lead to constraints on fishing opportunities and/or pressure for more widespread or stringent controls, hence additional costs and regulatory burden.

Given these costs, governments now err on the side of sustainability (precaution) when making regulatory decisions.

### Features of Australia's wild catch fisheries management

While all governments seek to manage fishing effort, they use different methods to do so. The predominant systems of control over the total catch of target species are either 'input based' — regulating how fishing occurs (for example, limits on vessel sizes, hours/days fished, fishing methods) — or 'output based', regulating the quantity of fish taken in accordance with a pre-determined allowable harvest of the species.

Input based controls have historically been used to limit fishing effort in commercial fisheries. In recent years, there has been a shift, though slow, to output controls, and in particular to tradeable quotas for catch, as they can provide a more effective means of ensuring that the collective catch of fishers does not exceed the designated limit and better enable improvements in fishing efficiency.

Recreational and Indigenous customary fishing are regulated through controls such as bag limits and fishing methods, and are generally not subject to total (aggregate) catch limits given the diversity and dispersion of activity. Both sectors are subject to significantly less monitoring and regulation than the commercial sector as historically they have been viewed as having less consequential impacts on fishing stocks and the environment.

In addition to controls on the harvest of target species, governments also:

- impose restrictions on fishing areas or methods to restore or protect fishing grounds, and minimise the impact of fishing on non-target species and the environment
- regulate access to fishery resources where there is competition between different fishing sectors (further on this below).

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## Regulatory challenges

Effective fisheries management requires the adaptation of regulatory controls to reflect new information on fish and marine resources, the effectiveness of controls in practice, as well as changing preferences for the use of marine resources. There are three continuing tasks involved: research and/or collection of data to inform management; the development and implementation of controls over activity; and the enforcement of controls.

The complex and dynamic nature of marine systems can make these tasks challenging. To set sound catch targets, for example, fishery managers need to understand (among other things) the biology of the target fish, potentially their interdependencies with other species and sources of fish mortality other than fishing, and project how variables will behave in the future. The determination of allowable fishing methods needs to take into consideration the incentives of fishers and the impact of fishing activities on both target species and the broader marine environment.

Similarly, fish and marine resources are subject to a variety of uses that provide a range of benefits to the community – economic, social and cultural. Ideally, access arrangements for fishery resources should reflect the highest value uses from the perspective of the community as a whole, and be responsive if preferences for use significantly change. This requires sound understanding of fishing activity, and consultation with different groups on the value they place on access. Consultation and transparent decision-making processes are particularly important when the value of benefits from access is hard to measure and there are competing, but equally valid, claims to the resource.

Governments recognise that information that reduces uncertainty and guides improvements in management methods has potentially high payoffs, but such information can be difficult and/or costly to obtain.

### *Decision making*

In deciding the degree of regulatory intervention/investment in fisheries, fishery managers and governments have to decide whether the gains from improvements in management are likely to outweigh the costs. Given the degree of uncertainty inherent in fisheries management, decisions are (implicitly or explicitly) based on weighing risks and the potential costs and returns (higher catch) from investment that might reduce these. This is known as the risk-catch-cost trade-off (figure 1.1). Reflecting a precautionary approach, it is generally assumed that increasing the level of fishing intensity in a fishery will require more investment in management effort if the risk to the sustainability of the fishery is to remain unchanged. But the level of investment required will also depend on the nature of the fishery, including the incentives facing fishers.

In principle, governments should target regulatory effort so it is proportionate to the value of fisheries to the community. High risk and/or high value fisheries, where the economic or

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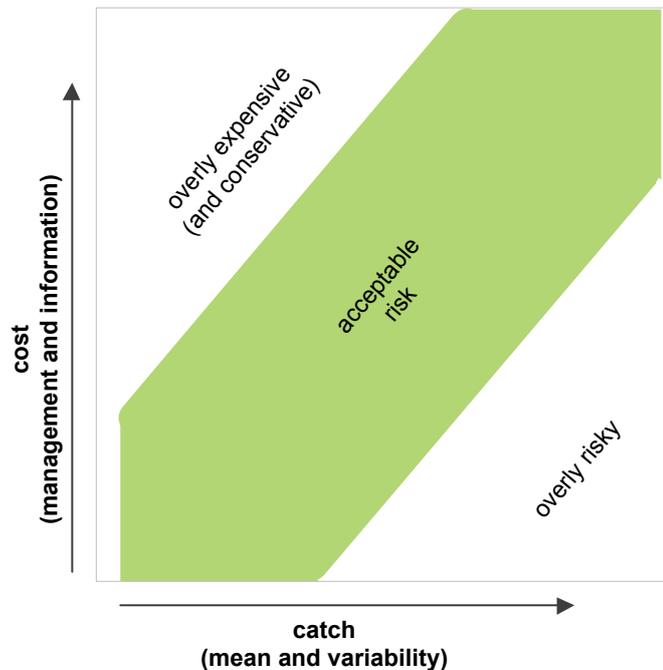
environmental consequences of mismanagement are highest, should attract relatively greater investment.

The nature of fisheries requires that management frameworks must balance flexibility to respond to changes with the provision of certainty to fishers. The latter significantly relies on:

- clear articulation of governments’ policy objectives for fisheries (and clarity on the treatment of embedded trade-offs); and
- transparent and accountable decision-making processes, given that the evidence informing controls over fishing will always be partial and decisions will invariably involve judgements on how and what information is used.

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Figure 1.1 **Risk-catch-cost trade-off**



Based on Dowling et al. (2013); Sainsbury(2005).

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### The fisheries management ‘tacklebox’

The most commonly used tools to control catch depend on the sector. The controls on each fishery are different, reflecting the fishery’s particular characteristics.

Table 1.2 outlines some of the policy options and regulatory levers available for the management of fisheries.

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**Table 1.1 Regulatory options for the ongoing management of fisheries**

<i>Regulatory alternatives</i>	<i>Examples and application</i>
Prohibitions on fishing	Fishers may have restricted (or be denied) access to fishing marine protected areas in order to protect features of the marine environment or conserve biodiversity.
Allowable catch limits	Catch limits are set to preserve the sustainability of the fishery in the first instance. However, they can also support economic objectives by discouraging over-investment in the fishery.
Controls on fishing methods	Fishers can be restricted to (or from) the use of certain fishing methods — for example, commercial fishers may be restricted to using only longline methods while recreational fishers might be precluded from using nets. These controls are applied in some fisheries as an indirect control on catch. Controls on methods are also commonly used to limit fishing methods harmful to the environment.
Direct controls on catch by individuals	Direct controls on catch take different forms — for example, individual transferable quotas (ITQs) determined out of a total allowable catch limit in commercial fisheries and bag limits in recreational fisheries. ITQ systems promote better economic outcomes by allowing fishing quotas to be traded. Other controls, such as minimum size limits, are applied as sustainability measures.
Gear requirements	Fishers can be required to use certain fishing gear or equipment — for example, turtle excluder devices. These requirements are most often applied to limit the impact of fishing on non-target species.
Closures	Fisheries managers can decide to close an entire fishery or certain areas within the fishery. Closures normally occur when there are significant concerns over sustainability (either of target or non-target species) or a need to protect a certain habitat. Periodic or seasonal closures to fishing grounds may also be used to protect species that may be vulnerable during their breeding season or to reduce the overall fishing effort.
Spatial and temporal separation	Fisheries managers can restrict a sector to an area in order to minimise conflict between fishers. Alternatively sectors may be separated by assigning specific times or seasons in which they may fish.

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## 1.2 Inquiry context

Overall, Australia's marine fisheries are considered to be performing well relative to the rest of the world in terms of environmental sustainability.

There are, however, concerns about the outlook for the commercial fishing industry, which has raised questions about whether fisheries regulation and management are impeding productivity improvement and investment in the sector.

In addition, changing community expectations and preferences for the use of fish resources raise significant questions as to whether the resources are being used in a way that is maximising community welfare and will be used sustainably in the future. This has been the dominant concern of submissions and consultations.

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Specific issues include:

- the growing impact and demand of recreational fishers in some areas, with management regimes not adequately reflecting the large social value to the community of recreational fishing, or sufficiently monitoring activity despite recreational catch rivalling or exceeding commercial catch for some species
- that decisions on where fishing can occur and by whom are being made in an arbitrary way in several jurisdictions, significantly affecting livelihoods and social amenity
- the general exclusion of Indigenous customary fishing from fishery management regimes, and associated inadequate consultation with Indigenous Australians on the management of relevant fisheries
- questions as to whether resource sharing arrangements support the optimal use of fishery resources in the long term.

### **1.3 The Commission's approach**

While there have been several reviews of fisheries regulations in recent years, these have focused on aspects of fisheries management or on specific jurisdictions' regulatory regimes. This review has a different orientation. It:

- addresses the management of cross-jurisdictional fisheries, widely seen as a significant and growing concern
- recognises the need to match regulatory effort to the value that can be gained from Australia's fisheries
- identifies the reform areas that are of high priority and common interest across jurisdictions
- focuses on the frameworks for determining access to fishery resources and managing each fishing sector, as it is these higher-level policies that will influence day-to-day regulatory burden
- considers opportunities to improve the efficiency and effectiveness of core management tasks.

In forming recommendations, the Commission has had regard for accepted principles of good regulatory design and 'best practice' fisheries management approaches in Australia and overseas. Several recommendations look to improve fisheries regulation by building on good practices already adopted in some (or many) jurisdictions.

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## 1.4 Guide to rest of this report

The rest of the report is structured as follows.

- Chapter 2 discusses access arrangements for fisheries, including how governments set overall catch limits for fisheries, and how they should allocate access across sectors when there is competition for resources.
- Chapter 3 considers the performance of the commercial fishing sector and ways to overcome impediments to the take-up of best practice management tools. It also recommends other changes to reduce regulatory burdens on the sector.
- Chapter 4 considers the importance of recreational fishing, the need for policy changes to better incorporate the sector's impacts and interests into fishery management, and the distinctive enforcement requirements for this sector.
- Chapter 5 discusses the regulatory frameworks applying to customary fishing and recommends changes to support greater recognition and participation of Indigenous Australians in fishery management regimes.
- Chapter 6 considers the extent and nature of detriment arising from cross-jurisdictional fisheries arrangements. Together with chapters 2, 3 and 7, this chapter sets out the key regulatory issues that affect the commercial wild catch fishing sector.
- Chapter 7 considers the efficiency and effectiveness of environmental management regimes for fisheries.
- Chapter 8 considers how the aquaculture sector has changed over the past 10 years and the influence of regulations on outcomes.
- Chapter 9 explores regulatory arrangements in the seafood processing sector.
- Chapter 10 recommends other ways that fishery management tasks can be improved.

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## 2 Access to fisheries resources

### Key points

- Governments' decisions about how much fishing can take place are set with regard to preserving the long-term sustainability of the fishing stock. Subject to this aim, governments set a level of utilisation and determine who can access fisheries in accordance with their broader objectives about how fishery resources should be used.
- In Australia, there are well-accepted — but not uniformly applied — best practice approaches to determining fishing limits and adapting controls when new information on the status of fish stocks comes to light.
  - All governments should adopt harvest strategy policies to provide guidance to fishers and fishery managers on standards for setting and administering harvest controls.
- When there is competition between fishing sectors, the basis for determining who can access fisheries, and how much they can take, is often opaque or of questionable efficiency. The key guiding principle should be to allocate access so as to maximise the value that the community can obtain, whether the benefits be economic, social or cultural.
  - Reallocations of access between the commercial and recreational sectors can be usefully supported by techniques that estimate the marginal economic value of their access to a fishery. However, these techniques rely on good data and are not without some limitations.
  - At the least, governments should institute guidelines on what they will take into account in allocation decisions, and seek to ensure that decisions support a clear gain to the community from any reallocations of access.
- The ability of governments to develop sound harvest and allocation strategies is severely constrained at present by a lack of relevant data on take of recreational and customary fishers.
- For higher value fisheries, governments should consider a move in the longer term to trading of access rights between the recreational and commercial sectors. Current overseas examples where this is occurring should be observed, with a view to understanding how similar models can be applied in Australia.
- Resource rent charges are rarely applied in fisheries in Australia. Rent charges are useful policy tools, but the marginal profitability of many commercial fisheries means that they are unlikely to be workable in most fisheries the short to medium term.

Marine resources — including fisheries — are managed by governments on behalf of the public. Governments must make decisions about how marine resources will be accessed and utilised, balancing the interests of different users. This includes determining:

- where and when fishing can be undertaken
- any limits on the type, quantity and size of fish that can be taken

- 
- who can fish, especially when there is competition for access
  - what methods of fishing can be used
  - how to monitor, enforce and evaluate fishing policy and activity.

This chapter focuses on the first three issues. Chapters 3, 4, 5 and 10 consider the remaining issues in the context of specific controls for fishing sectors and general governance arrangements.

## **2.1 Determining where fishing can occur**

Marine environments can often be used for a variety of purposes with little competition for access — that is, the type and level of activities of each user do not impact on the value gained from access by others. In such cases, there is little need for government intervention. In other instances, governments must decide what activities are allowed and when, with a view to maximising the value of marine resources to the community.

The Australian Government introduced an Oceans Policy in 1998 to manage Australia's marine jurisdiction on an integrated basis (Commonwealth of Australia 1998). This was envisaged to be achieved by the establishment of a National Oceans Office, which, among other things, would be responsible for establishing a planning regime that prevented conflict between different users for access to the marine environment (p. 13). However, achieving integration of planning regimes across sectors has proven difficult (compounded by the fact that marine activity spans jurisdictions), and several elements of the Policy have since been unwound. In practice, activities that affect the marine environment are largely regulated on an industry by industry basis.

### **The impact of land planning and marine infrastructure**

Fishers raised concerns about the impact of coastal planning arrangements, shore-based developments and marine infrastructure on fishing; notably that development proposals are not required to consider the impacts they will have on fishing activities.<sup>2</sup>

Developments producing runoff or changes in effluent outflows can affect fish health and abundance, and more generally the quality of marine environments. Small changes in the chosen locations of marine infrastructure can particularly affect the costs of commercial fishers. For example, they can increase the distance commercial fishers have to travel before they can start fishing, or affect trawl runs.

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<sup>2</sup> GA and MJ Stevenson, sub. 26; Queensland Seafood Industry Association, sub. 29; NSW Wild Caught Fishers Coalition, sub. 41 Western Australian Fishing Industry Council, sub. 45, Recfishwest, sub. DR91.

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Western Australia and Queensland require coastal development proposals to include consideration of their impacts on commercial fishing. In all other States and the Northern Territory, there are requirements to consider the impacts of land-based developments on marine ecosystems, but these are often limited to examining the impact on threatened and endangered species.

Requiring coastal development and marine infrastructure proposals to take into account their potential impacts on fisheries would help to ensure better integration of existing resource users' interests in development decisions and reduce avoidable costs to existing fishers. State and the Northern Territory governments should provide for such consideration in their planning regimes.

RECOMMENDATION 2.1

The State and Northern Territory Governments should amend relevant planning instruments so that planning and land-/marine use proposals take into account their potential impacts on marine fishing activities.

## Marine protected areas and fisheries

A prominent issue of concern raised by review participants was the impact of the declaration and zoning of marine protected areas on fishing activity.

Marine protected areas — also referred to as marine reserves or marine parks — are areas of the marine environment where activities are restricted for conservation purposes. The boundaries of marine protected areas are generally defined with reference to their 'comprehensiveness, adequacy and representativeness' in meeting this aim (box 2.1). Permitted activities in marine park areas are determined with reference to zones in accordance with categories defined by the International Union for Conservation of Nature (IUCN).<sup>3</sup> As marine parks are established to protect and conserve marine ecosystems, their declaration and zoning can have significant impacts on fishing activity.

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<sup>3</sup> The IUCN is a membership union comprising both government and civil society organisations. The IUCN protected area management categories are recognised by international bodies as the global standard for defining and recording protected areas (IUCN 2008).

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## Box 2.1      **The ‘comprehensive, adequate and representative’ principle**

Requirements that marine park areas be ‘comprehensive, adequate and representative’ are referred to in most jurisdictions’ legislation and guidance. For example:

- the Commonwealth’s *Guidelines for Establishing the National Representative System of Marine Protected Areas* state that the primary goal of policy is:  
... to establish and manage a comprehensive, adequate and representative system of [marine protected areas] to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia’s biological diversity at all levels (p. 5).
- the *Marine Parks Act 2007* (SA) states as an objective:  
... to protect and conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive, adequate and representative system of marine parks (s. 8).

A ‘comprehensive, adequate and representative system of marine reserves’ means:

- a marine reserve system containing examples of all major bioregions
- the inclusion of sufficient levels (number size, configuration) of each ecosystem within the protected area network to provide ecological viability and to maintain the integrity of populations, species and communities
- the inclusion of areas at a finer scale, to encompass the variability of habitat within ecosystems.

*Sources:* Australia and New Zealand Environment Conservation Council (1998); Department of the Environment (2012).

The zoning categories used in Australia range from IUCN I — ‘strict nature reserve’, which effectively prohibit any type of extractive activity to IUCN category VI — ‘managed resource protected area’, which allows some limited extractive or exploratory activity (table 2.1).

In most jurisdictions, a greater proportion of the area protected is designated IUCN IV or VI (where recreational and, limited commercial fishing is permitted) than areas designated IUCN Ia and IUCN II (that prohibit fishing). For example, in South Australia, Victoria and Tasmania, less than six per cent of State waters are dedicated sanctuary zones closed to any fishing activities (DEWNR SA 2014; Parks and Wildlife Service Tasmania 2015; Parks Victoria 2015). In general, marine protected areas displace relatively more commercial fishing than recreational and customary fishing.

**Table 2.1 IUCN management zones used in Australia**

<i>IUCN Category</i>	<i>IUCN Definition</i>	<i>Management Approach</i>
Category Ia Strict nature Reserve	Strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values.	Areas that should be managed mainly for scientific research and environmental monitoring.
Category II National Park	Large natural or near natural areas protecting large-scale ecological processes with characteristic species and ecosystems of the area, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.	Areas that should be protected and managed to conserve its natural condition.
Category IV Habitat/Species Management Area	Areas to protect particular species or habitats where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category.	Areas managed primarily for conservation, through management intervention if necessary, to maintain habitats or species.
Category VI Managed Resource Protected Area	Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resources use compatible with nature conservation is seen as one of the main aims of the area.	Areas should be managed mainly for the ecologically sustainable use of natural ecosystems.

*Sources:* Department of the Environment (2008), Director of National Parks (2013).

Participants from all three fishing sectors (commercial, recreational and customary) raised concerns that the declaration of marine protected areas was impeding their ability to access fishery resources, and questioned whether governments took into account the adverse impacts of decisions on fishers or considered how the impacts could be minimised. Marine protected areas were viewed by some as impeding potential growth in the commercial fishing sector by closing productive fishing grounds. There were also concerns about whether marine parks yielded long-term sustainability or biodiversity benefits.<sup>4</sup>

Marine protected areas in Australia are not established for fisheries management purposes but rather, for biodiversity conservation. Therefore, assessing the worth of marine protected areas and prudence of zoning decisions solely from the perspective of fishers would therefore not give sufficient weight to this broader objective. However, it is apparent that the impacts of marine park decisions and potential ways of minimising and mitigating adverse outcomes on fishing activities are not always understood and/or taken into account.

<sup>4</sup> For example Sunfish Queensland Inc, sub. 3; The Fishermens Portal Inc, sub. 17; AFANT, sub. 20, Merimbula Big Game and Lakes Angling Club, sub. 27, VRFish, sub. 25; GA & MJ Stevenson, sub. 26, IMAS, sub. DR92, Bob Kearney, sub. DR115

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Given the significant impact that marine park decisions can have on fishers' amenity and commercial prospects, it is important that they be made following careful consideration of their necessity and their impacts on different parties.

Many of the principles that should apply to declaration and zoning decisions are those of good regulatory practice, including that:

- decision making processes are transparent
- stakeholders are consulted
- consideration is given to the benefits and costs (including the opportunity costs) of different options
  - opportunity costs should be defined broadly and include forgone economic, social and environmental benefits. Where possible, decisions should be underpinned by information on, and objective assessment of, the value that the community and different users place on alternative uses of the marine environment.
  - consultation with stakeholders can help gauge these opportunity costs
- outcomes are evaluated and reported against stated objectives.

Whether the establishment of marine protected areas has any benefits for fisheries management and fishers is uncertain and subject to debate. The Australian Marine Conservation Society (sub. 33), the Humane Society International (sub. 31), WWF and TRAFFIC (sub. 62) argued that fishers and fisheries management do benefit, with:

- the use of no-take areas providing a scientific reference point
- marine protected areas (MPAs) acting as an 'insurance policy' against unknown aspects of fishing or where there is a lack of research data
- the 'spillover' of fish from protected areas into adjacent fishing areas improving yield.

In contrast, others considered the benefits to be overstated. For example, Professor Caleb Gardner and Dr Emily Ogier (sub. 16, p. 13) stated that:

- while MPAs as research sites have improved the knowledge base for fisheries management, small regional MPAs are more valuable for this purpose
- data collected from marine reserves have not been used for year-to-year decision making in fisheries as they only provide information under the extreme case of no catch of any species
- the 'spillover' effect of MPAs only occurs in overfished stocks. As overfishing is uncommon in Australian waters, MPAs tend to reduce rather than increase fisheries production.

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Periodic reviews of marine protected areas, undertaken in some jurisdictions,<sup>5</sup> provide an opportunity to examine whether governments' objectives in establishing marine parks are being met, whether there are unintended consequences, and whether changes should be made to permissible activities. Such reviews have led to beneficial changes, including recently in New South Wales, where the government amended legislation to ensure consideration of social and economic as well as environmental impacts of marine park management. In Commonwealth marine reserves, changes to zoning arrangements following a recent review resulted in a lessening of impacts on commercial fishers while improving conservation features.

## 2.2 Determining limits on fishing

All jurisdictions pursue multiple objectives through their fishery management regimes. Across jurisdictions, objectives are broad and diverse (table 2.2). For example, objectives can relate to:

- the environment — the ecologically sustainable development of the fishery, and the protection of threatened species
- promoting the value of fisheries for users — maximising economic returns
- facilitating commercial and/or recreational access to fisheries
- social and/or cultural aspects — including promotion of Indigenous customary fishing
- safety — such as Queensland's objective to reduce the possibility of shark attacks.

The diverse nature of these objectives means that policy makers and regulators are required to balance a range of considerations and interests when making decisions about the management of a fishery. Policy objectives and how they are translated into regulations and operational practices can have a substantial impact on final decisions regarding access and limits.

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<sup>5</sup> The Commonwealth, Queensland, New South Wales and South Australia are required under legislation to review marine park management plans in consultation with stakeholders at least every ten years. In Victoria, this is every 15 years. Other jurisdictions appear to undertake reviews on a more ad hoc basis.

**Table 2.2 Objectives of the jurisdictions' primary fisheries legislation**

	Cth	NSW	Vic	Qld	SA	WA	Tas	NT
Ecologically sustainable development	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Equitable or 'appropriate' sharing of fisheries resources		Yes	Implied	Yes <sup>a</sup>	Yes	Yes		Yes
Provide benefits to the community and/or consider community's interests		Yes		Yes <sup>a</sup>	Yes	Yes	Yes	Yes
Conserve/protect fish stocks, habitats and ecosystems		Yes	Yes	Yes <sup>a</sup>	Yes	Yes		Yes
Facilitate and/or encourage participation in fisheries management			Yes	Yes <sup>a</sup>	Yes	Future <sup>c</sup>		
Efficient and cost effective fisheries management	Yes				Yes	Future <sup>c</sup>		
Promote recreational fishing opportunities		Yes	Yes		Yes			
Promote sustainable fishing			Yes			Yes	Yes	
Maximise net economic returns	Yes					Yes <sup>b</sup>		
Cost recovery	Yes				Yes			
Promote viable fishing		Yes	Yes					
Conserve threatened species		Yes						
Increase community understanding of aquatic ecosystems							Yes	
Accountability of decision makers to the community and fishers	Yes				Yes			
Recognise and/or promote Aboriginal cultural fishing		Yes						
Facilitate the rationalisation and/or restructure of the commercial fishing industry			Yes					
Reduce the possibility of shark attacks				Yes				
Enhance competition				Yes <sup>a</sup>				

<sup>a</sup> Included as a principle underpinning the definition of 'ecologically sustainable development' within the Act. <sup>b</sup> The objectives are to yield the optimum (rather than maximum) economic, social and other benefits. <sup>c</sup> Included in the *Aquatic Resources Management Bill 2015* that is before the Western Australian parliament.

Sources: McPhee (2008); *Fisheries Management Act 1991* (Cth); *Fisheries Management Act 1994* (NSW); *Fisheries Act 1995* (Vic); *Fisheries Act 1994* (Qld); *Fisheries Management Act 2007* (SA); *Fisheries Resources Management Act 1994* (WA); *Aquatic Resources Management Bill 2015* (WA); *Living Marine Resources Act 1995* (Tas); *Fisheries Act 1988* (NT).

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## Good practice in setting limits

A key objective of fishery management in all jurisdictions is ecologically sustainable development. Most jurisdictions also explicitly identify the promotion of sustainable fisheries and/or the conservation or protection of fish stocks, habitats and ecosystems as objectives. Limits on the intensity of fishing are therefore set with the objective of preserving the long-term sustainability of fishing stock and their environments (box 2.2).

Because of unavoidable uncertainties, jurisdictions adhere to the precautionary principle in making decisions. This principle requires that a lack of full scientific certainty not be used ‘as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage’ (DEWR 2007, p. 11).

### Box 2.2      **A definition of sustainability**

Sustainability means different things to different people.

Some definitions of sustainability centre on whether stocks are at risk of extinction. Under this definition, stocks can be overfished but still be sustainable — that is, not subject to a risk (or increased risk) of extinction.

However, definitions of sustainability are often broader. A common inclusion in many definitions of sustainability is the concept of intergenerational equity — that the use of fisheries resources by the current generation will not diminish or jeopardise the ability of future generations to access these benefits. The concept of intergenerational equity is present in the definition of sustainability in the key regulatory documents of most Australian governments.

Consequently, when sustainability is referred to in this report, this includes the concept of intergenerational equity.

In managing fishery stocks, governments typically nominate targets of utilisation that reflect intergenerational equity. For example, fisheries are often managed to deliver maximum sustainable yield — that is, the level of catch that maximises revenue from fishing, or generates the largest amount of catch, either in terms of number of fish or tonnage, that can be sustained over an indefinite period. In other cases, fisheries are managed to deliver maximum economic yield — the level of catch that is both sustainable and maximises returns to commercial fishers, thereby introducing the concept of economic sustainability.

Further information on the performance of Australia’s fisheries with respect to sustainability can be found in chapter 7.

All jurisdictions aspire to manage fishery resources on an ecosystem basis. However, this is difficult to implement in practice. Managing on this basis necessitates the integrated management of all inshore and offshore activities that may affect the relevant ecosystem. It also requires cross-jurisdictional management of ecosystems that traverse borders. In practice, management is usually undertaken on a more pragmatic basis often centred on key species and their habitats, although regard is given to broader risks to ecosystems.

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## Stock assessments and harvest strategies

A core aim of fisheries managers is to nominate a maximum level of catch that both maintains the long-term sustainability of the stock and reflects the stated objectives of the fishery. In defining these limits, three main tools are available to regulators: stock assessments, harvest strategies and a harvest strategy policy.

*Stock assessments* are quantitative statements about the status of fish stocks based on scientific and statistical models. Stock assessments over time can demonstrate the resilience of stock to the historical level of fishing activity. Models based on reproduction information and risks provide information on what the maximum sustainable catch is likely to be. The maximum sustainable amount of fishing is influenced by a wide range of variables that are typically unique to a species, such as their reproduction rates, the size and age structure of their population and the resilience of stocks to underlying environmental risks.

*Harvest strategies* are formal frameworks that specify ‘pre-determined management actions in a fishery for a defined species ... necessary to achieve the agreed ecological, economic and/or social management objectives.’ (Sloan et al. 2014, p. 11). Harvest strategies are used to define the desirable level of utilisation of a fishery and/or points at which changes in management are required to ensure that policy objectives (typically relating to sustainability of the target stock) are met. These targets are combined with information from stock assessments to define desirable catch levels, maximum catch levels and other limits.

Harvest strategies are commonly used in Australia and in other countries, including the United States, Canada, New Zealand and Norway (Sloan et al. 2014). The benefits of harvest strategies are well accepted in fisheries management and include:

- increased certainty and transparency with respect to how fishery stocks will be managed and utilised
- allowing people who utilise fishery resources to make more informed plans
- less ad-hoc decision making, with a reduced capacity for politics to influence harvest decisions (which could lead to sub-optimal outcomes).

A number of submissions noted the benefits of harvest strategies (box 2.3).

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### **Box 2.3      Some participant comments on harvest strategies**

Many participants commented on the value of developing and implementing harvest strategies for fisheries. For example, Wildcatch Fisheries SA submitted:

Harvest strategies have a strong role in enhancing our fisheries management processes where they have clear rules to drive management adjustments in line with the performance measures established in each fishery or species strategy. The adoption of harvest strategies nationally would do much to change the landscape for managing fishers and bring the diverse recreational interests into a process that makes it clear where their and other users obligations exist to act for common benefit. (sub. 10, p. 3)

The Tasmanian Rock Lobster Fishermen's Association commented on the benefits having a harvest strategy policy for their industry:

The current harvest strategy has been a very effective tool for the sustainability of the fishery. Pre-defined rules for monitoring and assessing stocks, combined with reference points for performance allow control measures to be implemented to ensure sustainability.

The defined rules within the harvest strategy provide industry with a level of certainty around allocation and access to the resource that results in business having the capacity to balance investment with financial risk. (sub. 37, p. 8)

Seafood Industry Victoria also identified benefits of harvest strategies:

Harvest strategies certainly have a role in furthering our precautionary approach to fisheries management already implemented in Victoria, providing they have clear rules to drive adjustments (both up and down) as guided by the best available scientific information. The broad adoption of both management plans and harvest strategies for fisheries across the country would go a long way to increasing industries social licence to operate. However, caution must be taken when developing harvest strategies and must ensure a solid understanding of all extractions of the fisheries resource. The National Guidelines to developing Harvest Strategies is a solid starting point for the discussions. (sub. 44, p. 3)

Prof. Caleb Gardiner and Dr Emily Ogier submitted:

Harvest strategies solve long running problems in Australian fisheries of lack of objectives and politicisation of decisions on stock management. (sub 16, p. 7)

National guidelines for the development of fishery harvest strategies were released in 2014 (box 2.4). The guidelines draw on best practice approaches internationally and the experience of the Commonwealth, which has the most experience with harvest strategies in Australia.

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## Box 2.4 The components of an effective harvest strategy

The *National Guidelines to Develop Harvest Strategies* (Sloan et al. 2014) states that an effective harvest strategy will be suited to the specific fishery to which it applies and should consist of:

- a clear, precise set of operational, achievable objectives (which can reflect ecological, economic and social considerations) that implement the overarching legislation
- performance indicators for each objective
- reference points that define the target value of a performance indicator for a fish stock (target reference points); the value that will trigger a change in management approach (trigger reference points) and a value that is considered unacceptable (limit reference points)
- decision rules linked to the reference points, and
- a strategy for monitoring performance indicators through the collection of data.

An effective harvest strategy will be unambiguous, particularly in relation to the operational objectives and decision rules. It will also be adaptive to accommodate new information or exceptional circumstances.

Sources: PIRSA (2015b, 2015c); Sloan et al. (2014).

A *harvest strategy policy* is an overarching statement that seeks to facilitate the development of science-based approaches to managing multiple fisheries. It describes how government fishing policy will be incorporated into the harvest strategies for each fishery by specifying what should be included in the fishery-specific harvest strategy, including how key parameters should be set.

The Commission considers that developing and utilising a harvest strategy policy is best practice. They offer a number of benefits. While harvest strategies provide consistency and transparency in setting limits within fisheries, a harvest strategy policy promotes consistency and transparency across all fisheries in a jurisdiction, making it more likely that fishery policy goals will be met.

The existence of a harvest strategy policy places an onus on regulators and fishery managers to follow the policy or justify deviations from it. As a harvest strategy policy outlines the preferred level of utilisation of fishery resources, it also reduces the scope for ad-hoc decision making, which again guards against undue political interference in setting catch limits.

Similar to fishery-specific harvest strategies, harvest strategy policies should be subject to periodic public review. Reviews facilitate appraisal of the overarching direction of fisheries management, any necessary clarification and prioritisation of policy objectives, and refinement of best-practice directions for the development of harvest strategies.

Stock assessments, harvest strategies and an overarching harvest strategy policy are therefore important tools for ensuring the sustainability of the targeted stock, and communicating to fishers how fishery stocks will be controlled.

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Obtaining information to undertake stock assessments and to formulate harvest strategies can be costly (both in time and money). Regulators must weigh the costs of obtaining more evidence to inform the setting of limits against the benefits of better understanding key risks and potential outcomes.

More evidence to inform limits should be sought by regulators when the costs of doing so are likely to be outweighed by:

- the reduction in risk to either the sustainability of the fish stock or the marine environment more generally. This is more likely when there is the potential for risks to have significant and/or lasting consequences, and/or relatively little is known about risks
- the higher the value obtained from utilising the fish stock.

### **What jurisdictions do now**

Two recent studies (Hobday et al. 2016; Sloan et al. 2014) have assessed the use of stock assessments and harvest strategies across different jurisdictions in Australia.

These studies suggest that stock assessments are undertaken for most, but not all, commercial fisheries. Utilising survey data from each Australian jurisdiction, Sloan et al (2014), estimated that three quarters of the 180 fisheries or fish stocks examined were subject to formal stock assessment. However, there was considerable variation across jurisdictions. For example, Western Australia and New South Wales had undertaken formal stock assessments in all their fisheries, while fewer than half of the stocks studied in Victoria were subject to stock assessments (figure 2.1).

A more recent study by Hobday et al. (2016) also suggests that stock assessments are generally undertaken (table 2.3), although the number of fisheries examined in this study was smaller (95 fisheries).

While stock assessments appear to be widely used for commercial species (and fisheries where there is recreational and commercial catch), their use for species that are mostly taken by recreational fishers appears limited. Where existing controls on recreational fishing harvest (such as bag limits and size restrictions) appear to ably manage risks, stock assessments are not warranted. This may in the case in most fisheries (chapter 4). However, if there are marked increases in effort or decreases in take over relatively short periods of time that signal significantly reduced stocks and/or heightened risk, stock assessments may be prudent (alongside other interventions).

**Table 2.3 Selected indicators by jurisdiction**

Number of fisheries with indicator

	<i>Fisheries<sup>a</sup></i>	<i>Stock status</i>	<i>Harvest strategy</i>	<i>Management plan</i>
Commonwealth	11	11	11	11
South Australia	11	11	11	11
Tasmania	5	5	5	5
Northern Territory	7	5	2	3
Protected Zone Joint Authority	3	3	1	2
Western Australia	41	41	6	41
New South Wales	7	7	1	7
Victoria	3	14 <sup>b</sup>	0	3
Queensland	13	9	0	0

<sup>a</sup> Number of fisheries in each jurisdiction with equivalent performance indicators. <sup>b</sup> As reported.

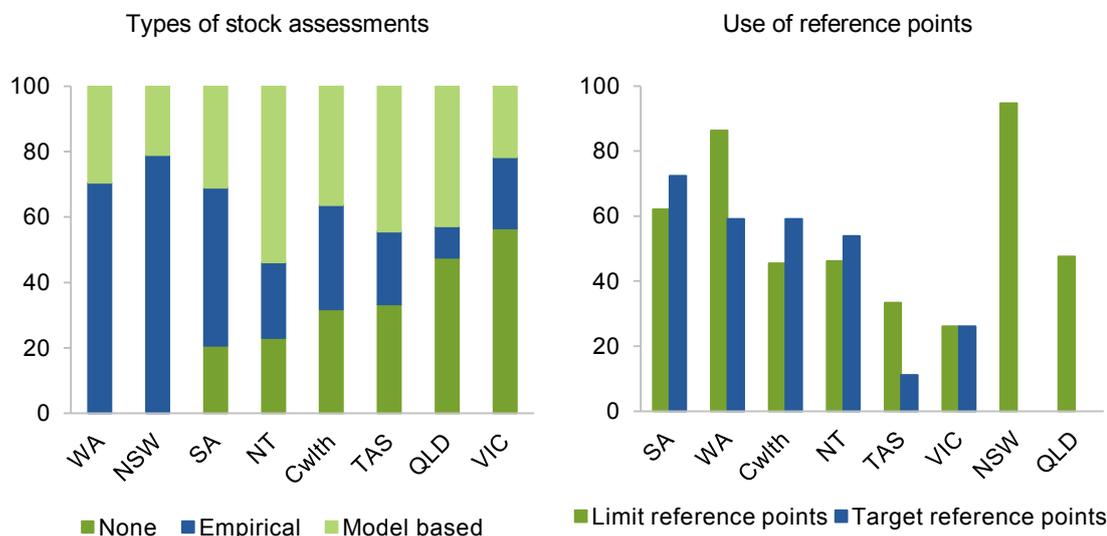
Source: Hobday et al. (2016, pp. 23–25).

Many commercial fisheries in Australia have fishery-specific harvest strategies. Sloan et al. (2014) surveyed the use of target reference points (which specify desired resource utilisation) and limit reference points (beyond which stocks, fisheries practices and management plans are reviewed) in harvest strategies, which are widely acknowledged to be good practice.<sup>6</sup>

The use of target reference points varies across jurisdictions. South Australia, Western Australia, the Commonwealth and the Northern Territory have the highest use rate of target reference points (figure 2.1), while Queensland and New South Wales were found to not use them. Two commonly used target reference points are maximum sustainable yield or MSY (the level of catch that maximises revenue from fishing, or generates the largest amount of sustainable catch, either in terms of number of fish or tonnage) and maximum economic yield or MEY (the level of catch that is both sustainable and maximises returns to commercial fishers over a period) (Kompas 2011). All jurisdictions were found to make use of limit reference points with Victoria and Tasmania having the lowest identified use (figure 2.1).

<sup>6</sup> Hobday et al. (2016) did not examine the use of trigger reference points (when fisheries management procedures should be reviewed).

Figure 2.1 **Use of reference points and stock assessments**  
per cent of fishery stocks examined



Source: Sloan et al. (2014, p. 16).

While commercial catch is usually managed through the use of harvest strategies, recreational catch generally is not. Moreover, there is limited active management of the recreational sector in commercial fishery harvest strategies even where recreational fishers are understood to take significant catch (recreational fishers are instead often treated as another source of fish mortality). The lack of data on recreational fishing makes it difficult to comment comprehensively on where applying such tools may be useful. Current approaches are, however, clearly impeding the management of some valuable species, such as southern bluefin tuna (chapter 6).

### Not all jurisdictions have harvest strategy policies

The Commonwealth, Northern Territory, South Australia and Western Australia have overarching harvest strategy policies.<sup>7</sup> The policies of South Australia and the Northern Territory reflect the guidelines provided by Sloan et al. (2014). Key features of both policies include:

- a clear statement on what is an acceptable level of risk
  - risk is defined as ‘... there should be a “high likelihood” that the stock or management unit will not fall below the established biological reference point’, where a high likelihood is taken to mean that there is a greater than or equal to

<sup>7</sup> See DAFF (2007), The Department of Primary Industry and Fisheries (NT) (sub. 46, attachment 3) to this inquiry, PIRSA (2015c) and DoF WA (2015c).

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90 per cent probability that the stock will be above the limit reference point over a period of time (PIRSA 2015b, p. 8, underline added)

- promotion of the use of target, trigger and limit reference points
- acknowledgment that there is a relationship between the level of exploitation in a fishery and the costs associated with undertaking monitoring and assessment. That is, where resources to inform management strategies are limited, more precaution around the level of exploitation is required.

The harvest strategy policies of the Commonwealth and Western Australia also have these features. However, both are more prescriptive than the South Australian and Northern Territory policies in defining what the target reference point should be. In the case of Western Australia, the ‘default’ target is a level of take that maintains biomass at or above MSY. The Commonwealth policy specifies that MEY should be pursued. These approaches are consistent with the respective legislated policy objectives of the jurisdictions.

New South Wales, Victoria and Tasmania and Queensland<sup>8</sup> do not have a harvest strategy policy. The costs of developing such a policy would be low (formalising existing practice in better-performing States and drawing on the national guidelines).

The Commission notes that a harvest strategy policy does not require that all fisheries be managed in the same way. Rather, they set out desired standards and practices and, as noted, require regulators and managers to justify deviations from standards. Where the nature of the fishery or species means that it is most cost-effective to manage the fishery in a different way, this should be permitted to continue.

#### RECOMMENDATION 2.2

The New South Wales, Victorian, Queensland and Tasmanian Governments should adopt the practice of other jurisdictions and develop and implement a harvest strategy policy. Harvest strategy policies should be developed with regard to the *National Guidelines to Develop Fishery Harvest Strategies*.

## 2.3 Determining allocations between fishers

One of the most frequent and contentious issues raised during this inquiry was how fishery stocks should be allocated across different user groups. Many submissions cited instances of competition between fishers, and particularly between recreational fishers and

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<sup>8</sup> The development of a harvest strategy policy in Queensland was floated in the Green Paper on Fishery Management Reform in Queensland which was released in July 2016 (DAF Qld 2016b).

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commercial fishers (a subset of which is contained in box 2.5). Numerous scientific papers, opinion pieces and blogs also point to the degree of contention in allocation decisions.

It is clear that competition for fisheries resources is a significant and growing issue. However, the extent of competition is hard to assess as there is relatively little information on shifts in activity and catch. Some competition may be transient, as both fish stocks and fishing effort are subject to fluctuations.

Allocation decisions are only needed for fishing grounds or species where significant and sustained competition arises. In cases where competing demand for access to fishery resources threatens the sustainability of a stock or its environment, a clear and transparent process for addressing competition is required. It is probable that competition in some fisheries or for some species will increase as fishing technology improves.

### **Good practice in determining allocations**

The nature of policy responses to competition for fishery resources should be guided by the nature of competition, including:

- the species or areas where there is competition
- whether competition only exists at certain times, days or seasons
- who is competing for access.

The following sections discuss approaches to allocating access to fishers who regularly compete for the same stock at the same time or season.

#### **The objective — maximising value**

The ‘value’ obtained from fisheries resources can have different facets and forms. This value accrues to both individuals that access the fishery and the broader community, and can encompass monetary and non-monetary benefits (table 2.5). Ultimately, governments should seek to maximise the value that may be obtained from access to fishery resources, taking into account the range of benefits that access may confer.<sup>9</sup>

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<sup>9</sup> In seeking to maximise the value obtained from a fishery, policy makers need to pursue both an allocation between different sectors that reflects the value they place on the fishery, but also should seek to ensure those who value access the most within each sector are able to obtain this access. This section focuses on the former of these concerns. Policy options that promote effective allocation within sectors, particularly the commercial sector, are explored in later chapters.

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## Box 2.5      **Some participant comments on competition for fishery resources**

In relation to fishing for flathead off the New South Wales South Coast, the Merimbula Big Game and Lakes Angling Club submitted:

Recreational anglers are catching smaller and smaller fish because commercial netting is winnowing the stock – their nets leave behind the smaller fish. The outcome, should unrestricted commercial netting offshore of popular tourist resorts continue, will be a measurable drop in tourism and hence the economic wellbeing of the local NSW south coast towns. (sub 27, p. 6)

VRFish, which represents Victorian Recreational Fishers submitted:

The current management of the Small Pelagic Fishery (SPF) provides a clear example of how recreational fishing values and interests are not adequately addressed by the Australian Government. There are insufficient legislative measures in place to protect recreational fishing grounds and the surrounding regional communities that they support, especially for our premier game fish species such as Southern Bluefin Tuna (SBT) from the SPF. (sub. 25, p. 1)

The Amateur Fisherman's Association of the Northern Territory submitted:

Recreational fishers are limited to highly regulated and inefficient gear in comparison to the commercial sector. The commercial sector extracts large quantities of fisheries resources in comparison to recreational anglers and this leads to conflict over target species especially when it is in conjunction with overcrowding of prime recreational fishing locations. (sub. 20, p. 4)

Wildcatch Fisheries SA commented:

The regulation of commercial fishers has become the core role for many recreational groups who do not understand fisheries management and see their personal values as outweighing the collective need for all Australians to be able to have access to their fish stocks. (sub. 10, p. 4)

The Tasmanian Seafood Industry Council commented:

The very large number of recreational fishers that frequent our waterways, and the regulatory and political difficulties associated with controlling or constraining recreational catch has often resulted in cuts to sustainable commercial take, or at the extreme, the complete removal of sustainable commercial effort, with little to no compensation. (sub. 47, p. 5)

Seafood Industry Victoria submitted:

Across Australia small-scale fisheries are being removed or restricted in order to give increased access to resources for recreational fisheries, these same fisheries are promoted across the world as environmentally friendly and best practice. The latest example of this in Victoria was the removal of the sustainable, small-scale, low-impact net fishery in Port Phillip Bay, which had co-existed with recreational fishing for over 170 years. (sub. 44, p. 2)

The Queensland Seafood Industry Association commented:

There is considerable room for better fisheries allocation given that the resource is a public one yet history has demonstrated that fisheries managers are guided by the government of the day. The existence of over 200 commercial closures that exclude commercial harvesting in favour of recreational harvesting suggests that recreational fishers have an ongoing advantage in the allocation of fisheries resources. (sub. 29, p. 4)

The Fishermens Portal Inc. (an organisation which represents commercial fishers in Queensland) submitted:

Fair access between recreational, commercial and Indigenous to the common resource is largely influence[d] by political aspirations to gain votes. Commercial fishers get the sharp end of the stick every time. Indigenous fishers have a traditional right to continue to fish as they always have. The recreational sector is the most powerful ... the effort from recreational fishers grows and grows. Bag limits will not control recreational effort. (sub. 17, p. 4)

As most allocation decisions in Australia do not involve a previously unallocated fishery, policymakers need to determine whether a reallocation in favour of one group at the expense of another will increase the overall value obtained from the fishery. This requires estimating the marginal or incremental value derived from gaining more access or lost due to reduced access. The challenge is to obtain comparable estimates of this marginal value for different types of fishers. Given the multifaceted nature of the value obtained from fisheries, this can be a difficult task.

Allocation decisions can be aided by the use of techniques to estimate the economic value of changes to access for the recreational and commercial fishing sectors, as discussed below. As quantification of changes in some benefits (such as social and cultural benefits) is difficult, governments are also likely to need to consider qualitative information. Qualitative information, by its nature, is more subjective. But the nature of these benefits should be described, and community's views on priorities sought, wherever possible. Governments should be transparent about how various benefits are considered and weighed in decision-making.

**Table 2.4 The many benefits of fishing**

<i>Sector</i>	<i>Personal benefits for fishers</i>	<i>Benefits to the wider community</i>
Commercial fishing	<ul style="list-style-type: none"> <li>• Financial returns (post tax and wages) from sale of fish</li> <li>• Enjoyment from working as fishers</li> <li>• Self-worth from being employed</li> </ul>	<ul style="list-style-type: none"> <li>• Supply of fresh seafood and other fish products</li> <li>• Flow on expenditure to the local community from having a viable fishing industry</li> <li>• Taxes on wages and profits</li> <li>• Community cohesion associated with living in a fishing orientated community</li> </ul>
Recreational fishing	<ul style="list-style-type: none"> <li>• Value obtained from the catch and consumption of fish</li> <li>• Financial returns to charter operators and industries catering to recreational fishers.</li> <li>• Value related to the activity of fishing (spending time in nature, or with friends and family)</li> </ul>	<ul style="list-style-type: none"> <li>• Flow on expenditure to the local community from having a vibrant recreational fishing industry</li> <li>• Community cohesion associated with living in a fishingorientated community</li> </ul>
Customary fishing	<ul style="list-style-type: none"> <li>• Value obtained from the catch and consumption of fish</li> <li>• Opportunity to connect with cultural heritage</li> </ul>	<ul style="list-style-type: none"> <li>• Flow on expenditure related to customary fishing</li> <li>• Benefits arising to the Indigenous and broader communities from the upholding and maintenance of traditional laws and customs</li> </ul>

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### *Estimating marginal economic values for recreational fishing*

Several studies — for example, Dominion Consulting (2005), EY (2015) — have estimated expenditure on recreational fishing, and these estimates have been used by proponents to proxy the economic worth of recreational fishing (and to argue for a greater allocation of total catch to the recreational sector). However, total expenditure figures are of limited use for reallocation decisions because they provide a measure of the total value recreational fishers place on access. A better measure for basing allocation decisions is the economic value recreational fishers obtain.

Estimating the economic value of recreational fishing can be challenging as the amount of value recreational fishers place on fishing is not represented in market prices. That said, there is a range of methods for non-market valuation (box 2.6). These include the travel cost method, random utility models (choice modelling) and contingent evaluation techniques.

#### **Box 2.6 Potential methodologies to value recreational fishing**

Techniques for estimating the monetary value of non-market ‘goods’ are divided into two broad categories: revealed preference methods and stated preference methods. Stated preference methods use survey data to elicit willingness to pay from hypothetical scenarios. Revealed preference methods used observed data to estimate the trade-offs people make and impute the value placed on a non-market outcome.

##### **The travel cost method**

Travel cost methods use the cost that people pay to travel to a particular site (in this instance, a fishing ground) to estimate the value they obtain from visiting that location. Data is collected on the costs that people incur and the frequency of visits to the site. This information is used to estimate the demand curve for access to the fishery ground and subsequently economic value (consumer surplus) of the activity.

The travel cost method requires some assumptions, including that people treat travel costs the same way they would treat an entry fee. The travel cost method can provide an estimate of the average consumer surplus of recreational fishers using the resource in its current state.

The estimate of economic value of recreational fishing can be compared to that of commercial fishing at the same site, although it is difficult using the travel cost method alone to make meaningful inferences about whether a proposed reallocation will increase the economic value obtained from the fishery.

(continued next page)

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Box 2.6 (continued)

### **Random utility modelling**

Random utility models (or choice models) can be classified as a revealed or stated preference method depending on the method of data collection. Stated preference methods for random utility modelling uses surveys asking participants to choose their most preferred option from a set of alternatives. These options will have a number of features that differ. When considering fisheries, for example, these features could include the cost of accessing the site, expected catch and the ecological characteristics of the site that may influence their choice of fishing site. The revealed preference method collects similar information, but instead of asking fishers to make hypothetical choices, the data collected are observations of fishers' actual decisions about where they fish and the ecological characteristics of these sites.

The common feature of these two methods is the underlying theory. Random utility models are based on the principle that people will elect to fish at a site which gives them the most satisfaction (utility). Modellers expect utility to be influenced by the features associated with the site and the cost individuals incur to get there. The results of the model can be used to quantify tradeoffs between alternatives, allowing estimates of the change in economic value that occurs with a change in attributes.

Whether using observational data or choice surveys, random utility modelling may be better suited to allocation decisions than the travel cost method as it estimates the marginal economic value of features and allow quantification of the expected changes in economic welfare associated with a reallocation or policy change.

### **Contingent valuation techniques**

Contingent valuation techniques are stated preference methods which involve using surveys to estimate a respondent's willingness to pay for a non-market good. While the particulars of contingent valuation surveys vary, it most commonly involves presenting respondents with set values and asking whether or not they would be willing to pay the amount for access to the non-market good. This survey method relies heavily on good survey design in order to elicit unbiased responses.

### **Hedonic pricing**

Hedonic pricing is a revealed preference method that uses the fact that market goods comprise attributes that include non-market elements to estimate the value placed on non-market goods. Regression techniques are used to identify significant factors or elements that determine market prices and to estimate the value that consumers place on these elements. For the purposes of estimating the value of recreational fishing, hedonic pricing is difficult to apply and therefore is not commonly used.

*Sources:* Baker and Ruting (2014); Colin Cameron and Trivedi (2005); Mazur and Curtotti (2016); Ward and Loomis (1986); Ward et al. (2012).

A number of Australian studies have estimated the marginal economic value of recreational fishing for particular species, or particular locations, predominately through use of random utility or contingent valuation methodologies.

For example, van Bueren (1999) used a random utility model to estimate the marginal economic value of fish caught by shore-based recreational fishers in Southern Western

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Australia under both prevailing conditions at the time and under a 50 per cent increase in catch rates. The 50 per cent increase in catch rates was estimated increase the average value of a fishing trip by \$4.05.

Another study by Yamazaki et al. (2011) used contingent valuation methods to examine the value of recreational fishing in Tasmania across two different fisheries (the inshore saltwater fishery and the rock lobster fishery). In both instances, a greater catch was found to not significantly affect fishers' willingness to pay for their fishing trip.

Other Australian studies that have investigated the value of recreational fishing, and how this value would be expected to change in the wake of catching additional fish include Rofle and Prayaga (2007) with respect to freshwater dams in Queensland; Prayaga, Rolfe and Stoeckl (2009) with respect to the Capricorn Coast and Farr (2013) with respect to the Townsville area. A range of international studies have also examined the marginal value obtained from increasing catch for recreational fishers.<sup>10</sup>

These studies provide some illustrative examples of the economic value of recreational fishing. They also outline the importance of having access to robust data on recreational fishing in order for the techniques to be useful.

#### *Estimating the marginal economic values for commercial fishing*

The economic value of commercial fishing involves consideration of the producer surplus derived by the commercial fisher (the difference between how much they sell a fish for and the costs of production) and the consumer surplus of the buyer in obtaining commercially-produced fish (the difference between how much consumers actually pay to consume fish and how much they are willing to pay). The sum of these two components can ascertain the value obtained from commercial fishing. As fish are bought and sold on a market, and prices are therefore observable, this value is to an extent revealed by market prices.

Changes to the allocation for commercial fishers can affect the quantity of they can sell, and the costs of catching these fish. Large changes in allocation may also affect the prices at which fishers sell their produce. The interaction of these factors changes the value commercial fishers obtain from accessing the fishery. The difference between the value obtained under a new allocation and the previous allocation represents the marginal economic value arising from the change in allocation.

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<sup>10</sup> These studies include Gentner et al. (2010), Agar and Carter (2014) and the South Australian Centre for Economic Studies (1999).

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### *Estimating the marginal economic values for customary fishing*

Fishing undertaken for Indigenous customary purposes should be considered as a separate sector in an allocation process. The value of customary fishing is difficult, if not impossible, to measure because some of the benefits accruing to the fisher are derived from his or her connection to country and cultural heritage. As Campbell (2002) describes:

Difficulties exist in valuing the rights of Aborigines and Torres Strait Islanders to fisheries resources because the intertwining of material uses (consumption of seafood) with a community's culture, spiritual laws and custom means that these two (or more) sources of value are difficult to disaggregate. (p. 176)

This necessitates a pragmatic approach to determining allocations. The Commission considers that a level of catch should be set aside that would allow Indigenous communities to maintain their customs. These issues are discussed more fully in chapter 5.

### **Marrying principle with pragmatism**

#### *Some reallocation goals may need to be met incrementally*

The ultimate objective in making resource reallocation decisions should be to maximise the value obtained by the community from fisheries resources. Given information gaps, particularly in the short term, governments should seek to draw on the best available information and make decisions in close consultation with affected fishers and the broader community.

Governments also need to take into account the timing, impact and costs of change in any reallocation. Changes to allocations that create large, short-term adjustment costs may not be supported by the community as a whole. In this case, making incremental changes over a period so that affected parties can prepare is a reasonable approach. Governments should adopt transparent and open processes for gathering information, and ensure that the basis for proposed and actual decision-making is clear.

Reallocation processes must reflect the circumstances of the particular fishery — there is no 'one size fits all' approach. To improve the likelihood that value to the community is maximised, several principles should guide allocation policies, as discussed below.

#### *Changing allocations in practice*

In situations where competition between recreational and commercial fisheries is endangering the sustainability of a stock and the size of the stock is unlikely to increase in the near future, the use of economic valuation techniques is likely to be especially useful in informing any reallocations. An applied example of this is the Canadian Pacific salmon fishery, where marginal economic valuations for different species were estimated, and reallocation undertaken in such a way as to increase the value of the fishery (box 2.7).

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**Box 2.7      Allocation of Pacific salmon stocks in Canada**

The marginal economic value of Pacific salmon stocks to different sectors has been an explicit factor influencing allocations. In 1996, Canada Fisheries sponsored research into the economic value of chinook and coho salmon, finding that the marginal value of an additional fish would be higher for recreational rather than commercial fishers (Gislason et al. 1996).

The study informed a formal allocation policy for Pacific salmon — established in 1999, but still used today — that gives priority for these species of salmon to recreational fishers, while commercial fishers are given 95 per cent of the harvest of other salmon species (sockeye, pink and chum) (Fisheries and Oceans Canada 1999).

The Canadian Pacific salmon example also illustrates how reallocations need not result in straight transfers of welfare from one sector to another, with the commercial sector being compensated for decreased access to some species of salmon with increased access to other species.

In instances where the stock and, consequently, the total allowable catch, are increasing, regulators may have scope to achieve altered shares by assigning incremental increases in the stock to one sector, which would provide an increase in that sector's share over time. This is generally preferable to transferring existing allowable take across sectors. If the take of a sector is held constant, even if their share of catch declines, the direct costs borne by the sector as a result of the reallocation would be lower than in circumstances where a portion of their take is removed.

*Government intervention is not always needed*

Government intervention may not be needed in all cases of competition for access. Some situations may be resolved through negotiation by the affected parties themselves, or with governments playing only a facilitating role.

Assuming no unfair advantage to one party over another, the outcomes of negotiations could be taken to reasonably reflect the value of access to each party and consequent sectoral shares or limits that would maximise value for the community as a whole (that is, by reflecting collective preferences for use). For governments and the general public, the advantage of a negotiated resolution is that it is less likely to be disputed and less costly for the community.

Government intervention is more likely to be required when parties are unwilling to negotiate, or negotiation would be an inefficient or uncertain way of achieving policy goals (for example, if there was a significant imbalance in the bargaining powers of the sectors).

*A clear and transparent process is critical*

Governments should have a policy stating how access to resources will be reallocated when competition between groups arise. This policy must be adhered to and be

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evidenced-based if it is to be effective in promoting the best use of fishery resources, building the confidence of stakeholders and improving accountability for decisions.

Allocation policies should indicate how policy objectives will be interpreted and prioritised when making allocation decisions. At a minimum, policies should specify:

- the circumstances in which a change in allocation will be considered (such circumstances could include major changes in the use and circumstances of the fishery)
- the processes to be followed when a change in allocation is being considered, including consultation with stakeholders and target timeframes for decisions
- the key factors that will guide decisions, being ones that would improve or maximise the value of access to the community
  - this should include how different forms of value will be measured and weighted, given the policy objectives of the jurisdiction
- how decisions will be communicated.

Other matters that policies could cover include evidence to be used in decision-making and processes for appeal and/or compensation in situations that result in reduced access.

The Commission envisages that an allocation policy would work in concert with a harvest strategy policy to promote effective fisheries management. Both serve different but valuable functions:

- a harvest strategy policy outlines the level of catch of that will be pursued across fisheries in a jurisdiction and therefore helps to define a level of utilisation consistent with the long-term sustainability of stocks and the objectives of the fishery
- an allocation policy outlines how allowable catch limits will be shared across different fisher groups with a view to maximising the value that can be obtained from this catch.

### *Accountability for outcomes*

Regulators must be able to hold sectors to their allocated shares or access rights. There are several methods to do this. These include output controls (including individual tradeable quotas for the commercial sector, and tagging for the recreational sector), imposing spatial separations (for example, by providing recreation only fishing areas) or temporal restrictions (for example, having a separate commercial and recreational season).

## **What jurisdictions do now**

Broadly speaking, jurisdictions appear to be much less advanced in making effective allocation decisions than they are in setting overall limits.

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In some instances, decisions on the allocation of resources appear to be made in an arbitrary way without due consideration of the most valuable use of these resources. For example:

- commercial net fishing is being phased out in several areas in Victoria because of an election commitment by the Andrews Government to increase the number of recreational fishers to one million by 2020. The Government has argued that increasing the number of recreational fishers will create jobs, support local businesses and strengthen rural and regional communities (Andrews 2015)
- the Queensland Government has acknowledged that some fishing grounds are closed simply to reduce conflict between recreational and commercial fishers (sub. 60, p. 1)

Four jurisdictions — South Australia, Western Australia, New South Wales and the Northern Territory — have allocation policies. The content of these policies vary, but each outlines how a review will be triggered and the process that will be undertaken when making allocation decisions (box 2.8).

#### Box 2.8      **A summary of allocation policies**

**South Australia's** allocation policy builds on requirements in the *Fishery Management Act 2007*, which requires that a share of aquatic resources be allocated to different sectors when a fishing plan is undertaken. The policy identifies the triggers against which an adjustment in allocation may be considered, and the process by which a review is undertaken. This process is tiered — beginning with an initial assessment, before moving to a full, more comprehensive, evaluation if required. Preferred and other methods to implement an adjustment are outlined.

In **Western Australia**, an allocation committee provides advice to the Minister on allocation decisions. The guiding principles of the review are set out, along with the process that will be followed (including when the submissions from the public will be accepted).

In **New South Wales**, stakeholders can (for a fee) apply to have an allocation assessed, with the onus being on the stakeholder to provide evidence that supports a change in allocation. The application is considered by a working group, who provides advice to the Minister of whether the allocation should be changed. The Minister makes the ultimate decision.

In the **Northern Territory**, the Minister is able to direct the Management Advisory Committee of a fishery to consider allocation issues. In the event that an agreement is not able to be reached, an expert panel is appointed to advise the minister, with opportunities for public submissions.

*Sources:* Department of Industry (New South Wales) (2015); DoF WA (2012b); DPIF (2015a); PIRSA

There is no overarching policy for the allocation of marine fishing resources across sectors in the Commonwealth, Victoria, Tasmania or Queensland (although the Green Paper on Fisheries Management Reform in Queensland has proposed one (DAF Qld 2016b)). Nonetheless, allocation decisions are still made in some fisheries. For example:

- the Victorian Rock Lobster Fishery Management Plan provides a Total Allowable Recreational Catch of five to ten per cent of the Total Allowable Commercial Catch, although the plan notes 'limiting recreational take to the Total Allowable Recreational

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Catch has, to date, not occurred because there is no agreed method for estimating and regulating take' (DPI Vic 2009).

- Tasmania has nominated roughly 14 per cent of the Total Allowable Catch for Rock Lobster in 2016-17 to the recreational sector. The remainder of the Total Allowable Catch is for commercial fisheries (DPIPWE Tas 2016b).
- in agreement with the commercial tuna industry, charter operators and game fishers, the Australian Government has banned the take of blue and black marlin for commercial purposes.

#### RECOMMENDATION 2.3

The Australian, Victorian, Queensland and Tasmanian Governments should adopt the practice of other jurisdictions and develop a policy to guide the allocation of access to fisheries stocks between different sectors.

The allocation policies of all governments should seek to promote the best use of fishery resources and provide confidence in relation to the processes involved in determining resource shares. At a minimum these policies should outline:

- triggers for review of existing allocations between sectors
- the review process, including how consultation will occur
- key considerations that will guide decisions.

These policies should be publicly available.

The ability of jurisdictions to make effective allocation decisions is severely constrained by the lack of rigorous and regular data on recreational and customary fishing — for example, in some jurisdictions, recreational fishing surveys have only been undertaken once in the last decade (chapter 4).

The lack of information on recreational and Indigenous customary fishing means that current allocation decisions are, in many cases, being made on arbitrary bases. The collection of better information to inform access and allocation decisions should be a high priority for governments, particularly in highly-contested fisheries. Chapters 4 and 5 address these issues at a sector level in more detail.

#### FINDING 2.1

Decisions by governments on the allocation of marine fishery resources are severely constrained by a lack of comprehensive and current data on the participation, effort and take of the recreational and Indigenous customary fishing sectors.

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## Paying for access rights — a longer term solution?

The determination of allocations between sectors is, at present, most practically facilitated by governments. Over time, consideration should also be given to allowing recreational fishers to purchase and trade access rights. Customary rights should not be tradeable or transferrable, recognising the unique characteristics of the associated cultural benefits and that these benefits are exclusive to the community concerned.

All jurisdictions use transferable catch or effort quotas to manage commercial activity to some degree. Transferable quota systems set limits on the total amount of allowed effort or catch for a particular fishery within a set time period, and apportion tradeable entitlements to fish out of these limits. Holders are free to then sell or lease their entitlements to each other through a price determined by the market. The major advantage of an inter-sector trading mechanism is that it removes the need for governments to make subjective decisions about which users value access to the fishery the most (and apportion access to reflect this). Instead, this is achieved organically — those who value access more than the prevailing market price will purchase additional access from those who value their access relatively less.

Trading between sectors is not currently undertaken in Australia. Overseas examples provide insight into how inter-sectoral trading may work — a notable example being Canada’s halibut experimental recreational fishery (box 2.9). A feature of this fishery is that a ‘baseline’ level of access is maintained for all recreational fishers, while frequent recreational fishers (who, presumably, place a higher value on access) can lease quota from commercial fishers to improve their access.

### Box 2.9 **Canada’s Halibut Experimental Recreational Fishery – Pacific Region**

Pacific halibut is a large flatfish found off Canada and the United States, and highly valued by both the recreational and commercial sector.

Recreational fishing for Pacific halibut in Canada occurs in both a standard and an experimental fishery. In the standard fishery, licensed fishers are permitted to catch one halibut per day and have a total of two in their possession. An annual limit of six halibut is also in place.

However, recreational fishers can opt into the experimental fishery. In this fishery, recreational fishers are able to lease halibut quota from commercial harvesters, allowing them to fish beyond the catch limit of the standard fishery. Catch is recorded through recreational logbooks.

Recreational fisheries may purchase quota directly from individual commercial license holders, or through a quota broker. For the 2015 season, around 8600 pounds (nearly 4000 kilograms) of halibut quota was transferred to recreational fishers operating in the experimental fishery from the commercial sector. As an indicator of price, as of 31 May 2016, one broker was offering a lease price of CAN \$6.75 per pound.

*Sources:* Fisheries and Oceans Canada (2016); Integrated Quota Management Inc (2016).

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Inter-sectoral trading is more costly to administer because of the need to establish systems to monitor take, and enforce strict trading rules. Given the higher costs involved, not all fisheries will be suited to quota management — for example, those that have low levels of exploitation, or are of low value or risk.

Australian policymakers should observe overseas examples with a view to understanding how inter-sectoral trading for higher-value fisheries could be implemented in Australia. The transaction costs associated with such schemes can be expected to lessen as the recreational sector in Australia becomes better organised and integrated into the management of fisheries.

#### RECOMMENDATION 2.4

All governments should consider a move to trading of access rights between the commercial and recreational sectors in the longer term for suitable, higher value fisheries. Policy makers should observe the performance of overseas inter-sectoral trading models, with a view to understanding how similar models can be applied in Australia.

### Resource rent charges

Fisheries are a common pool resource, and fishers of all types access fisheries for private gain. Consequently, there is an argument that those accessing and gaining value from fisheries should provide a form of payment to the government (on behalf of the broader community) in return for the use of the resource. However, there are significant challenges in applying such arrangements equitably and cost effectively across fisheries.

Returns or payments can take many forms, including:

- an output-based charge, where a charge would be levied on fish taken (similar to a mining royalty).
- a profit-based charge, where the charge would be based on the profitability of fishers (the ‘profit’ for recreational fishers would represent the value they obtained from access beyond the price they paid for access).
- payments received from an auction or fee system, where parties pay for the right to access fishery resources.

Resource rent charges are not frequently employed in fisheries in Australia (exceptions including the commercial abalone fisheries in Victoria and Tasmania, where a royalty is used), nor are they common practice worldwide.

In order to be equitable, resource rent charges would ideally be applied to both the commercial and the recreational fishing sectors. A number of substantial barriers mean that it is impractical for governments to collect rents from recreational fishers. Data on

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recreational take and mortality is poor, and it is unlikely to be cost effective for governments to verify the catch of recreational fishers and levy a charge for it.

Pragmatically, resource rent charges are likely to only be levied cost-effectively on commercial fishers. For many fisheries, the profitability of operators is marginal at best (chapter 3), meaning that the revenue raised through rent charges would be small, and potentially unlikely to exceed the costs of maintaining and enforcing the charge.

For fisheries that are predominately commercial with more profitable operators, resource rent charges may be more workable. In instances where fishing rights are not perpetual, an auction or a fee could be established on issuance of those rights. In instances where fishing rights are perpetual, or held for long periods of time, royalty style schemes represent an option.

In deciding whether to implement resource rent charges, governments should balance the expected benefits against the costs of establishing and managing such schemes, and any inequities associated with levying one sector and not others.

While such schemes are useful policy tools, and are worthy of consideration, the Commission considers this is a lower priority reform area than others outlined in this report, including implementing effective cost recovery arrangements and reforming the management of individual fishing sectors. In many instances, pursuit of these reforms will result in a fishing sector where the use of rent charges will be more viable in future.

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## 3 Commercial fishing

### Key points

- The commercial fishing sector's output, value and employment have been in decline for more than a decade.
- This trend among other things, reflects constraints on activity due to past overfishing and the use of controls on fishing methods (input controls) as the predominant method of constraining catch. Input-based management has suppressed productivity improvement and slowed structural adjustment.
- The focus of reform for the sector should be on expanding the use of individual transferable quota systems (ITQ) in fisheries. ITQ systems provide greater confidence on the achievement of sustainability goals, impose fewer constraints on productivity improvement and provide for more secure property rights, which can facilitate investment.
  - Where ITQ systems are not technically feasible or cost-effective, governments should adopt market-based input controls — individual transferrable effort systems (ITE).
- A move to ITQ systems will facilitate structural adjustment and support growth in the sector's value by making it easier for more efficient fishers to enter the industry and less efficient fishers to exit. Structural adjustments may have flow-on impacts on supplier businesses, local employment and local communities.
- Implementation of recommendations made elsewhere in this report, including more predictable and sound bases for decisions on access to, and utilisation of, fishery resources, are also important for the viability of the sector.
- Governments should regularly review their commercial fishing regulations to ensure they are effective and impose the minimum restrictions necessary to meet policy objectives. This will help to avoid regulatory and cost 'creep'.
- The commercial fishing industry has a comparatively poor safety record, and there is uncertainty in the industry about who is responsible for the supervision of work safety following the transfer of some functions from the States and Territories to the Commonwealth.
  - Governments should clarify which agencies are responsible for different types of incidents. Relevant agencies should work with fishers to ensure that safety regulations remain practical and effective in reducing the risks of injury and fatality in the sector.

There are around 165 commercial fisheries in Australia and around 200 species caught and traded commercially. The vast majority of catch (85 per cent) is concentrated in 60 species (Finn et al. 2015, pp. 54–56) with rock lobster, prawns and abalone accounting for around two thirds of the value of production (Savage and Hobsbawn 2015 Table S2). Some species are prized and command a premium in overseas markets. The majority of wild

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caught fish (by weight) is for domestic consumption, increasingly in competition with imports and fish produced through aquaculture.

There has been a decline in the sector's value of production over the past decade, reflecting constraints on catch and limited price growth. The majority of catch by value is taken by a small proportion of fishing businesses. Profitability in the higher-value fisheries is flat at best. These factors point to the need for consolidation in the sector, but this is occurring in only a limited way. Many State fisheries are predominantly input-controlled, which is impeding structural adjustment.

Regulatory arrangements need to promote innovation, efficiency improvement and investment, including through increased scale. This highlights the need for best practice management techniques and regulatory frameworks for commercial fisheries if the sector and community are to derive maximum returns.

This chapter considers key trends in and features of the commercial sector, how regulation is affecting productivity, and other policy issues that were raised in the course of the inquiry, including food security and the regulation of worker safety.

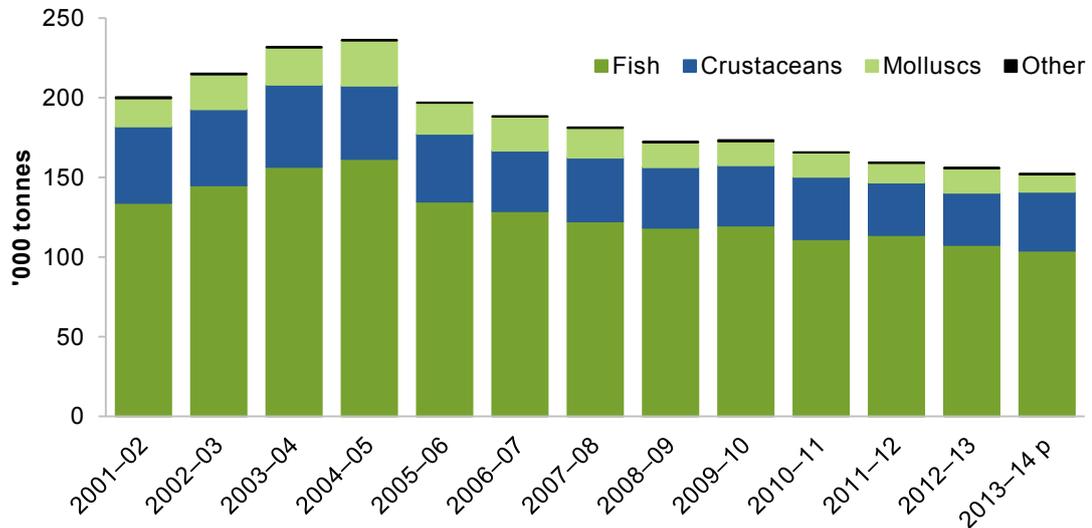
## **3.1 The commercial fishing sector**

### **Output, value and employment**

The output of the commercial fishing sector and prices for fish are inherently variable due to changes in fish abundance and consumer demand. That said, there has been a trend decline in output over the past 10 years, in part due to policies to correct over-fishing that have placed constraints on catch levels (figure 3.1). Output has also been affected by under-catch of fish (catch below allowable or target levels) in some fisheries, largely due to poor returns (box 3.1), although there is insufficient data to indicate the extent to which this has affected trends.

The average price of fish has declined by 20 per cent since 2001-02. This has been almost entirely due to changes in the mix of species produced. The decline in output and average prices have together resulted in a steady decline in the value of wild caught fish over the past 15 years (figure 3.2).

Figure 3.1 Weight of wild caught fish



P Preliminary estimate.

Data source: Savage and Hobsbawn (2015).

Employment in commercial fishing has declined substantially, more than halving since 2001-02 (figure 3.2). There were around 6500 people in Australia in 2015-16 whose main job was with a commercial fishing business. People working in commercial fishing are on average older than other workers, and the average age is increasing.

Given the ageing of the commercial fishing labour force, there is some concern that critical fishing knowledge (especially localised knowledge) will be lost, whether through fishing sector reform or as fishers retire (for example, NSW Wild Caught Fishers Coalition, sub. 41 and Seafood Industry Victoria, sub. 44).

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### Box 3.1 Under-catch in Australian fisheries

The catch rate in Commonwealth fisheries is close to 50 per cent of the allowable take in recent years (AFMA, sub. DR111).

Catch and effort levels in some other Australian fisheries are also below allowable or target rates. For example:

- catches of Spanish mackerel in the Queensland fishery (2014-15), giant crab in the Tasmanian fishery (2012-13 and 2013-14) and Roe's abalone in Western Australia (2014-15) were under 60 per cent of the total allowable catch (TAC)
- catch in the Western Australian salmon fishery has been below 400 tonnes each season since 2010-11. The target catch range has been between 1200–2800 tonnes
- the Onslow and Broome prawn fisheries in Western Australia have experienced very low levels of fishing effort, with catches well below the target range.

The Fisheries Research and Development Corporation (FRDC) is undertaking further investigation of the extent of and reasons for under-catch and, relatedly, the extent of any under-investment in the sector.

Fisheries managers and industry representatives indicated to the Commission that under-catch is mostly due to low returns, reflecting temporal or market-based, as well as policy-induced, factors. The former include falling market prices, changes in demand, increased costs for fuel and/or labour, and changes in currents or water temperature affecting the availability of fish.

Policy factors have included changes in permitted fishing practices and the closure of fishing grounds. Some fisheries in Western Australia, for example, have been closed or partly closed due to declines in stock, but the target take levels for the fisheries have not been adjusted. Changes in market conditions can also make model-derived catch targets redundant.

Under-catch has mostly been observed for low-value species. In contrast, the catch limits of high-value species, such as Southern Bluefin tuna, rock lobster and abalone, are usually met.

Reasons given for under-catch of Roe's abalone in Western Australia and giant crab in Tasmania, which are relatively higher-value, included:

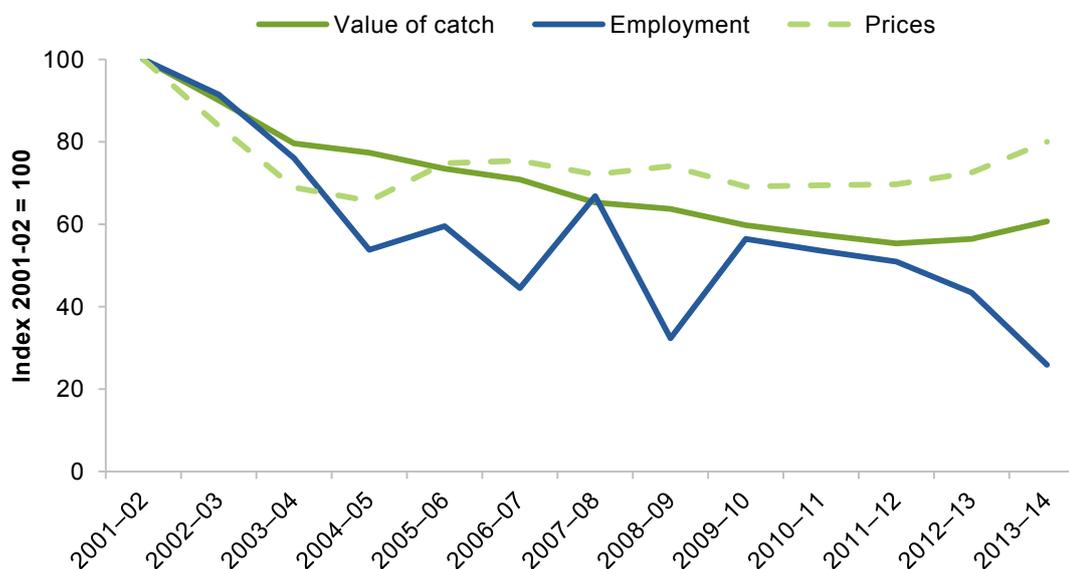
- competition — Roe's abalone directly competes with abalone produced through aquaculture, and attracts a lower price than other wild-caught abalone. Given the growing aquaculture production of abalone in Australia and overseas, the returns on the catch of Roe's abalone has declined
- joint catch — that giant crab in Tasmania is usually caught along with even higher valued rock lobster. Many fishermen stop fishing once their quota for rock lobster has been filled.

Multi-species fisheries have a greater likelihood of under-catch because of the tendency of fishers to concentrate on the most profitable species. In addition, in fisheries where there is a high likelihood of several species being caught together, controls are typically set to restrict catch to the most at-risk species, which may limit overall take. For example, it is likely that the very low quota for school shark in the Southern and Eastern Shark and Scalefish Fishery has periodically constrained the catch of gummy shark.

Other reasons given for under-catch related to specific conditions in the fishery, including distance from market where there had been a decline in local fishery-related services (such as receiving, transporting and/or boat repair services) (for example, prawn fisheries in the North West Coast of Western Australia) and difficulty in hiring crew.

Figure 3.2 **Decline of commercial sector value and employment**

Index of employment<sup>a</sup>, value of catch<sup>b</sup> and prices<sup>c</sup>



<sup>a</sup> Average of quarters for each financial year for the fishing, hunting and trapping sub industry grouping. ABS employment data is based on survey data, and estimates for disaggregated groups can suffer from volatility. <sup>b</sup> Value of catch in 2013-14 prices. <sup>c</sup> Average price per kg in 2013-14 prices.

*Data sources:* Commission estimates based on ABS Labour Force, Australia, Detailed, Quarterly, 6291.0.55.003, table 06, May 2016 and Savage and Hobsbawn (2015).

## Demand

The quantity of seafood consumed per person in Australia from both wild capture and aquaculture increased by about one per cent a year in the six years to 2013-14 (Savage and Hobsbawn 2015, p. 1). Australian per capita consumption of fish appears to be at about the world average (FAO 2014).

Domestic seafood consumption was concentrated in canned tuna, prawns, salmon (canned and fresh) and squid, as well as crumbed and battered fish (Danenberg and Mueller 2011 tables 2 and 3). The majority of consumption — 69 per cent in 2013-14 — was sourced from imports (Savage and Hobsbawn 2015, p. 4).

There has been a shift in the types of fish eaten in Australia and their sources over recent decades, with a growing reliance on imported fish and aquaculture production. A major change in fish consumption in Australia has been the increase in salmon consumption — which has risen from 1.5 to 2.5 kilograms per person in the five years to 2014. This increase has principally been sourced from Australian aquaculture, but also includes imported canned and smoked product.

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The value of Australian seafood exports increased from \$1.1 billion in 2008-09 to \$1.3 billion in 2014-15. This reflects an increase in the price received for seafood exports, with the volume of exports generally flat. The increase in export values has predominantly been driven by crustaceans, which have made up at least two thirds of the value of Australia's exports every year for the past decade (ABARES 2015a table 92). Almost all of the crustacean export earnings came from rock lobster. The main markets for crustaceans are in East Asia.

## **Sector composition and performance**

### **Wide dispersion of catch among fishing businesses**

The commercial fishing sector comprises large, vertically integrated food companies through to small family businesses, with the majority being small businesses.

This disparity can be seen in the dispersion of catch values. An analysis by the Fisheries Research and Development Corporation (FRDC) found that a small proportion of fishing businesses takes the majority of the catch value (FRDC and Ridge Partners 2015, pp. 74–75 interim analysis). Data available to the Commission on the Commonwealth and Tasmanian fisheries (figure 3.3) confirms the disparity.

- In the Commonwealth, 70 per cent of vessels each produced a gross catch value of less than \$1.15 million in 2014-15, slightly lower than the average for all fisheries.
- In the Tasmanian scalefish fishery, 70 per cent of commercial fishers had a below average gross catch value of \$22 000 or less in 2015.

Information available on other States and the Northern Territory suggests that smaller fishing businesses in these jurisdictions have small average values of catch.

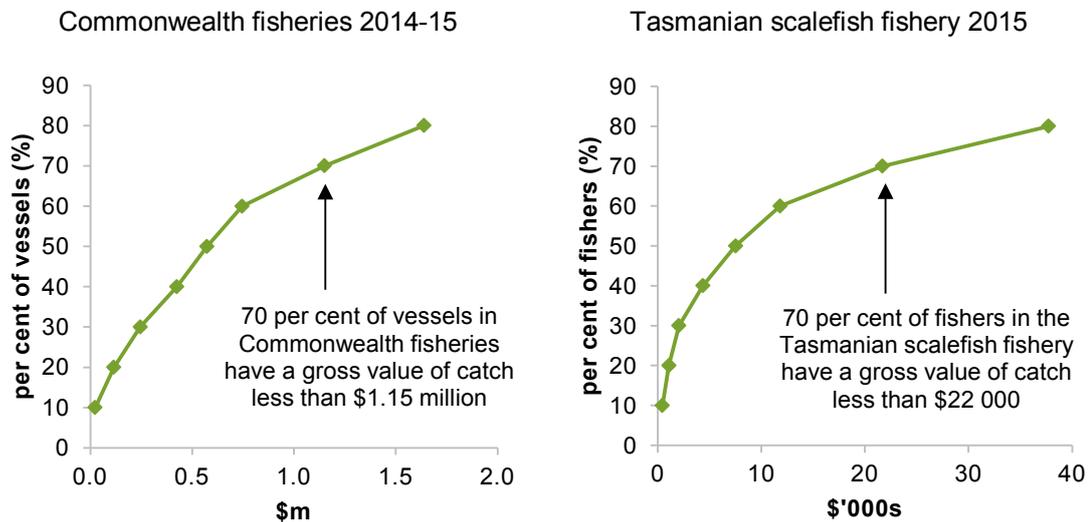
Commercial fishing can be highly seasonal in many fisheries, which can affect the value of catch by fishing businesses. One way that fishers manage the impact of seasonality is to have rights to fish in more than one fishery. GA and MJ Stevenson note that fishers:

... may have multiple endorsements to allow seasonal access to a variety of fisheries. Some fishers may draw 40 per cent of their income from net fishing and 60 per cent from crab fishing. (sub. 26, p. 14)

Even when fishing is permitted all year round, some commercial fishers will restrict their activities based on seasons and traditional practices. For example, Indigenous commercial fishers may adhere to traditional seasons for fishing (Hawkins 2004) and some commercial operators voluntarily constrain their fishing efforts to contribute to stock sustainability (GA and MJ Stevenson, sub. 26).

**Figure 3.3 Distribution of catch value among fishers operating in two jurisdictions**

Cumulative frequency of vessels or fishers with gross value of catch at or below a given value.



*Data source:* Data supplied by the Australian Fisheries Management Authority (AFMA) and Tasmanian Department of Primary Industries, Parks, Water and Environment.

In Queensland, it appears fishing businesses on average operate in three fisheries in the State (Queensland Government, sub. 60, p. 1). In contrast, fishing businesses rarely operate in multiple Commonwealth fisheries. In addition, some fishers operate in multiple jurisdictions (chapter 6, appendix B), but information is not collected by authorities on the extent of this practice.

Another reason for discretionary low catch by some businesses is that they may combine fishing with one or more other jobs. GA and MJ Stevenson elaborated that ‘commercial fishing may be one of many sources of income or the sole income of some fishermen’ (sub. 26, p. 14). Reliance on employment outside of commercial fishing does not mean the fishing business is unviable. As The Fishermens Portal noted:

One fishing family may be able to maximize their profits by fishing at optimum times and having other forms of income to fall back on when the fish are not running. This family would show as a low volume producer yet in fact may be better off than a fisher who fishes every day and burns up his profits through increased running costs. (sub. 17, p. 5)

However, combining commercial fishing with non-fishing employment may mean that sufficient income cannot be generated from fishing to justify new investment.

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## Productivity, profitability and value

There is limited data available in relation to the economic performance of fishing enterprises or fisheries. The information available suggests that there is significant disparity in performance between entities.

### *Productivity*

Productivity is the relationship between output and the resources used in the production process (inputs). Productivity growth is usually considered to be a key source of business competitiveness and long-term growth. In fisheries, however, it is a limited performance indicator because of the influence of regulation on both outputs (the quantity and type of fish produced) and inputs (how fish are caught).

In some fisheries, regulation explicitly constrains productivity growth by defining (fixing) the relationship between inputs and outputs. For example, some fisheries managers use the measure ‘catch per unit of effort’ to control the intensity of fishing. In these fisheries, catch per unit of effort is used as a proxy for the abundance of the overall fish stock. Managers either adjust total allowable catch (for output-controlled fisheries) or total allowable effort (for input-controlled fisheries) to keep the measured catch per unit of effort to or within targeted levels. This approach constrains the intensity of fishing when stocks are considered to be at risk, but can also allow for greater intensity if stocks are considered to be sufficiently abundant.

Productivity information (box 3.2) should therefore be interpreted with caution and considered alongside other sources of performance.

Most jurisdictions do not routinely publish productivity estimates, and those that do – the Commonwealth and South Australia — do not use the same approach. The information available for the Commonwealth indicates:

- productivity improved in Commonwealth fisheries after voluntary exit programs were enacted (particularly the Securing our Fishing Future program), which resulted in industry consolidation and restructure of business models
- in each of the fisheries regularly reviewed, output in the fishery has fallen, but input use has fallen further, contributing to strong growth in measured total factor productivity.

For South Australian fisheries, the main productivity-type indicator is a comparison of the average real cost per kilogram of catch with its average real price per kilogram. The productivity trends here are less clear, only indicating that:

- both the average cost per kilogram of catch and average price declined for three fisheries (sardine, abalone and Spencer Gulf Prawn); in each instance, the average price per kilogram fell more than the average cost per kilogram, resulting in a deterioration on face value

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- in the remaining five fisheries, both the average cost and price per kilogram of catch increased.

### *Profitability*

Estimates of profitability are available for an ‘average boat’ operating in some Commonwealth and South Australian fisheries (figure 3.4).<sup>11</sup> This data suggests that profitability of an ‘average boat’ in these fisheries is in the order of \$100 000, and been relatively flat at best over the past decade.

#### **Box 3.2 Measuring productivity in the fisheries sector**

Productivity in its purest sense is measured as output per unit of input. In fisheries, both inputs and outputs are regulated to ensure sustainability.

Productivity in the commercial fishing sector is not widely and routinely reported. The most consistent measures of productivity are produced by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) for Commonwealth fisheries. ABARES uses a combination of data from fisheries surveys and logbook data in order to estimate fisheries’ total factor productivity. Surveys to collect productivity data are undertaken every two years for major fisheries and on an ad hoc basis for smaller fisheries (such as when management changes occur).

Other jurisdictions with the exception of South Australia do not routinely publish productivity estimates.

In addition to regulations that may affect the scope for, and rate of, productivity growth, other features of the fishing industry can complicate the interpretation of productivity estimates:

- Most fisheries have a small number of fishers, and not all are surveyed. Survey results are therefore often based on a sample of boats that is not representative of a jurisdiction’s entire fleet.
- Some fisheries operate with freezer trawlers, which have a very different business model to most fishers. Estimates of industry performance will be very sensitive to the inclusion or exclusion of freezer trawlers in the survey.
- In multi-species fisheries, total gross catch quantity, a common measure of output, does not accurately reflect vessel output. Some analysts use deflated revenue as a proxy for output as this weights catch volume by price, but this is problematic when there is a high degree of vertically integrated fishers operating in the fishery. For example, there are many businesses operating in the South Australian Marine Scalefish Fishery that use their catch as feed for their tuna farms. As the fish are never commercially sold, it is difficult to estimate revenue from the fishery.

*Sources:* Skirtun & Green (2015); Bath, Skirtun & Green (2015); Green (2016).

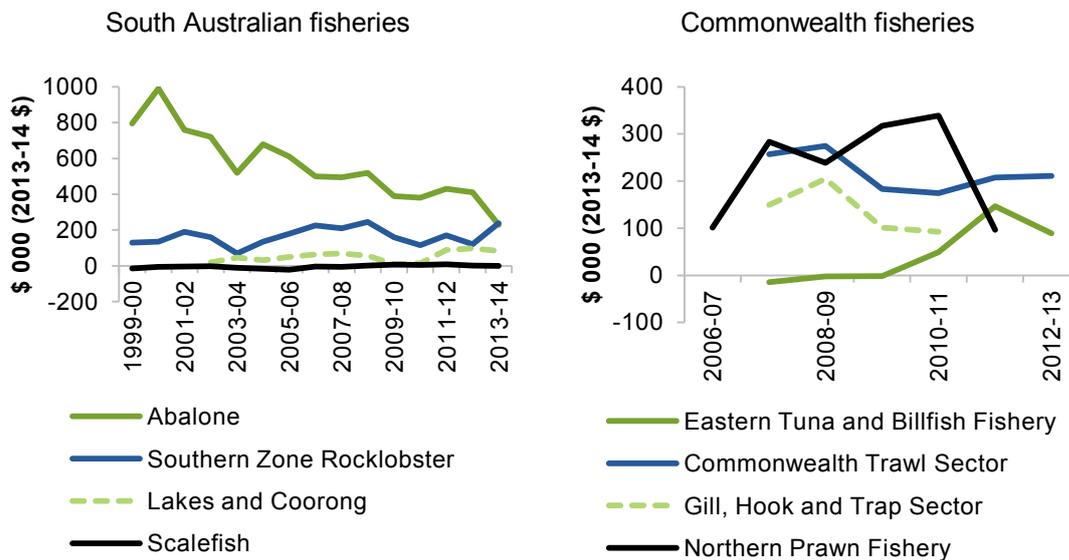
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<sup>11</sup> Profit at full equity is derived by taking business income (typically value of catch plus payments for fishing rights leased or sold to other fishers) and then subtracting costs and a return on capital.

Such data need to be used with caution. The published estimates for the Commonwealth and South Australian fisheries do not represent all individual businesses within those jurisdictions or across Australia because:

- profit estimates are only generally available for fisheries with the greatest value of catch and/or higher per kilogram prices
- a number of fishers operate in more than one fishery, so the information will not always reflect the full profitability of fishing businesses
- the estimates are for an ‘average boat’ operating in the fishery, which is unlikely to reflect the situation of many boats operating in the fishery as catch may vary markedly.

**Figure 3.4 Profitability of Australian fisheries**  
Profit at full equity: average per boat

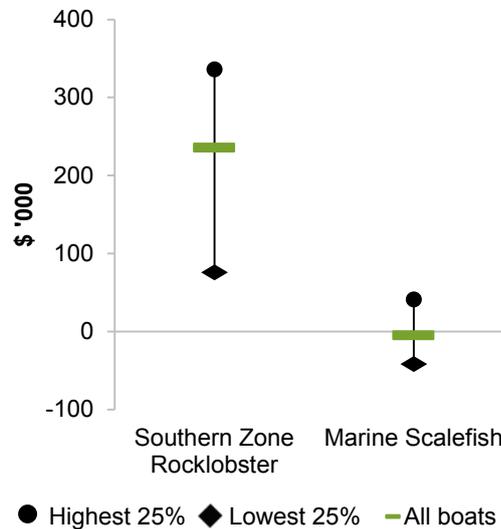


*Data sources:* Bath, Skirtun and Green (2015); George and New (2013); George, Vieira and New (2012); Perks and Vieira (2010); Skirtun and Green (2015); Skirtun, Stephan and Mazur (2014); Vieira and Perks (2009); and Econsearch (2015a).

Given the disparity in value and volume of catch by fishing businesses and the predominance of small businesses, the profits earned by the majority of fishing businesses are likely to be below the quoted average boat profit. These estimates will of course understate the level of profits for the most successful fishing businesses.

Variation in profitability between fisheries can be seen in the reported profitability of the top and bottom fishers in the South Australian scalefish and southern zone rock lobster fisheries (figure 3.5). The most profitable 25 per cent of fishers in the marine scalefish fishery had lower average profits than the least profitable 25 per cent of fishers in the southern zone rock lobster fishery.

Figure 3.5 **Distribution of profits in two South Australian fisheries**  
 Profit at full equity 2013-14: Rock Lobster and Marine Scalefish fisheries<sup>a</sup>



<sup>a</sup> Average profit for quartile and for all fishers operating in the fishery.

Data sources: Econsearch (2015d, 2015f).

### Value

The value of fishing licences (or fishing rights generally) reflect the stream of expected profits derived from those rights, as well as any uncertainty over the tenure of the rights and abundance of the fish stocks, the rules and regulations for the fishery and prevailing economic conditions.

If profit margins are similar between two fisheries, the fishery with more secure rights, less restrictive operating procedures or lower uncertainty over stock levels is likely to have higher rights values. A change in the nature of the rights and/or operating procedures in a fishery can significantly change the value of licences. The introduction of an individual transferable quota system for pipis in the South Australian Lakes and Coorong Fishery, for example, led to an increase in the average value of licences from \$200 000-300 000 to around \$700 000 in a year (Econsearch 2015b).

As an example of the range of current values for licences, the average value of a licence in the abalone fishery in South Australia is around \$5 million.<sup>12</sup> In contrast, the average value

<sup>12</sup> A deterioration from a high of just under \$11 million in 2004–05 because of a profitability decline due to high exchange rates (Econsearch 2015c).

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of a licence per boat in the South Australian Marine Scalefish Fishery has fluctuated between \$60 000 and 250 000 since 1999-00.

### *Scope to expand production from existing fisheries*

One of the constraints on the performance of commercial fisheries is policy-imposed limits on catch. However, there may be scope to expand the level of catch now or in the future.

The most obvious scope to expand production is in fisheries where catch levels are below permitted levels (box. 3.1). There may also be scope to increase allowable catch levels, including where fish stocks are recovering (although permitted future catch levels are likely to remain below the previous levels associated with declining stocks).

In addition, it is of note that allowable catch levels have been set conservatively for some fisheries because the current economic circumstances do not justify greater expenditure on stock assessments.

Some stakeholders have suggested that the setting of allowable catch levels by governments is unnecessarily cautious and/or that there may be scope to catch or better utilise currently non-target species (for example, Kearney, sub. DR115). It is clearly in Australia's interests to be open to innovation in the range of species caught and to better utilise fisheries resources where this is consistent with sustainability. Overall, demand and the commercial sector's capacity to produce economically viable yields will depend on its efficiency in production and how well it can differentiate and market product, especially given competition from other countries and aquaculture.

Changes in regulations that would lower the costs of running fisheries (while maintaining environmental outcomes), and promote innovation in products and fishing methods, offer the greatest scope for productivity improvement.

## **3.2 Primary catch management techniques**

In order to be able to catch and sell fish, commercial fishers in Australia need to hold fishing rights or entitlements. The nature of entitlements varies between jurisdictions and between fisheries in each jurisdiction. Entitlements usually specify who can fish, what vessels can be used, how much fish can be taken and/or the fishing methods that can be used, depending on the type of fishery.

The nature of rights or entitlements can affect both the level of fish caught and the degree and nature of effort invested in 'landing' (producing) the allotted catch. They are therefore an important tool for meeting environmental goals and have a significant influence on the productivity of fishers and the economic performance of the commercial fishing sector.

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The controls used to manage fishing entitlements are usually classified as ‘input’ or ‘output’ controls.

Input controls regulate how fishing occurs, such as vessel size, length of nets, number of hooks or the amount of time that can be spent fishing. They are an indirect means of limiting the catch of fish. Output measures directly control the amount or weight of fish that can be caught.

In Australia, input control-based entitlements can, in most instances, be used, leased or sold to other fishers as a single entitlement. Some jurisdictions employ ITEs, which allow input-controlled entitlements to be traded either in full or part. ITEs may set out, for example, the number of days that a fisher can fish, with the number of days based on the size of their boat and/or length of the nets that they use. Fishers are able to trade their entitlement of fishing days, which better facilitates their utilisation (entitlements may not be fully utilised, for example, where fishers have problems with their vessel or gear).

Input-based management is the predominant management technique in Australia.

Output limits may be set at the fishery level, with regulators halting the fishing season once the catch limit is reached. More commonly, quotas are determined for individual fishers from the total allowable catch limit that is established for a fishery and/or species in a fishery. Individual quotas can be set by weight or number of fish, but are usually determined as a share of total allowable catch. Catch limits are usually accompanied by restrictions on fishing methods to limit bycatch or the impacts of fishing on the environment.

A common form of output control used in developed countries is ITQs. ITQs entitle each fisher to a share of the total allowable catch for the season, and can be traded in full or part.

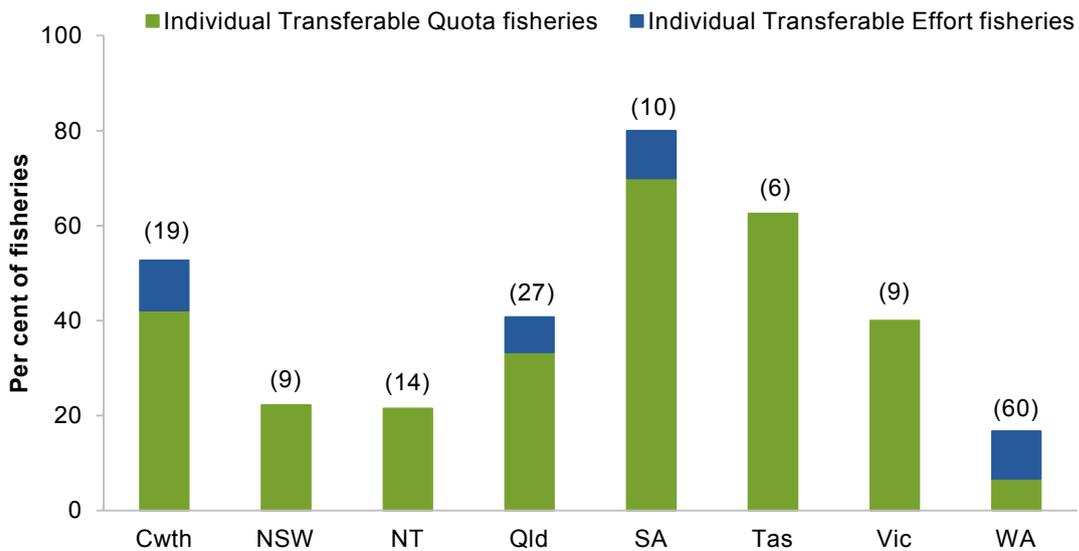
Where the characteristics of the fishery make their application suitable (explored below), output controls are preferred to input controls as the primary method of controlling aggregate catch. This is because they provide greater confidence on sustainability outcomes and impose fewer constraints on how fish are caught — therefore greater scope for productivity improvement and value creation.

A further important feature is the transferability (tradability) of entitlements, in full and part, which facilitates their greater utilisation and purchase by those who are likely to generate greater returns. These features promote improvement in the value of fisheries, as well as smoother adjustment by the sector in response to changes in market conditions.

ITQs are currently used in about a quarter of the fisheries in Australia (figure 3.6). The jurisdictions with the highest use of ITQ systems are generally those whose fisheries had characteristics that made them more immediately amenable to this technique (discussed below). ITEs are not frequently used and where they are it is largely in fisheries targeting prawns and squid — species with short life spans and with highly variable recruitment (the addition to the biomass from spawning) (table 3.1). All jurisdictions have retained some

input-controlled fisheries because of the perceived value (on the part of fishers) attaching to existing entitlements, rather than because this has been deemed to be the best management method.

**Figure 3.6 Use of individual transferable quota and individual transferable effort in fisheries by jurisdiction<sup>a</sup>**  
Per cent of fisheries<sup>b</sup>



<sup>a</sup> Based on publicly available documents as of June 2016. This does not include the recently announced New South Wales reforms which will be implemented over the next three years. <sup>b</sup> The number of fisheries per jurisdiction is in brackets above the bar. The number of fisheries by management control method includes double counting as a small number of fisheries have both transferable effort and quota arrangements.

Source: Commission estimates.

The New South Wales Government announced in May 2016 that it would move most fisheries in that State to either ITQs or ITEs by December 2018. Nonetheless, even allowing for this, input controls will remain the main technique for managing Australia’s fisheries. Queensland has also released a green paper exploring reform options for fisheries management (DAF Qld 2016b) that may change the management methods used in that State.

**Table 3.1 Examples of Australian fisheries by management approach**

<i>Individual Transferable Quota systems (ITQs)</i>	<i>Individual Transferable Effort systems (ITEs)</i>	<i>Other input controls</i>
Small Pelagic Fishery (Cth)	Northern Prawn (Cth)	Prawn (Torres Strait)
Lobster (NSW)	Southern Squid Jig (Cth)	Marine Aquarium (Qld)
Tropical Rock Lobster (Qld)	East Coast Otter Trawl — Prawn (Qld)	Deep Water Fin (Qld)
Abalone (NSW, Vic, SA, WA and Tas)	Gulf St Vincent Prawn (SA)	Sea Urchin (Vic)
Southern Rock Lobster (Vic, Tas, SA, WA)	Pilbara trap (WA)	North Coast Crab (WA)
Demersal (NT)	Gascoyne Demersal Scalefish (WA)	Offshore Net and Line (NT)

## Choice of management tools for fisheries

In its draft report, the Commission considered that there was scope for greater adoption of ITQ systems as the primary method of controlling catch, and recommended that governments move their fisheries to this approach as the default option unless it could be shown that this was not technically feasible or cost effective for a fishery. This would place the onus on governments to assess the suitability, costs and benefits of alternative management approaches on a fishery by fishery basis and consciously select the approach that would best promote the viability of the fishery.

In recommending this approach, the Commission noted the major benefits and costs of ITQ systems relative to input-based controls (box 3.3), including:

- that ITQ-based management arrangements generally do not specify how fishing is to occur (other than to meet environmental concerns) and are superior to input-based systems in promoting efficiency improvement and innovation
  - the ability to adopt innovative business practices is important in all fisheries but will be particularly important for those targeting the domestic market, given the competition they face from imports in the domestic market
- the greater certainty provided by ITQ systems on sustainability outcomes and in support of investment and activity in the sector
  - on the latter, secure property rights associated with ITQs have assisted fishing businesses to obtain finance. In addition, as quotas are secure and less likely to be subject to regulatory intervention due to concerns about the breaching of catch limits, they allow fishers to attempt to time their catch to take advantage of market conditions regardless of the actions of other fishers
- that ITQ systems can be more expensive to administer than input-based systems because they rely on, for example, stock assessments to determine allowable catch levels and systems to monitor who owns and has leased quota, and the levels of catch against allocated quota. Governments have variously employed electronic vessel

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monitoring systems, onboard observers or video monitoring to prevent unrecorded catch and ‘high-grading’, where smaller fish or less valuable quota species are discarded to allow fishing to continue

- high-grading can lead to wastage where the discarding of fish leads to their death, as well as the compromising of catch limits where such mortalities are not included in formal records of catch.

The differences between the costs of administering ITQ and other systems in fisheries are sometimes overstated, not recognising the degree of commonality in tasks required by good fisheries management (regardless of the method of control), and advances in monitoring technologies that have made them more cost-effective to use. Fisheries managers can also adopt lower-cost implementation methods given the degree of risk. For example, observers could be used on just some trips, providing a sample of representative vessels to estimate the level of discards. The total allowable catch could then be revised down to account for the estimated discards (as well as a larger margin for error). The Commonwealth and South Australia have demonstrated that it is possible to extend the use of ITQs to fisheries targeting lower value fish.

The Commission’s draft report also noted that innovation in management techniques is helping to overcome technical problems in using ITQ systems. One of the most significant is setting total allowable catch levels in fisheries with multiple target species (multi-species fisheries).

In multi-species fisheries, ITQ systems can constrain the overall level of catch to the sustainable take level of the most vulnerable species in the fishery. To address this issue, AFMA is developing an approach that would set the TAC for lower-value fish in multi-species fisheries differently to high-value fish. The TAC for high-value fish would be set at levels that would generate the maximum economic yield (an approach designed to maximise the value of the extracted fish over time). For lower-value fish, the TAC would be set according to maximum sustainable yield, which would allow higher levels of catch. This approach would make it less likely that the catch of lower value fish will constrain overall catch in multi-species fisheries.

While multi-species fisheries are likely to continue to present challenges, the work of AFMA indicates that the scale of problem can be reduced.

There are also unique challenges where the target species are short lived and where there is highly variable recruitment. In fisheries with variable recruitment, ITQs can limit catch to substantially below sustainable levels in years of abundance — resulting in considerable levels of under-catch.

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### Box 3.3 Output controls vs input controls

Evidence available on Australian ITQ-managed fisheries indicates that environmental and commercial outcomes are positive.

- In solely Commonwealth managed fisheries, almost all stocks are not subject to overfishing, and where stocks had previously been overfished, there is evidence of recovery. For example, flathead, gemfish and orange roughy stocks in the Southern and Eastern Scalefish and Shark fishery recovered after the introduction of ITQs (Department of Agriculture and Water Resources: attachment to sub. 56, pp. 22–3).
- ITQs have promoted investment. For example, greater certainty over catch shares contributed to decisions to invest in rock lobster processing facilities in South Australia and Western Australia. Improved sustainability outcomes achieved under ITQs also increased confidence for fishers to invest in gear and technology which would allow them to better target species that are in recovery (such as orange roughy).
- A study of the Tasmanian southern rock lobster fishery found that after the introduction of ITQs, fishing effort moved to areas where the catch had attributes that were more highly valued by the export market — in particular, moving to shallower waters where the colour of lobsters caught is more likely to attract a price premium on international markets (Hamon et al. 2009, p. 554). Previously in the fishery, effort controls created perverse incentives to catch as many rock lobsters as quickly as possible rather than catching those that would bring the greatest profit.

Input control arrangements can allow higher economic returns in some circumstances. For example, they can reduce wastage of fish as fishers are often allowed to keep and sell any fish they catch that meet size and species specifications.

However, similar provisions to supplement quota arrangements could also reduce wastage. Moreover, the use of input controls often leads to fisheries regulators modifying the controls to ‘cancel out’ any productivity improvement achieved by fishers. The Queensland Government noted:

If a fishery is managed primarily by input measures there must be a mechanism for continually reducing total fishing effort, since the fishing effectiveness of each individual boat invariably improves over time and results in threats to sustainability as well as reduced economic efficiency. Usually the reduction in fishing effort is achieved by a regular tightening of input controls, which further exacerbates problems of overcapitalisation and economic inefficiency. (sub. 60, p. 6)

Similarly, the Northern Territory Seafood Council noted ‘innovation and efficiency gains lead to tighter controls to mitigate the catch’ (Northern Territory Seafood Council nd, p. 1).

The inability to directly control catch also creates greater regulatory risks and related uncertainty for fishers. For example, if a fishing season must close upon reaching a limit, this can encourage fishers to try to catch as many fish as possible as early in the season as they can (known as the ‘race to fish’).

The Queensland Department of Agriculture and Fisheries noted that ‘[t]he management arrangements currently in place for [some of its input-controlled] ... fisheries do not have sufficient capacity to control total catch’ (DAF Qld 2016b, p. 25).

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## Making the ‘right’ choice

The Commission has examined what characteristics make a fishery more or less amenable to management using ITQs. Experience suggests that fisheries are more amenable to management by ITQ where:

- the fishery targets only one or a small number of target species
- the potential worth of the fishery justifies any additional costs of stock assessment and monitoring
- there is a predictable and reliable basis for setting the total allowable catch, including predictability of recruitment
- there is one regulator of stocks
- there is not significant access to the fishery by the non-commercial sectors.

Costs and complexity are also likely to be lower where the fishery covers only a single biological stock (as migratory species are more difficult to manage) and there are small number of operators and fish landing places.

There are characteristics that make some fisheries less amenable for management using ITQs at present, but there does not appear to be a single ‘fishery characteristic’ that would definitively preclude its use. For example, while the higher cost of administering ITQs suggests that they are more suited to high-value fisheries the experience of the Commonwealth and South Australia suggests that ITQs can successfully be applied to lower value fisheries. And many technical challenges have been able to be addressed or been outweighed by the benefits (appendix C). The question of whether ITQ management would result in greater overall benefits than the status quo should be considered on a case-by-case basis.

The Northern Prawn Fishery (sub. DR80) suggested that rather than ITQs being considered the default, preconditions could be established to ‘screen’ fisheries to limit the number that would be reviewed as more likely candidates for reform. Such a list could help industry and policy makers to assess fisheries against the known benefits and workability of ITQs, but ruling fisheries in or out of consideration based on current practice and knowledge would limit fisheries managers and industry from considering new and innovative ways of managing their fishery.

The Commission does not envisage that all fisheries in Australia would be managed by ITQs. It does consider, however, that governments and fisheries managers can make greater use of best practice management approaches such as ITQs, including through pragmatic and innovative implementation methods. The onus should be to demonstrate why the benefits offered by ITQ systems are unlikely to exceed the costs involved, rather than cursorily ruling the option out. Making ITQs the default management approach would place such an onus on governments and fisheries managers.

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## Social impacts of ITQs

Several participants<sup>13</sup> raised concerns that greater use of ITQs could have a negative impact on the wider community. Concerns centred on:

- potential consolidation of the sector, leading to loss of jobs and threats to the viability of coastal towns
- potential foreign ownership or control of fishing rights (or even ownership by those from outside of the jurisdiction)
- whether private benefits from access under ITQ systems would flow back to the wider community.

In addition, there were concerns that the benefits of ITQs only go to those who own the initial rights, not fishers who have to lease rights or fishing crew, and that a focus on economic efficiency ignores the flow-on impacts of reform to fishing communities.

### *Industry adjustment and restructure*

Transition to ITQ systems involves costs, including the revision of business models for fishers because ITQ systems require the imposition of explicit, usually lower, limits on catch and dissolve existing rights to fish in favour of new, tradeable, rights. Once operational, ITQ systems may facilitate structural adjustment through easier entry to and exit from the sector, and shifts to more efficient fishing practices. This may have flow-on impacts on supplier businesses, local employment and local communities.

When assessing the potential impacts of change to fishery management systems, it is important to acknowledge that there has already been a reduction in the number of commercial fishers, the number of vessels and the number of fishing ports being used. These changes have typically occurred across fisheries, not just in those that have moved to ITQs, in response to changes in technology and market conditions. Among other things, this has resulted in the exit of less competitive fishers and reduction of excess capacity in the industry.

Excess capacity arises particularly in input-controlled fisheries because catch methods are not as efficiently updated as in other systems and/or it is harder to enter and exit the industry (and hence for more efficient operators to replace less efficient operators). This typically results in more fishers and boats than are needed to efficiently catch a set level of fish and, over time, pressure on business viability.

The introduction of ITQs, both in Australia and overseas, has catalysed the introduction of more efficient business models for fishing, which has led to visible job losses in some

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<sup>13</sup> Institute for Marine and Antarctic Studies (sub. DR92), Sydney Fish Market (sub. DR73), Stevenson and Stevenson (sub. DR95), Seafood Industry Victoria (sub. 44).

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fisheries. Studies indicate that while the extent of job losses has varied (depending on the nature of the fishery, how the fishery operated before ITQs were introduced and the method for allocating quota), they have largely resulted in a better matching of fisher numbers to permitted levels of catch. For example:

- The southern bluefin tuna fishery in Australia was considered to have excess capacity before the introduction of ITQs. There was an over 60 per cent reduction in operating vessels after their introduction. The excess capacity included fishers who had recently started operating in the fishery and did not have specialised tuna-catching vessels (Campbell, Brown and Battaglione 2000).
- The reduction in activity in the Australian South East Trawl fishery after ITQs were introduced was more modest — with a 27 per cent reduction in licensed vessels (Newby, Gooday and Elliston 2004).
- Employment was estimated to have fallen in the Alaskan Pacific halibut fishery (by 70 per cent) after the introduction of ITQs (Olson 2011, p. 353). Prior to the introduction of ITQs, the fishery was only open for 2 to 3 days a year because of the excess capacity in the fishery (MRAG Ltd 2010).

Changes in employment have been less pronounced in fisheries where efforts were made to remove excess fishing capacity before the adoption of ITQs.

In terms of the quality of jobs, the experience overseas in new ITQ fisheries has been an increase in the amount of work per worker in the fishery — both in terms of the length of time in a year they are employed and the average hours of work for the weeks that they are employed (for example, the introduction of ITQs in fisheries in British Columbia and the Alaskan Pacific halibut fishery led to a large decrease in the number of people employed in most fisheries, but an increase in the aggregate hours worked (GSGislason & Associates, Edna Lam Consulting and Christopher Sporer Consultants 2008; MRAG Ltd 2010)).

This is not to say that the introduction of ITQs will not have adverse employment impacts and, particularly, in small communities that are economically reliant on fishing. However, the magnitude and duration of those impacts will differ between locations depending upon the characteristics of the fishery, the location and the fishers (box 3.4). And it would be misleading to attribute any longer-term loss of fishery-related employment solely to the introduction of ITQs given pressure on the viability of existing business models.

Governments can and have sought to aid transition and reduce the adverse impacts of policy changes. They also have discretion to pursue regional development or employment objectives. The Commission's general view is that such programs should address hurdles to re-employment or the efficient engagement of workers to where they are needed.

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### **Box 3.4      Employment transitions following the introduction of transferrable quotas**

The Commission identified two studies that examined job transition after the introduction of ITQs (one Australian and the other in New Zealand). New Zealand has a similar history of fishing to Australia, with fishing playing a significant role in its regional and national economy.

The experience in the southern bluefin tuna fishery in Australia was that almost all owner operators who left the industry due to the introduction of ITQs (exiters) were in employment soon afterwards (Campbell, Brown and Battaglene 2000). This transition was aided by many exiters having rights in other fisheries and/or the fact that they combined fishing with other employment.

In New Zealand, only 3 per cent of owners who exited after the introduction of ITQs reported being subsequently unemployed, despite most previously relying exclusively on commercial fishing for employment and living in small and relatively remote locations (Stewart, Walshe and Moodie 2006).

Neither the Australian or New Zealand study examined the employment outcomes of non-owner operators, such as people leasing fishing entitlements and crew members. As non-owner operators do not own rights, they would generally not receive a windfall gain from leaving the industry, and so may be less capable of buying rights to new fisheries or have the same financial capacity to 'start again'.

#### *Wealth effects under ITQs*

Some participants raised concerns that ITQ systems have resulted in the appropriation of benefits by private individuals, including foreign owners of fishing rights, at the expense of the broader community. In response to draft recommendation 3.1, the Institute for Marine and Antarctic Studies (IMAS) stated:

The current recommendation is not consistent with the legislative obligation to manage fisheries to the benefit to the community (see table 1, end of report) ... ITQs have led to a separation in ownership which doesn't seem to be recognised (ie ITQs are leading to large rent payments to quota owners who increasingly live distant from the fishery including overseas). Employment in the fishing sector is reduced by ITQs. ... Consequently, costs are decreased and rent payments to quota investors increase which clearly benefits the quota owner but benefits to Australia are uncertain (we know from ATO releases that corporate tax is often not being collected to compensate for loss of gross state product). (sub. DR92, p. 2)

The 'rent payments' referred to by IMAS are profits that fishers can earn above what would normally be obtainable if they did not have exclusive rights.

The introduction of ITQ management is commonly associated with higher profit levels and increases in the value of fishing rights, reflecting more efficient business models and capacity for growth in value. Clearly, a viable sector is needed for the generation of any wider benefits to the community, whether this is the continued availability of commercially caught, competitively-produced fish, local employment and/or financial returns.

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The sector would not be helped by restrictions on access to overseas expertise, capital or technology. Governments can, however, act to ensure that the ‘surplus’ generated from the better utilisation of fisheries is shared by both rights holders and the community. This could be by charging resource rents, where practicable, ensuring that tax obligations are met (although there was no evidence put that current quota holders are not meeting their tax obligations) or some other means of providing a return to the community.

## **Moving to best practice management controls**

The Commission considers that there is a strong case for moving to ITQs where costs can be managed effectively and where ITQs are technically feasible.

A hurdle to the take-up of ITQs has been the cost of buying out existing entitlements to fish. The efficient and effective implementation of ITQs has also been hindered by the processes of allocating new rights.

The Commission has been advised that, at a practical level, reform without buying out at least some existing entitlements can excessively delay reform processes. The task of instituting reforms could be made easier by:

- removing or reducing some sources of latent effort (under-utilised entitlements to fish), which inflate the ‘demand’ for the fishery and complicates the allocation of new entitlements
- improving the way that rights are allocated under the new ITQ system to better match fishing entitlements with that necessary to operate viably.

The Commission understands that fishery policy and management authorities are already undertaking work to reduce the transitional impacts of moving to ITQs and ITEs and improve the feasibility of the former for multi-species fisheries.

## **Addressing underlying latent effort**

The most common way rights have been reassigned in the past has been to allow a short period of trading in historical catch or effort entitlements in order to enable businesses to exit the industry or adjust their business models. Such trading mechanisms have tended to be very complex, and the level of sophistication required to effectively participate in such a system has been beyond the capacity of some commercial fishers.

The process has also usually been made more complicated by the existence of un- or under-utilised fishing entitlements (latent effort) (box 3.5) — more particularly, entitlements that are not routinely being used or are not intended to be used because, for example, holders are in transition to retirement or have bought entitlements in the hope of later selling them for a profit. Such underlying latent effort increases the likelihood that active fishers will receive allocations that are below the level required to keep fishing or

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below the level required for them to fish viably. This shortfall in allocation arises because the level of allowable catch under ITQs is often below implied catch levels under the preceding input management arrangements, and the distribution of new rights is based on prior holdings. Also, where quota allocations are based on past fishing practices, those allocations will typically reflect average activity in the fishery. If a fisher's catch differs from the average for the fishery, it is likely that their quota allocation will not suit their business model.

### **Box 3.5 Sources of latent effort**

Latent effort refers to the non- or under-utilisation of entitlements. This may arise for a number of reasons:

- people want to permanently fish less than they previously did (for example, as a transition to retirement) or have exited the industry, but have not sold or leased their entitlements
- they may be holding multiple endorsements, which allows them to choose when to fish based on market prices and abundance; or
- people may be holding onto unused fishing entitlements as an asset in anticipation of a future sale at a profit or in the hope of a buy-out if governments undertake reforms.

In relation to transitioning to ITQs, the most problematic form of latent effort is people holding on to entitlements in anticipation of a future sale at a profit. It is likely that that these rights would be quickly sold and fully utilised if ITQs were introduced.

Significant underlying latent effort also makes it difficult to determine what settings should be used for ITEs. This is because, at any time, the amount of fishing actually occurring might significantly vary from what managers assume. Managers must either accept the risk of catch levels exceeding identified allowable levels, or use caution in setting input control limits — which may result in catch well below identified acceptable levels.

Removing or reducing latent effort before adopting ITQs (or ITEs) would simplify the process of allocating new entitlements and lead to fewer fishers receiving insufficient entitlements. In cases when fishers receive entitlements that would require a reduction of fishing, the extent of any shortfall is likely to be smaller.

The experience of Australia and overseas suggests that a better approach would be to separate the process into two steps: first, rescind all fishing rights or reduce latent effort through a bidding system; second, only once the level of entitlements has been reduced (or removed), fishing businesses would be permitted to participate in a market process to trade new rights.

Participants also suggested in response to the draft report that an alternative to fishery managers removing latent effort would be for current rights holders to voluntarily agree on the initial allocation of quota among themselves, based partly on catch history in a recent period and partially on a per licence basis. The outcome would be an allocation that better reflects actual and likely utilisation of entitlements and the reduction of total latent effort.

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Such an outcome is more likely to occur when recent catch levels are close to the likely total allowable catch to be permitted under the ITQ. Given the history of fishery allocations that have been disputed in Australia (Campbell, Brown and Battaglene 2000; Newby, Gooday and Elliston 2004; Pascoe 1993), industry agreement on an allocation process could speed up the reform process and foster greater confidence in the final ITQ system.

Another problem that can occur when allocating ITQs based on historical catch is that some fishers may have had low catch levels in the base period because of circumstances beyond their control (such as poor health or family circumstances). In a number of jurisdictions, fisheries managers have set aside some quota for such eventualities. Typically, an independent panel is established to review such cases, and guidance is given as to the types of circumstances that can be considered. The Commission commends that approach, but also notes that it is unlikely that any process will be able to anticipate the full range of acceptable reasons why participation may have been low (GA and MJ Stevenson, sub. DR95).

### Improving the allocation process

Even where latent effort has been removed or reduced in a fishery, the initial reallocation of rights may not provide all fishing businesses with a combination of rights that would be optimal or viable for their business (box 3.6). For some fisheries, a minimum number of entitlements may be needed before fishing is permitted, and fishing businesses that were entitled to fish before the allocation of new rights may have insufficient rights to fish afterwards.

When fishing businesses are allocated too few rights, they will need to trade to obtain a better set of entitlements. This may be through an initial trading system that the fisheries managers establish as part of the allocation process, or using private trading arrangements.

To participate in an initial trading system, fishers have to identify viable combinations of fishing rights. A fisher's desired combination may reflect past fishing practices, or fishers may try to use the reform process as a means of altering their business model. But some fishers may be unsuccessful in obtaining an optimal combination, or even a combination that permits fishing to occur.

The risks of unviable combinations of fishing rights can be lessened through the use of conditional bidding arrangements. Conditional bidding arrangements allow fishers to specify threshold conditions to buy or sell — for example, a fisher may stipulate the purchase of rights if 10 type A rights and 5 type B rights can be purchased; otherwise, the fisher will sell all their rights.

Without the ability to make conditional offers, commercial fishers may fail in their objective (whether that be to purchase enough entitlements to support the viability of their

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business, or to fully exit the industry). Both situations risk an increase, or continuation, of latent effort and inefficiencies in fishing effort (at least in the short run).

Conditional bidding systems have been established in other markets, for example trading environmental offsets in Victoria (Nemes, Plott and Stoneham 2008). *BushBroker* allows developers to find people who are willing to sell rights to their land for enduring native vegetation offsets. For a development to proceed, a combination of native vegetation offsets needs to be secured, often requiring rights to be sourced from a number of potential providers. This system has been operating effectively for a number of years.

Governments implementing fisheries reforms that fundamentally alter the nature and mix of entitlements for commercial fishers could consider establishing a transitional trading system that allows some conditional bidding arrangements.

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**Box 3.6 Reallocation of rights — concerns and practical considerations**

Stakeholders expressed concern about the need to buy additional licences to maintain current fishing practices:

Smaller operators who do not wish to invest everything into the industry and who perhaps have been bringing up families or investing in other industries should not face the prospect of having to sell their house to stay in this industry. (comment 1)

The need to borrow huge sums of money to buy up other fisher's entitlements to stay in business. (comment 6)

The complexity of allocating new rights can be seen with the recently announced reforms in New South Wales. One of the fisheries being moved to quota is the Ocean Trap and Line – Line East fishery. That fishery will have quotas for four species of fish and a fifth quota that covers three fish. It is likely that quota allocations will be based on average catches for fishers operating in each fishing zone in the State.

The new quota rights will be transferable across the State. As such, if a fisher does not have similar catch shares to other fishers in their zone, they will need to trade to achieve their preferred mix of rights. There are likely to be numerous combinations of rights that would satisfy the fisher's desired outcome. The fisher will need to determine what those favourable combinations might be and how to achieve them. The most favourable combination will depend on the prices for quota rights from each zone, which will not be known ahead of the need to trade. The possible combinations will be complex.

Given that some fishers operate in multiple fisheries, quota trading between some fisheries is allowed, and some fisheries require a minimum number of entitlements to be held to use fishing rights, determining a usable combination of rights could be complex for some fishers.

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Ideally, fishing businesses going through an adjustment process should seek advice about their financial options. The recently announced reforms to the New South Wales fisheries have included grants for fishers to seek independent financial advice (DPI NSW 2016a). The experience in New South Wales should be helpful for other jurisdictions in deciding if subsidising financial advice would be beneficial.

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## Markets for quota

For the full benefits of ITQs to be realised, fishers must be able to efficiently trade quota. New purchasers or lessors need to be able to identify potential sellers or lessees and utilise their new entitlements in a timely way (this is especially important for leasing of quota towards the end of the fishing season).

Overall, there appear to be generally well-operating markets for existing ITQs in Australia.

For many fisheries, there are strong informal networks that facilitate trading of quota rights. The Commission was advised that, occasionally, these networks do not work efficiently because of disputes between some fishers.

A number of brokers are actively involved in trading quota entitlements. Brokers are not essential for efficient markets to develop, but can improve their operation. Brokers can provide for a more visible market and make more transparent price and other data that can be important for borrowers and lenders.

The tools available to fishers to electronically trade quota rights are widespread, easily accessible and cost effective. Some electronic trading or social media platforms also offer the opportunity to negotiate sales anonymously (which could enable trading when disputes between fishers arise).

The main area of concern is how quickly leased entitlements can be utilised. Some jurisdictions operate a paper-based system for notification of trades, which can hamper the ability to lease in or lease out quota at the end of the season. Similar concerns also arise for jurisdictions that need to vet market participants (particularly fit and proper person checks). Such vetting processes should only be imposed if essential for preserving the integrity of the system, and should impose low compliance burdens on prospective fishers. In particular, the Commission sees no value in reviewing whether an existing 'approved' fisher is a fit and proper person if they seek to lease additional quota during the course of a season.

## The question of compensation

There are many complicating factors associated with determining whether, and the extent to which, compensation should be paid to current fishers (box 3.7). Some fishers were historically given, or paid very low fees for, their entitlements, while others have recently purchased rights at closer to their full value.

For fishers who have newly acquired rights (particularly if they borrowed to buy the rights or purchased vessels and equipment to use those rights), they would likely demand compensation that covered all of their expenditure and the present value of future earnings. Fishers who have held their rights for an extended period may feel entitled to compensation for surrendering their entitlements.

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It is also sometimes difficult to differentiate between ‘active’ and truly dormant rights. Rights may not be fully utilised at any point in time, for example, because of illness or injury, or because of a run of years when target stocks have been too low.

Some governments are required to provide compensation for rescinding or removing some types of rights (such as in New South Wales) while the rights to compensation in others depends on the reason for the change (such as in Queensland, where no compensation is required if rights are removed so as to protect animals other than fish).

**Box 3.7      Should current fishers be compensated for loss of fishing entitlements?**

The legal basis of fishing rights varies in Australia. Most fishing rights either bestow perpetual rights to fish, and even in instances where perpetual rights are not granted, current holders are protected from having their rights assigned to other fishers.

In many instances, commercial fishers are legally entitled to be compensated if their rights to fish are revoked. But what should they be compensated for?

There are two types of losses that commercial fishers could incur if their fishing rights are revoked:

- the loss of value of their fishing right
- the loss of potential future earnings.

One of the problems with input controlled fisheries is that the value of fishing rights tends to be very low. Compensation based on the value of fishing rights is, therefore, often opposed by commercial fishers.

One of the challenges with compensating for the loss of future earnings is determining a fair basis for the compensation. For example, should fishers receive the same level of compensation even if they paid vastly different amounts to obtain the rights?

Pragmatically, reform of commercial fisheries management is likely to be delayed if compensation is not provided (even to those who are not legally entitled to compensation).

A range of structural adjustment packages have been used in Australia. Some of the practical problems that have arisen include that:

- fishers have not exited the industry, but moved to other fisheries — potentially adding to sustainability and viability issues in other fisheries
- concerns have been raised about viability impacts when part of the funding of compensation packages have been raised through industry levies (Shark Bay Prawn Trawler Operators’ Association, sub. 55)
- compensation schemes have established expectations about the generosity of future schemes. That is, when generous compensation is provided, it can encourage people to enter or remain in fishing in the hope of a buyout and thereby perpetuate latent effort within fisheries.

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Many governments have been reluctant to fund compensation without a hypothecated funding source (such as an industry levy).<sup>14</sup> Accepting that compensation is often needed to progress reform, the sector needs to also be realistic about future prospects and the need for reform to enable improved sustainability, productivity and profitability.

The pressure to provide compensation can discourage governments from pursuing beneficial reforms of fisheries management. One way to limit the extent of compensation payable in the future is to limit the duration of commercial fishing rights. However, this may only be feasible without the change itself also creating claims for compensation in new fisheries or in existing fisheries where all rights have been surrendered to government. The Australian Southern Bluefin Tuna Industry Association (sub. DR106) emphasised the importance of perpetual rights.

Perpetual rights to the fishery would encourage fishermen to make investment decisions more in line with expectations about long term prospects from a sustainable fishery. The greater the security to title, the greater would be the incentive to invest in ‘careful fishing’, the greater would be the value of the entitlements, and the less would be the administrative burden, over time, associated with it. (IAC 1984, p. 42)

Most of the benefits of perpetual rights can be achieved through the use of limited duration rights if the length and characteristics of the right are sufficient to encourage investment and satisfy lending requirements. This would involve rights of multiple years or decades, and the ability for owners to renew the lease period part way through — albeit with an additional charge proportional to the duration of the remaining right. Existing rights holders could also be given first right to renew, or the right to match other offers.

## **Next steps**

The Commission favours the use of ITQ systems as the default option. They should be used where technically feasible and cost effective.

Given this, the Commission considers that all governments should direct their fisheries managers to move each of their fisheries to ITQ management unless it is demonstrated that this is technically impractical or not cost effective for the individual fishery. A policy directive in these terms is already in place for Commonwealth fisheries managed by AFMA (Macdonald 2005, p. 3). In instituting reforms, governments should first address underlying latent effort and hindrances to moving to, or operating efficiently under, the new arrangement. Such steps should reduce the scope for unintended adverse outcomes from moving to ITQs, and lessen the adjustment costs faced by commercial fishers.

If ITQs are not feasible or cost effective, ITEs should be the preferred management method. ITEs still allow a market-based mechanism for ensuring that entitlements are used,

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<sup>14</sup> One of the attractions for governments of moving straight to a market-based mechanism is that, under such a mechanism, the industry itself needs to partially fund the adjustment.

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and used by the most efficient fishers. The Commission considers that there are no technical barriers to operating any fishery using ITEs, but notes that there will be transition costs (particularly if a new allocation of rights would be required).

For a minority of very small fisheries, retention of existing methods may be justified. This is mostly likely to be the case where the gross value of production of the fishery is very low (and so the costs of monitoring trading of rights would exceed the benefits) and catch rates are close to the maximum sustainable level.

The Commission's recommendation would require each fishery that is not currently managed through ITQs to be reviewed to determine the most appropriate management method.

#### FINDING 3.1

Output controls, in particular, individual transferable quota systems, provide greater confidence on the achievement of sustainability goals. In addition, they provide greater scope for innovative and efficient use of fisheries resources because:

- fishers have greater freedom to adopt improvements in business practices and take advantage of market opportunities
- they provide more secure property rights which can facilitate investment.

While individual transferable quota systems will not be appropriate for all fisheries, there is scope for governments to increase their take up.

#### RECOMMENDATION 3.1

The State and Northern Territory Governments should establish individual transferable quotas as the default management system for each of their fisheries.

If this is not technically feasible or would not be cost effective, governments should adopt individual transferable effort systems, or otherwise a management approach that permits as much flexibility as practicable in the trading of fishing rights.

The Australian Government should complete the move of its fisheries to either individual transferable quota or individual transferable effort systems.

Governments should publicly release reasons for the management approach taken for each fishery.

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### 3.3 Scope for improvement in other management and regulatory arrangements

This section considers whether the nature of security registers impede the ability of commercial fishers to obtain finance, if there are any impediments to the establishment of new fisheries and the scope for reducing other regulatory costs and imposts.

#### Lending against fishing rights

The Commonwealth Fishers Association (CFA) submitted that lenders assign higher lending value ratios (LVRs) to State fishing rights relative to Commonwealth fishing rights. A key reason for this difference was asserted to be that ‘in most [s]tates, third party interests can be registered directly on the asset’ (sub. 49, p. 10) whereas security interests over Commonwealth fishing rights are required to be registered on the Personal Property Security Register (PPSR). The CFA requested that legislation be changed to allow registration of third party interests on Commonwealth fishing rights.

The Commission consulted five Australian banks on this matter. Two lenders acknowledged they had a preference for lending against State fishing rights over Commonwealth rights for the reasons above. The remaining three lenders did not.

The Commission has confirmed that, from a legal perspective, State-based third party registers offer no better recourse or recovery rights to lenders compared to the PPSR. A recent review into the PPSR (Whittaker 2015) has also recommended that the PPSR should apply to all statutory licences (including State fishing licences) if the PPSR is to realise its full potential. This recommendation was supported by the Australian Bankers’ Association and the Law Council of Australia, the latter noting:

Many businesses, such as fisheries and taxis, cannot operate without a licence. The exclusion of licences from the scope of the PPSA can have the effect of deterring lenders from lending to such businesses on secured terms, as the sale of these business as a going concern would be much more attractive prospect than selling off the businesses’ individual assets which may carry little value when compared to the business as a whole. This can have the effect of increasing lending costs for small business which rely on statutory licences, as lenders will factor in this risk when providing the loan. (2014, p. 7)

Banks advised the Commission that the LVRs applied against rights in different State and Commonwealth fisheries typically range from 20–60 per cent. Some banks also indicated a preparedness to lend beyond these LVRs for borrowers with strong balance sheets and operating cashflows. This broadly aligns with the experience of southern bluefin tuna fishers who operate in a Commonwealth fishery and have received LVRs of 30–80 per cent against their rights (Australian Southern Bluefin Tuna Industry Association, trans. p. 79). While southern bluefin tuna fishers have a number of characteristics that

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distinguish them from other fishers,<sup>15</sup> LVRs of up to 80 per cent (the same as is applied to residential dwellings) suggests that concern over the strength of the security interest is a lower order issue (if it is an issue at all) for at least some of the lenders in the market.

The collective advice from banks to the Commission was that the considerations most affecting their lending decisions are:

- the strength and certainty of the business's cashflow, the level of equity in the business and the experience and expertise of the business's management
- whether the fishery (or fisheries) in which the borrower operates is sustainable, managed against stable total allowable catch limits and underpinned by strong, long-term statutory fishing rights
- the difficulty of obtaining reliable valuations for fishing rights and information on the prices for which different species are sold.

Of these matters, the first is within the control of the borrower while the second generally aligns with the objectives and principles of good fisheries management. The third is the result of information asymmetries arising from sometimes opaque markets for fishing rights and a lack of industry knowledge on the part of lenders. Some industry bodies, such as the Australian Bluefin Tuna Industry Association, have taken an active role in seeking to overcome these asymmetries. This has taken various forms, including providing lenders with industry updates, details of recent trades of statutory fishing rights and information on fish prices.

The Commission considers that there is not sufficient evidence to justify the policy change recommended by the Commonwealth Fishers Association.

## **Trial fisheries**

Opening new fisheries is one means available to government of raising the landed value of commercial fishing. For a new fishery to be viable, a previously unfished stock with potential commercial value needs to be identified.

Each jurisdiction has clear policies that explain the process that commercial fishers need to follow in applying for consideration of new fisheries. The onus for identifying potential new fisheries rests, as it should, with the commercial fishing industry.

Examples of trial or exploratory fisheries include:

- the Kimberly Developing Mud Crab fishery in Western Australia

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<sup>15</sup> A key feature in this regard is the size and balance sheet strength of many southern bluefin tuna fishers.

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- Patagonian toothfish, Antarctic toothfish and mackerel icefish in the ocean areas covered by the Commission for the Conservation on Antarctic Marine Living Resources.

There may be scope for unexploited (or lightly exploited) species to be developed into a larger commercial market. For example, some of the success of commercialising orange roughy has been attributed to changing the name of the fish from slimehead (Jacquet and Pauly 2008). Similarly, promotion campaigns could aim to highlight the benefits of species that are known to exist in exploitable densities, or even species that are expanding in biomass or spreading into jurisdictions because of changes in climatic conditions.

## **Other areas for improvement**

### **Greater use of technology**

Compliance activities are being undertaken more comprehensively and efficiently through the use of technologies such as electronic vessel monitoring systems, electronic data lodgement systems and onboard video surveillance. Increased mobile phone coverage and satellite broadband services will increase the number of fisheries where electronic systems can be used. In addition, advances in miniaturisation technology and/or further reductions in the price of such electronics will make it more feasible to use these systems on smaller commercial boats, including boats without cabins.

At present, the use of some of these technologies involves substantial upfront costs, and may not be warranted (or practical) in all fisheries. However, there is scope for greater use in higher-value/risk fisheries and for streamlining of compliance and monitoring arrangements where fish stocks cross multiple jurisdictions (chapter 6). For example:

Although the scallop fishery is based on a single stock ... the fishery is managed by three agencies ... and two [of those] agencies are running Vessel Monitoring Systems (VMS) to track vessels in the fishery. All this for a fishery that has 1012 dedicated vessels and an annual Gross Value of Production of less than \$6 million. (Richey Fishing Co., sub. 30, p. 2)

### **Reducing other regulatory costs and imposts**

#### *Keeping regulations and costs in check*

Commercial fishing is an activity that has been closely regulated in Australia for over 30 years. Over that time, the regulatory challenges and objectives have altered. For example, the impact of fish take on the wider ecosystem is better understood, the scale and locations of recreational fishing, diving and other marine activities have increased and the abundance and location of threatened and endangered species have changed.

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The regulatory response to these changes has typically been to overlay new requirements onto existing fisheries management practices. The Queensland Department of Agriculture and Fisheries observed:

Queensland's current fisheries management arrangements are based on approaches developed in the late 1970s. They are cumbersome, costly to administer, inflexible and increasingly less effective in ensuring the sustainability of the resources and the economic viability of the existing industry sectors. (DAF Qld 2016b, p. 3)

Specific concerns raised with the Commission included:

- the failure to remove historical controls as they are replaced with new regulatory controls (Wildcatch Fisheries SA, sub. 10, comments 3 and 10)
- inconsistencies in administrative arrangements between fisheries in the same jurisdiction (Northern Territory Seafood Council, sub. 43)
- the lack of review of the effectiveness of previous reforms (Wildcatch Fisheries SA, sub. 10)
- inconsistent or duplicative management practices where responsibility for a fish stock or expanses of water are shared by two or more governments (chapter 6)
- seemingly arbitrary decision-making, including on resource access and allocation (chapter 2).

In addition to statutory reviews of fisheries laws, fisheries regulators should regularly review whether the specific controls and management arrangements applying to fisheries are still appropriate for each fishery, and are the minimum required to meet policy objectives. There seems scope for some streamlining and simplification — as noted, new technologies (including electronic data collection systems) allow more efficient monitoring of fisheries and quota-based trading systems, such as ITQs, and require less prescriptive arrangements.

Some specific suggestions for regulatory improvement from stakeholders are outlined in box 3.8.

As discussed elsewhere in this report, improving the basis for, and transparency of, fishery access decisions and rationalising government responsibility for the management of cross-jurisdictional fish stocks should also reduce costs and improve certainty for commercial fishers.

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### Box 3.8 Participant suggestions on areas for improvement

Fishers suggested that the following be reviewed:

- in Western Australia, the requirement that catch and effort reports must be submitted on paper forms instead of electronically. Paper submission raises costs and could reduce the timeliness and usefulness of the information for fisheries managers
  - one participant requested that, so long as paper forms are used, the number of fields for reporting each species caught should be increased to allow full and accurate reporting (comment. 8)
- the notification arrangements for State-run regional harbours in Western Australia — in particular, the need to provide proof of insurance for vessel survey certificates for each facility used (comment. 8)
- in Queensland, requirements that fishers have to report on compliance matters that are not related to their fishery or the gear they use (comment. 1)
- in Tasmanian individual transferable quota systems, agreement has been reached to allow some under-catch to be rolled over to the following year's quota, but information management systems have not been amended to recognise this (comment. 9)
- in the Northern Territory, the electronic lodgements system could be made more efficient by preloading common species names that fishers catch (comment. 5).

#### RECOMMENDATION 3.2

All Governments should regularly review commercial fishing regulations and fishery-specific controls to ensure that they only impose the minimum restrictions necessary to meet policy objectives.

#### *Cost recovery arrangements*

Several stakeholders have questioned the transparency of cost recovery decisions (for example: Southern Rock lobster Limited, sub 22; South Australian Rock Lobster Advisory Council, sub. 28; Seafood Industry Victoria, sub. 44) or expressed concern about the lack of clear reasoning behind the provision of some services.

In fisheries that are cost-recovered, information should be readily available on the services for which costs are recovered and the rationale for them. While this is essential for allocative efficiency, industries have a financial incentive to identify and alert regulators to potential savings, and so can contribute to improving the cost efficiency of management. Chapter 10 further discusses cost recovery arrangements.

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### 3.4 Food security, sufficiency and worker safety

Several stakeholders raised concerns regarding food security and self-sufficiency goals for wild caught seafood. Commercial fishers also raised concerns about the poor safety record of the commercial fishing industry and uncertainty about which agencies have regulatory responsibility for reviewing workplace safety for commercial fishers. These are discussed below.

#### Food security

A number of participants raised concerns about ‘food security’ in Australia.<sup>16</sup> While there is some commonality in views, there are major differences in both perceptions as to the nature of the problem and suggested solutions.

Wildcatch Fisheries SA argued for a change in fisheries management practices, in part on the basis that the seafood industry plays a role in ensuring food security.

Core objectives for fisheries management should not just be based on stock sustainability but must be driven by effectively generating economic and social benefit to the owners of the resource and in providing for the production of a key food source that underpins food security. (sub. 10, p. 6)

Several participants considered that political and climatic instability would affect the stability of food supply and sought intervention to support the seafood production industry.

Food security is a necessity in a world suffering food shortages and facing the effects of climate change. The commercial harvesters of sustainably caught or grown foods (sea and land) require protection via government mandates to ensure future production for domestic and global demand. (NSW Wild Caught Fishers Coalition, sub. 41, p. 11)

A change of political priorities is urgently needed with regard to fisheries management. Long-term food security is a significant concern for the future. (Queensland Seafood Industry Association, sub. 29, p. 4)

Political, economic and climatic instability places greater importance upon the need for food security policies to be in place. In consequence of this need, the service provided by commercial fishermen in supplying food for the public at large needs to be valued much more and commercial fishermen should have priority of access to fisheries resources ... (GA and MJ Stevenson, sub. 26, p. 10)

The most commonly cited definition of food security comes from the most recent World Food Summit.

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<sup>16</sup> National Aquaculture Council, sub. 2; Wildcatch Fisheries SA, sub. 10; GA and MJ Stevenson, sub. 26; Queensland Seafood Industry Association, sub. 29; Australian Barramundi Farmers Association, sub. 34; and NSW Wild Caught Fishers Coalition, sub. 41.

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Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO 1996)

Based on the World Food Summit definition, Australia is not at risk of food insecurity as there is no lack of fish availability. Fish production globally is outstripping population growth and international seafood prices are declining. In addition, Australia has strong links to international seafood suppliers.

The growth in global seafood production has almost exclusively arisen from increased aquaculture output, and is anticipated to be the main source of supply to meet projected growth in demand (FRDC and Ridge Partners 2015).

The impacts of climate change on food production systems is anticipated to vary, not only based on the food being produced, but with the location of production. Fish production is no different. For example:

- it has recently been estimated that the wild stocks of cephalopods have been increasing in recent years (a trend that is likely to continue with rising water temperatures)
- reports indicate that the location of some fish stocks in Australian waters have changed in recent years
- for aquaculture, production of temperate zone stocks have been hampered by higher water temperatures — including salmonoids in Australia
- climate change is likely to expand areas suitable for warmer water aquaculture practices.

Concerns have been raised about the safety of imported seafood, and the lack of consumer knowledge as to the source of their seafood purchases. Chapter 9 examines issues of labelling and food safety. The Commission is satisfied that the current food safety system applying to both domestic and imported seafood provides sufficient protections, including for imported seafood.

## **Self-sufficiency**

In the draft report, the Productivity Commission did not agree with the recommendation of some participants that Australia should pursue full self-sufficiency in fish production. This position was challenged by a number of stakeholders, who sought further explanation of the Commission's view (Sydney Fish Market, sub. DR75; Bob Kearney, sub. DR115).

Self-sufficiency implies that a country (or even a region) produces enough of a good to meet the needs of the people in the area. In practice, it is often measured as local consumption as a proportion of local production. As such, a goal of self-sufficiency could be met by restricting local consumption, increasing local production, or a combination of the two.

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The Commission sees no benefit in constraining the volume or type of seafood consumed to that produced domestically when access to overseas seafood provides consumers with greater choice of product and the quality and price benefits associated with competition. At the multilateral level, the benefits of access to other countries' product (and other countries' access to Australia's) are well-accepted grounds for trade and, more broadly, the allocation of resources to nations' areas of comparative advantage, where gains from trade can be made.

The Commission also does not consider that domestic production levels should be pegged to growth in domestic consumption (or vice versa) given other market opportunities and sources of supply.

As noted earlier in this chapter, there is scope to increase the volume of commercially-caught fish in Australia. But the level of fish caught in Australia reflects, rightly, what is economically viable to produce. To the extent that the reforms recommended in this report translate to increased profits for commercial fishers, they may contribute to higher catch levels in the future.

## **Safety in commercial fishing**

Commercial fishing involves a range of activities that present inherent personal safety risks. These risks include the use of gears, winches and electrical systems in a marine environment. Marine and weather conditions also raise the potential for accident and injury.

Internationally, commercial fishing is generally considered to be the most dangerous occupation (FAO 2014; OECD 2015). In Australia, safety statistics for commercial fishing are generally not reported on their own, but rather data is aggregated across agriculture hunting, fishing and aquaculture together. That aggregate group typically has the highest reported rate of workplace fatalities of any industry grouping; around 13 fatalities per hundred thousand workers per year (Safe Work Australia 2015). The average rate for all industries is under two fatalities per hundred thousand workers.

While not routinely published, the number of work-related fatalities in the commercial fishing sector is recorded in health and safety statistics. The two to nine fatalities per year that occur in commercial fishing (table 3.2) is a small percentage of total work related fatalities for the country (which have varied between 188 and 310 over the same period) (Safe Work Australia 2015, p. 7). However, the standardised rate of fatalities per worker is well above the national average.

**Table 3.2 Reported commercial fishing work related fatalities**  
2004-2014

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Fish trawling, seining and netting	5	5	5	0	2	2	0	2	0	2	1
Line fishing	0	0	0	0	0	0	1	0	0	2	0
Other fishing	3	1	0	3	1	0	0	2	2	1	1
Prawn fishing	1	0	0	0	4	5	0	0	0	2	0
Rock lobster and crab potting	0	0	0	0	2	0	0	1	0	0	0
<b>Total</b>	<b>9</b>	<b>6</b>	<b>5</b>	<b>3</b>	<b>9</b>	<b>7</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>2</b>

Source: Data supplied by Safe Work Australia.

The Commission has been informed of some fishing regulations that either discourage the adoption of safer commercial fishing practices or require actions that can place the safety of commercial fishers at greater risk. For example, limits on ‘soak time’ (the length of time nets or traps can be left in the water) can require fishers to retrieve gear in dangerous conditions.

The Commission has also been informed of the safety concerns commercial fishers have when operating on their own. In particular, where fishing rules restrict the number of fishers who can be on board vessels when fishing occurs. This concern was most commonly raised in New South Wales, although the Commission has been informed that recently announced reforms will address this issue.

Commercial fishers and regulators should work closely together to ensure regulations are regularly reviewed so that they remain practical and effective at reducing the risks of injury and fatality in the sector.

Regulatory responsibility for workplace health and safety in commercial fishing is unclear. Based on the investigation of fatalities that have occurred in commercial fishing, lead responsibility is sometimes taken by maritime safety authorities, sometimes by fisheries authorities and sometimes by workplace health and safety regulators.

The transfer of maritime safety responsibility for commercial fishing from the States and Territories to the Australian Government has exacerbated the uncertainty over regulatory responsibility. Governments should seek to ensure that there are good linkages between work health and safety and maritime regulators (including in relation to the sharing of information on incidents) and make clear which agencies are responsible for different types of incidents.

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## 4 Recreational fishing

### Key points

- There are millions of recreational fishers, and the rising sophistication and affordability of scanning technology and vessels have increased fishers' ability to fish further offshore and more intensively. Harvest and management strategies need to reflect this trend.
- A sound evidence base is not presently available to guide decisions on access and facilities for recreational fishers.
- The better use of existing recreational fishing licensing systems, and the introduction of low-cost licensing in jurisdictions where not presently used, would provide a means for gathering evidence to better meet the future needs of recreational fishers, and better support long-term environmental objectives.
- Controlling take is more difficult for recreational fishing than for commercial fishing given the diversity and dispersion of recreational activity.
  - When bag, size and gear limits are ineffective, alternatives such as the application of additional conditions on licences to manage demand or tagging should be considered before more stringent controls, such as area bans, are implemented.
- Penalties for non-compliance with fishing regulations should support deterrence and be proportionate to the harm posed to the fishery.
- More research on the effectiveness of catch and release methods in deep waters is warranted.
- The existing ad-hoc jurisdictional and regional surveys do not provide adequate information for understanding, managing and developing Australia's recreational fisheries. Regular and systematic collection and collation of evidence on recreational fishing is required.
  - A national survey co-funded by all jurisdictions, including the Australian Government, should be conducted in 2018-19 and followed up by five yearly surveys, whether at the national level or on a coordinated jurisdictional basis.

Recreational fishing is fishing for personal consumption, sport or other enjoyment. Fish that are caught may be retained (consumed or shared) or released, but legally may not be sold. Recreational fishing is sometimes, but inaccurately, seen as an inconsequential adjunct to commercial fishing. This neglects that the community places a large social value on recreational fishing, with millions of Australians fishing each year. Moreover, for some species recreational catches now rival or exceed commercial catches, meaning that understanding recreational take is an important element of managing the relevant fisheries. Recreational fishing practices can also have adverse effects on non-target species (by catch) and ecosystems (Recreational Fishing Advisory Committee 2010 and section 4.1).

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Concerns about the impact of recreational fishing in some fisheries have heightened with the greater sophistication and affordability of scanning technology and vessels. For example, sonar-based fish finders incorporating GPS (Global Positioning System) are enabling fishers to reach a broader range of species, and fish more intensively. Improvements in navigational and safety equipment and vessels themselves have also resulted in more recreational fishers venturing into Commonwealth waters.<sup>17</sup>

Demand for access to certain fishing areas or species by the recreational fishing sector has also contributed to significant tension in some jurisdictions. The extent of competition for resources is difficult to assess as there is little information on shifts in activity and catch.

The recreational sector's impact on fisheries is likely to remain significant given population growth and utilisation of new fishing technologies. It is therefore not practical or consistent with policy aims for the recreational fishing sector's interests and impacts to be dealt with in an ad-hoc way.

The recreational fishing sector comprises a diverse range of people with different incentives for, and patterns of, fishing. They fall into three groups:

- *independent recreational fishers*, who are more likely to fish from shore or in smaller boats
- *game and sports fishers*, who tend to use sophisticated vessels and gear, and target large pelagic fish, such as marlin, sailfish, tuna, wahoo and giant trevally
- *charter vessel operators*, who provide fishing experiences and expertise on a commercial basis.

The rest of this chapter discusses the importance of recreational fishing (section 4.1), the merits of licensing systems to efficiently manage and sustain fisheries (section 4.2), the distinctive regulatory and enforcement requirements for this part of the fishing sector (sections 4.3 and 4.4), and the imperative for more accurate, timely and comprehensive data on recreational fishing (section 4.5).

## 4.1 Current estimates of participation and catch

Recent State and territory wide studies indicate that while recent estimates of participation are generally lower than those reported in the 2000-01 national survey (the exception being Victoria), a significant proportion of Australians fish — with the majority of jurisdictions estimating participation rates of around 20 per cent (table 4.1).

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<sup>17</sup> For example, Recfish Australia (2010) reported that in some regions such as Narooma and Bermagui, 47 per cent of fishing trips occurred in Commonwealth waters.

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**Table 4.1 Estimates of Statewide participation in recreational fishing**

	<i>Number of recreational fishers aged five years and older (participation rate) 2000-01 National survey (Henry and Lyle 2003)</i>	<i>Most recent estimate of number of recreational fishers (participation rate)</i>
NSW/ACT	NSW: 998 501 (17 per cent) ACT: 53 467 (19 per cent)	849 249 residents aged five years and older (12 per cent) 2013-14 survey (West et al. 2015)
Victoria	549 803 (13 per cent)	838 119 adults (18 per cent) 2013-14 estimate (EY 2015)
Queensland	785 045 (25 per cent)	642 000 residents aged five years and older (15 per cent) 2013-14 survey (DAF Qld 2015c)
South Australia	328 227 (24 per cent)	277 027 residents aged five years and older (18 per cent) 2013-14 survey (Giri and Hall 2015)
Western Australia	479 425 (29 per cent)	479 425 residents aged five years and older (29 per cent) 2000-01 national survey (Henry and Lyle 2003)
Tasmania	124 590 (29 per cent)	97 784 residents aged five years and older (22 per cent) 2012-13 survey (Lyle, Stark and Tracey 2014)
Northern Territory	43 932 (32 per cent)	31 790 non-indigenous residents aged five years and older (22 per cent) 2009-10 survey West et al. (2012).
Australia	3 362 990 (20 per cent)	Numbers not added because of differences in survey years and design.

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A small number of fishers account for the majority of recreational fishing effort, with recent data from New South Wales/Australian Capital Territory, South Australia, Tasmania and the Northern Territory showing that around 20 per cent of fishers in each of these jurisdictions accounted for between 55 and 60 per cent of total fishing days (effort).

Boat-based recreational fishing accounts for about 50 per cent of catch and effort for the recreational sector in several States. For example, in 2013-14:

- 53 per cent of recreational catch was from boat-based fishing in Queensland (DAF Qld 2015c).
- in New South Wales, boat-based and shore-based fishing accounted for equal proportions of the total catch (kept and released) of all organisms taken by New South Wales/Australian Capital Territory recreational fishers (West et al. 2015).

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- in South Australia, boat-based fishing effort (60 per cent of fishing effort) was higher than the shore-based effort (Giri and Hall 2015).

Surveys are undertaken on an ad-hoc basis and there is therefore little information on shifts in fishing activity and catch. Relatively recent data indicate, however, that the total catch from recreational fishing is often less important than recreational catch of a particular species. For some species, the recreational take rivals or exceeds that of the commercial sector (box 4.1).

#### **Box 4.1 Significant recreational catch of key species**

Many species are harvested by recreational and commercial fishers and in some instances recreational catch is estimated to exceed commercial catch.

- The 2013-14 New South Wales survey of recreational fishing estimated recreational harvest weights for 10 key species and compared these with commercial fisheries data. It found that recreational catch exceeded commercial landings for five of the 10 species — dusky flathead, sand flathead, mulloway, tailor and yellowtail kingfish (West et al. 2015).
- Queensland's 2013-14 recreational survey estimated that the recreational harvest of snapper and yellowfin bream are similar to the commercial harvest, whereas the recreational harvest of dusky flathead was more than twice the commercial harvest (DAF Qld 2015c).
- The 2013-14 South Australian Recreational Fishing Survey estimated that the recreational harvest exceeded commercial production for King George whiting (58 per cent of the total harvest) (Giri and Hall 2015).
- The 2012-13 survey of recreational fishing in Tasmania estimated the annual recreational harvest of flathead was 236 tonnes, almost six times the commercial take. The shares of key species taken by the recreational sector in the Tasmanian commercial scalefish fishery were similar to or larger than that taken by commercial fishers for blue warehou, flathead, flounder, mullet, cod, barracouta, jackass morwong, jack mackerel, striped trumpeter, and southern calamari (Lyle, Stark and Tracey 2014).

Beyond survey evidence, some States have licensing arrangements that provide information on the number of independent recreational fishers (table 4.2).

However, these provide a partial and inconsistent picture because of incomplete coverage of certain types of fishing and significant exemptions. In Victoria, for example, only one third of the number of people who fish are licensed (assuming the number of licences issued is a proxy for the number of licensed fishers).

All jurisdictions except Victoria and Tasmania have licensing arrangements for charter boat operators. Jurisdictions with licensing require the collection of catch and effort data through the keeping of logbooks (as does Tasmania, though on a voluntary basis), but limited information was available to the Commission on charter fishing activity. Data for Queensland and South Australia show that participation in charter fishing and the rate of catch has been declining over the past 10 years (box 4.2). In New South Wales, 204 charter boat licences were issued in 2014 out of a total cap of 276 (which was set in 2000).

**Table 4.2 Recreational fishing licensing — independent fishers**

<i>Jurisdiction</i>	<i>Licensing</i>	<i>Number of licences<sup>a</sup></i>
New South Wales	Licence required for all types of recreational fishing activities, but with exemptions for: people under 18 or over 60 years of age; an adult assisting a person under the age of 18 years; an Aboriginal Australian; and the holders of pension or veterans affairs concession cards.	197 793 3 day licences 70 921 1 month licences 131 388 1 year licences 103 716 3 year licences <b>503 818 total licences</b>
Victoria	Licence required for all types of recreational fishing activities, but with exemptions for: people under 18 or over 70 years of age; holders of a seniors card, veterans affairs card; some Commonwealth pensioner concession cards; and members of traditional owner groups.	34 699 3 year licences 122 692 1 year licences 28 791 28 day licences 102 316 48 hour licences <b>288 498 total licences</b>
Queensland	No licence required for marine fishing.	Not applicable
South Australia	No licence required but registered rock lobster pots must be used to catch southern rock lobster for personal use.	4 261 registration holders <b>7 533 registered pots</b>
Western Australia	Licensing is oriented to valuable species and to certain methods of fishing. Licence required for abalone, rock lobster, marron, net fishing and fishing from a boat. Half fee concession for: people under 16 years of age; the holders of a seniors card; recipients of the age, disability support or widows pension; a pension under the Coal Industry Superannuation Act; and recipients of a Veterans Affairs entitlement.	139 855 fishing from boat 52 013 rock lobster 17 064 abalone 16 738 net fishing 10 962 marron <b>236 632 marine licences</b>
Tasmania	Licensing is oriented to valuable species and to certain methods of fishing. Licence for saltwater rod and line fishing not required. Recreational sea fishing licence required for abalone, rock lobster dive, rock lobster pot, rock lobster ring, scallop, graball net, mullet net, beach seine nets and any type of set line (including dropline or longline).	16 232 rock lobster pot 12 100 abalone 8 745 rock lobster dive 7 887 graball net 4 585 rock lobster ring 3 354 scallop dive 4 510 set line 1 118 beach seine net 855 mullet net <b>59 386 total licences</b> <b>20 792 licensed fishers</b>
Northern Territory	Licence not required except for a temporary licence for fishing on and over Indigenous land and adjoining waters.	Not applicable

<sup>a</sup> New South Wales, Victoria, South Australia and Tasmania licence numbers in 2014-15 and Western Australia licence numbers as at May 2016.

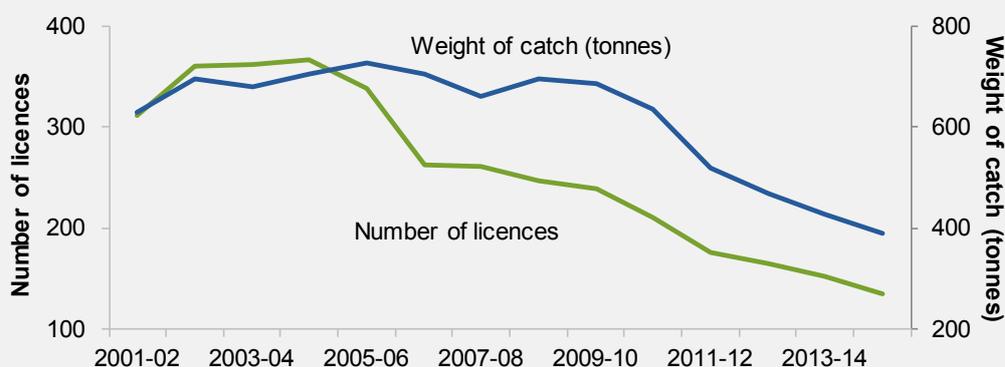
Source: Information supplied by the State and Northern Territory Governments.

## Box 4.2 Charter fisheries licensing, Queensland and South Australia

### Queensland

Un-capped licensing for all charter fishing operations was introduced in 1995. In 2006-07 licensing arrangements were changed to require only offshore charter boats to be licensed and, accordingly, licence numbers fell (from 339 in 2005-06 to 262 in 2006-07). Catch nevertheless, remained relatively stable (727 tonnes in 2005-06 and 704 tonnes in 2006-07). In the past decade the number of licences purchased has progressively fallen (to 135 licences by 2014-15). This corresponded with a fall in catch to 391 tonnes in 2014-15 — see chart below.

#### Licences and catch, Queensland charter boats



Source: Information provided by the Queensland Government.

### South Australia

Charter boat fishery licences are issued for the term of periodic charter boat fishery management plans. The current plan is effective from August 2011 until June 2021. In 2014-15 there were 105 licences. No new licences are currently being issued, but licences may be purchased from existing holders. In recent years, there has been a decline in active licences, and considerable decrease in the number of clients, trip days and catch (see table below).

#### Charter boat fishery, South Australia, data summary

	Number of licences	Number of active licences	Number of clients	Number of trip days	Number of fish retained
2007-08	108	78	21 960	3 640	143 276
2008-09	108	79	21 431	3 561	147 991
2009-10	109	77	21 846	3 552	147 984
2010-11	109	77	20 095	3 322	136 611
2011-12	109	77	23 711	3 566	153 468
2012-13	109	75	23 532	3 391	132 721
2013-14	105	74	19 227	2 830	113 842
2014-15	105	61	15 129	2 388	94 917

Source: Tsolos and Boyle (2015).

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## 4.2 Towards better management

The management of recreational fishing should be based more on evidence about the extent, nature, impact and value of recreational fishing activities. This would contribute to improved management of catch-constrained stocks and resource allocation decisions, and more generally support sound decision making on the management of fishing activity, and on additional services and facilities for fishers.

Well-designed licensing systems provide the means for collecting this information without imposing undue regulatory burden on fishers or government.

Licensing systems already exist in some States. They deliver current, although partial, information on participation. In comparison to States without licensing, which rely on periodic surveys for participation data, licensing systems provide governments ready and reliable sampling frames for the collection of other information that may be needed to inform management, such on fishing methods, catch, locations and the value derived from fishing (box 4.3).

### Box 4.3 Licensing and sample frames for surveys

The scale and diversity of recreational fishers makes it difficult to identify and target a representative sample of the recreational fishing population for survey. Where recreational fishing licences have been introduced, benefits have included a reduction in the cost of screening surveys, an increase in the speed with which surveys are completed, and greater confidence in the outcomes (Griffiths et al. 2014). For example, in Western Australia the Recreational Fishing from Boat Licence was primarily designed to generate a database to target surveys and more precisely determine recreational catch and effort (DoF WA 2012a).

In the absence of a licensing system, a survey sampling frame is generally established through telephone screening. This involves randomly phoning households in order to obtain information on those fishing, or intending to fish, and to recruit a selection of fishers to a longitudinal diary survey to obtain trip-specific catch and effort data.

Telephone screening can be costly and time consuming. Further, the efficiency and effectiveness of telephone surveys has been decreasing over time because of a rising rate of non-response due to the increasing prevalence of telephone marketing, and lower usage of traditional landlines (Griffiths et al. 2014).

The CSIRO has found that:

The required large-scale surveys involve estimating participation from general population telephone surveys ... are becoming increasingly inefficient. This is due to incomplete sampling frames, non-response and non-contact issues associated with increasing use of mobile phones and unlisted numbers. The result is highly uncertain participation and effort estimates that are required by scientists to estimate the total catch of particular species by the recreational fishery. (sub. 61, p. 13)

Benefits of sampling from a list of licence holders include reduced cost for the initial screening survey, high response rate, a reduction in non-response bias and improved precision in estimates.

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For charter boat operators, a condition of licensing in most jurisdictions is the maintenance of logbook recording of both catch and effort data, which appropriately reflects their greater incentives to maximise take.

Registration systems are another option for collecting participation information, but do not offer the benefit of clarifying the rights and responsibilities associated with access to marine fisheries. In contrast, licensing can provide a:

- direct means of communicating to recreational fishers their role and responsibility in the stewardship of fish and marine resources, by linking access to existing conditions (allowed duration of fishing, fishing methods, and/or bag, species or size controls)
- basis for more targeted education
- basis for collecting information on demand for fish species and/or fishing, and where people most like to fish
  - licensing would therefore provide the Queensland, South Australian and Northern Territory Governments (in regards to independent recreational fishers) and the Victorian and Tasmanian Governments (in regards to charter fishing) a better basis for monitoring effort, enforcing controls and developing services for recreational fishers
- source of revenue for recreational fishing management, research and facilities for recreational fishers (this is considered further below).

A feature of good licensing design is coverage of all recreational fishers (including independent fishers, charter fishing operators and sports fishers) to provide an accurate picture of participation and generate the information used to help manage stocks.

Licensing systems are not intended to restrict participation in recreational fishing and, rather, primarily be used to gather information. The experience of domestic systems shows that the costs for government and compliance burden on fishers can be relatively low (for example, permits can be obtained online for a low fee and issued for short or longer-term periods). The experience of other countries, such as the United States (box 4.4) indicates that well-designed licensing systems can provide an effective means of collecting data and improving management.

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#### Box 4.4      **Recreational fishing licensing in the United States**

Saltwater recreational fishing is a popular activity in coastal communities in the United States. In 2014, 68 million fishing trips were taken by 11 million recreational saltwater fishers (National Oceanic and Atmospheric Administration 2016b).

The cornerstone to management of recreational fishing in the United States is a licensing/registration system. In the United States 19 of the 24 coastal states have a licensing system in place. Licences are generally available for short or longer time periods (including one day, ten day, monthly and lifetime) and are available for purchase both online and at licensing agencies. Fees vary by state. For example, annual saltwater licences for residents range from US\$7 in Rhode Island, US\$24 in Alaska to US\$47 in California (National Oceanic and Atmospheric Administration 2016a). Non-resident licences are often sold at a higher price relative to resident licences. For example, in California a non-resident annual saltwater license is priced at US\$126 (California Department of Fish and Wildlife 2016). Reduced fee or free licences are generally available for concessional groups such as seniors, juniors and people with a disability.

In those states without licensing, recreational fishers over 16 years of age must be registered on an annual basis by the state or through the National Saltwater Angler Registry. Registration fees vary by jurisdiction. For example, registration is free in New Jersey, New York and Pennsylvania, US\$1 in Maine and US\$29 under the national registry (National Oceanic and Atmospheric Administration 2016a).

The licensing and registry system was established to provide a sampling frame for surveys, which generate the information used to help manage and rebuild fish stocks. For example, the Rhode Island Government website states:

The state-license and federal-registry programs are designed to improve the quality of marine recreational fishing data. In turn, the improved data will help to ensure that recreational fishing regulations are fair, effective, and based on sound science. Additionally, the new programs will provide the first full accounting of the scope of recreational saltwater fishing in RI, and throughout the US, and will thereby help to more fully demonstrate anglers' economic, conservation, and marine stewardship contributions (Rhode Island DEM 2016).

Data are collected through a range of methods including online and postal surveys, creel surveys and harvest reporting cards.

Licensing also provides a source of funding for managing and improving recreational fisheries. For example, revenue raised from Virginia's saltwater recreational fishing license is deposited into a fishing development fund which is expended on programs aimed at conserving and enhancing fish species important to recreational fishers and improving fishing opportunities and facilities. Programs include building artificial reefs, improving fishing access (such as piers and harbours), public education, tournaments, data collection and fisheries research (Virginia Marine Resources Commission nd).

Overall, licensing provides a practical and proportional way of better incorporating recreational fishing into harvest and other management strategies (box 4.5). All jurisdictions should therefore require recreational fishers to obtain licences (or permits) to fish. To this end the:

- Queensland, South Australian and Northern Territory Governments should introduce licensing for independent recreational marine fishing

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- Victorian and New South Wales Governments should improve the comprehensiveness of existing schemes by limiting exemptions
  - Western Australian and Tasmanian Governments should broaden the scope of their licensing systems to include all recreational fishing activity
  - Victorian and Tasmanian Governments should introduce licensing for marine charter boat operators
  - Australian Government should consider licensing if it takes on greater responsibility for the management of recreational catch (chapter 6).

#### **Box 4.5 Why the Commission is recommending licensing**

##### **The challenge**

- There are millions of recreational fishers. They are a highly diverse group in terms of the type and level of activity and catch.
- Technology is helping recreational fishers target and catch more fish.
- Collectively, recreational fishers can affect the long-term sustainability of Australia's fishery resources. Yet recreational fishing is usually poorly monitored.
- Fisheries managers need to better understand how many people are fishing when and where, and what they are catching.
- Understanding existing activity is essential to managing Australia's fisheries resources for future generations of fishers, as well as providing well-targeted regulatory services.
- Information gaps may not be crucial when stocks are healthy, but when the threat of over-fishing arises, good catch and participation information leads to better responses and outcomes.

##### **The benefits of licensing**

- The primary purpose of a licensing system is to improve knowledge about recreational fishing activity.
- Licensing provides a count of recreational fishers in a given State/Territory, and enables the creation of a database that can be used to improve the efficiency of surveys.
- Improved surveys can provide richer information regarding the level and location of fishing activity, the needs and expectations of recreational fishers, and the contribution of recreational fishing to local economies and communities.
- Better information contributes to better management decisions, including how access to fisheries should be shared and what additional services or facilities should be provided for recreational fishers.
- In some high-demand and high-risk fisheries, licensing can be used to better control overall take.
- Licensing can provide a means for raising revenue for services for recreational fishers, although this should be a secondary consideration to their use to gather information on and manage resource use.

(continued next page)

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Box 4.5 (continued)

**Weighing up the benefits and costs**

- There are direct costs involved in developing and maintaining a licensing system.
- Licensing also imposes a regulatory cost and compliance burden on recreational fishers.
- Experience in jurisdictions with licensing in place demonstrates that such costs can be contained and that the regulatory burden imposed on recreational fishers is low.
- Use of new technologies, including, for example, online application and receipt of licences, can limit cost and inconvenience.
- There are examples, such as in Western Australia, where the introduction of licensing has been received favourably by recreational fishers.
- On balance, the Commission concludes that licensing will support the gathering of essential information, and is a logical and proportionate response to improving the management of Australia's fisheries resources for the benefit of the wider community, including recreational fishers, now and for the future.

## **Promoting efficient management through cost recovery**

The main consideration in setting the price of licences should be that they support the central policy objective of gathering information on and better managing resource use.

Ensuring that licensing systems have broad coverage and do not discourage participation suggests that the fee for the majority of fishers should be relatively low. The Commission envisages that near or full cost recovery should be achievable given the cost of administering current licensing systems on a per fisher basis is relatively low, at around \$4 per licence a year.<sup>18</sup>

Apart from recovering the costs of system administration, some jurisdictions may wish to use licensing fees to help fund other costs of regulation or additional services and facilities for recreational fishers (such as ramps and fish cleaning tables). Where fees are charged for these purposes, the principles of best practice cost recovery should apply. These include that the costs recovered from recreational fishers should relate to government spending that confers benefits solely or largely to recreational fishers, noting that many benefits cannot be attributed to particular individuals.

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<sup>18</sup> In 2014-15 the Victorian Government reported that it incurred a cost of \$1.06 million in the administration of recreational fishing licences (Victoria State Government 2015) — or a cost of \$3.66 per licence sold. The New South Wales Government incurred a cost of \$2.08 million for recreational fishing fee administration in 2014-15 (DTIRIS NSW 2016) — or \$4.13 per licence sold.

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## Transparent reporting of costs and services

There is a considerable degree of dissatisfaction with how funds are currently raised and used in some jurisdictions. Participants considered that spending is ad-hoc, unpredictable, inefficient and ill-disciplined. For example, Sunfish Queensland noted that in Queensland:

A Recreational Use Fee (RUF) paid by each registered boat owner ... goes to Fisheries — it raises approximately \$4.5 to \$5 million per annum. Originally this fee was for recreational fishing enhancement and covered actions such as Kids Fishing Days, fresh water stocking, tagging, extension, publications, specific enforcement, commercial buy back, advisory committees, liaison officers, grants etc. This was held in a 'trust' fund and the use discussed with recreational fishers. In 2012 the [Queensland] Government decided that the monies would be used at the discretion of Fisheries and added into their budget. Many of the programs were stopped and no consultation with recreational fishers now occurs. Much of this fee is now used for 'core Government business'. (sub. 3. p. 2)

Without explicit cost recovery attached to licensing, and transparency on the level of funding necessary and links to the services provided, it is unsurprising that stakeholders are dissatisfied.

The New South Wales and Victorian Governments have established trust funds to distribute the fees collected from recreational fishers. While the expenditure of trust funds is transparent (box 4.6), governance arrangements can limit the timeliness of decision making and they are best suited to the funding of irregular investments in the sector. They are less appropriate for the recurrent expenditures associated with cost recovery such as core management and regulatory services.

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## Box 4.6 Licence fee disbursement in Victoria and New South Wales

### Victoria

Every year the Victorian Government, through the Recreational Fishing Licence Trust Account, disburses revenue derived from the sale of recreational fishing licences to projects that will improve recreational fishing in Victoria. In 2014-15 recreational fishing licence revenue contributed over \$6 million to the Victorian Recreational Fishing Licence Trust Account. Major disbursements from the fund included:

- \$2.2 million to the Recreational Fishing Grants Program which included payments to 83 individual projects including research programs, access and facilities, workshops and come and try fishing days
- \$2 million to fisheries enforcement and education including the deployment of 13 fisheries officers
- \$860 000 in river fish stocking
- \$425 000 to VRFish
- \$186 000 to Fishcare Victoria.

### New South Wales

All money raised by the New South Wales recreational fishing fee is placed into the Recreational Fishing Trusts and spent on improving recreational fishing in New South Wales. These trusts are regulated by law and overseen by two committees made up of recreational fishers — one for saltwater and one for freshwater. In 2014-15, about \$15.1 million was raised from licence fees. It was used to fund:

- recreational fishing enhancement programs (\$3.4 million)
- fishing fee coordination and payment network (\$2.6 million)
- enforcement of fishing rules (\$2.3 million)
- research on fish and recreational fishing (\$2.1 million)
- education (\$2 million)
- recreational fishing haven loan repayments (\$2 million)
- aquatic habitat protection and rehabilitation (\$1.1 million)
- fishing access and facilities (\$835 000).

*Source:* Victoria State Government (2015) and information provided by the NSW Government.

## Design and implementation of licensing

Establishing a recreational fishing licensing system will involve some transitional costs, including set-up and ongoing administration, and enforcement costs.

For maximum efficiency, licensing systems, as discussed earlier, should have high coverage rates. Governments may exempt certain groups (young children or pensioners) from the payment of fees, but there should be few exemptions from being 'counted'.

Many countries adopt relatively simple fee structures involving:

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- different fees for different periods of licences (a crude way of differentiating between users making modest compared with higher demands on fisheries)
  - variations in fees for certain concessional groups (predominantly seniors and juniors). Such fee structures can be justified on various grounds, such as capacity to pay, the value of encouraging community-wide participation, and recognition that lower-income people are often more sensitive to prices
  - differences in charges for residents compared with non-residents. A jurisdiction may wish to subsidise fishing by local residents for community and social purposes (benefits the local community would not obtain for non-residents).

The Commission considers that fees should be simply structured, with State and Northern Territory Governments choosing fee structures and limited exemptions to suit their economic, social and management goals for recreational fishing. Zero or very low cost licences could be made available to groups that are currently exempt for affordability reasons.

Given charter boat operators' incentive to fish for commercial gain, it is reasonable that a condition of their licensing be a requirement to keep records of catch and effort to support fishery management (similar to commercial fishers). Record-keeping requirements should be mandatory given that voluntary logbook programs are unlikely to provide the same robust data and, in particular, will suffer from self-selection bias. Records should be the subject of compliance review to provide assurance on the accuracy and reliability of data.

Inquiry stakeholders reported that, in some jurisdictions, charter boat customers did not understand or objected to the requirement to obtain an independent licence before fishing on a paid charter. As charter boat operators are responsible for charter trips it would make sense to permit them to purchase licences for their customers.

## Next steps

A reasonable timeframe for the introduction of licensing and recalibration of arrangements to expand coverage is within the next three years. This will enable licensing to be used as a sampling frame for jurisdictional or a nationally-coordinated survey from 2023-24 (as discussed in section 4.5).

The introduction of a compulsory licence for marine recreational fishing is likely to face some resistance. The Commission notes, however, that in some jurisdictions (such as South Australia and the Northern Territory), licensing has the support of some recreational fishing groups. More generally, submissions to this inquiry indicate general support for the notion that recreational fishers be better recognised and incorporated into fisheries management strategies.

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#### RECOMMENDATION 4.1

Within the next three years all jurisdictions should require recreational fishers to obtain licences to fish in marine waters.

- The Queensland, South Australian and Northern Territory Governments should introduce licensing for independent recreational marine fishing.
- The New South Wales and Victorian Governments should improve the comprehensiveness of existing schemes by removing exemptions.
- The Western Australian and Tasmanian Governments should broaden the scope of licensing to include all recreational fishing activity.
- The Victorian and Tasmanian Governments should introduce licensing for marine fishing charter boat operators.
- The Australian Government should consider licensing of recreational fishers if it takes on greater responsibility for the management of recreational catch.

### 4.3 Control mechanisms

The management of recreational fisheries is an evolving area of policy that is being shaped by changes in knowledge and community expectations. In Australia, recreational fishing is primarily managed by the State and Northern Territory Governments (box 4.7).

The Australian Government has scope to intervene through general powers of the *Fisheries Management Act 1991* (relating to fisheries management plans) and the *Environment Protection and Biodiversity Conservation Act 1999*, but to date has not directly managed recreational fishing. In Commonwealth waters, the jurisdiction immediately adjacent to the Commonwealth water has responsibility for managing recreational fishing. The Government recently announced that it would seek to ensure that the Australian Fisheries Management Authority considers the interests of all fishers (including recreational fishers) in its decision making (Ruston 2016).

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#### Box 4.7      **Jurisdiction and management for recreational fishing**

Jurisdiction over fishing falls to the States and Northern Territory within three nautical miles of the low water mark and to the Commonwealth beyond that point. However, while the *Fisheries Management Act 1991* (Cwth) gives AFMA the power to ‘prohibit or regulate recreational fishing’ no such regulations are in place. In practice, the State and Northern Territory Governments manage recreational fishing in Commonwealth waters adjacent to their respective coasts as they are ‘best placed to do so’ (as stated in the 2005 Memorandum of Understanding between the jurisdictions — *Proposed Resource Sharing Arrangements for Commonwealth Fisheries*).

##### **State and Northern Territory reliance on extra-territorial powers**

Section 2(1) of the *Australia Act 1986* (Cwth) gives the State and Northern Territory Governments ‘full power to make laws for the peace, order and good government of that State that have extra-territorial operation’. The State and Northern Territory Governments are reliant on the preparedness of the courts to confirm these extra-territorial legislative powers in order to regulate recreational fishing in Commonwealth waters. The test established by the courts for this purpose is that there must be ‘sufficient connexion’ between the legislation and the interests of the State or Territory. *The Port MacDonnell Professional Fishermen’s Association case* showed that the fact a fishery was being exploited by South Australians and a source of trade and employment for the State was sufficient for State laws to have effect out to 200 nautical miles.

The reliance on the court’s determination for the extent of their powers is recognised in the fisheries legislation of the New South Wales, Victorian, South Australian, Western Australian and Tasmanian Governments wherein recreational fishing laws apply to any waters to which the legislative powers of the State may extend. The extent of the extra-territorial legislative power of the State and Northern Territory Governments is, however, limited by Commonwealth fisheries laws — under section 109 of the Constitution, Commonwealth law prevails if there is any inconsistency with State or Territory laws.

*Sources: Pearce v Florenca (1976) 135 CLR 507; Port MacDonnell Professional Fishermen’s Association Inc. v South Australia (1989) 168 CLR 340.*

## **The effectiveness of controls**

Managers of recreational fisheries around the world generally seek to control the harvest of targeted fish species and prevent the harvesting of juvenile fish to promote sustainability. The number of participants, diversity in activity, a large and often remote coast-line, and the capacity for fishers to rapidly respond to available fish stocks makes controlling recreational take more difficult than for commercial fishers, who usually fish in more defined areas and predictable ways.

Current management approaches vary, but can include: size, bag, boat and possession limits; restrictions on the types of gear that may be used; and temporal and spatial closures. The efficiency of controls can vary depending on the fishery and species. There is no ‘one size fits all’ approach to management. As noted by the Australian Marine Conservation Society:

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To determine the appropriate mix of controls an assessment of the risks associated with catching the target species, the impact of this catching on non-target species and the broader ecosystem will be needed. This is within dynamic ecosystems where the abundance of target and non-target species change and innovation by fishers mean that arrangements need to be continuously monitored and adjustments made in response to these changes. (sub. 33, p. 12)

### Bag, possession, size and gear limits

Bag, possession, size and gear limits are the most widely used control mechanisms in recreational fisheries. They are typically well understood by recreational fishers as necessary to protect fisheries resources for future generations.

- Bag and possession limits (also boat limits in some States) aim at sharing catch equitably between recreational fishers as well as constraining overall catch for sustainability reasons.
- Size limits are regulated to protect young fish in order to minimise the chance of overfishing.
- Limits are also placed on the gear (such as the number and type of lines and hooks and the prohibition of some equipment such as gill nets) to limit catch and minimise the impacts of some methods on the marine environment.

While data inadequacies make it difficult to be definitive about the broader effectiveness of controls, where research is available, size, bag and gear limits appear to be effective. Indeed, in many fisheries average fishers may rarely reach a bag limit (CSIRO, sub. 61). TARFISH said:

Bag and possession limits are an imprecise measure used to indirectly control the take of fish species and in general, over time, appear to provide the required degree of biological control.

Size limits are a direct biological control being set at a level above the sexual maturity of fish species to ensure they are contributing to future stocks. They would appear to be effective and in most cases are set at a scientifically justifiable level. (sub. 42, p. 6)

Moreover, as many recreational fishers are likely to fish to enjoy the activity itself — as much as ‘landing’ a fish — controls over methods rather than catch are also apt.

However, some stakeholders observed that some recreational fishers appear to be quasi-commercial — fishing four or five times a week and harvesting more fish than they could reasonably be expected to consume themselves. Several were of the view that daily bag limits are only effective for recreational fishers who fish once a week (or less on average).

Ideally, management controls should be developed with an understanding of the status of the targeted species and their ecological systems, and recreational catch activity levels and methods. The data collection systems recommended in section 4.5 should help to identify and more effectively manage the risks associated with highly-fished areas.

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It is clear that, for some key species and fisheries targeted by both recreational and commercial fishers, bag, size and gear restrictions are not effective management tools. For example, the Tasmanian Rock Lobster Fishermen's Association submitted that bag limits set for the Tasmanian rock lobster are not sufficient to meet stock rebuilding objectives.

The Tasmanian rock lobster east coast stock rebuilding strategy highlights the difficulties associated with managing recreational fisheries. This 10 year strategy aims to rebuild lobster stocks on Tasmania's east coast by limiting the amount of lobsters harvested each year. The commercial catch is constrained using an east coast catch cap, which is monitored under a Quota Management System.

The preliminary control on recreational catch was a reduction in the daily bag limit from 5 to 3. As stocks rebuilt, the recreational catch increased above their resource allocation limit. In response, bag limits were decreased to 2 per day. As stocks continue to rebuild on the east coast, it is projected that the recreational take will continue to increase, even with the 2 per day limit. Subsequently, further alternative mechanisms to constrain recreational take must be implemented to ensure the 10 year rebuilding strategy is maximised. (sub. 37, p. 9)

## Area closures

When bag, possession, size and gear limits are ineffective in achieving fisheries sustainability objectives, fishing areas are often closed (whether on a temporary, seasonal or permanent basis) to protect fishery stock. Area closures may be established, for example, where:

- a population of endangered species or threatened species live
- fish congregate before or during spawning
- species have been overfished or are susceptible to overfishing
- there is a need to separate incompatible uses of the marine environment, such as a spearfishing area from a swimming area.

Most recreational fishing closures are seasonal and implemented to protect fish during spawning periods. While recreational fishers generally understand the need for seasonal closures to protect fish stock, many oppose blanket 'no-take' permanent closures. Participants indicated that access to fishing opportunities is a major concern for recreational fishers. Poorly targeted area bans can impose unnecessary costs and restrict the value of fisheries to the community.

## Managing high-risk recreational fisheries

In many recreational fisheries unrestrictive licensing (uncapped and available at a price that does not restrict effort) coupled with conventional controls such as bag and size limits and seasonal closures are likely to be sufficient to effectively manage fisheries. In highly valuable and contested fisheries or fisheries that are rebuilding stock, conventional controls may not be enough to achieve stock sustainability.

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The essential problem, as outlined in the rock lobster example above, is that the pressures of fishing on vulnerable fisheries cannot be contained by bag limits or other limits per fisher when overall fishing is not controlled. Further, where sectoral allocations (as recommended in chapter 2) are applied to selected fisheries, measures will be needed to enforce the aggregate allowance for the recreational sector.

Options for reducing aggregate take in ‘at risk’ fisheries as an alternative to complete area bans include restricted licences and harvest tagging.

### Restricted licences

The Commission envisages that licences for the vast majority of recreational fishers would not be restrictive — that is, not designed to cap effort or restrict participation. Such general licences should be available to any person willing to pay the fee (and for some groups licensing may be free).

However, in some limited circumstances, governments should consider whether additional requirements are needed for access to certain fisheries or stocks. In particular, restricted licences should be considered as a potential way of more efficiently controlling aggregate recreational catch in high-risk and catch controlled fisheries.

Licences can be tailored (across different species or locations) through variations in fees or conditions, or caps on the number of licences issued, to manage the demand for vulnerable species. And where sectoral allocations are applied to high-risk fisheries, such licensing can be used to help manage effort and catch and therefore ensure the sector stays within its allocation. For example, setting a higher price for licences for at-risk species (relative to the general recreational fishing licence) or to use particular fishing gear may be effective in controlling take. In some US states, stamps are required to be purchased for the right to fish for a particular at-risk species. For example, in Alaska a stamp is required for king salmon fishing (Alaska Department of Fish and Game 2016a). Stamps are affixed to the general recreational fishing licence.

A cap on the number of licences issued can provide greater certainty on aggregate take. In this instance, the appropriate mechanism for allocating limited licences (such as first-come first-served, lottery or auction) is likely to vary according to the environmental status of, and the objectives for, the fishery.

A requirement to purchase a licence for use of particular fishing gear and equipment (such as lobster pots and gill nets) can also be useful in managing fishing effort in high demand/value or at-risk fisheries. Tasmania currently requires licences for the use of specific equipment (gillnets, beach seine nets and set lines) that may have a significant impact on the resource (table 4.2).

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## Harvest tagging

In some cases, a hard cap on the number of fish that can be harvested (rather than effort) may be a more effective management control in at-risk fisheries. Harvest tags have considerable potential in marine recreational fisheries where catch limits are required to rebuild and sustain valuable but vulnerable fish stocks and where a sectoral allocation has been set. A hard cap is achieved by fisheries managers allocating a fixed number of tags per season.

Harvest tags (or documents) assign a right to the harvest of a specified number of a species over a particular period (such as day, season or year). Generally, tags are attached to the harvested animal as a condition for its legal possession and cannot be reused.

There are a few examples of tag programs. In California, all recreational fishers must have an abalone card (which has 18 tags attached) when fishing for red abalone. Only one abalone card per fisher is issued a year. Each time an abalone is taken (immediately upon exiting the water), the fisher must mark on the card details of the month, day, time of catch, and fishing location of the harvested abalone. A tag must also be attached to the shell of the abalone by running a string, line or zip tie through the tag and through a siphon hole of the abalone shell (California Department of Fish and Wildlife 2016).

Other examples of harvest tags include Shark Bay snapper in Western Australia (box 4.8), salmon and sea trout in Ireland, cod in Newfoundland, and game and freshwater species in many states of the United States (Ford and Gilmour 2013).

In some US states, tags are not required to be attached to the harvested species, but catch must be documented on a harvest card. Each card has a set number of lines, only one animal harvest can be reported on each line and recording must be completed in pen so that it cannot be erased. For example, in Washington a harvest card is required to fish for salmon, steelhead, sturgeon and halibut (Washington State Department of Fish and Wildlife 2016).

Harvest tags can help improve accountability and efficiency in recreational fisheries management by setting a definite upper bound on harvest and providing a means of directly controlling to this limit. They have the potential to improve recreational fishing satisfaction by:

- granting clear fishing rights to recreational fishers
- allowing access to marine areas that would otherwise be protected by stringent area closures
- allowing longer seasons due to elimination of the ‘race to fish’, compared with non-rights based fisheries management.

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#### Box 4.8 **Shark Bay snapper fishery, Western Australia**

Shark Bay pink snapper has long been an iconic species valued by both recreational and commercial fishers. The three separate stocks found in the Eastern Gulf, Denham Sound, and the Freycinet Estuary are particularly vulnerable to over-exploitation because the snapper aggregate to spawn when recreational effort is greatest.

In the 1980s and early 1990s the intense harvesting of large, spawning snapper in Shark Bay (mostly by recreational vessels) resulted in significant stock depletion. Management measures were progressively introduced from 1998 to limit the harvest of pink snapper. These included increases in minimum fish size; the introduction of a maximum length; reductions in the daily bag limit; a total ban on the taking of pink snapper for almost 5 years (June 1998 to March 2003) in the Eastern Gulf; and a seasonal closure in the Freycinet Estuary (Jackson et al. 2005).

In 2003, to ensure the sustainability of the stock a Total Allowable Catch (TAC) was set for both commercial and recreational fishers of which 75 per cent was allocated to recreational fishers. A conventional management approach was adopted in the Eastern Gulf (slot size limit, bag limit, and a 4 month spawning season closure) and Denham Sound (slot size limit and bag limit only), to control catch. In the Freycinet Estuary a more output-based approach — a limited issue of management-tags — was used to enforce the recreational quota (Jackson et al. 2005).

Tags were available on an annual basis through a lottery system managed by the Department of Fisheries. Fishers were able to receive a maximum number of two tags per year. The tags were inserted through the mouth and out of the lower jaw of the fish, and locked in place to ensure the tag could not be reused.

The management tags were viewed as highly successful in limiting the catch of pink snapper. While the introduction of the management tags was not initially well received by recreational fishers, partly due to their cost, acceptance improved over time (Jackson et al. 2005). In January 2016, after 12 years of enforcement, the tag lottery was abolished. The Western Australian Government explained:

Pink snapper stocks in Shark Bay's inner gulfs were overfished in the 1990s, prompting a major long-term recovery program. After two decades of intensive stock monitoring and strong management measures, with support from recreational and commercial fishers, the stocks have now recovered to above the program's targeted levels. As a result, the recreational fishing rules have been relaxed to give more fishers access to this iconic fishery and a better chance of taking a 'trophy' pink snapper, while ensuring the stocks remain at above sustainable levels. (DoF WA 2016d)

The lottery was replaced with a possession limit of 5 kg of fillets of fish or one day's bag limit of whole fish or fish trunks (applying to all fish, not just pink snapper).

#### *Implementation of harvest tagging*

Harvest tagging programs should be designed with the biological status of the fish stock, management objectives and the needs of fishers in mind. The attributes of tagging programs (such as the number of tags issued and price) should take into account the scarcity of the species relative to demand, catch and release mortality rates (such as from barotrauma, scale loss or hook damage) and other regulations in place (size, bag and possession limits and seasonal closures).

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Some desirable features of harvest tagging systems include:

- that they are obtained prior to harvest
- they provide for different classes of tags, such as for resident and non-residents
- they provide for tamper-proof tag attachment or recording as soon as possible after the animal is caught
- expiration at the end of season
- an ability to support data collection, such as through harvest card reporting.

An important and potentially controversial consideration is how the tags should be allocated. A relatively simple option involves direct sales online and at retail outlets at a set price on a first-come, first-served basis until the season is over or allocation is met. However, this is unlikely to be satisfactory when the tags are scarce and valued highly. In this situation alternative allocation options that are used include lottery rationing and the auctioning of harvest rights.

Auctioning, in principle, would be the most efficient option as it would ensure that a species is valued according to demand and does not require prior knowledge of resource values. However, auctioning may raise some concerns about inequities arising from different capacities to pay among fishers. Lottery allocation systems randomly allocate tags among applicants and can provide a more equitable distribution of high-demand tags, but at the cost of some of the allocative efficiency benefits of auctioning.

Many tag systems currently in place do not allow for transferability or the resale of tags. However, transferability and resale should be considered in some circumstances as it can help to maximise benefits. For example, if tags are scarce and a tourist purchased a tag but was unable to catch the targeted species and unable fish again before the tag is to expire, there would be benefits if the tag could be resold (for both the tourist and the recreational fisher that acquired the tag). Resale may involve returning the tag to where it was originally purchased or transferring directly to another recreational fisher.

In many fisheries, managers will need to consider how to include both individual fishers and charter boats in harvest tag allocation. Systems should allow for both individual fishers to purchase a tag and then hire a charter boat service or for charter boat operators to obtain tags on their clients' behalf.

Establishing a recreational fishing harvest tagging system will involve set-up, ongoing administration and enforcement costs. Harvest tags can be administratively costly and logistically challenging to administer and enforce (especially in large fisheries with many fishers and multiple entry points). Based on 1200 quota tags per year, the cost of administering the Shark Bay management-tags, was estimated at about \$15 per tag (not including the cost of compliance). However, the cost was estimated to fall to \$5 per tag if 5000 snapper tags had been issued (Jackson et al. 2005).

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The Tasmanian Government commented that tagging should be assessed for efficiency and cost (sub. DR99). The Western Australian Department of Fisheries also commented that tagging systems may not be suitable where there is a high risk of mortality simply arising from capture:

Any proposed general use of tag systems to limit the take of recreationally-caught fish would require careful consideration. In particular, tag systems may not be desirable in situations where there may be significant capture mortality (e.g. from barotrauma, scale loss or hook damage). Using a tag system does not prevent incidental mortality of captured fish and, while it may limit landings, it may not achieve the aim of averting fishing mortality. In such circumstances, more appropriate management tools may be area and/or time closures.

The use of tag methods also requires a relatively high level of at-landing compliance inspection (and therefore high cost) to ensure that fishers consider that there is a reasonable likelihood of being detected if they attempt to land an untagged fish. (sub. DR96, p. 5)

Area closures offer a simple, low cost solution to ensuring sustainable fisheries, but, as noted earlier, they are a blunt instrument that can impose unnecessary costs and restrict the value of fisheries to the community. Tagging or restricted licences should be considered on a case by case basis when conventional controls such as bag and size limits are ineffective, and before more restrictive area closures are implemented.

Any tagging system should be based on full recovery of management costs (including administration and related assessments and research) and reserved for highly-valued, at-risk species. In particular, several stakeholders suggested that southern bluefin tuna could be more effectively managed through tagging arrangements.

#### RECOMMENDATION 4.2

Governments should consider implementing harvest tagging or restricted licences to manage valuable at-risk species when conventional management controls (such as bag and size limits) are ineffective in achieving sustainability goals or meeting set harvest allocations.

## Jurisdictional inconsistencies

Some recreational fishers are frustrated by the inconsistencies in regulatory controls between jurisdictions, particularly along State and Northern Territory borders. Inconsistency can increase the complexity and uncertainty of regulatory requirements. Particular examples of inconsistencies raised by stakeholders include:

- east coast snapper size limits are 28 cm in Victoria, 30 cm in New South Wales, and 35 cm in Queensland. Bag limits are 10 in New South Wales and Victoria, and 4 in Queensland

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- minimum sizes for rock lobster are 98.5 mm in the southern zone of South Australia, 105 mm in the Northern Zone of South Australia and for females in Victoria, and 110 mm for males in Victoria
  - regulators allow the take of female mud crabs in New South Wales and the Northern Territory, but apply different size restrictions. The Queensland Government prohibits the taking of female crabs, and this prohibition has been in place since the late 1800s. While there have been attempts to resolve this discrepancy (the most recent in 2011), there is a strong desire within the Queensland community to preserve the existing policies (Queensland Government sub. 60, p. 10)
  - the sand whiting size limit in New South Wales is 27 cm and the bag limit is 20 compared with a size limit of 23 cm and bag limit of 30 in Queensland.

Inconsistencies can reflect regulators' different management goals and the fact that migratory fish may enter jurisdictions at different stages of their lifecycles. For example, TARFISH commented:

Bag/possession limits that underpin fish stock levels in Tasmania can be vastly different to other states for a number of reasons. Fishing pressure can be vastly different between the states due to population, different sub species can exist that vary markedly across states, fish size can be dramatically different across states, ie Southern Bluefin Tuna reach Jumbo size (larger than 100kg) in Tasmania but do not show up in South Australia or New South Wales etc. (sub. 42, p. 7)

Where inconsistencies in regulation are justifiable, jurisdictions should be transparent about the scientific basis or management objective behind the regulatory requirement.

In some circumstances — such as where jurisdictions are using different scientific methods to set size and bag limits — inconsistencies may be less justifiable. However, participants in this inquiry have indicated that, on the whole, inconsistencies are minor and do not present a major impediment to their enjoyment of fishing (for example, Amateur Fishermen's Association of NT, sub. 20; VRFish, sub. 25; and TARFish, sub. 42).

As discussed in chapter 6, policy makers should collaborate to ensure more consistent management approaches to fisheries and fish stocks that cross borders. The relative costs and benefits of moving to more consistent approaches should be considered on a case by case basis. As the Tasmanian Government commented:

Projects working towards cross jurisdictional arrangements seeking savings also need to be rigorously assessed. Generally, processes and negotiations etc. involving multiple jurisdictions are resource intensive and do not provide quick outcomes. Indeed cross jurisdictional processes can lead to additional levels of bureaucracy that is counterproductive to aims of efficiency. Any focus on harmonisation and savings purportedly through cross jurisdictional arrangements need to be considered on a case by case basis. (sub. 48, pp. 1–2)

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## Catch and release in recreational fisheries

Catch and release fishing (returning a live fish to the water after capture) is common practice in recreational angling. For example:

- in New South Wales, 56 per cent of finfish were released after capture in 2013-14 (West et al. 2015)
- in South Australia, just under 30 per cent of marine finfish and 40 per cent of marine shellfish were released after capture in 2013-14 (Giri and Hall 2015)
- the 2013-14 survey of boat licence holders in Western Australia found that 56 per cent of total catch was released (DoF WA 2013)
- in Tasmania, 44 per cent of finfish were estimated as released after capture in 2012-13 (Lyle, Stark and Tracey 2014).

Catch and release may occur voluntarily (for example, by recreational fishers who are concerned about conservation, and sports fishers who are fishing for sport rather than for food), or be mandated by regulation (for example, if a fish is undersized or a bag limit is exceeded). The 2012-13 Survey of Recreational Fishing in Tasmania found that small size (under legal size or 'too small') was the major motivation for fishers to release flathead, whiting, Australian salmon, and silver trevally. Poor eating qualities were identified as important factors for the release for cod, leatherjacket and gurnard. Catch and release (sport) fishing was important for black bream (Lyle, Stark and Tracey 2014). As such, release rates vary considerably between species. For example, in South Australia in 2013-14, release rates varied from 11 per cent for southern garfish, to 33 per cent for Australian salmon and 80 per cent for mulloway (Giri and Hall 2015).

Survival rates can vary by depth of capture, species, type of hook used, where the fish is hooked, and how long a fish is out of the water. Overall, Australian and international research largely shows that most inshore fish and crustaceans survive after release, and that catch and release fishing is effective for managing and conserving stocks. Table 4.3 provides a snapshot of saltwater fish survival rates.

There is less known about the effects of catch and release fishing on fishing stocks in deep water, but emerging research suggests that these methods are associated with higher mortality rates.

Deep sea fishing involves fishing at depths greater than 30 metres and is often called offshore boat fishing, sport fishing, or big game fishing. Barotrauma has been found to be a significant cause of mortality for line-caught demersal fish. Barotrauma results from the expansion of gases in the swim bladder and other organs when fish do not have time to adjust to the rapid changes in water pressure as they are pulled towards the surface.

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**Table 4.3 Saltwater fish survival rates**

<i>Species</i>	<i>Survival (per cent)</i>	<i>Influences on mortality</i>
Yellowfin bream	72–92	Deep hooking and removal
Eastern sea garfish	46	Deep hooking, scale loss and extended air exposure
Dusky flathead	91–97	Deep hooking
Southern sand flathead	92	Deep hooking
Luderick	99	None identified
Mulloway	73–81	Deep hooking and removal
Sand mullet	96	Bleeding from hook wounds
Sand whiting	97	None identified
Snapper	67–92	Deep hooking and removal
Tailor	92	Deep hooking and removal
Yellowtail kingfish	85	Deep hooking

*Source:* DPI NSW (2013b).

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A study on maximum survival of released undersize west coast reef fish found that the post-release mortality rate of:

- dhufish increased with depth of capture from a 21 per cent mortality rate at depths of less than 14 metres to a mortality rate of 86 per cent at depths of 45–59 metres
- snapper increased from about a 3 per cent mortality rate at depths of less than 30 metres depth to a rate of 69 per cent at depths of 45 and 65 metres (Lenanton et al. 2009).<sup>19</sup>

Several techniques have been developed to treat barotrauma, including venting whereby the swim bladder of a fish is punctured with a needle to remove excess gas. While venting can help the fish to return to the deep water, it can injure other organs and lead to death. Agencies in Australia and the United States generally recommend the use of various forms of cages or weights to return fish to their capture depth (McLennan, Campbell and Sumpton 2014). For example, in Western Australia it is compulsory to possess a release weight for fishing for demersal fish (such as dhufish) in the West Coast Bioregion (DoF WA 2016a). In the United States, work is underway to develop recompression devices to improve the survival rates of deep sea fish. However, testing of such devices is in its infancy (NOAA 2014).

The existing evidence suggests that catch and release may not be an effective management strategy for recreational catch of deep-sea fish and that alternative approaches may be needed. Nevertheless, the evidence on the mortality rates of released deep-sea fish and on the effectiveness of interventions to reduce these rates is still incomplete. More research is warranted in this area.

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<sup>19</sup> The study reported that the highest proportion of dhufish are caught at depths between 40 and 59 metres and the highest proportion of snapper are caught at depths between 20 and 59 metres.

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## 4.4 Regulatory enforcement mechanisms

Enforcement mechanisms are a key aspect of any regulatory system. Fisheries officers in each State and Territory undertake a range of compliance activities, including inspections, surveillance patrols and intelligence operations. Compliance options across the jurisdictions generally include education, verbal and official warnings, infringement notices, prosecution and cancellation of licences or permits. For example in:

- New South Wales about 3300 offences were recorded in the marine recreational fishery sector in 2014-15 with penalties including cautions (58 per cent), penalty notices (40 per cent) and prosecutions (2 per cent)
- Victoria about 35 000 inspections were undertaken in the marine recreational fishery sector in 2014-15 where about 3600 offenders were detected and penalties included verbal and written warnings (65 per cent), infringement notices (34 per cent) and prosecutions (1 per cent)
- Queensland about 1000 offences were recorded in the marine recreational fishery sector in 2015 where offences were penalised with a caution (49 per cent), fine (49 per cent) or prosecution (2 per cent)
- South Australia about 860 offences were recorded in the recreational fishing sector in 2015 with penalties including cautions (53 per cent), expiations (42 per cent) and prosecutions (5 per cent).<sup>20</sup>

Participants suggested that many recreational fishers follow regulations. At the same time, there is concern that the vast expanse of Australia's marine fisheries provides significant opportunities for non-compliance, and these are difficult to detect. For example, high-value fish stocks, such as abalone, can be found in isolated marine environments where surveillance is difficult. Accordingly, for some recreational fishers, the rewards of non-compliance can be high and the risks low. Areas viewed as particularly problematic include illegal take of key species, the selling of recreational catch, non-compliance with bag and size limits and fishing without a licence.

The scale and scope of non-compliance with recreational fishing laws is difficult to judge given the number, dispersion and diversity of participants and activity. Given the challenges of policing activity, some participants suggested that more expenditure should be directed at regulatory education and changing attitudes (for example, Amateur Fishermen's Association of NT, sub. 20; VRFish, sub. 25; and RecFish SA, sub 35). However, this would only reduce offences committed through ignorance of regulatory requirements rather than deliberate non-compliance.

Education campaigns on fish size limits over the past decades appear to have been highly effective in increasing compliance with regulation (CSIRO, sub. 61). And all jurisdictions

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<sup>20</sup> Information supplied by the New South Wales, Victorian, Queensland and South Australian Governments.

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are currently providing information on recreational fishing and its regulation in a range of locations and formats, such as hard copy publications, signage at targeted recreational fishing spots, documents on websites and smartphone applications. That said, (as discussed earlier) the introduction of a comprehensive licensing system (recommendation 4.1) would enable more effective targeting of education material to recreational fishers.

Several participants suggested that governments should consider whether there are sufficient resources directed at enforcement. The Law Council of Australia commented that in its experience:

... the chance of being caught has more impact as a deterrent than the quantity of the penalty. That suggests the need for some resources to be devoted to enforcement. (sub. DR93, p. 5).

During consultations it was also suggested that while 24 hour hotlines were established in jurisdictions to report fisheries offences, in most instances there were not enough fisheries officers to respond in a timely manner to reports of non-compliance. Some stakeholders further claimed that regulators targeted enforcement at ‘soft targets’, such as enforcement of recreational fishing licences, rather than at illegal take of key species and the sale of recreational catch where the risks to sustainable fisheries are higher.

Penalties should be designed to support deterrence and be proportionate to the level of harm posed to the fishery. Jurisdictions should consider both the adequacy of current financial penalties and the merit of others that are likely to increase the level of deterrence. For example, in discussions some stakeholders suggested that penalties for non-compliance in the recreational fishing sector should include the temporary seizure of recreational fishing gear and boats.

Penalties for failure to hold or carry a licence should not be punitive for first offences, and regulatory aims may be better served by education, warnings or small fines (especially in the first few years of a new licensing regime). This would recognise that the aim of licensing is not to punish people when they offend per se, but to increase awareness and compliance with rules. In contrast, strong penalties should be applied in instances of knowing and persistent breaches, such as in the illegal take of key species and the selling of recreational catch.

#### RECOMMENDATION 4.3

The State and Northern Territory Governments should review penalty regimes for marine recreational fishing to ensure that penalties support deterrence and are proportionate to the level of harm posed to the fishery.

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## 4.5 Improving the information base

Estimating catch and effort to incorporate recreational fishing into stock and marine management is significantly more difficult than for the commercial sector because of the number and diversity of participants.<sup>21</sup>

Existing information — often based on sporadic surveys undertaken by State and the Northern Territory Governments — provides a limited, unreliable and out-of-date picture of recreational fishing effort, catch and value across Australia (box 4.9).

For instance, there may be other, unrecognised species where recreational catch is exceeding sustainable levels, suggesting greater regulatory controls are warranted. Conversely, inadequate information may sometimes prompt poorly targeted or unjustified limits on access and methods of fishing. Moreover, differences in methodologies and survey years between the jurisdictions make it difficult to compare and use data for managing species and fisheries that cross jurisdictional boundaries. Improved information would help understand, manage and develop Australia's recreational fisheries.

Better information on the wider social aspects of recreational fishing is also important. Understanding why people fish and the benefits they receive can help determine the value of recreational fishing to the community and facilitate better engagement with fishers as a regulated group. Better data would also:

- indicate the different categories of people who fish recreationally and their fishing behaviours (such as where and how they fish)
- enable improved communication between researchers, managers and fishers
- facilitate more detailed assessment of the regional impacts of recreational fishing
- allow governments to assess any divergence between the unintended and realised effects of policy decisions (for example, as in the creation of marine sanctuaries)
- enable more tailored management plans and policy
- identify any services and facilities required for recreational fishers.

Five yearly surveys of recreational fishing in Canada (which have been undertaken since 1975) have demonstrated that they can be useful in achieving such objectives (Fisheries and Oceans Canada 2010).

Both governments and industry stakeholders have recognised a need for a more systematic and coordinated approach to the collection of recreational fisheries data across

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<sup>21</sup> Given the relevant populations of recreational fishers there are large trade-offs between the costs of surveys and their completeness, accuracy and sampling precision. For example, surveys of boat based fishing in Western Australia are cost effective (largely because the recreational fishing from a boat licensing register provides a sample frame for surveys), but they exclude shore-based recreational participation, catch and effort.

jurisdictions. The Australian Government’s policy for a *More Competitive and Sustainable Fisheries Sector* (August 2013) included an objective to conduct recreational fishing surveys every five years (Georgeson et al. 2015).

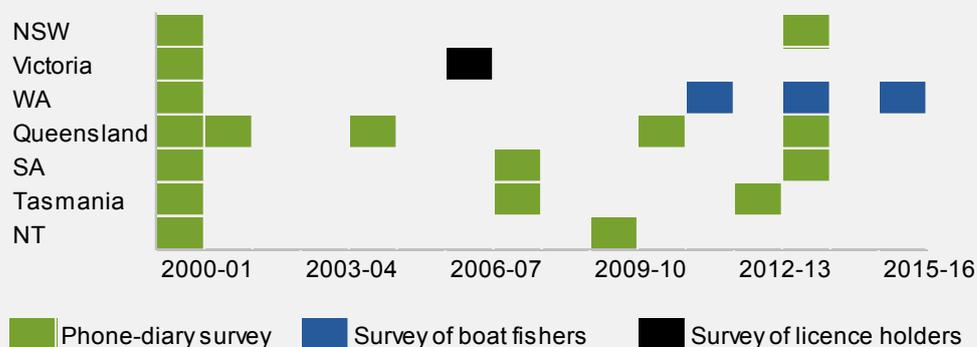
#### Box 4.9 A turbulent sea of numbers: surveys of recreational fishing

In Australia, the first and only national survey (the National Recreational and Indigenous Fishing Survey or NRIFS) was undertaken in 2000-01. The NRIFS provided information on participation, effort, catch, social benefits and expenditure at the jurisdictional and national levels. Such information was invaluable in guiding recreational fisheries species and decision-making processes (Griffiths et al. 2014).

The NRIF data are out-dated, particularly for species whose abundance is subject to large temporal variations, and in view of the changes in regulation, fish stocks and likely fishing patterns over the past 15 years.

The State and Northern Territory governments have conducted surveys to address specific concerns, such as the management of key species targeted by recreational and commercial fishers including flathead, snapper and whiting. Western Australia conducts a regular two-yearly State-wide survey of recreational fishers with boat licences. Other jurisdictions undertake surveys of recreational fishing on an ad hoc basis (as shown in the chart below). Some targeted regional surveys have also been undertaken to improve understanding of recreational catch and effort, as well as the economic and social contribution of recreational fishing (Georgeson et al. 2015).<sup>a</sup>

#### Jurisdictional-wide surveys of recreational fishing<sup>b</sup>



<sup>a</sup> Targeted information is also collected for charter boat catch and effort, and from game fishing competitions and tag and release programs.

<sup>b</sup> The majority of state and Northern Territory surveys have used the phone-diary method. The exceptions are Victoria, which has used its licensing register as a sampling frame, and Western Australia, where surveys are conducted of recreational fishers with boat licences.

Source: Georgeson et al. (2015).

To date, the State and the Northern Territory Governments have been reluctant to commit to undertaking regular, coordinated surveys, in part because of a lack of resources. Based on the estimated cost of a national survey, \$6.8 million in 2017-18 (Georgeson et al. 2015),

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this would entail just over \$2 per recreational fisher every five years (or about 40 cents annually).<sup>22</sup>

The Commission proposes a two-step approach to address the pressing need for survey information from the recreational sector.

As a first step, in 2018-19 the Australian Government should undertake a national survey using a comparable method to the 2000-01 national survey. This avoids all jurisdictions having to be administratively involved in this task. It would represent a five year period since the previous State-wide surveys conducted in New South Wales, Queensland and South Australia; a six year period between surveys in Tasmania and; a two year period since the survey of boat fishers in Western Australia (box 4.8). The cost of the 2018-19 survey should be met by all jurisdictions.

The second step involves the implementation of regular surveys, which are essential in order to measure change in catch and effort over time and support fisheries management decisions. From 2023-24, all jurisdictions should conduct regular surveys (ideally at five yearly intervals), whether this be on a jurisdictional or coordinated national basis. If at the jurisdictional level, it is desirable for the surveys to coincide in time and be largely consistent to support cross-jurisdictional fishery management and provide an accurate national picture (jurisdictions may otherwise choose to include additional questions to address State-specific issues).

As discussed above, the surveys should focus on recreational fishing participation, total catch and effort, the identification of recreationally-important species, and the value of fishing to recreational fishers. Importantly, they will provide an up-to date tool for assessing inter-sectoral allocations and management decisions.

Population-based surveys, are however, generally not able to provide the accurate and timely stock status data required for managing harvest in at-risk fisheries. The proposed five yearly population surveys should be conducted together with more detailed and frequent surveys for particular fisheries. Survey methods more suited to particular locations include creel surveys (surveys undertaken at given fishing locations), aerial surveys and the use of remote cameras (Smallwood et al. 2011). These are relatively costly measures and have various deficiencies, but are likely to be an important element in the portfolio of methods for managing recreational fisheries. The State and Northern Territory Governments should use such approaches as they deem appropriate, but should share their findings on their effectiveness, as well as diffusing any new innovative information-gathering methods.

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<sup>22</sup> Assuming there are currently 3.2 million recreational fishers (based on the most recent estimates of participation — table 4.1).

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#### RECOMMENDATION 4.4

The Australian Government should conduct a national survey of recreational fishing in 2018-19, using a comparable approach to the 2000-01 national survey. The cost of the survey should be shared by all governments.

From 2023-24 all governments should undertake five yearly surveys of recreational fishers, whether at the national level or on a coordinated jurisdictional basis.

Surveys should be consistent across jurisdictions and focus on participation, catch and effort, identification of species important to recreational fishers and information on the value of recreational fishing. The information should be made publicly available.

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## 5 Indigenous fishing

### Key points

- Fishing is a significant activity for many Indigenous Australians, providing an important food source as well as unique benefits associated with the maintenance of traditional customs. Indigenous Australians may fish for commercial or recreational purposes, but also for customary purposes in accordance with their own laws and customs.
- Native title provides access to fisheries for some groups. Changes in jurisprudence and the slow pace of native title determinations have created uncertainty over the full extent of native title rights and interests. This uncertainty has contributed to customary fishing often being managed by exemption under fisheries laws rather than being recognised (and managed) as a sector in its own right.
- Progress toward better recognition and effective incorporation of customary fishing in fisheries management has been slow. Poor recognition has resulted in a lack of clarity regarding the rights of customary fishers and a limited understanding by fisheries managers of customary fishing. It has also contributed to low levels of involvement of Indigenous Australians in fisheries management.
- To enable better recognition and incorporation of customary fishing in fisheries management:
  - fisheries laws should provide for fishing by Indigenous Australians in accordance with their own laws and customs
  - in resource sharing arrangements, governments should set aside a level of catch for local Indigenous communities sufficient to maintain their customs before allocating access to other sectors.
- Customary fishing activities, as for other sectors, may be subject to controls to ensure the sustainable use of fisheries.
- To ensure that the customary allocations and any controls over customary fishing activities are culturally sensitive and do not infringe on the rights and interests of native title holders, they need to be developed in collaboration with Indigenous communities.
- Native title determinations have recognised the right of some native title holders to fish for any purpose, including sale, barter and exchange. Consistent with the intent of recognising customary fishing rights, the definition of customary fishing should provide for fishing for such purposes where in accordance with Indigenous laws and customs.
- There is a need to improve engagement between fisheries managers and Indigenous fishers. There is also scope to increase the application of Indigenous traditional knowledge in fisheries management through Indigenous sea ranger programs and other means.

The terms of reference for this inquiry direct the Commission to investigate ‘the extent to which fisheries management regimes support greater participation of Indigenous

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Australians, provide incentives to Indigenous communities to manage their fisheries, and incorporate their traditional management practices in the fishing industry’.

This chapter outlines how Indigenous Australians undertaking customary fishing are currently regulated and considers options to support greater participation of Indigenous Australians in both fishing and fisheries management. The Commission has focused on common issues across jurisdictions and related improvements to regulatory principles, rather than providing recommendations on specific issues in particular jurisdictions.

## 5.1 Overview of Indigenous fishing

### What is customary fishing?

Customary fishing is the act of fishing by Indigenous Australians in accordance with their own laws and customs. For an Indigenous fisher, customary fishing may include (among other purposes) fishing for personal or communal use, recreation, ceremony, barter or sale, or to pass on traditional knowledge.

Fisheries laws generally treat customary fishing as an activity distinct from other fishing activities that Indigenous Australians may engage in and that non-Indigenous Australians may equally pursue and enjoy (box 5.1). This is because of the unique attributes of, and benefits from, customary fishing.

#### Box 5.1 **Not all fishing by Indigenous Australians is customary fishing**

Customary fishing (also known as cultural or traditional fishing, depending upon the jurisdiction) refers to the activity of Indigenous Australians fishing in accordance with their own laws and customs. In contrast, the wider concept of Indigenous fishing includes customary fishing, as well as recreational and commercial fishing undertaken outside of Indigenous law and custom. An Indigenous fisher may therefore be classified by fisheries authorities as either a customary, recreational and/or commercial fisher, with the distinction generally turning on the intent and circumstances of the fishing activity.

The definition of customary fishing in fisheries laws does not always align with how Indigenous Australians conceive of customary fishing. For example, if an Indigenous Australian is fishing for personal use in accordance with their traditional laws and customs but not in accordance with a jurisdiction’s definition of customary fishing, they are generally classified as a recreational fisher for fisheries management purposes and subject to recreational gear, catch and bag restrictions.

Fishing for commercial purposes is also not considered as customary fishing under fisheries laws. Some jurisdictions, such as Western Australia, allow customary fishers to barter or exchange fish provided it occurs between Aboriginal communities, does not involve money, and is consistent with traditional practices.

*Sources:* DoF WA (2009); Fisheries Research and Development Corporation and Ridge Partners (2015).

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Customary fishing practices vary across the country, and fishers may target a range of species, including more obscure species such as rays (Kleisner et al. 2015) and marine animals such as turtles and dugongs — although management of the latter species is not the responsibility of fisheries authorities. The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) provides for Indigenous Australians to hunt otherwise protected marine species, including sea turtles and dugongs, for traditional (but non-commercial) purposes.

However, customary fishing practices are not static. They can, and do, vary over time in line with changes in the laws and customs of each Indigenous community — including in response to outside influences. For example, the use of modern fishing techniques and equipment need not preclude a fishing activity from being in compliance with Indigenous laws and customs.

### **Customary fishing today**

Customary fishing is understood to be widely practiced across Australia (Kleisner et al. 2015). More than half of Australia’s Indigenous population over the age of 15 is estimated to engage in customary fishing (SCRGSP 2016). Customary fishing is most concentrated in the Northern Territory and the northern areas of Queensland and Western Australia where more than 90 per cent of Indigenous Australians surveyed engaged in customary fishing during 2001 (Henry and Lyle 2003).

Although customary fishing practices are known to vary significantly between communities, information on customary fishing practices is notably poor, and the sector as a whole is not well understood by fisheries managers.

Information available indicates that the Indigenous customary sector’s total catch is relatively small in most fisheries. For example, under its allocation policy, South Australia provides for ‘traditional fishing’ allocations of 1 per cent of total catch in most of its fisheries (PIRSA 2016a). Catch by the Indigenous customary sector is, however, significant for some species such as trochus.

Most customary catch is understood to be consumed by the fisher’s household and extended family. In one New South Wales case study, 70 per cent of customary fishing catch was used by the fisher’s household and the majority of the remaining share was distributed to the fisher’s immediate and extended family (Schnierer and Egan 2015). The remainder was either shared with the fisher’s community, bartered, sold or released. A similar focus on household consumption was observed in Western Australia, although sharing within the community was also prominent (Wright and O’Neill 2013).

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## Value of fishing for Indigenous Australians

The benefits of fishing activities to Indigenous Australians are multifaceted. These benefits include both monetary and non-monetary values and can accrue to both the individual fisher and their wider community. Benefits are derived from different sources — for example, from the act of fishing and from the consumption of fish (table 2.4, chapter 2).

Indigenous Australians have fished and used fisheries products for a range of purposes for many thousands of years (Calogeras et al. 2015; Roberts and Schilling 2010). While its significance varies between communities, fishing may be undertaken for both regular consumption or to supply ceremonies. Contributions to the inquiry have pointed out the ongoing value of fish as an important food source for communities where few other options are available (Australian Institute of Aboriginal and Torres Strait Islander Studies, sub. DR109). Fish may also be distributed by the fisher to other community members under sharing obligations (Feary 2015).

However, fishing can provide benefits beyond pure consumption to both individuals and the particular Indigenous community, as in Hundloe (2002):

... the value of seafood when harvested by Indigenous people is, or can be, greater than the value obtained from eating the food. The additional value has to do with the relationship — in a religious or cultural sense — of the Indigenous fisher and his or her clan to the environment.

Particular marine species may be ceremonial totems, with special meaning to particular members of the community (Feary 2015). Fishing is also important for the transmission of traditional knowledge between generations and for Indigenous Australians to maintain their connection to traditional land and waters (Feary 2015).

## History of commercial fishing by Indigenous Australians

While customary fishing is often conceived of as being purely for subsistence and ceremonial purposes, in many parts of Australia there is a record of Indigenous communities using fisheries for commercial purposes prior to European settlement (ATSISJC 2008). The Yolgnu people of Arnhem Land granted Macassan traders from Indonesia the right to fish in their waters in exchange for traded goods (Museums Victoria 2010). Similarly, there is a long tradition of inter-island trade of harvested marine resources amongst Indigenous communities within the Torres Strait Islands (Brennan 2012) along with reciprocal arrangements allowing Torres Strait Islanders to fish in each other's territories (Thomassin, sub. DR112). Indigenous Australians in other parts of Australia also claim commercial fishing as part of their ongoing cultural practice (Schnierer and Egan 2012).

Since European settlement, Indigenous Australians have participated in the development of new commercial fisheries, including in New South Wales (Feary 2015) and northern Australia (Durette 2007). Over time, the number of Indigenous Australians employed in commercial fishing has declined in line with the overall fall of employment in the fishing

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industry. In 2011, 353 Indigenous Australians were employed in the fishing industry, making up almost 3 per cent of employees — higher than their representation in the general workforce (ABARES 2015b). 57 per cent of Indigenous Australian workers in the fishing industry were employed as labourers, compared with 39 per cent across the entire sector.

Some participants have identified impediments to participation in commercial fishing that are unique to Indigenous Australians (Northern Land Council, sub. 39 and sub. DR101; Federation of Victorian Traditional Owner Corporations, sub. 40). These barriers to participation are discussed in section 5.4.

## **5.2 How customary fishing is regulated**

In the first instance, a customary fisher is regulated by the Indigenous laws and customs they acknowledge and adhere to. At the same time, mainstream Australian fisheries laws and other legislation provide different means through which Indigenous fishers can access fisheries for customary purposes. These means include specific customary fishing rights afforded by fisheries laws, the recognition of native title rights over the waters of a fishery, Indigenous land rights and through other agreements made with governments. The interaction between these access regimes is not always clear and can vary by jurisdiction.

### **Customary fishing in fisheries laws**

Customary fishing is managed by the States and the Northern Territory, with the exception of the Torres Strait (box 5.2). All coastal State and Territory governments recognise customary fishing within their respective fisheries and related laws. The Australian Government does not manage Indigenous customary fishing but has recently made a commitment ‘to strengthen the interest of all resource users, including Indigenous fishers, in Commonwealth fisheries management’ (Department of Agriculture and Water Resources, sub. DR108, p. 5).

The legislative definition of customary fishing and nature of access afforded to customary fishers varies between jurisdictions (table 5.1). For management purposes, most jurisdictions exempt customary fishers from obtaining a licence to fish but impose some possession limits or gear restrictions. The criteria used to determine who may fish for customary purposes also differ between jurisdictions.

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## Box 5.2      **Fishing in the Torres Strait**

Fishing regulations in the Torres Strait are unique because of the Torres Strait Treaty between Australia and Papua New Guinea. The treaty defines how responsibility for the region is shared between the two countries, while placing emphasis on protecting and maintaining the customary practices of Torres Strait Islanders.

The *Torres Strait Fisheries Act 1984* (Cth), which regulates the Australian area of the Torres Strait fishery, established the Protected Zone Joint Authority (PZJA). The PZJA comprises the Australian and Queensland Governments and the Torres Strait Regional Authority (TSRA). The PZJA manages commercial and customary fishing, while the Queensland Government has responsibility for recreational fishing.

The Torres Strait Fisheries Act reinforces the objective of protecting the traditional way of life of Torres Strait Islanders (which includes customary fishing), as well as promoting economic development for traditional inhabitants. These objectives are supported by the provision of Traditional Inhabitant Boat (TIB) licences for commercial fishing. TIB licences, which are not limited in number, allow traditional owners to fish in all commercial fisheries except for the prawn fishery.

As a result, Torres Strait Islanders are more engaged in commercial fishing than many other Indigenous Australians. Since its inception in 1994, the TSRA has sought 100 per cent ownership of licences by traditional inhabitants, and commercial licences are no longer issued to non-traditional inhabitants. Following licence buybacks, TIB licences account for all commercial fishing entitlements in the finfish, bêche-de-mer, trochus and crab fisheries. Torres Strait Islanders also own most of the licences in the pearl fishery and more than half of all licences in the tropical rock lobster fishery.

*Sources:* MRAG Asia Pacific (2014); Torres Strait Regional Authority, sub. 9.

**Table 5.1 Customary fishing regulation in Australian jurisdictions**

	<i>How customary fishing is defined in fisheries laws:</i>	<i>Customary fishing provisions apply to:</i>	<i>How customary fishing is regulated:</i>
NSW	Fishing activities and practices carried out by Aboriginal persons for the purpose of satisfying their personal, domestic or communal needs, or for educational, ceremonial or other traditional purposes, and which do not have a commercial purpose.	All Indigenous Australians.	Exempt from recreational licences and subject to less stringent bag limits than recreational fishers.
Vic	No specific definition in fisheries laws, but under the <i>Traditional Owner Settlement Act 2010</i> (Vic), traditional resource use is defined as 'providing for any personal, domestic or non-commercial communal needs of the members of the traditional owner group'.	Traditional owners recognised under State non-fisheries legislation.	Exempt from recreational licences but subject to recreational bag limits.
Qld	<ul style="list-style-type: none"> <li>• An Aborigine acting under Aboriginal tradition, or a Torres Strait Islander acting under Island custom; and</li> <li>• the taking, using or keeping of the fisheries resources, or the using of the fish habitats, was for the purpose of satisfying a personal, domestic or non-commercial communal need of the Aborigine or Torres Strait Islander; and</li> <li>• the fish was taken using a prescribed apparatus or in a manner consistent with Aboriginal tradition or Island custom.</li> </ul>	All Indigenous Australians acting under tradition or custom.	Exempt from fisheries laws but subject to gear and spatial restrictions.
SA	Fishing engaged in by an Aboriginal person for the purposes of satisfying personal, domestic or non-commercial, communal needs, including ceremonial, spiritual and educational needs, and using fish and other natural marine and freshwater products according to relevant aboriginal custom.	Native title groups recognised under a traditional fishing management plan.	As provided under a traditional fishing management plan.
WA	Fishing by an Aboriginal person that: <ul style="list-style-type: none"> <li>• is in accordance with the Aboriginal customary law and tradition of the area being fished; and</li> <li>• is for the purpose of satisfying personal, domestic, ceremonial, educational or non-commercial communal needs.<sup>a</sup></li> </ul>	Indigenous Australians with a traditional connection to area being fished. <sup>b</sup>	Exempt from recreational licences, while other regulations differ for some species. <sup>c</sup>
Tas	<ul style="list-style-type: none"> <li>• The non-commercial use of the sea and its resources by Aborigines; and</li> <li>• the taking of prescribed fish by Aborigines for the manufacture, by Aborigines, of artefacts for sale.</li> </ul>	All Indigenous Australians undertaking 'an aboriginal activity'.	Exempt from recreational licences, but subject to recreational restrictions.

(continued next page)

Table 5.1 (continued)

	<i>How customary fishing is defined in fisheries laws:</i>	<i>Customary fishing provisions apply to:</i>	<i>How customary fishing is regulated:</i>
NT	Use of the resources of an area of land or water in a traditional manner, but not permitting a person to engage in a commercial activity.	Aboriginals who have traditionally used the resources of an area of land or water in a traditional manner.	Exempt from fisheries laws.

<sup>a</sup> This does not preclude bartering of fish within or between Aboriginal communities for items other than money. The barter must be of a limited nature and consistent with the traditional practice of those communities. <sup>b</sup> The *Aquatic Resources Management Bill 2015* (WA) proposes that this definition change to 'a person who is wholly or partly descended from the original inhabitants of Australia'. <sup>c</sup> The bill further proposes this be changed to 'not requiring a licence if fish are taken for the purposes of the person or the person's family and not for a commercial purpose'.

Sources: *Aquatic Resources Management Bill 2015* (WA); DEDJTR Vic (2015c); DoF WA (2009, 2015b); DPI NSW (2016b); DPIF NT (2016); DPIPWE Tas (2015a); *Fish Resources Management Act 1994* (WA); *Fisheries Act 1988* (NT); *Fisheries Management Act 1994* (NSW); *Fisheries Act 1994* (Qld); *Fisheries Act 1994* (Vic); *Fisheries Management Act 2007* (SA); *Fisheries Regulations 2009* (Vic); *Living Marine Resources Management Act 1995* (Tas); PIRSA (2011); *Traditional Owner Settlement Act 2010* (Vic).

## Fishing for customary purposes under native title and land rights legislation

### Native title determinations can confer a right to fish

A right for Indigenous Australians to access fisheries resources may be recognised by determinations under the *Native Title Act 1993* (Cth).

A native title determination may recognise the right of native title holders to access particular areas of land or waters to carry out traditional activities, including fishing, in accordance with their own laws and customs. Each determination is unique to the community and the area claimed, and the rights and interests recognised will vary between determinations. For some, a determination will recognise a right to take resources for any purpose (including commercial uses), whereas, for others, the recognition will only extend to specified non-commercial purposes.

Native title rights over land may be recognised as either exclusive or non-exclusive — that is, native title holders may (or may not) have the right to control access to the area. However, exclusive rights cannot be recognised over the sea. This is because native title rights and interests are considered to 'yield' to other public rights in the event of any inconsistency, and therefore cannot be recognised by the common law, even where found to exist. Consequently, while native title rights over sea country can be recognised, they cannot be exclusive — such rights conflict with the right of innocent passage, as found in *Yarmirr* (*Commonwealth v Yarmirr* (2001) HCA 56, box 5.3).

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## Box 5.3 Selected case law influencing native title rights to fish

### ***Commonwealth v Yarmirr* (2001) HCA 56**

In 1994, a number of clan groups claimed native title over the sea around Croker Island in the Northern Territory. While rights over the island itself were previously granted to the communities by the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth), the Act did not confer rights over the seas. In its 1998 determination, the Federal Court recognised native title rights over sea country for the first time. However, the determination did not recognise a right for the native title holders to exclude others from the area — a finding that was appealed by the native title holders to the High Court.

The High Court dismissed the appeal, concluding that exclusive rights over waters were inconsistent with public rights to navigate and fish. In the event of an inconsistency between native title rights and common law rights, the native title rights were found to ‘yield’ to other rights, and must be exercised in accordance with State, Territory and Commonwealth laws (except where specific exemptions apply, such as s. 211 of the *Native Title Act 1993* (Cth)). While native title rights over areas of sea may be recognised, these rights cannot be exclusive.

### ***Akiba v Commonwealth* (2013) HCA 33**

In 2010, a judge of the Federal Court of Australia made a determination recognising the existence of native title rights and interests in relation to much of the waters of the Torres Strait. The ruling recognised the non-exclusive right of native title holders to access and take resources for any purpose in the native title areas. This allowed the native title holders to take fish from the area for commercial or trading purposes. The initial determination was subsequently appealed and amended in 2012 by the Full Federal Court, which found that any right to take fish for commercial purposes had been extinguished by successive fisheries legislation enacted by the Queensland and Australian Governments.

The Full Federal Court’s decision was then appealed to the High Court of Australia in 2013. The High Court allowed the appeal against the decision of the full Federal Court, finding that the native title holders had a right to fish for any purpose — a right that had not been extinguished by legislation that prohibited fishing without a licence.

### ***Karpany v Dietman* (2013) HCA 47**

In 2009, two Indigenous fishers were charged with violating the *Fisheries Management Act 2007* (SA) by possessing undersized abalone in excess of the recreational bag limit. The defendants were native title holders over the area they were fishing on, and argued that they were exercising their native title rights to fish for non-commercial purposes. While initially cleared, the prosecution appealed and the acquittal was overturned by the Supreme Court of South Australia. The defendants were granted leave to appeal to the High Court in 2013.

The defendants used s. 211 of the Native Title Act to make their case. This section provides that where other laws require a licence or permit to be held to undertake certain activities (including fishing), the lack of a licence does not prohibit or restrict native title holders undertaking those activities for non-commercial purposes in the exercise of their native title rights (although native title holders are required to hold the licence/permit if it is for research, environmental protection, public health or public safety purposes). The High Court accepted the defence in this case, judging that the defendants were not subject to South Australian recreational fishing restrictions where those restrictions infringe on the enjoyment of native title rights to fish for non-commercial use.

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The rights recognised by a native title determination depend upon both the customary law and traditions of the community claiming title and whether their rights have been fully or partially extinguished since European settlement. Native title rights and interests over an area may be extinguished by the granting of a lease or by other acts of government. For example, the granting of freehold title over land extinguishes all native title rights and interests over that area.

Legislation that *unconditionally* prohibits certain activities, such as hunting or fishing, also has potential to extinguish the native title right to undertake that activity. Certain acts of government that extinguish or temporarily impair native title rights may necessitate compensation to the native title holders under the ‘future acts’ provisions of the Native Title Act. In August 2016, a test case for determining compensation payable for the extinguishment of native title rights was decided in the Federal Court (*Griffiths v Northern Territory of Australia* (No 3) (2016) FCA 900). The judgment awarded more than \$3.3 million for the extinguishment of native title over areas of the township of Timber Creek in the Northern Territory. To mitigate the risk of compensation liability, some legislation enacted since the passage of the Native Title Act (for example, the *Living Marine Resources Management Act 1995* (Tas)), has included ‘savings provisions’ to avoid inadvertently impinging upon native title rights.

#### *Native title rights may extend to fishing for any purpose*

A right to fish ‘for any purpose’ has been explicitly recognised in some recent native title determinations, most notably *Akiba v Commonwealth* (2013) HCA 33 (*Akiba*). The High Court noted that the *regulation* of a native title right to fish in an area is not inconsistent with the continued existence of that right, and therefore statutory licencing regimes did not extinguish native title rights to fish for any purposes. The court also recognised that native title claimants need not prove an established practice of commercial activity, only that the laws and customs of the community did not restrict or dictate the purposes for which resources could be taken (Strelein 2015).

The judgment in *Akiba* found that fishing for commercial purposes in enjoyment of native title rights remains subject to laws governing commercial fishing generally. Indigenous fishers who have a native title right to fish for commercial purposes must exercise that right in accordance with commercial fishing laws that generally apply to all other citizens (s. 211 of the Native Title Act). Therefore, native title rights do not provide an unrestricted right to trade fish.

#### *Protection of native title rights*

In some circumstances, native title holders may be able to exercise their rights to undertake practices that would otherwise violate State fisheries laws. The Native Title Act, as a federal law, overrides State legislation to the extent of any inconsistency. Further, where State and Territory laws prohibit or restrict native title rights to fish for personal,

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communal or other non-commercial uses, s. 211 of the Native Title Act may provide a defence to prosecution (but only if such restrictions do not constitute an unconditional prohibition on the activity and if fisheries laws have not previously extinguished such rights). This section was used successfully as a defence from violating minimum size restrictions in *Karpany v Dietman* (2013) HCA 47 (box 5.3). However, the application of s. 211 depends on the facts of the case (including the relevant legislation) and the protections are yet to be widely tested.

### *Indigenous land use agreements as a fisheries management tool*

Amendments to the Native Title Act in 1998 created a framework for the Australian, State and Territory governments, as well as other parties, to negotiate Indigenous land use agreements (ILUAs) with Indigenous communities. ILUAs are voluntary and legally binding between the parties and set rules about the use of land, water and resources within the prescribed area (National Native Title Tribunal nd). Valid agreements can be made with either native title holders or with claimant groups prior to a determination — although they cannot apply where native title has been found not to exist.

In situations where catch is to be limited for environmental reasons, ILUAs provide a means for imposing constraints. ILUAs can restrict the exercise of native title rights, but only where agreed to by the native title group. ILUAs can also extinguish native title by agreement and provide for compensation.

ILUAs are currently used in the management of customary fishing in several jurisdictions, but most notably in South Australia. In South Australia, an ILUA must be in place with a given native title group (as defined under the Native Title Act) in order to develop a traditional fishing management plan. A traditional fishing management plan is required for customary fishing rights to be recognised for that group under the *Fisheries Management Act 2007* (SA).

As a matter of policy, South Australia is resolving native title claims through the negotiation of ILUAs (Government of South Australia (Crown Solicitor's Office) 2004). These agreements cover a range of issues, of which fishing is only one. In 2011, the South Australian government stated an aim to negotiate ILUAs with each Indigenous community wanting to undertake customary fishing by 2016 (PIRSA 2011). To date only one traditional fishing management plan is in place, although for an inland, rather than marine, fishery (Government of South Australia, sub. 63).

The use of ILUAs is similar to the Canadian approach to customary fishing management. Canadian Aboriginals can only participate in the 'food, social and ceremonial fishery' following agreements or treaties between the government and each recognised community that create a communal licence for that group (Fisheries and Oceans Canada 2012). These agreements allow management controls to be partially developed by the communities themselves.

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## Land rights legislation can also affect access to fisheries

In some jurisdictions, Indigenous Australians have been granted freehold ownership of areas of land and intertidal waters through land rights legislation. The right of ownership includes an ability to prohibit physical access to fisheries. This intersection of land rights and fisheries access occurs most prominently in the Northern Territory (box 5.4).

To account for complexities arising from land rights, the Northern Territory has undertaken consultation with Aboriginal land councils to secure access for commercial and recreational fishers. This process has, so far, delivered outcomes that maintain most access for other sectors but also provide benefit for the Indigenous land owners — including providing greater powers for Indigenous rangers to enforce fisheries rules (Northern Land Council, sub. 39).

### Box 5.4 Indigenous fishing in the Northern Territory

The *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth) created a system of recognising and providing land rights to Indigenous Australians in the Northern Territory. The process established freehold land rights for traditional owners over the intertidal land (between the low and high tide marks), but not for the overlying waters. By 2007, the Act had granted rights to traditional owners over more than 55 per cent of the Northern Territory's land area, including more than 80 per cent of its coastline.

In 2007, the Federal Court extended land rights to include exclusive ownership of the intertidal waters adjacent to granted land. This decision was confirmed by the High Court on appeal in the 'Blue Mud Bay' case. Consequently, access to these waters for any purpose, including fishing, is only permitted with approval from the traditional owners. This decision was significant as the intertidal waters in the Northern Territory are key habitats for important recreational and commercial target species, including mud crab and barramundi.

Access to the intertidal waters has since been subject to interim access arrangements, with permits issued by the Aboriginal land councils required to enter those waters. However, the ruling does not provide ownership over fisheries resources, with the Northern Territory Government maintaining the authority to regulate fishing.

*Sources:* DPIF NT (nd); *Gumana v Northern Territory* (2007) FCAFC 23; *Northern Territory v Arnhem Land Aboriginal Land Trust* (2008) HCA 29.

## Other arrangements affecting customary fishing

Marine protected areas can affect the ability of Indigenous Australians to undertake customary fishing. The access available to Indigenous Australians varies depending on the jurisdiction, the park and the type of fishing activity.

In the Great Barrier Reef Marine Park, Traditional Use of Marine Resource Agreements (TUMRAs) have been developed between the marine park authority and individual traditional owner groups. The agreements regulate traditional fishing and hunting activities in the marine park through a co-management approach. For example, the TUMRA may set

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out a hunting limit for dugongs, with the Indigenous community being responsible for allocating hunting rights within that limit.

### **5.3 Concerns with customary fishing regulation**

Participants in the inquiry raised a range of concerns in relation to how governments regulate customary fishing activities. The key themes were:

- a lack of clarity on the rights and responsibilities of customary fishers
- poor understanding of customary fishing by fisheries managers and few formal allocations of access for customary use.

#### **Lack of clarity on customary fishing rights and responsibilities**

In most jurisdictions, regulatory approaches do not explicitly define the rights and responsibilities of Indigenous Australians when fishing for customary purposes. A number of participants submitted that this has created uncertainty for both customary fishers and for other users of the resource<sup>23</sup> and may be deterring participation in customary fishing activities. The treatment of customary fishing activity as largely exempt from laws that generally apply to other fishing activity is likely to have undermined the collection of information on customary fishing, and weakened the processes of engagement, consultation and enforcement.

There is inconsistency in the scope of customary fishing activity allowed under fisheries laws and that provided for by native title. For example, statutory provisions relating to customary fishing preclude fishing for commercial purposes, even though the right to fish for any purpose has been recognised under some native title determinations. In addition, the legal status of some activities undertaken pursuant to Indigenous custom, such as bartering fish, is unclear in most jurisdictions — Western Australia’s customary fishing policy being unique in explicitly permitting the customary barter of fish (DoF WA 2009).

In some jurisdictions, the observance of traditions involving large catches of fish for ceremonies has placed Indigenous Australians at risk of prosecution where those catches exceeded prescribed bag and/or possession limits (New South Wales Aboriginal Land Council, sub. DR103).

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<sup>23</sup> For example, Northern Land Council (sub. 39); Federation of Victorian Traditional Owner Corporations (sub. 40); Fisheries Research and Development Corporation Indigenous Reference Group (sub. 57); Recfish West (sub. DR91); New South Wales Aboriginal Land Council (sub. DR103).

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## No explicit allocation for customary fishing in most jurisdictions

Customary catch is expected to be relatively small for most stocks and the absence of an explicit catch allowance for customary fishers in most fisheries is unlikely to compromise sustainability objectives or impede the pursuit of customary fishing. However, where fishing pressure on the resource is more intense (for example, abalone), a better understanding of customary catch is needed and a formal resource allocation to the customary sector may be required to ensure overall catch limits are sustainable and customary fishing practices can be maintained.

Several jurisdictions have, or have proposed, allocation policies that treat customary fishing as a distinct sector. For example:

- The South Australian Government provides a specific allocation for customary use in its fisheries management plans (PIRSA 2011).
- Customary use is given priority in resource sharing decisions in the Northern Territory (DPIF NT 2015a) and will be granted priority under the proposed Western Australian allocation policy (Department of Fisheries (WA), sub. 21).

In these cases, customary catch is not (or will not) be measured and, in general, the allocations are not (or will not be) enforced to restrict customary fishing to the allocated catch limit. The primary purpose of the allocations is to inform the catch limits applied to other sectors.

The lack of data on the levels of customary catch is a major impediment to setting allocations for customary fishers. The 2001 National Survey (Henry and Lyle 2003), which only covered northern Australia for Indigenous fishers, is the most current wide-ranging source of data on customary fishing. Since then, only community-specific studies — such as that undertaken in New South Wales (Schnierer and Egan 2015) and Western Australia (Wright and O’Neill 2013) — have provided further information on species targeted and numbers caught by customary fishers. There is very little information on the total customary catch by species.

## Reform has been slow

The issues introduced above have been identified in reviews dating back to 1986 (ALRC 1986; Borthwick 2012; FRDC 2012; National Native Title Tribunal 2004).

The 2004 *Principles Communiqué* (box 5.5) from all State and the Northern Territory Governments set out several high-level principles for the management of customary fishing. While progress has been made toward the implementation of the communiqué, it has come slowly and the principles are yet to be fully adopted in most jurisdictions.

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### Box 5.5      **The 2004 *Principles Communiqué* on Indigenous Fishing**

Following the 2003 conference on Indigenous fishing rights, all State and the Northern Territory Governments formally endorsed a set of non-binding principles to guide management of Indigenous fishing, known as the 2004 *Principles Communiqué* on Indigenous Fishing.

The principles are:

1. Indigenous people were the first custodians of Australia's marine and freshwater environments: Australia's fisheries and aquatic environment management strategies should respect and accommodate this.
2. Customary fishing is to be defined and incorporated by governments into fisheries management regimes, so as to afford it protection.
3. Customary fishing is fishing in accordance with relevant Indigenous laws and customs for the purpose of satisfying personal, domestic or non-commercial communal needs. Specific frameworks for customary fishing may vary throughout Australia by reference, for example, to marine zones, fish species, Indigenous community locations and traditions or their access to land and water.
4. Recognition of customary fishing will translate, wherever possible, into a share in the overall allocation of sustainable managed fisheries.
5. In the allocation of marine and freshwater resources, the customary sector should be recognised as a sector in its own right, alongside recreational and commercial sectors, ideally within the context of future integrated fisheries management strategies.
6. Governments and other stakeholders will work together to, at minimum, implement assistance strategies to increase Indigenous participation in fisheries-related businesses, including the recreational and charter sectors.

Increased Indigenous participation in fisheries related businesses and fisheries management, together with related vocational development, must be expedited.

*Source:* National Native Title Tribunal (2004).

In 2012, the Fisheries Research and Development Corporation Indigenous Reference Group identified 11 research priorities to assist in integrating Indigenous Australians into fisheries frameworks (Calogeras et al. 2015). Key amongst these is the need to address the lack of information on customary practices, which has to date made it difficult to determine appropriate management.

Ongoing developments in native title case law are likely to have contributed to the slow pace of reform. The influence of both evolving jurisprudence and ongoing native title determinations has created uncertainty over the extent and specific nature of native title rights and interests. As a result, the intersection of native title and fisheries laws is not yet fully settled.

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## Improving the regulation of customary fishing

While presumably well intentioned, the approach of managing customary fishing by effectively excluding it from fisheries management requirements does not deliver satisfactory outcomes. The task of reshaping the regulatory approach to customary fishing requires genuine, and committed, engagement and collaboration with Indigenous Australians (section 5.4). As summarised by the Australian Institute of Aboriginal and Torres Strait Islander Studies:

... [the process of] developing allocations and controls should ... empower ... participants and establish ... a strong partnership between regulators and Indigenous peoples to actively manage fisheries into the future. (sub. DR109, p. 4)

The Commission has sought to identify the key issues and areas for reform, make recommendations in certain priority areas and identify options for other matters where management decisions necessarily need to be made at the local level.

### Better recognise customary fishing

Customary fishing should be explicitly recognised as a sector in its own right in fishery management regimes, thus allowing Indigenous Australians to maintain and practise their customary use of fishery resources.

The definition of customary fishing in fisheries laws should provide for fishing undertaken by Indigenous Australians in accordance with their own laws and customs. As these laws and customs vary across Australia's Indigenous communities, the specific nature of customary fishing that will be permissible (in terms of when, where and how fishing occurs) will vary. It follows that Indigenous communities must have a prominent role in determining the management arrangements for customary fishing within their communities and on their country.

Better recognition of Indigenous customary fishing in fisheries laws should lead to incorporation of fishers' rights, interests and obligations into management regimes, as is the case for other fishing sectors. Clarification of rights should also support better engagement with and participation of Indigenous Australians in fisheries management.

### *Customary fishing should not be limited to native title holders*

It is desirable that customary fishing activity (whether or not pursued in the exercise of native title rights) be recognised in, and counted under, fisheries management regimes for the purposes of prudent management.

There are also equity grounds for not confining the ability to fish for customary purposes solely to native title holders. The Australian Institute of Aboriginal and Torres Strait Islander Studies noted:

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Native title requires very onerous standards of proof, which some Indigenous peoples in Australia may be unable to establish to the satisfaction of the Courts. In other instances, native title has been impacted by extensive settlement and land that can be reclaimed under native title laws may be limited by extinguishment.

For some groups who have been dispossessed from their traditional country, fishing may remain one of the critical methods of maintaining and transmitting cultural knowledge and connecting to Country. ... relying on ‘proven native title rights’ as the basis for determining the scope of customary fishing plans may further disenfranchise those Indigenous peoples most affected by colonisation (sub. DR109, p. 2).

As the value of customary fishing to Indigenous fishers, and to the broader community, exists regardless of the legal means by which a fishery is accessed, the right to fish for customary purposes should not be defined in such terms — that is, the right should not be limited only to native title holders and land rights holders. Rather, the right should recognise all Indigenous Australians with a connection to sea country and a desire to engage in fishing activities in accordance with customary laws.

That said, the construction of a customary fishing right within fisheries laws should not curtail the current (or future) rights and interests of native title holders. This means that, while the recognition of customary fishing (and its attendant rights) under fisheries laws need not be the same as under the Native Title Act, it must not be inconsistent with the Act.

*Providing ‘evidence of right’ to undertake customary fishing may be appropriate*

Because customary fishing may include practices that would violate rules applied to other sectors, it should only be undertaken by those entitled to do so, and in a manner consistent with the relevant Indigenous laws and customs.

The Commission envisages that acknowledged traditional owners would, in most, if not all, cases, determine who can undertake Indigenous customary fishing on their country. Presently, some Aboriginal land councils, representing local Indigenous communities, issue ‘fishing cards’ to provide evidence of customary fishing entitlements (National Native Title Council, sub. DR102). For example, the South West Land and Sea Council in Western Australia issues cards confirming the holder is of Aboriginal and Torres Strait Islander descent, identifies as an Australian Aboriginal or Torres Strait Islander, and is accepted by the community as such. The card notes that the holder must comply with the regulations set out for the fishery including bag limits, closed seasons and legal sizes.

There were mixed views on the part of participants on requiring such evidence of right to undertake customary fishing. The New South Wales Aboriginal Land Council noted that Indigenous fishers are wary of any move to ‘place the onus on Aboriginal peoples to prove “entitlements” to undertake customary fishing’ (sub. DR103, p. 2). In contrast, some other participants did not think it unreasonable to require evidence of a claimed right (Law Council of Australia, sub. DR93).

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The idea of requiring/providing evidence of the right to undertake customary fishing has merit, particularly as a way of quickly resolving questions in contested fisheries or queries put by authorities in enforcing fisheries laws. There is no reason that these permits need to be issued by government, provided fisheries officers are aware of who has authority to issue them. The use of such permits may not be supported in all fisheries. Where it is not, the scope for community conflict over contested resources will be higher.

*Reciprocal relationships should be permitted*

Several participants submitted that fisheries laws should allow traditional owners to permit neighbouring Indigenous communities to fish on their country in accordance with their fishing rules where this is permitted under their laws and customs.<sup>24</sup> Recognising such reciprocal practices would be consistent with recognising customary fishing. Therefore, to the extent that access to fishery resources can be shared with others under the laws and customs of an Indigenous community, they should not be restricted by fisheries authorities.

In practice, such arrangements could be facilitated by a system, such as a permit, by which the guest fisher could affirm to fisheries officers that they have been given permission to fish on their host's land and waters. Fishing cards could be 'endorsed' by the relevant land council or native title prescribed body corporate to permit the holder to fish in a particular area.

*Commercial fishing should be recognised as a part of customary fishing*

Fishery laws mostly limit customary fishing to non-commercial purposes, although the trade and barter of fish is an established part of customary practice for some Indigenous communities (section 5.1). The Commission has been informed that many of today's Indigenous Australians consider commercial fishing as much a part of their traditional practice as fishing for household consumption and, as a result, these purposes can overlap on a single fishing trip and are difficult to separate (Thomassin, sub. DR112). Several participants considered that, following *Akiba*, fisheries laws should recognise this.<sup>25</sup>

Consistent with the Commission's proposal that the definition of customary fishing in fisheries laws should provide for fishing undertaken by Indigenous Australians in accordance with their own laws and customs, governments should permit fishing for commercial purposes where this is consistent with these laws and customs.

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<sup>24</sup> Fisheries Research and Development Corporation Indigenous Reference Group (sub. DR87); Thomassin, (sub. DR112).

<sup>25</sup> Australian Institute of Aboriginal and Torres Strait Islander Studies (sub. DR109); National Native Title Council (sub. DR102).

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#### FINDING 5.1

Most fisheries laws do not recognise the taking of fish for commercial purposes in the rights afforded to customary fishers, although the laws and customs of some Indigenous communities provide for such purposes (in addition to the purposes of satisfying personal, domestic and non-commercial communal needs).

#### RECOMMENDATION 5.1

Fisheries management regimes should recognise Indigenous customary fishing as a sector in its own right.

This recognition should provide for fishing by Indigenous Australians in accordance with the laws and customs of their community (including fishing for commercial purposes, where provided for by these laws and customs).

Customary fishing rights should not be limited to native title holders.

The *Akiba* determination established that native title holders with rights to fish for any purpose are subject to commercial fishing laws if fishing commercially in enjoyment of their native title rights.<sup>26</sup> This gives rise to the question of whether all customary fishing activities with a commercial purpose should be regulated under commercial fishing laws.

Given the incentive to exploit fishery resources for profit, customary fishing for commercial purposes should not be unrestricted. However, the regulation of commercial customary fishing should also recognise that this activity is undertaken for cultural purposes as well as for profit. A balance therefore needs to be struck between preventing over-exploitation and permitting the maintenance of Indigenous customary practice.

Acknowledging that Indigenous customary fishing is regulated in the first instance by relevant community laws and customs, the Commission considers that:

- transactions that have a commercial aspect but are overwhelmingly customary in nature, such as the small-scale sale, barter or exchange of fish, should not be subject to commercial fishing laws and should be solely regulated in accordance with laws governing customary fishing
- significant or large-scale commercial transactions should be regulated by commercial fishing laws. Significance should be determined by reference to matters including, but not necessarily limited to, the quantity and value of catch sold and/or the nature of trade. Any sale of fish into conventional supply/processing chains, for example, should be subject to commercial fishing laws.

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<sup>26</sup> *Akiba on behalf of the Torres Strait Islanders of the Regional Seas Claim Group v State of Queensland* (No 2) (2010) FCA 643 at 16.

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The thresholds at which the trade of fish is deemed to be significant should be set by governments in collaboration with Indigenous communities and other stakeholders, recognising that what may be required to preserve customs will be particular to each community.

#### RECOMMENDATION 5.2

Indigenous customary fishing for commercial purposes that is: i) significant in terms of the quantity and/or value of fish sold, bartered or exchanged, and/or ii) sold into conventional supply or processing chains should be regulated by the commercial fishing laws applying to all other citizens.

The specific thresholds at which the trade of fish is deemed to be significant should be set by governments in collaboration with relevant Indigenous communities and other stakeholders.

Some of the arguments presented in favour of including commercial fishing within the scope of customary fishing focused on the opportunity it could provide for economic development (for example, National Native Title Council, sub. DR102). This is a different policy objective to acknowledging the rights and interests of Indigenous Australians, and is considered in section 5.5.

### Allocating fishery resources to the customary fishing sector

Where there is competition for the resource and a limit on overall catch, a key aspect of fisheries management is allocating the total allowable catch across fishing sectors and managing fishing activity so as to ensure compliance with those allocations (chapter 2). Fisheries managers require information on the extent of customary fishing (including fishing under native title rights) to inform this process. Specifically, decision makers need to understand how much catch is required to meet the customary needs of Indigenous communities, and to have a reasonable estimate of fish mortalities from all sectors in order to set catch allocations that will not breach the total allowable catch.

#### *Principles of allocation*

As discussed in chapter 2, the allocation or reallocation of fisheries resources should be based on the principle of maximising the benefits of access (both monetary and non-monetary) over time. In principle, determining an allocation to customary fishers should be based on comparing the benefits arising from customary fishing with the benefits arising from use by competing sectors.

This approach is, however, difficult to apply in practice as customary fishing has cultural dimensions that make its value very difficult (if not impossible) to quantify. Indigenous customary fishing has values associated with connection to country and community that

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would not necessarily be well captured by a ‘willingness to pay’ measure for each individual. To the extent that customary fishing practices preserve unique traditions, they are also not replaceable. For these reasons, it is not feasible to allocate catch shares to the customary fishing sector based on a measurement of its relative value. Rather, a minimum acceptable level of access is required.

### *The Commission’s proposed approach*

The Commission proposes that governments set aside a level of catch for customary fishers before making allocations to other sectors. This would, in practice, accord priority to Indigenous customary fishers. The level of catch set aside should be sufficient for local Indigenous communities to maintain their customs. It should be informed by advice from the relevant communities and data collected on customary practices and use.

Customary fishing, as for other sectors, should be subject to overarching fishery management goals, including the sustainable utilisation of fish stocks. As such, allocations to the Indigenous customary sector should be binding and not exceed the limits required to meet policy aims. Sustainable use of the resource will, of course, help to secure customary activities over time.

The Commission prefers that Indigenous communities determine how, and to whom within their community, access to the customary allocation for each fishery is granted. This relies on structures and processes for determining who can rightfully take from that allocation and resolving any disputed claims or concerns arising from decisions. The use of ‘fishing cards’ is one way of proving and enforcing entitlement, and may be particularly useful in high-demand fisheries. But Indigenous communities may have other arrangements, reflecting their management of fisheries for many years. Fisheries managers should have no involvement in the process unless specific concerns cannot be addressed by the community and are threatening broader fisheries management objectives, or if managers are invited to help resolve them.

The notion of giving priority to customary fishing has been raised in several previous studies, including the Australian Law Reform Commission’s ‘Recognition of Aboriginal Customary Laws’ review (1986) and the draft Western Australia Aboriginal Fishing Strategy (Franklyn 2003). It is an approach taken with overseas indigenous populations, including in Canada (Fisheries and Oceans Canada 2012), Alaska (Alaska Department of Fish and Game 2016b) and in New Zealand (where priority is shared with recreational fishers) (MPI NZ 2016a). Inquiry participants from other sectors have also supported priority for the Indigenous customary sector (for example, Recfish West, sub. DR91), although in some cases they do not support the inclusion of customary fishing for commercial purposes in a priority allocation (Commonwealth Fisheries Association, sub. DR85).

The customary allocation should not be tradeable or transferrable to other fishing sectors, recognising that the associated cultural benefits are unique to customary fishers and their

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communities. This also effectively means that the customary allocation will be excluded from any inter-sectoral trading systems (chapter 2).

### *Determining the allocation to the customary sector*

The allocation to the customary fishing sector should reflect the nature of fishing provided for by customary fishing rights. This means that allocations will vary across jurisdictions (and, where relevant, communities). It also means that, where small-scale commercial fishing activity is permitted, the priority allocation will extend to those activities.<sup>27</sup>

Unlike other sectors, the allocation for the customary sector should be set at a level, rather than a share, of resources, reflecting an amount that would meet cultural requirements.

Allocations to customary fishers need to be established in collaboration with Indigenous communities and fishers. It will require information on customary activities and catch requirements. Over time, information should be collected on actual customary catch to better inform decisions. Good-faith engagement by fisheries managers with customary fishers will be required along with preparedness by customary fishers to share information — in other words, genuine collaboration.

The Commission understands that customary fishing comprises a small part of the total catch in many (but not all) fisheries. Providing a priority allocation that covers customary use by the local Indigenous community would therefore not materially affect allocations to other sectors in most cases. It should be recognised in making any initial allocation that it is not a ‘new’ allocation, considering Indigenous Australians have been fishing in such a way for a considerable period of time.

That said, the proposed granting of priority to customary take will likely be more contentious in fisheries where there is a high level of competition for a stock (typically for higher value species) and where customary fishing is a larger share of fishing activity. In these cases, fisheries managers should, where possible, calibrate the customary allocation in collaboration with all sectors.

To the (likely limited) extent that establishing priority allocation to Indigenous customary fishers involves a reduction in allocation to other sectors, consideration may need to be given to the impact on the value of existing rights and whether transitional arrangements and/or compensation may be required. Such principles should be considered as part of any allocation policy (chapter 2).

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<sup>27</sup> Where commercial activities are significant enough to be subject to general commercial fishing laws, they would instead be subject to the commercial allocation.

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### *Adjusting allocations over time*

The Commission envisages that any allocation to the customary sector would change significantly only when there are structural shifts to supply or demand. This would include (but not be limited to) circumstances where there is a significant threat to the sustainability of the fish stock or a change in cultural requirements for Indigenous communities due to significant population increase or decrease.

In a scenario where a fish stock is significantly reduced or at risk of being overfished, fisheries managers may need to reduce the overall catch to ensure sustainability. While priority for the customary sector means their allocation should be maintained where possible, there may be times when their allocation needs to be reduced. In such circumstances, agreement should be sought between customary fishers and fisheries managers on changes to the customary allocation and any accompanying controls on fishing effort. Ideally, changes to limits and controls would be designed and enforced in collaboration with Indigenous communities, incorporating relevant Indigenous customary management practices. The agreed approach should be determined in advance of a stock becoming threatened, and documented in the harvest strategy for the relevant fishery (or fisheries).

In extreme circumstances, a total ban on fishing may be required; for example, following a natural disaster. Where applied to all other sectors, a ban should (conceptually) also apply to customary fishers, including those fishing under native title rights. Where possible, such a ban should only be applied with agreement from affected customary fishers with the need for the ban clearly communicated. Any proposed ban needs to be mindful of the rights and interests of, and protections for, native title holders under the Native Title Act.

The process of adjusting allocations should be transparent, based on clear decision criteria and, as with any regulatory change, be made in consultation with all affected fishers.

### *Poor data constraining allocation processes*

A major weakness in current decision-making processes is the lack of information on customary fishing. The Fisheries Research and Development Corporation is currently funding a number of projects to overcome information gaps (Calogeras et al. 2015), but this research is not necessarily designed to inform an allocation process.

Customary fishers are generally not included in recreational fishing surveys, as significant differences in community structure necessitate specialised data collection techniques (Georgeson et al. 2015). A community-level collaborative research methodology is considered best practice (Schnierer 2011). Such approaches are informative but difficult to standardise across communities. Crucially, community-level research must be culturally sensitive, and requires 'buy in' from the communities, particularly if surveyors represent government. Data collection is contingent on trust, and governments must be transparent

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about how any collected data will be used. There may also be scope for land councils to help with data collection.

The interim solution, used by most jurisdictions with allocation policies, is to estimate a nominal level of catch for customary fishers with a positive margin for error and revise this as more information becomes available. Over the medium term, information on customary practices and demand of each Indigenous community should underpin allocations for customary fishing.

**RECOMMENDATION 5.3**

Where there is a need for resource sharing arrangements, governments should set aside a level of catch for local Indigenous communities that is sufficient to maintain their customs before allocating access to other sectors.

The level of catch should be agreed between Indigenous customary fishers and fisheries managers, but should be subject to overarching fishery management goals, including the sustainable utilisation of fish stocks.

### Controls on customary fishing

Customary fishing is regulated in the first instance by Indigenous laws and customs (section 5.2). Where the fishery is not subject to a higher level of inter-sectoral competition for catch and an Indigenous community has a system for enforcing its laws and customs, that community may be best placed to determine, and ensure compliance with, controls over customary fishing. Fisheries managers can be guided by co-management principles (box 10.4, chapter 10) in making such decisions.

In other circumstances, conservation and public interest considerations (such as community safety) may necessitate fishing controls (such as gear restrictions) in addition to those required under Indigenous laws and customs. To ensure that controls over customary activities are culturally sensitive and do not infringe on native title rights, it is important any such controls are developed by agreement with Indigenous communities.

**RECOMMENDATION 5.4**

In designing laws consistent with the recommendations in this report, any controls over Indigenous customary fishing activities should be developed, implemented and enforced in collaboration with Indigenous communities.

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## 5.4 Involving Indigenous Australians in fisheries management

The degree to which governments involve Indigenous Australians in the management of fisheries varies. In some jurisdictions, such as New South Wales and the Northern Territory, Indigenous Australians are involved through bodies such as advisory councils and consultative committees — although the success of existing processes has been questioned in both jurisdictions (Northern Land Council, sub. DR101; New South Wales Aboriginal Land Council, sub. DR103). In other jurisdictions, there appears to be no clear processes or bodies in place to ensure consultation with Indigenous Australians on fisheries management (Wright and O’Neill 2013).

A number of participants considered that existing engagement is inadequate, and many Indigenous Australians are unable to participate in the design and implementation of fisheries regulations.<sup>28</sup> While Indigenous Australians may be consulted on management decisions, ‘frameworks for community engagement toward consent and decision making processes remain strikingly absent’ (Northern Land Council, sub. 39, p. 7).

Participants also indicated that Indigenous Australians find it difficult to engage in fisheries management.<sup>29</sup> There were numerous reasons put for this difficulty, but many considered the lack of recognised representative bodies, capable of advocating for Indigenous fishing on behalf of diverse and dispersed Indigenous stakeholders, to be a key issue.

Although concern about the effectiveness of consultation and stakeholder engagement is shared across all jurisdictions and all fishing sectors (chapter 10), there are particular concerns in relation to arrangements involving Indigenous Australians, including that:

- traditional owners are not given a say in who can fish on their country (Centre for Aboriginal Economic Policy Research, sub. DR107)
- self-regulation of customary fishing through Indigenous law and custom is not acknowledged by governments (New South Wales Aboriginal Land Council, sub. DR103)
- there are few systems in place to formally recognise the traditional fishing knowledge and management practices of Indigenous Australians by fisheries authorities (Northern Land Council, sub. 39; Fisheries Research and Development Corporation Indigenous Reference Group, sub. 57).

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<sup>28</sup> For example, Northern Land Council (sub. 39 and sub. DR101); Federation of Victorian Traditional Owner Corporations (sub. 40); Thomassin (sub. DR112).

<sup>29</sup> For example, Federation of Victorian Traditional Owner Corporations (sub. 40); Northern Land Council (sub. DR101); New South Wales Aboriginal Land Council (sub. DR103).

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## Engaging with Indigenous Australians

The mode of engaging with a stakeholder group needs to be appropriate to the management decision under consideration. As outlined in chapter 10, different approaches have strengths and weakness depending upon the circumstances and the decision to be made.

For some management decisions engagement needs to occur at the level of the individual community, whereas for other decisions communities may be represented by a separate body. Where the representative structures are not in place or are insufficiently resourced to provide the desired input into management processes, there are options available to governments to help develop the capacity of these representative bodies. For example, the Australian Fisheries Management Authority has seconded liaison officers to work with (and in) peak bodies to build capacity and capability (section 10.1, chapter 10).

### Applying traditional knowledge in fisheries management

The self-management of customary fishing activities under Indigenous law and customs is one way in which traditional knowledge can be applied in the management of fisheries. Improved engagement with Indigenous Australians should allow for their traditional knowledge to be considered in management decisions. Ongoing initiatives of jurisdictions, such as South Australia and Western Australia, to promote co-management initiatives (chapter 10) should also provide scope for Indigenous Australians to become more directly involved in the management of fisheries.

The Great Barrier Reef Marine Park's TUMRAs (section 5.2) provide a model for Indigenous involvement that is supported by some (Law Council of Australia, sub. 93). While TUMRAs are more formal arrangements and are time consuming to negotiate, they have the benefit of being developed in direct consultation with the affected community and can provide for Indigenous Australians to apply their own management practices on their activities, while ensuring overall catch limits are adhered to (Dobbs 2007). TUMRAs are also not limited to native title claimants and holders, unlike ILUAs.

### *Indigenous rangers*

Indigenous ranger programs provide an established means to provide culturally-appropriate management and apply traditional knowledge (box 5.6). Feedback to the inquiry was highly supportive of ranger programs, especially the wider social benefits they can provide.<sup>30</sup>

Presently, however, ranger programs do not appear to be well integrated with fisheries management. There is scope for fisheries authorities to better leverage this existing

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<sup>30</sup> For example, Northern Land Council (sub. DR101); National Native Title Council, (sub. DR102); Australian Institute of Aboriginal and Torres Strait Islander Studies (sub. DR109).

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program. For example, a ranger’s knowledge of local laws and customs could be applied in ‘policing’ customary fishing as well as being applied in an educative role to further develop customary fishing. Experience indicates that, to be successful, funding for ranger programs needs to be ongoing and programs benefit from additional support to build the capacity of ranger groups (Synergies Economic Consulting 2015).

**Box 5.6 Indigenous ranger programs**

The Australian Government’s ‘Working on Country’ program currently funds around 770 full-time Indigenous ranger positions. Ranger groups undertake environmental work over their country, including protected species conservation, as well as the management of cultural sites and transfer of traditional knowledge. The social benefits for remote Indigenous communities are considerable, including better health outcomes and improved connection to country. Demand for ranger jobs is currently outstripping availability. Queensland, Western Australia and the Northern Territory also operate their own ranger programs.

Indigenous ranger programs are important for maintaining and incorporating Indigenous knowledge into resource management, as well as helping ensure management controls are culturally-sensitive. However, few ranger programs currently incorporate fisheries management. Some groups in the Northern Territory sea ranger program have roles that specifically address fisheries issues, such as fish population reporting. Some rangers have also been given limited enforcement powers.

*Sources:* Northern Territory Government (2011); Synergies Economic Consulting (2015).

## **5.5 Participation of Indigenous Australians in commercial fishing**

A number of participants have raised concerns about the small number of Indigenous Australians engaged in commercial fishing and suggested that governments should be more active in promoting involvement.<sup>31</sup> More generally, commercial fishing is seen to provide an opportunity for employment, income and economic development for Indigenous Australians while also providing an opportunity to maintain an attachment to country.

The economic development of Indigenous communities is affected by a large range of factors, most of which lie outside the scope of this inquiry. To the extent that commercial fishing opportunities provide an optimal way of supporting development goals, it would likely only be one part of any policy and applicable in particular circumstances.

This section sets out some considerations in relation to promoting development through commercial fishing opportunities, drawing on the experiences of other countries.

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<sup>31</sup> For example, Northern Land Council (sub. 39); Federation of Victorian Traditional Owner Corporations (sub. 40); National Native Title Council (sub. DR102).

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## **Barriers to participation**

Several participants considered that Indigenous Australians find it difficult to get involved in commercial fishing due to difficulties in engaging meaningfully with fisheries management regimes (discussed above), as well as the difficulties and costs associated with obtaining commercial quota or fishing rights, and subsequently developing a viable enterprise (Torres Strait Regional Authority, sub. 9; Federation of Victorian Traditional Owner Corporations, sub. 40).

Access is not the only prerequisite to developing a viable commercial fishing enterprise. Other requirements include access to appropriate skills, infrastructure and financial capital including that necessary to purchase and maintain boats and gear. These challenges are not confined to Indigenous fishers and communities (chapter 3).

The nature of modern commercial fishing is not always amenable to Indigenous fishers fishing in accordance with their laws and customs. Cultural obligations may dictate catch sharing and so not all fish caught ‘commercially’ may be sold (Schnierer and Egan 2012, p. 57). However, the fixed costs (such as fees) faced by Indigenous commercial fishers do not recognise this, which can affect the profitability, if not the viability, of the enterprise.

Some participants view the current regulation of commercial fishing as being poorly suited to the way Indigenous Australians fish. Past reductions of commercial fishing effort have been described as ‘exclusionary’ for Indigenous fishers (Australian Institute of Aboriginal and Torres Strait Islander Studies, sub. DR109). For example, Indigenous Australians fishing in multiple fisheries at different times of the year, in accordance with custom, may become ineligible to maintain their fishing rights under some structural adjustment schemes (Schnierer and Egan 2012).

Aquaculture is considered by some to be an avenue for Indigenous engagement in commercial activities, as access rights are not constrained as much as in marine fisheries. However, aquaculture ventures have their own challenges, requiring, among other things, specialist technical skills, access to suitable sites and infrastructure and resources for ongoing investment in nutrition, fish and marine health and genetics (chapter 8).

## **How some overseas jurisdictions have encouraged participation of indigenous people in commercial fishing**

In other countries with a similar historical background to Australia, commercial fishing by indigenous people occurs via a combination of legal rights and supportive government policy. In acknowledging their respective indigenous peoples and the role that commercial fishing can play in their economic development, Canada and New Zealand both have policies aimed at encouraging participation in commercial fishing.

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## Canada

The right of Aboriginal peoples in Canada to maintain their traditional access to fisheries is constitutionally recognised. This right can extend to commercial purposes if a community can prove commercial fishing was a ‘defining and central feature of their society prior to European contact’ (Durette 2007, pp. 3–4).

The relationship between Aboriginal peoples and the government is more structured in Canada compared to Australia. The Canadian Government has treaties in place with most Aboriginal groups — some of which define fishing rights, such as the Nisga’a Treaty in British Columbia (Nisga’a Tribal Council 1998). These treaties influence a range of government policies.

The Canadian Government’s Aboriginal fishing strategy facilitates engagement of Aboriginal people in commercial fishing through a number of programs (Fisheries and Oceans Canada 2012). For example, the Allocation Transfer Program includes a voluntary buyback of commercial fishing quota by the Canadian Government. This quota is allocated on a communal basis for commercial use by Aboriginal groups. Total effort in each fishery is thus unchanged and sustainability objectives are not impaired.

## New Zealand

Maori commercial fishing rights were secured by the *Treaty of Waitangi Fisheries Agreement Act 1992*. The Act settled all Maori commercial fishing claims, replacing them with access rights provided by the Act (Durette 2007). Under the Act, 20 per cent of commercial quota for newly developed fisheries is set aside for Maori commercial fishing. The New Zealand Government also funded Maori to buy out the privately-owned Sealord (New Zealand’s largest fishing company) and attain its commercial quota. As Maori authorities, companies holding fishing quota on behalf of Maori benefit from preferential tax rates compared with non-Maori organisations (New Zealand Inland Revenue 2011).

Maori now hold about half of New Zealand’s commercial fishing quota (Inns 2013). While obtaining quota has provided wealth and a source of income it has not, on its own, led to a commensurate increase in Maori employment in commercial fishing, with Maori making up less than a quarter of those employed in the fishing industry (Nana 2014).

## Policy considerations

There are a number of ways in which Australian governments could promote commercial fishing by Indigenous Australians. Any policy initiative to do so through the reallocation or setting aside of fisheries resources will, however, be at the cost of access by other fishers.

More fundamentally, experience in Australia has demonstrated that policy initiatives aimed at creating development and employment opportunities for Indigenous communities often

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fail because they do not incorporate the broader prerequisites for success. These include closely involving the community in designing and implementing initiatives, as well as investing in education, training and broader capacity-building. In other words, access to a fishery is only likely to generate positive and sustainable economic benefits and employment for an Indigenous community (presuming that this is indeed the best way of encouraging economic development) if it is part of a broader, multifaceted strategy in which the community is actively involved.

### Government purchase of commercial quota

Governments could purchase ordinary commercial quota in the open market and assign it to Indigenous fishers. This approach would bring Indigenous fishers into the commercial fishing framework.

In addition to the financial costs to government, a key consideration would be determining how to assign the quota from a fishery. Quota could be granted to individual fishers or an agreement could be made with a recognised Indigenous organisation to assign quota. For example, under the draft *Tropical Rock Lobster Management Plan*, the Torres Strait Regional Authority will initially hold the Indigenous-only quota in trust and determine how it is assigned (AFMA 2016e).

A community-quota approach could assist the development of commercial enterprises as aggregating quota would assist in creating economies of scale and provide more flexibility to fishers. Assigning quota to a community, rather than an individual, would allow the community itself to determine who is permitted to fish the quota and when.

Assigning rights at the community level has been somewhat successful in Canada. Canada's experience suggests this model requires (at a minimum) representative groups that can effectively engage with fishery authorities and consensus within the community on how the entitlement should be used.

### Indigenous-only commercial licences or quota

A related option is to assign Indigenous individuals or communities commercial quota which is only available for Indigenous fishers, or has special conditions attached. The considerations are similar to the previous option, but with the condition that once quota is obtained by an Indigenous operator, it cannot be converted back into general quota. This is the approach applied in the Torres Strait through Traditional Inhabitant Boat licences (box 5.2), where it has contributed to the transfer of licence ownership to traditional owners.

Queensland, Western Australia and the Northern Territory currently offer specialised Indigenous commercial licences. While the details differ, these licences permit an Indigenous fisher to sell their catch, up to a certain limit, in specified species (generally

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those without significant resource pressure). However, these licences are usually subject to a number of restrictive conditions and have not been widely taken up.

Indigenous-only licensing would progress a fishery towards higher Indigenous participation by restricting access for non-Indigenous participants. As experience shows, the restrictions attached to any Indigenous-only licence require careful consideration. Further, a possible (and rational) response to obtaining quota would be for quota-holders to lease the entitlement to other fishers. New Zealand's experience shows that leasing quota could provide income but may not necessarily improve employment outcomes.

A related approach is to designate Indigenous-only commercial fisheries in areas where there is a longstanding traditional connection and limited overlap with other users. The best example is the trochus fishery in One Arm Point, Western Australia, which is operated and managed by the native title holders of the area (WAFIC nd). Jurisdictions could work to identify other opportunities for such arrangements.

### Promoting Indigenous involvement in aquaculture

As noted, aquaculture has been promoted by some as an alternative option. Joint ventures are one way of potentially promoting viable developments (box 5.7).

#### **Box 5.7      The Aarli Mayi aquaculture project**

The Aarli Mayi aquaculture project is a proposed joint venture in the Kimberley region of Western Australia. During 2016, the project was allocated a 5000 tonne a year finfish quota and an aquaculture leasehold of 369 hectares.

One of the goals of the project is to create regional employment and financial benefits for the traditional owners. Ownership is divided between three traditional owner groups, who own 75 per cent of shares, and the privately-owned Maxima Opportunity Group, which owns the remaining 25 per cent. The Maxima Opportunity group has local experience in commercial fishing and is providing business development expertise.

*Sources:* Maxima Opportunity Group (2015), Maxima Opportunity / Aarli Maya Aquaculture Pty Limited, trans., p. 171-174.

Previous attempts to improve the participation of Indigenous Australians in aquaculture have not been successful. The 2001 National Indigenous Aquaculture Strategy, which itself had limited effect, attributed past poor outcomes in Indigenous aquaculture ventures to 'inadequate planning, support and training processes' for Indigenous communities (Lee and Nel 2001, p. 14).

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Any government strategy would therefore need to meaningfully help Indigenous participants overcome these technical barriers. Under the Aboriginal Aquaculture in Canada Initiative, the Canadian Government provides targeted funding for proposed aquaculture projects in the development of business expertise (Fisheries and Oceans Canada 2014).

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## 6 Fisheries spanning jurisdictions

### Key points

- Australia has many marine fisheries that span Commonwealth, State and/or Northern Territory waters. Some of these are managed according to jurisdictional borders, rather than as a single fishery, resulting in multiple management systems for those fisheries.
- Managing fisheries according to jurisdictional borders can create adverse consequences including: additional administrative and compliance costs, unequal treatment of fishers, constraints on productivity growth, high levels of waste through discarding of fish, and sub-optimal management of both target stocks and bycatch.
  - These adverse consequences are likely to increase for fisheries where the movement and composition of stocks are affected by climate change and for Commonwealth fisheries that are subject to increasing fishing by recreational fishers.
- Not all fisheries spanning borders appear to be problematic, with many arrangements not attracting stakeholder concern. However, the management of 26 stocks has been identified as concerning due to duplicated or inconsistent arrangements. Of these, the degree and nature of detriment varies widely.
- The cost of transferring management of a single stock to one jurisdiction can be significant and, along with a lack of priority being accorded to reform by governments, has resulted in longstanding problems not being addressed. Given limited resources, governments should:
  - focus on higher value and at-risk fish stocks that are subject to inconsistent management arrangements, and hence vulnerable to significant cost escalation or diminution in value if poor management arrangements continue. Stocks in this category include southern bluefin tuna, the east coast snapper stock and stocks within the Commonwealth/New South Wales trawl fisheries.
  - consider whether the transfer of management responsibility to one jurisdiction or better alignment of management arrangements with continued shared management would produce the greatest net benefits.
- The costs and risks of shared management of fish stocks will be reduced if governments adopt known best practice approaches to core fisheries management tasks (such as adopting harvest strategies) and routinely seek to implement reciprocal or consistent arrangements in relation to matters such as catch controls, controls over fishing methods and data collection.
  - As in the past, reforms will falter if governments do not make reform of cross-jurisdictional fisheries arrangements a collective priority. Governments should also issue joint reform strategies for, and regularly review, the management arrangements for cross-jurisdictional fisheries.

Australia has many marine fisheries that span Commonwealth, State and/or Northern Territory waters. Some of these are managed according to jurisdictional borders

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(‘cross-jurisdictional fisheries’) resulting in multiple management systems for those fisheries.

Multiple regulatory systems add to the cost of managing a cross-jurisdictional fishery. Further, where the rules of those systems are inconsistent or do not sufficiently take each other into account, there are higher risks of over- and under- fishing, unequal treatment of fishers, higher compliance costs and administrative inefficiency. Problems with a number of cross-jurisdictional fisheries have been recognised for many years, but reform in this area has generally been limited. This chapter considers how cross-jurisdictional fisheries in Australia are managed and reform options and priorities.

## 6.1 Basis of jurisdictional responsibility

The legal basis for jurisdiction over Australia’s offshore waters has evolved over time to become defined by an agreement between the Australian, State and the Northern Territory Governments known as the Offshore Constitutional Settlement (OCS — box 6.1). In essence, the OCS provides:

- the States and Northern Territory with legislative powers and title over waters and the seabed up to three nautical miles from the low water mark (referred to as ‘coastal waters’)<sup>32</sup>
- the Commonwealth responsibility from the three nautical mile mark to the edge of the Australian Fishing Zone (AFZ), which extends to 200 nautical miles offshore.

These jurisdiction boundaries apply to all marine uses and activities, including fishing, marine parks and offshore petroleum exploration (as well as matters such as crimes at sea). The boundaries were agreed by the jurisdictions and given effect through a package of legislation passed by the Australian, State and Northern Territory Governments. Hence, it is unlikely that the OCS will change unless all jurisdictions agree that there are sufficient problems (or foregone opportunities) to warrant such a reform.

Because recreational fishing and customary fishing historically have taken place closer to the shoreline, only the States and Northern Territory regulate those activities including within the Commonwealth waters adjacent to their respective coasts. (Further background on responsibility for recreational fishing is contained in chapter 4; chapter 5 covers customary fishing.)

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<sup>32</sup> There are some cases where coastal waters extend beyond the three nautical mile limit — for example, the Gulf of St Vincent and Spencer Gulf are deemed to be South Australian waters.

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### Box 6.1      **How the Offshore Constitutional Settlement came to be**

The Australian Constitution does not directly address jurisdiction over Australia's offshore waters. The question of jurisdiction came into sharp focus in the 1960s when the Australian Government sought to reconcile its powers under the Constitution with its obligations under international law.

The Australian Government claimed sovereignty over all offshore waters from the low water mark with the passage of the *Seas and Submerged Lands Act 1973* (Cth). The purpose of the Act was, in part, to give effect to provisions contained in international treaties (the *Convention on the Territorial Sea and Contiguous Zone* (1958) and the *Convention on the Continental Shelf* (1958)) to which Australia became signatory in 1963. The Seas and Submerged Lands Act was unsuccessfully challenged by the States in 1975 with the High Court finding that the legislation was a valid use of the Australian Government's external affairs power (s. 51 (xxix) of the Constitution).

Following a change in the Australian Government in 1975, the Australian, State and Northern Territory Governments commenced negotiations over the jurisdiction for offshore waters. An intergovernmental agreement on the matter, known as the Offshore Constitutional Settlement (OCS), was reached in 1979.

Recognising that the OCS would not negate the need for further negotiation on jurisdictional responsibility over marine waters, the final section of the OCS directs that:

When the Commonwealth and States are each concerned with the same matter, they should channel that concern into paths of cooperation ... The offshore arrangements have *laid the basis* [Commission emphasis] for a permanent workable and beneficial solution of problems that have beset the nation for a decade or more. (1980, p. 17)

The jurisdictional boundaries agreed in the OCS align with those assumed for the management of fisheries prior to the passage of the Seas and Submerged Lands Act. So, in effect, the OCS formalised the prior arrangements that assumed State territorial limits to be three nautical miles from the low water mark. The OCS was given full effect from February 1983 through Commonwealth and enabling State and Territory legislation.

*Sources: Bonser v La Macchia* (1969) 122 CLR 177; *New South Wales v the Commonwealth* (1976) 135 CLR 337; *Port MacDonnell Professional Fishermens' Association v South Australia* (1989) 168 CLR 340; *Gullet* (2008, 2009); *National Oceans Office* (2002); *White* (2009).

A number of formal arrangements have been established to manage fisheries spanning jurisdictional boundaries. These include 59 OCS fisheries arrangements between the Australian Government and different State/Northern Territory Governments (box 6.2), three joint authorities, and a Protected Zone Joint Authority for the Torres Strait (details of the Protected Zone Joint Authority are contained in chapter 5). There are also a number of informal arrangements between jurisdictions on specific aspects of fisheries management, such as research and stock assessment methods.<sup>33</sup>

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<sup>33</sup> There are few formal agreements between the States/Northern Territory for the management of cross-jurisdictional fisheries. One such agreement is the 2006 Memorandum of Understanding between Western Australia and the Northern Territory to promote the consistent management of the South Sea Pearl industry.

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## Box 6.2 OCS fisheries arrangements

The Offshore Constitutional Settlement (OCS) provides that the Australian Government may make agreements with the State and/or Northern Territory Governments in relation to fisheries. These agreements are known as 'OCS fisheries arrangements'. Under these arrangements, the jurisdictional boundaries prescribed under the OCS can be varied to better conform to the span of a given fishery (or fisheries).

Mirror provisions within the fisheries legislation of the jurisdictions give their respective Ministers the power to enter into OCS fisheries arrangements and then give legal effect to those arrangements. The validity of OCS fisheries arrangements has been upheld by the High Court (*Port MacDonnell Professional Fishermens' Association v South Australia* (1989) 168 CLR 340).

Not all fisheries spanning the waters of the Commonwealth and a State/Northern Territory (as defined in the OCS) are subject to an OCS fisheries arrangement. Where there is no such arrangement, jurisdiction over the fishery defaults to the State/Northern Territory within their waters and the Commonwealth within its waters.

In addition to these arrangements, jurisdictions co-operate by jointly undertaking tasks or sharing services. For example, Queensland provides logbook services to the Australian Fisheries Management Authority (AFMA) for the aquarium sector in the Coral Sea Fishery and AFMA provides vessel monitoring system services for Victoria, Queensland and South Australia, as well as observer services for a New South Wales fishery (AFMA, sub. 50).

## OCS fisheries arrangements

In their early conception, OCS fisheries arrangements were to improve the management of cross-jurisdictional fisheries by having such fisheries operate under a single law, a single set of management rules and a single licensing regime. From the first OCS fisheries arrangement, however, the 'single jurisdiction' model has not always been followed. The first arrangement was for the Bass Strait Scallop Fishery in 1986, where jurisdiction was shared between the Commonwealth — which was given responsibility for the central portion of Bass Strait — and Tasmania and Victoria, which were given responsibility for areas within 20 nautical miles of their respective coasts. This arrangement remains in effect today.

The 1991 OCS fisheries arrangements between the Australian and New South Wales Governments, and 2006 amendments to the *Fisheries Management Act 1991* (Cth) marked further moves away from the single jurisdiction model. New South Wales' 18 OCS fisheries arrangements all involve shared jurisdiction with the Commonwealth over a number of stocks. The 2006 amendments provided for a fishery to be managed according to the laws of different jurisdictions in different areas provided those areas do not overlap — that is, the amendments explicitly provided for the shared management of a single fishery.

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At least 29 of the current 59 OCS fisheries arrangements place the management of fisheries or fish stocks with two or more jurisdictions.

### Construction and focus of OCS fisheries arrangements

OCS fisheries arrangements set out the physical area, fishing method(s) and the species or group of species to which the arrangement applies. They also specify whether it is the State/Northern Territory, Commonwealth or a joint authority that is responsible for all or specific aspects of the fishery. The arrangements deal with the question of jurisdiction only. They do not, for example, set out the basis for sharing access between different fishing activities or set out the management arrangements for fisheries.

OCS fisheries arrangements typically apply to commercial fishing only. This reflects the historical focus of regulators on commercial fishers and predominance of commercial fishers in Commonwealth waters.

### Memoranda of understanding

The Victorian, South Australian and Tasmanian Governments each have an overarching Memorandum of Understanding (MoU) with the Australian Government (and AFMA) to guide the operation of their OCS fisheries arrangements. There are no MoUs between the New South Wales and Australian Governments, despite their considerable shared jurisdiction and 18 OCS fisheries arrangements.

The extent of shared jurisdiction with the Commonwealth is not as great for Queensland, Western Australia and the Northern Territory, and these jurisdictions do not have overarching MoUs. Rather, MoUs cover specific major areas of potential overlap — namely, the management of tuna (and tuna-like species) and the Northern Prawn Fishery.

Both the overarching and specific MoUs seek to promote cooperation between jurisdictions. Examples of provisions promoting better practice include:

- the timely sharing of data and research on both target species and bycatch
- the coordination of catch and bycatch policies for those instances where a species is targeted by fishers in more than one jurisdiction or targeted in one jurisdiction but incidentally caught in another
- commitments to establish a global total allowable catch (TAC) for a shared stock and a process for allocation of the TAC across jurisdictions
- commitments to establish arrangements to ensure each jurisdiction remains within its allocated catch limit
- regular meetings to discuss the management of shared, adjoining and overlapping fisheries.

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## Joint authorities

The OCS provides for the establishment of ‘joint authorities’ to manage fisheries that span jurisdictional boundaries. A joint authority comprises the Ministers responsible for fisheries from the Commonwealth and the State/Northern Territory (as applicable). Collectively, the Ministers oversee the strategic direction of the fishery. Day-to-day management is undertaken by the nominated jurisdiction according to its fisheries laws thereby providing for a fishery to be managed by a single authority according to one set of management rules and one licensing requirement.

At the time the OCS was agreed it was expected that joint authorities would play a meaningful role in the management of fisheries. But, as at December 2016, only three fisheries joint authorities were operating pursuant to OCS fisheries arrangements: the Queensland Fisheries Joint Authority, Northern Territory Fisheries Joint Authority and the Western Australian Fisheries Joint Authority.

Joint authorities have not been a favoured management arrangement for fisheries spanning borders because they ‘tend to be administratively cumbersome and ... perpetuate the problem of divided responsibility’ (DPIE 1989, p. 54). In a recent review of Queensland’s fishery management arrangements, MRAG Asia Pacific noted that ‘[i]n an era of small and more cost efficient government it is hard to see where the [Queensland Fisheries Joint Authority] adds value to a fishery that is primarily managed by Queensland’ (2014, p. 105). That the OCS provides for the Commonwealth’s view to prevail in the event of any disagreement within the joint authority is likely to have reduced the appeal of this model to other jurisdictions.

AFMA (2016g) has indicated that it will disband the three joint authorities and replace each with a single jurisdiction management structure as a ‘red tape reduction initiative’.

## 6.2 Problems in cross-jurisdictional fisheries

Informed by submissions and previous reviews, the Commission has identified 26 stocks that are being adversely affected in some way by shared management (table 6.1). The most significant concerns relate to stocks in southeast Australia. The combined gross value of production of affected stocks is approximately \$490 million.

**Table 6.1 Stocks of concern under shared management**

Stocks	Managed by	Gross value of production <sup>a</sup>
		\$ million
Southern rock lobster	Vic, SA, WA and Tas	178
Southern bluefin tuna	Cth, NSW, Vic, SA, WA and Tas	125 <sup>b</sup>
Coral trout	Cth, Qld, WA and NT	30
Mud crab	NSW, Qld, WA and NT	27
Sardines	Cth, NSW, Vic, SA, WA and Tas	19
Gummy shark	Cth, NSW, SA and WA	19
Yellowfin tuna	Cth, NSW, Vic, Qld, SA and WA	15
Tiger flathead	Cth and NSW	14
Spanish mackerel	Cth, Qld, WA and NT	8
Grey mackerel	Qld, WA and NT	7
South Australian snapper	Cth and SA	6
East coast snapper	NSW, Vic and Qld	5
Eastern school whiting	Cth and NSW	5
Pink ling	Cth and NSW	5
Scallop	Cth, Vic and Tas	4
Blue eye trevalla	Cth and NSW	4
Blacktip shark	Cth, Qld, WA and NT	3
Red emperor	Cth, Qld, WA and NT	3
Black jewfish	Cth, Qld, WA and NT	3
School shark	Cth, NSW, SA and WA	<2
Albacore	Cth, NSW, Vic, Qld, SA, WA and Tas	<2
Bight redfish	Cth and SA	<2
Striped marlin	Cth, NSW, Vic, Qld, SA, WA and Tas	<2
Orange roughy	Cth and NSW	<2
Silver trevally	Cth and NSW	<2
Striped trumpeter	Cth and Tas	<2

<sup>a</sup> Commission estimates of the gross value of production are based on catch data for 2012-13, 2013 calendar year and 2013-14 — whichever was the most current. The gross value of production is expressed in 2013-14 dollars. <sup>b</sup> Based on the 'farm gate' value (that is, after captured fish have been grown out in aquaculture pens). Value at the time of capture is approximately \$40 million.

Sources: Commission estimates; ABARES (2015c); AFMA (2016a); DAF Qld (2015a, 2015b); DEDJTR (Vic) (2014); DPIF NT (2015b); Econsearch (2015e); FRDC (2014c); Industry & Investment (NSW) (2010a, 2010b).

The concerns raised by participants focus almost exclusively on the costs and complexity arising from shared management. These include the costs of:

- duplicated management systems (multiple stock assessments, harvest management plans, research processes, monitoring and compliance systems, and stakeholder engagement processes)
- multiple assessments under part 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) for stocks that are exported and subject to shared management

- 
- complying with different regulatory systems (maintaining separate log books for each jurisdiction, meeting different licence requirements and participating in multiple consultation processes)
  - meeting requirements developed to deal with the problems caused by shared jurisdiction (for example, the ‘single jurisdiction trip’ requirements — box 6.3).

Inconsistent approaches to management are also leading to:

- the creation of higher risks in relation to the sustainability of fish stocks and ecological systems due to different methods of controlling catch
- inequitable treatment of fishers operating within and across fisheries due to the application of different rules and cost recovery arrangements
- high levels of waste through discarding where shared jurisdiction over an expanse of water<sup>34</sup> and/or fishing method results in the incidental catch of non-target species.

The nature and magnitude of detriment arising from shared management varies from fishery to fishery. For some stocks (such as southern bluefin tuna (SBT)) there are clear risks to sustainability and/or value (box 6.3). For other stocks (such as southern rock lobster), the costs and/or the risks are much lower (box 6.4). Appendix B provides detailed case studies on SBT, eastern school whiting, snapper, gummy shark and school shark, southern rock lobster and southeast Australian scallops.

Even where management arrangements are well aligned and designed to reduce duplication, management costs are higher than would be the case if the stock was managed by a single (efficient) jurisdiction due to the transaction costs incurred in preserving alignment.

Reducing compliance costs could improve the viability of commercial fishing businesses. Where regulatory costs are higher than necessary, consumers will pay higher prices, which may in turn reduce demand, fishing activity, investment and employment.

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<sup>34</sup> An expanse of water can contain multiple fisheries. For example, off the South Australian coast there are at least seven fisheries in the same waters — Rock Lobster Fishery (SA), Marine Scalefish Fishery (SA), Sardine Fishery (SA), Small Pelagic Fishery (Cth), Southern and Eastern Scalefish and Shark Fishery (Cth), Southern Squid Jig Fishery (Cth) and Western Tuna and Billfish Fishery (Cth).

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## Box 6.3 **Stocks most affected by shared management**

### **Southern bluefin tuna (SBT)**

SBT is a high value and at-risk stock that would benefit from a clear apportionment of the allowable catch to the commercial sector and the recreational sector to maximise the value of the fishery and maintain the overall catch within allowed limits. The recreational sector is currently not formally accorded a share of catch and is seeking to secure rights to the stock, for example:

There are insufficient legislative measures in place to protect recreational fishing grounds and the surrounding regional communities that they support, especially for our premier game fish species such as [SBT] ... (VR Fish, sub. 25, p. 1)

### **Commonwealth/New South Wales trawl fisheries (includes tiger flathead, eastern school whiting, pink ling, silver trevally and blue eye trevala)**

Catch is controlled in the Commonwealth fishery through a quota system while catch in the New South Wales fishery is controlled using limits on boats and gear. The absence of catch limits for New South Wales fishers means there is a heightened risk of overfishing should their catch exceed that predicted by AFMA when setting the allowable catch for Commonwealth fishers. Conversely, if New South Wales fishers do not meet their notional catch allocation, Commonwealth fishers bear the costs of that under-fishing through lower than optimal quota. New South Wales fishers benefit from AFMA's stock assessments but do not contribute to the costs (which are mostly borne by Commonwealth fishers).

Fishers are subject to restrictions on fishing to prevent the gaming of the Commonwealth's quota system. The restrictions include:

- a requirement that fishing is only undertaken in one fishery on each fishing trip ('single jurisdiction trip' requirements). This means that, while a fisher may travel through the Commonwealth and New South Wales fisheries on a fishing trip, they can only take fish from one or the other fishery (but not both), even if they hold licences to fish in both fisheries
- limits on the take of certain species (known as 'trip limits'). The limits are 50–1000 kilograms per trip (depending on the species).

### **East coast biological snapper stock**

New South Wales, Victoria and Queensland complete their own stock assessments on east coast snapper even though it is a single biological stock. This results in higher management costs and less complete information for management decisions (compared to an overarching assessment). The lack of an overarching stock assessment has resulted in the snapper's status being 'undefined' (FRDC 2014c). The States have commenced a project to develop a stock model and draw up protocols to support consistent decision making. This project is expected to be completed during 2017.

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**Box 6.4 Other stocks affected by shared management****Yellowfin tuna, albacore and striped marlin**

The absence of an allocation of the allowable catch between commercial fishers (managed by AFMA) and recreational fishers (managed by the States) for these stocks is causing tension between the sectors as they compete for catch. The level of competition (and tension) is expected to grow as the recreational effort in Commonwealth waters increases.

**Gummy shark and school shark**

Gummy shark and school shark share habitats and are targeted using the same fishing methods. The sharks are the subject of OCS fisheries arrangements between the Australian Government and each of the Victorian, South Australian and Tasmanian Governments.

There is a single biological stock of gummy shark extending from New South Wales to Western Australia. The Commonwealth, New South Wales, South Australia and Western Australia have varying levels of responsibility for managing the stock. Concerns over the stock are, however, almost exclusively concentrated in waters off the South Australia coast where:

- discarding by South Australian fishers is resulting in wastage, forgone profits and uncounted mortalities. The management rules mean that discarding by South Australian fishers occurs even where those fishers also hold Commonwealth rights for gummy shark
- South Australian fishers are (collectively) likely exceeding the notional catch allocation assigned to them under the OCS fisheries arrangement for the stock.

School shark is an at-risk stock that is subject to a remediation plan and vulnerable to the efforts of Commonwealth and South Australian fishers targeting stocks such as gummy shark and snapper, respectively. Actions by fishers to avoid school shark are likely reducing their productivity in fishing other stocks.

**South Australian snapper**

Snapper stocks off the South Australian coast are the responsibility of the South Australian Government. Commonwealth fishers operating in the Southern and Eastern Scalefish and Shark Fishery have been using longlines to target gummy shark following restrictions on the use of gillnets introduced in 2012. This has resulted in increasing levels of snapper bycatch.

Snapper is subject to overfishing in four of South Australia's six snapper management areas. This follows a significant increase in South Australia's commercial catch over the period 2008–2012 and the discarding of 'many thousands' of undersized snapper by recreational fishers over the same period (Fowler et al. 2013, p. 15). The extent to which bycatch by Commonwealth fishers is contributing to the overfishing is unclear but is a concern of South Australia's commercial and recreational fishers. This concern persists despite AFMA placing a 50 kilogram trip limit for snapper on Commonwealth fishers.

**Coral trout**

The costs arising from shared management are likely less than in other cross-jurisdictional fisheries as over 95 per cent of the total catch is taken from Queensland fisheries (FRDC 2014c). Further, some duplication of management processes is unavoidable as the management of the Torres Strait Finfish Fishery (managed by AFMA and from which coral trout is taken) is bound by the 1985 Torres Strait Treaty with Papua New Guinea.

(continued next page)

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Box 6.4 (continued)

### **Mud crab and Southeast Australian scallops**

These stocks are subject to duplicated management processes. However, their sedentary nature means there are fewer impacts from shared management than for other stocks.

### **Southern rock lobster**

Southern rock lobster is a single stock that is managed by four States, with 98 per cent of the total catch taken by Victorian, South Australian and Tasmanian fishers (FRDC 2014c). Costs and risks have been substantially reduced by cooperation between the States on research and management, the use of a common model to perform stock assessments and regular liaison between marine scientists/researchers. It is unclear whether further reform would produce net benefits given the gains already made, the costs of reform and the stock's sedentary nature.

## **Structural problems facing cross-jurisdictional fisheries**

The rigidly defined geographic boundaries specified in many OCS fisheries arrangements are not suited to providing dynamic regulatory responses to changing fish populations and distributions arising from climate change. The Food and Agriculture Organisation (FAO) has noted that climate change is already affecting fish and their ecosystems:

... with some species moving to deeper waters, and ... some species moving hundreds of kilometres poleward. As a result there is [an] introduction of new species and losses of familiar species in conventional fishing grounds. These changes ... could introduce considerable confusion in stock assessments, confounding the ability to distinguish between the impact of fishing and that of the environment. For species or populations that cannot move in response to climate change, changes in the population parameters used for stock assessment and management could affect the reliability of assessment made using historical parameter values. (2009, p. 49)

Arrangements according the States and Northern Territory sole responsibility for the regulation of recreational fishers are also under some pressure. The limitations of these arrangements are already evident in the management of tuna stocks (box 6.3 and 6.4) and marlin stocks (the Australian Government having banned the capture of blue and black marlin for commercial purposes in agreement with the commercial sector, charter operators and game fishers). While recreational fishers are likely to continue to fish mainly in coastal waters, it is conceivable that a small but increasing number (including charter and game fishers) will access Commonwealth waters as boating and gear technology improves.

## **Where have successful arrangements been instituted?**

Cross-jurisdictional fisheries managed by a single government show few (if any) of the problems noted above. Such fisheries include the Northern Prawn Fishery (Cth) and those in Queensland and Western Australia subject to OCS fisheries arrangements including the

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Western Rock Lobster Fishery (WA), East Coast Otter Trawl Fishery (Qld), Spanner Crab Fishery (Qld) and West Coast Deep Sea Crustacean (WA) (subs. 21 and 60; Woodhouse (2002, p. 74)).

The OCS fisheries arrangement for the Northern Prawn Fishery was agreed between the Australian, Queensland, Western Australian and the Northern Territory Governments in 1988 and updated in 1995. The arrangement followed an expansion in the fishing grounds and a significant number of freezer trawlers entering the fishery, as well as increasing concerns regarding overexploitation and overcapitalisation within the fishery. It was to provide for more effective and flexible management of the fishery, particularly the sensitive nursery areas (Cartwright 2005).

The OCS fisheries arrangements between the Australian and Western Australian Governments, and between the Australian and Queensland Governments, provide for the States to have jurisdiction over the majority of waters off their coasts (box 6.5) and so have avoided duplication. Queensland and Western Australia also appear to have been advantaged by their relative isolation from other States.

#### **Box 6.5 OCS arrangements: Western Australia and Queensland**

The five OCS fisheries arrangements involving Western Australia provide for the management of most commercial fishing under Western Australian law. The exceptions are commercial fishing in the Northern Prawn Fishery, fishing for tuna and trawling in waters more than 200 metres deep (all of which are Commonwealth responsibilities).

Similarly, the OCS fisheries arrangements involving Queensland provide for management of the majority of fishing activity in waters adjacent to the Queensland coast under Queensland law. AFMA separately manages the Northern Prawn Fishery, the Torres Strait Fisheries (the subject of a bilateral treaty with Papua New Guinea), the Coral Sea Fishery and deep water trawling in southern Queensland, as well as fishing for tuna and tuna-like species fisheries.

The distinguishing features of the fisheries above are that:

- a single jurisdiction is responsible for each fishery
- management responsibilities have been aligned to the geographic range of the fishery — a prerequisite for good fisheries management (FAO 1995)
- governance arrangements have been set according to the geographic range of the fishery — the State is responsible for fisheries completely contained within the waters adjacent to the State while the Commonwealth is responsible where the fishery spans waters adjacent to multiple jurisdictions.

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## 6.3 Past reform attempts

As noted by Borthwick (2012, p. 81), ‘[o]ver the years, there has been considerable discussion of how these [shared management] issues might be better resolved but they have not come to much’. Part of the reason for this is that ‘... many seemingly sensible measures which would improve cross jurisdictional management ... would not pass basic return for effort assessments’ (Department of Agriculture and Water Resources, sub. DR108, p. 2).

Past experience has been that significant change has generally only been achieved when the cost of not acting, such as the risk to the sustainability of a stock, became too great.<sup>35</sup> For example, decisions by Victoria, South Australia and Tasmania in 2000 and 2001 to cede jurisdiction over the gummy shark and school shark to the Commonwealth followed a considerable depletion in the stocks’ biomass. Similarly, increasing concern over the sustainability of catch in the Northern Prawn Fishery finally led to the ceding of jurisdiction to the Commonwealth.

Generally, the potential to avoid costs, including the cost of opportunities foregone from better utilisation of resources, have not been sufficient to prompt change in the management of many of the stocks identified as being of concern. In some cases where reform has been attempted, the timeframes have extended beyond what almost anyone would consider reasonable — nearly 10 years in the case of negotiations over the Commonwealth and New South Wales trawl fisheries (which remain to be fixed) and over 30 years for the ‘on again, off again’ reform initiatives in the southeast Australian scallop fisheries.

The cost of undertaking reforms appears to have been a significant impediment, along with a lack of priority being given to this area of reform. The process of moving a shared fishery to management by a single jurisdiction can be complex, costly and time consuming. For example, before management of a stock can be transferred to one jurisdiction, the rights of fishers in the existing fisheries need to be converted to rights in the new fishery.

Seeking to improve a shared management arrangement by better aligning management approaches can also be a complex undertaking — for example:

- jurisdictions need to agree on a range of matters (such as stock assessment methods) before stock assessment processes and management controls can be aligned
- before a single stock assessment can be introduced there needs to be agreement on how the resultant TAC will be determined and allocated across the jurisdictions. This

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<sup>35</sup> The costs of overfishing and actions to recover fish stocks can be significant. For example, the fishing of orange roughy in Australian waters (except the Cascade Plateau where stocks were healthy) was prohibited for nearly a decade from 2006 while stocks recovered. As another example, in the United States, the National Marine Fisheries Service and the U.S. Fish and Wildlife Service (2005, cited in (Little et al. 2015)) estimated the cost of rebuilding Atlantic salmon to be at least US\$36 million.

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requires agreement on the objectives of the TAC. Negotiations can become protracted where governments have different priorities

- if services, such as research, are to be shared, consensus needs to be reached on matters such as how costs will be shared and the scientific methods to be used.

The planning and design process itself can be costly — for example, the Commission understands \$0.5 million has been allocated by the New South Wales Government to plan and design the reform of the Commonwealth/New South Wales trawl fisheries. While this is a relatively complex multispecies fishery, it is an indication of the initial outlay required.

Many past reform attempts appear to have faltered because they relied on ‘business as usual’ resources or because of resources being allocated to other priorities:

Tasmania has stated in the past that it is not in a position to make any financial contribution to any transitional or future costs which are additional to current staffing levels ... [Sen (2011, p. 40) in relation to the reform of the southeast Australian scallop fishery]

The Review Team [reviewing commercial fisheries in New South Wales] understands that the issues around OCS discussions between the Commonwealth and NSW are quite complex, and that it is unlikely that all these issues can be resolved in a short timeframe. This is because of resource constraints within the Fisheries Division of NSW DPI and the Commonwealth ... (Stevens, Cartwright and Neville 2012, p. 39)

It also appears that the costs of reform and other priorities are also reasons why, where change has occurred, it has often not required change to underlying lines of jurisdictional responsibility — for example, efforts by jurisdictions to jointly undertake some tasks or share services (section 6.1).

## **6.4 Reform directions**

Continuation of the current approach is not tenable if governments wish to maximise the value of fisheries and ensure their sustainability. The costs of not changing will likely increase, particularly for fish stocks affected by climate change and subject to increasing effort by recreational fishers in Commonwealth waters.

### **Prioritising reform of specific stocks**

Limited resources and the costs of reform mean that reforming all cross-jurisdictional fisheries with scope for improvement is not realistic. Ultimately, the benefits of reform have to outweigh the costs over a reasonable timeframe. This suggests:

- governments should first focus on higher value and at-risk fish stocks that are subject to inconsistent management arrangements

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- governments should consider whether transfer of management responsibility to one jurisdiction, or shared management with better alignment of management arrangements, would produce the greatest net benefits considering the costs involved.

### Management under one jurisdiction

In 1993, the jurisdictions agreed to a set of principles to guide the formation of OCS fisheries arrangements (box 6.6). These included that governments should avoid, as far as possible, subdividing management responsibility for a stock under different jurisdictions — that is, management by one jurisdiction is best. The Commission considers that this principle remains relevant. On the question of who should be responsible for what, experience suggests:

- the Commonwealth should have jurisdiction over migratory stocks that are subject to international agreements and span two or more jurisdictions given it is both signatory to the relevant international conventions and well placed to manage stocks across jurisdictions. This should not preclude the Commonwealth assigning some management tasks to the States/Northern Territory if they are better placed to undertake them (for example, monitoring and enforcement of catch at the shore), but these tasks should be undertaken in accordance with the Commonwealth's management policy
- a State or the Northern Territory is usually best placed to manage stocks (other than those subject to international agreements) that span the waters of only their State/Territory and the Commonwealth as they are better placed to manage the totality of issues in waters off their coast lines.

For stocks (other than those subject to international agreements) that span the borders of two or more States/Northern Territory and the Commonwealth, the considerations are more complex. Decisions need to be made on a case-by-case basis considering, among other matters:

- the extent of fishing within the coastal waters of the State(s)/Northern Territory and within Commonwealth waters
- the relative expertise of the jurisdictions in regard to the fishery
- the extent to which the decision on management would result in shared jurisdiction over an expanse of water and/or fishing methods
- the geographic distribution of fishers in the fishery
- the extent of recreational and customary fishing in the fishery.

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**Box 6.6 Principles Guiding Revision of the OCS Fisheries Arrangements (1993)**

In 1993 the jurisdictions agreed that new OCS fisheries arrangements should:

- ensure, through proper conservation and management measures, that living resources of the Australian Fishing Zone (AFZ) are not endangered by over-exploitation
- achieve the optimum utilisation of the living resources of the AFZ
- avoid, as far as possible, subdividing a single stock under different jurisdictions
- achieve (as a preference) single agency management of fisheries as opposed to joint authorities which add another layer of consultation and operate less rapidly
- include memoranda of understanding to ensure reciprocal licensing, data transfer and the application of uniform arrangements where appropriate
- seek to preserve the flexibility of the fleet to move within a fishery according to changes in the seasonal or geographic distribution of resources
- avoid discriminating against fishers solely on the basis of State of residence
- avoid restrictions which represent an impediment to trade between the States
- set boundaries which seek to maximise the potential to develop efficient catching, processing and marketing sectors (subject to resources conservation considerations)
- take account of administrative law including principles of natural justice with respect to the introduction of measures to regulate fisheries
- seek to achieve a broad based species approach to OCS arrangements with respect to bycatch
- minimise the number of boundaries and the cost of administration and enforcement.

*Source:* ANAO (1996).

### Where management by one jurisdiction may be unsuitable

Transferring management of a stock to one jurisdiction may not be cost-effective or a priority for: stocks fished primarily by recreational fishers across multiple States; sedentary stocks; and stocks of low (current and potential) value (table 6.2).

Where transferring management to one jurisdiction is unlikely to be cost-effective, the path of reform should be based on:

- **sharing information and research:** this is a relatively low-cost way to support more informed (and consistent) decision making in cross-jurisdictional fisheries
- **aligning stock assessment processes and management controls:** once jurisdictions have a shared understanding of the fishery this can be translated into a common stock assessment methodology (or directly into an agreed basis for a single stock assessment — below). Management controls should also be aligned where possible. Some controls, such as size limits and seasonal closures, may need to vary but there should be sound management reasons for doing so. Other initiatives could include:

streamlining data collected from fishers; aligning harvest strategies, controls over fishing methods and the timing of key management decisions; and consolidating consultation processes

- **rationalising multiple stock assessments into a single assessment:** once jurisdictions have implemented aligned stock assessment processes and/or come to an agreement on the assessment methodology, they can undertake a single stock assessment rather than multiple individual assessments. Agreement on how the resultant recommended biological catch will be allocated between jurisdictions is required for a single stock assessment to be most effective. The implementation of transferrable entitlements (chapter 3) in each jurisdiction and a single harvest strategy for each fishery would support the process of moving to a single stock assessment.

**Table 6.2 Where management by one jurisdiction may be unsuitable**

<i>Situation</i>	<i>Reason</i>
Recreational stocks taken by fishers in multiple jurisdictions	The impact of shared fishery arrangements on recreational fishers is reportedly 'relatively minor'. <sup>1</sup> However, the efficiency and effectiveness of management is still adversely affected where jurisdictions complete their own stock assessments for a shared fish stock. This can be mitigated by actions such as sharing research and commissioning a single stock assessment.
Sedentary stocks (such as rock lobster, scallops and abalone)	By their nature, these stocks typically need targeted spatial management. When supported by a cooperative management approach between jurisdictions (as with the southern rock lobster), separate management arrangements across (and within) jurisdictions can operate without an adverse impact on outcomes.
Stocks of low (current and potential) value	The low value of these stocks limits the potential net gains from reform to management by a single jurisdiction. More cost-effective reform may entail sharing information and data between jurisdictions.

<sup>1</sup> Amateur Fishermen's Association of the NT Inc. (sub. 20); VR Fish (sub. 25), Merimbula Big Game & Lakes Angling Club Inc (sub. 27); Tasmanian Association for Recreational Fishing Inc. (sub. 42).

#### RECOMMENDATION 6.1

In reforming cross-jurisdictional fisheries, all governments should:

- focus first on higher value and at-risk fish stocks that are subject to inconsistent management arrangements
- consider whether the transfer of management responsibility to one jurisdiction or shared management with a better alignment of management arrangements would produce the greater net benefits.

The cost of actions on the reform path set out above will increase as jurisdictions move from sharing to alignment and onto rationalisation. Reform ambitions should be guided by

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the expected size and likelihood of net benefits. Section 6.5 sets out specific reform priorities and preconditions given the above considerations.

### **Is there a case for more fundamental reform?**

The Commission considered several options for more systemic reform of Australia's fisheries jurisdictional and management arrangements. One option was the amalgamation of Australia's fisheries jurisdictions into a single fisheries jurisdiction — an idea raised repeatedly since before Federation.<sup>36</sup> Alternatives included various regional management models, where regions would be defined with reference to ecosystems or in a similar way to the United States (where Interstate Marine Fisheries Commissions guide the management of fisheries spanning state waters and Regional Fisheries Councils the fisheries extending into federal waters). Wildcatch Fisheries SA (sub. 10) and AFMA (sub. DR111) were among the participants advocating a regional-based approach to cross-jurisdictional fisheries.

In principle, the single jurisdiction model, which would bring all fisheries under a consistent management approach, has the most merit. In practice, the costs of shifting all fisheries to management under a single jurisdiction (which, for practical reasons, would have to be the Commonwealth) are likely to be prohibitive and create new efficiency costs associated with federal management of inshore fisheries (box 6.7). The case for reform is also somewhat diminished by the relatively small number of stocks affected by shared management and the existence of well-working intergovernmental arrangements for a number of those stocks. In short, the model would have merit if governments were starting from scratch, but they are not, and it is very uncertain that the benefits from reform would outweigh the costs.

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<sup>36</sup> For example, Official Record of the Debate of the Australian Federal Constitution, 3rd session, Melbourne 1898 (p. 1857-1858), the 1929 Royal Commission on the Constitution, and *Bonser v La Macchia* (1969) 122 CLR 177.

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## Box 6.7 Benefits and costs of moving to a single jurisdiction

A single Australian fisheries jurisdiction could be established via an OCS fisheries arrangement in which the States and Northern Territory cede jurisdiction over their coastal waters to the Australian Government. A single national regulator could manage the resulting national jurisdiction.

There is limited data on the costs and benefits of current OCS fisheries arrangements and the management of cross-jurisdictional fisheries more generally. However, the benefits of moving to a single jurisdiction can reasonably be assumed to include:

- decreased risks to shared stocks as a result of managing them according to a single stock assessment rather than multiple, partial assessments
- reduced management and compliance costs from removing duplication
- greater certainty in the management of fisheries, including in relation to how emerging fisheries management issues, such as climate change, are dealt with
- improvements in productivity arising from the removal of regulatory controls aimed at preventing the 'gaming' of shared fishery management arrangements (for example, the removal of trip limits and single jurisdiction trip requirements).

The composition of Australia's wildcatch fisheries significantly limit the gains to be made from reform. There are relatively few gains from reforming the fisheries for sedentary stocks (table 6.2), while there are cross-jurisdictional fisheries across Queensland and Western Australia as well as the Northern Prawn Fishery where existing management arrangements are working well. Together, these represent over 60 per cent (by value) of Australia's wild caught fisheries (based on 2013-14 catch values (Savage and Hobsbawn 2015)). Of the remaining fisheries, not all have shared management and, for many of those that do, the costs from shared management are low or benefits from reform very uncertain (box 6.4).

Advancing technology is providing a means of better dealing with some of the adverse outcomes from shared management. For example, vessel location systems and e-monitoring using onboard cameras have allowed AFMA to trial the removal of single jurisdiction trip requirements in some fisheries. As such, some of the problems caused by shared management may lessen or be eliminated over time.

The costs of moving to a single regulator would include:

- establishment costs, which are likely to be significant, including those related to restructuring current cross-jurisdictional fisheries, establishing a regulator for the national jurisdiction, consultation with stakeholders and incorporating the management of all affected fisheries into a national approach
- potential loss of innovation associated with the loss of competitive federalism
- loss of efficiency in managing inshore fisheries.

The latter is likely to be significant. The Commonwealth has no advantage in managing inshore fisheries (and recreational fishing in particular) and would require a significant increase in resources to do so. While the latter could theoretically be met in part by a transfer of funds to the Commonwealth, this would not address its disadvantage relative to the States and Northern Territory in dealing with local issues, including relevant planning laws and determining access in consultation with stakeholder groups. It is highly probable that a national regulator would need to delegate tasks to the States and the Northern Territory and/or have local branches in those jurisdictions. Any delegation of functions would further add to the ongoing management costs because of the need to monitor the actions of delegates and hold them to account.

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Some of these limitations also apply to regional governance models. In addition, regional governance models do not appear to have an inherent advantage over current lines of jurisdictional responsibility:

- Unless a substantial reduction in the number of management areas/jurisdictions could be achieved, regional arrangements present no obvious advantage over historic borders when it comes to addressing phenomena such as climate change and the changing distributions of fish stocks. Consolidating management responsibility into a few large regions would, however, likely encounter similar issues to those limiting the viability of moving to a single fisheries jurisdiction.<sup>37</sup>
- While the management of fisheries would ideally be aligned to ecosystems, this is difficult to achieve in practice because ecosystems can be hard to define spatially due to overlaps and changes over time.
- Regional management arrangements would likely need to deal with the issues that have beset Australia's joint authorities (section 6.1).
- There is little incentive for jurisdictions with fewer, or more minor, cross-jurisdictional fisheries issues (such as Queensland and Western Australia) to commit resources to a regional management structure from which they would receive little benefit.

Some stakeholders have suggested that aligning the management of different fishing methods on a regional basis would improve outcomes in cross-jurisdictional fisheries. This idea has merit, but there would be greater value in broader alignment across all jurisdictions through the adoption of best practice management approaches (such as harvest strategies). Adopting best practice approaches, along with aligning controls on fishing methods and bycatch management, for example, would not only benefit cross-jurisdictional fisheries but would support the productivity of fishers who operate in multiple jurisdictions and fisheries. These are worthwhile measures in their own right and not simply as a response to the management issues in cross-jurisdictional fisheries. Further, there is no need for a new national body to support such reform as there is an existing one that can assume responsibility for the task (the Australian Fisheries Management Forum).<sup>38</sup>

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<sup>37</sup> A regional approach focused on the management of cross-jurisdictional fisheries would likely result in two management regions. One region would comprise New South Wales, Victoria, South Australia, Tasmania, the east coast of Queensland and the associated Commonwealth waters (AFMA, sub. DR111). This would leave the Gulf of Carpentaria off Queensland's west coast, Western Australia, the Northern Territory and associated Commonwealth waters to comprise the remaining region.

<sup>38</sup> The Australian Fisheries Management Forum is comprised of the heads of Commonwealth, State and Territory fishery management agencies, as well as observers from relevant bodies, such as the Fisheries Research and Development Corporation.

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## 6.5 Reform priorities

### Specific stocks

Of the 26 stocks raised with the Commission as being of concern, the management of SBT, the Commonwealth/New South Wales trawl fisheries (tiger flathead, eastern school whiting, pink ling, silver trevally and blue eye trevalla), and the east coast snapper stock are the highest priorities for reform. Addressing the management issues associated with these stocks would reduce the total value of production for specific stocks adversely affected by shared management to the order of \$150 million (or 10 per cent of Australia's wildcatch production).<sup>39</sup> The scale of the issues for most of these remaining stocks are considered to be more minor in nature and/or the benefits from reform uncertain (box 6.4 and below).

The management arrangements for the Commonwealth's Eastern Tuna and Billfish Fishery (which includes yellowfin tuna, albacore and striped marlin) should be the next stock-specific priority for reform as the fishery is subject to increasing recreational take and competition between sectors.

Concern about over-catch of gummy shark by South Australian fishers can be addressed by Primary Industries and Regions (South Australia) enforcing the catch allocation provided under the OCS fisheries arrangement. This could be supported by AFMA lifting its single jurisdiction trip requirement. Allowing for 'dual jurisdiction trips' would provide a means through which South Australian fishers could cover their over-catch with Commonwealth quota. However, such an approach would require consultation with industry and possibly a trial arrangement, as there are several issues that could undermine its effectiveness, including the availability (and price) of Commonwealth quota and the incremental cost to South Australian fishers of complying with AFMA requirements for quota and dual jurisdiction trips.<sup>40</sup> Closer alignment of both jurisdictions' management requirements for line fishing methods (including bycatch management) would also assist (and would likely also benefit the management of the snapper stock and school shark).

There are no obvious reforms for school shark that would not require major (and costly) changes in the State and Commonwealth fisheries off the South Australian coast. AFMA has set its catch limits and other controls to allow for only incidental catches of school shark. A remediation plan is in place for the stock and is supported by monitoring of Commonwealth fishers to track mortalities and progress against the plan. South Australian action to better control their gummy shark catch would benefit the school shark as the

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<sup>39</sup> This estimate of the value of stocks adversely affected by shared management excludes the southern rock lobster as the issues from shared management are substantially reduced by the coordinated management approaches of Victoria, South Australia and Tasmania, as well as the stock's sedentary nature.

<sup>40</sup> These requirements include the Vessel Monitoring System, observers, physical separation of catch from each fishery and separate logbook reporting.

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stocks share the same habitat and are targeted using the same fishing methods. At this stage, the existing management controls and AFMA's ongoing monitoring of progress against its remediation plan remain the best approach to this stock.

Any reform of the management arrangements for sardines and snapper off the South Australian coast would need to be assessed against a cost/benefit appraisal.

Governments should proceed with their plans to replace each of the three joint authorities with single jurisdiction management structures (section 6.1) — these authorities are responsible for managing stocks of Spanish mackerel, grey mackerel and red emperor.

All other stocks are considered lesser priorities in the short to medium term because the net gains from reform are likely to be relatively small or are very uncertain.

### Southern bluefin tuna

AFMA sets the allowable commercial catches for SBT at levels that do not recognise mortalities from recreational fishing. Until at least the early to mid-2000s, the catch of SBT by recreational fishers was quite small,<sup>41</sup> but more recent research indicates that there has been considerable growth (for example, Green et al. (2012b) and Tracey et al. (2013)). This makes the current approach no longer appropriate.

Sectoral catch limits need to be established for SBT to ensure it is managed sustainably and that the value from the fishery is maximised. As the Australian Government is accountable to the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) for Australia's management of SBT, it should be responsible for setting the allowable catch limits for all fishers.<sup>42</sup>

#### *Apportioning and implementing sectoral catch limits*

At present, there are no formal estimates of the total recreational catch or numbers of recreational fishers that regularly catch SBT across Australia, nor estimates of the value of catch to recreational fishers. There is, therefore, a limited understanding of recreational demand for SBT and a limited basis from which to consider the apportionment of catch.

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<sup>41</sup> Estimates of the recreational catch in 2002 put it at 0.4–2.5 per cent of the commercial catch (Cardno Ecology Lab 2012).

<sup>42</sup> Australia (and other countries subject to the CCSBT) need to have a system to account for all SBT mortality arising from fishing activities by 2018 (CCSBT 2014). The recommendations in this report are not aimed at meeting this requirement, though they may assist the Australian Government to advance the work necessary to do so.

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The Australian Government plans to undertake a survey of recreational catch over the 2017-18 SBT fishing season (DAWR 2016b). This information should be used to inform the setting of sectoral limits for the SBT fishing season commencing on 1 December 2018.

There is scope for the Australian Government to facilitate a common understanding of the stock and the value of access to different groups. Building on this, there may be scope for negotiation (and agreement) between the commercial and recreational sectors on catch limits.

In the absence of an agreement between the sectors, the Australian Government will need to set the sectoral catch limits. Collaboration with the sectors in setting limits will be an important part of this process; past attempts to establish sectoral catch limits for tunas were undermined by inadequate stakeholder engagement (Joll 2006). Responses to the draft report show that the diversity in views among stakeholders as to how sectors should share access has not diminished over time.<sup>43</sup>

The Australian Government should consider the scope for using market-based mechanisms to help determine (and distribute) catch limits. For example, one option would be setting a base-level catch allowance for the recreational sector and then providing means for fishers to acquire additional rights to the stock. Canada's Halibut Experimental Recreational Fishery (box 2.9, chapter 2) is an example of where this has worked in practice. Other market-based measures, such as the auctioning of harvest tags, could provide a means of efficiently distributing the recreational catch limit. How catch is distributed across the recreational sector is an important consideration given the different value of SBT to different types of fishers (such as charter operators and game fishers) and because of the different size (and value) of SBT over its range in Australian waters.

#### *Transition for the commercial sector*

The Australian Southern Bluefin Tuna Industry Association (sub. 59 and DR106) submitted that any reduction in the share of Australia's allowable SBT catch assigned to commercial fishers should be compensated. It asserted that there have been 'continued assurances by Australian Governments at CCSBT that the CCSBT allocation to Australia was the commercial quota' (sub. 59, p. 12). Since the 1990s, Australia's full allocation from the CCSBT has routinely been assigned to the commercial sector.<sup>44</sup>

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<sup>43</sup> For example: Frank Prokop, sub. DR73; VR Fish, sub. DR74; Merimbula Big Game & Lakes Angling Club Inc, sub. DR77; South Australian Fishing Alliance Inc, sub. DR89; and the Australian Southern Bluefin Tuna Industry Association, trans. p. 75–77.

<sup>44</sup> One exception to this was the 2012-13 season when 15 tonnes of Australia's catch allocation from the CCSBT was not included in the allowable commercial catch. Australia received an extra 15 tonne allocation in May 2013 after South Africa failed to accede to the CCSBT and the catch allocation set aside for South Africa was redistributed among the other members (ABARES 2014; CCSBT 2012, 2013).

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Whether there is any legal obligation on the part of the Australian Government to provide compensation will no doubt be further explored should the industry press its claim. The Commission notes that, aside from any legal questions, governments should be able to adjust catch limits and controls on fishing activity in response to changing circumstances, including changing demand for access to resources. That said, where industry has reasonably relied upon past government decisions and policies to make investment decisions and there is a substantial change in those policies, it would not be unreasonable for the government to consider how it could support the industry's transition to the new arrangements.

### *Ongoing management*

The Australian Government could assume direct responsibility for managing recreational SBT fishers — especially if controls, such as harvest tags, are employed to manage recreational catch in a consistent manner across its range. However, it could also continue to draw on the States' expertise and proximity to recreational fishers for day-to-day management. Under such an arrangement, the States would need to be accountable for compliance with any catch limit assigned to their recreational fishers and any management requirements set by the Australian Government. Ultimately, consultation between the Australian Government, the States, commercial and recreational fishers will be required to ensure a prudent and practical division of day-to-day management responsibilities.

### *Giving effect to the new arrangements*

The *Southern Bluefin Tuna Fishery Management Plan 1995* along with the OCS fisheries arrangements and MoU for SBT will require amendment (and a new agreement with New South Wales will be required) once management arrangements have been determined. Amending a single OCS fisheries arrangement has not been a simple or timely process in the past and the amendment of seven arrangements may pose significant hurdles. As an alternative approach, the Australian Government could:

- give notice that the OCS fisheries arrangements for SBT are to be cancelled
- use its powers under s. 6 of the *Coastal Waters (State Powers) Act 1980* (Cth) to legislate to limit the fishing of SBT and impose controls on both commercial and recreational fishing as necessary.<sup>45</sup>

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<sup>45</sup> s. 6 of the *Coastal Waters (State Powers) Act 1980* (Cth) protects the Commonwealth's rights and duties to ensure compliance with international agreements of which Australia's commitments to the CCSBT would be one.

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RECOMMENDATION 6.2

The Australian Government should set allowable catch limits of southern bluefin tuna for all fishing sectors. Sectoral allowances should be in place in advance of the southern bluefin tuna fishing season commencing on 1 December 2018.

In consultation with fishers, the Australian and State Governments should negotiate the nature of, and responsibility for, day-to-day management of recreational fishers catching southern bluefin tuna.

### Commonwealth and New South Wales trawl fisheries

AFMA (sub. 50) and SETFIA (sub. 53, p. 8) confirm there is ‘in principle’ agreement from stakeholders to ‘rationalise the management’ of the two trawl fisheries. The New South Wales Southern Fish Trawl Restricted Fishery should be absorbed into the Commonwealth Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery as:

- the Commonwealth has the necessary management infrastructure in place including proven stock assessment methods and a best practice individual transferable quota regime
- the fish taken by trawling in southern New South Wales waters extend into Victorian and Tasmanian waters where they are also managed by the Commonwealth within the Commonwealth Trawl Sector.

Transferring jurisdiction for trawling to the Commonwealth would see shared jurisdiction over New South Wales’ inshore waters. The Commission understands that there are relatively few inshore species that would be both bycatch for trawlers (Commonwealth jurisdiction recommended) and target species for other fishing methods such as longlining (New South Wales jurisdiction). At the least, the issues arising for bycatch in inshore waters are expected to be less than those arising in the trawl fisheries under the current arrangements.

RECOMMENDATION 6.3

The New South Wales Southern Fish Trawl Restricted Fishery should be absorbed into the Commonwealth Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery by the end of 2018.

### East coast snapper

As the catch of east coast snapper is dominated by recreational fishers, there is a good case for leaving the ongoing management with the States (New South Wales, Victoria and

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Queensland). However, management costs could be reduced by undertaking a single stock assessment rather than each jurisdiction completing their own assessment. Against a single assessment, the jurisdictions will be better placed to make a determination on the status of the stock and what remedial action, if any, needs to be taken, and determine the extent to which the disparate catch controls of the jurisdictions can be more closely aligned.

The current joint stock assessment project (box 6.3) is a crucial step in moving to aligned decision making across the States. Accordingly, the New South Wales, Victorian and Queensland Governments should ensure the project proceeds as a reform priority.

#### RECOMMENDATION 6.4

The New South Wales, Victorian and Queensland Governments should ensure the joint stock assessment project for the east coast biological snapper stock proceeds as an immediate priority.

### **Better supporting shared management now and into the future**

To reduce the costs of potential change in future, and to better meet policy goals, governments should adopt best practice approaches to core fisheries management tasks (such as stock assessments and harvest controls — chapter 2). They should also routinely seek to implement reciprocal or consistent arrangements in relation to matters such as catch controls, controls over fishing methods and data collection. It is important that fisheries administrators have a structured means of sharing information, including on the emerging challenges they face and lessons learned. The Australian Fisheries Managers Forum appears to work well in this regard.

These actions should help to improve outcomes in cross-jurisdictional fisheries and, more generally, reduce avoidable costs for fishers operating across multiple jurisdictions and fisheries.

The *Principles Guiding Revision of the OCS Fisheries Arrangements* (the Principles — box 6.6) agreed by the jurisdictions in 1993 remain valid and important. The Commission notes that the problems caused by shared jurisdiction over expanses of water and fishing methods are not addressed by the Principles although they have been a cause of concern for many stakeholders — most notably in South Australia (for example, in relation to sardines, snapper, gummy shark and school shark). Accordingly, the Principles should be amended to include limiting the extent of shared jurisdiction over expanses of water and fishing methods wherever possible.

Reflecting best practice from existing MoUs (as outlined in section 6.1), future MoUs should include requirements for sharing data and managing bycatch. The requirements for bycatch should detail how limits are to be set by management agencies rather than

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prescribing bycatch limits. This would allow bycatch limits to be adjusted in light of changing circumstances without having to renegotiate the MoU.

Like other areas of regulation, fisheries management arrangements should be periodically reviewed to ensure that they remain fit for purpose against policy objectives and that they provide for the efficient achievement of those objectives. Such reviews should occur at least with any revision of the harvest strategies for the stocks in cross-jurisdictional fisheries. These reviews should focus on ensuring that arrangements remain valid in light of any change in the distribution of fish stocks, changing fishing behaviour (including from recreational fishers), changing fishing methods, any advances in fisheries management, and/or changes to the harvest strategy. These reviews should also seek to correct the known drafting errors in OCS fisheries arrangements (appendix B).

#### RECOMMENDATION 6.5

The management arrangements for cross-jurisdictional fisheries and supporting memoranda of understanding should be reviewed regularly by governments to ensure they remain fit for purpose.

The *Principles Guiding Revision of the OCS Fisheries Arrangements* should be amended to include an intention to limit the extent of shared jurisdiction over expanses of water and fishing methods wherever possible.

## Progressing reforms

To gain support for reform, the expected costs and benefits need to be robustly assessed and clearly communicated. The case for reform needs to be backed by government resolve and the commitment of sufficient resources to properly design and implement policy change. Well designed and resourced reforms are also critically important to ensure minimisation of the costs of change. In this regard, the New South Wales Government's commitment of dedicated resources to plan and design the reform of the Commonwealth/New South Wales trawl fisheries is a welcome development.

While the Australian Fisheries Managers Forum has promoted some reforms in fishery management, progress on the more challenging areas has been slow, reflecting limited buy-in from governments. The Commission considers that governments should make the reform of cross-jurisdictional fisheries a collective priority. To this end, Ministers should develop and make public a joint reform strategy and ensure that management arrangements over cross-jurisdictional fisheries are kept under regular review. Progress should be assessed and reported annually over the term of the strategy.

The joint reform strategy should span the medium term (three to five years) and include:

- the fish stocks/fisheries that are priorities for reform, the proposed reforms and intended outcomes

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- intended investigations of other management areas to reduce costs and improve outcomes (for example, to institute reciprocal or consistent catch controls, align controls over fishing methods or data collection arrangements)
  - milestone actions and dates for each reform initiative
  - details of the criteria and timing for determining future reform priorities.

The determination of a strategy will require coordinated action by governments and consultation with stakeholders. To enable time for its proper design and adequate buy-in, the strategy should be released within 12 months of the release of the Commission's final report. The process of developing the strategy should not delay any reform initiatives currently in train nor any other reforms recommended in this report.

#### RECOMMENDATION 6.6

The task of reviewing and developing reforms to reduce the costs of cross-jurisdictional fisheries should be the subject of a joint Ministerial direction to agencies.

All governments should make the reform of cross-jurisdictional fisheries a collective priority and issue a joint reform strategy within 12 months of the release of the Commission's final report. Progress against the strategy should be reported annually over its term.

Resistance to reform has arisen from commercial fishers where it would see them moving from a jurisdiction without cost recovery to a jurisdiction with full cost recovery (such as the Commonwealth). As discussed in chapter 10, there are sound reasons for moving to cost recovery arrangements, and these arrangements should be designed to ensure the equitable treatment of all fishers in cross-jurisdictional fisheries.

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## 7 Managing the environmental impact of fisheries

### Key points

- The regulatory frameworks governing the environmental impact of fisheries appear to be broadly effective.
- Despite this, there is a public perception that the sustainability of fisheries is at risk, resulting in the increasing take-up of third-party certification schemes and some pressure to increase the stringency of regulation. Both can unduly increase regulatory burden and costs. The information available on environmental standards and actual outcomes in fisheries can be improved by:
  - the Commonwealth Department of the Environment publishing the annual reports submitted by fisheries in relation to their compliance with accreditation under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
  - governments releasing periodic summaries on interactions with protected species
  - the Australian Government clarifying the purpose of the List of Marine Species established under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), and the basis on which species are added to or removed from the list.
- There is scope to expand the use of explicit mortality limits to better manage the impact of fishing on protected species, alongside existing measures that seek to prevent mortalities in the first place.
- The degree of arms-length vetting of fishery management plans by the Commonwealth Department of Environment should reflect the risk posed by the fishery. In addition to continuing to move lower-risk fisheries to ten-yearly accreditation regimes, the Australian Government should not compulsorily require the accreditation of low-risk fisheries, and instead intervene in these fisheries if there is a change in their status.
- Third-party certification of fishery management practices is a divisive issue in the industry. Some view it as an important part of securing a 'social licence' to operate, while others view it as unnecessary and expensive.
  - As third-party certification standards are set by private organisations (often on a fee-for-service basis), third-party certification should not replace regulatory requirements or set regulatory benchmarks. Vetting and monitoring such schemes also poses significant practical issues for government.
  - In instances where the information requirements under third-party certification are similar to requirements under regulatory environmental assessments, environment departments should, to the extent practicable, use the information provided to the third-party certification body for their assessments or vice versa.

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It is undisputed that fishing needs to be regulated to manage its impacts on the marine environment. Given the need for regulation, the Commission has explored three key questions — are current environmental regulatory requirements:

- effective — do they achieve what they set out to do;
- efficient — do they operate with as little cost as possible; and
- being set and reviewed transparently — and so informing public understanding and debate on environmental objectives and outcomes?

Answering these questions is challenging because of the diverse nature of fisheries. Hundreds of different species are caught across dozens of different fisheries and unique environments. The management approaches employed in each fishery vary, and these approaches periodically change (as they should) to accommodate new information or manage new risks. The Commission has therefore considered available information on environmental outcomes, and sought to assess the processes through which regulatory requirements are set and objectives met, rather than the specific management techniques used in individual fisheries.

## **7.1 Overview of the regulatory framework**

The environmental regulation of fisheries is undertaken by both the Australian Government and the governments of the States and Territories. All jurisdictions promote the sustainable management of their fisheries and have enshrined the concept of sustainability — often in the form of ecologically sustainable development — into the objectives of their fishery management legislation (chapter 2).

Some jurisdictions have also adopted more specific objectives, including the protection of endangered species (New South Wales) and minimising the impact of fishing on non-target species (Commonwealth).

### **Regulatory requirements**

In most jurisdictions, the primary laws managing the environmental impacts of fishing are contained in fisheries management legislation. However, aspects of other environmental regulation may also be relevant — for example, legislation relating to protected species or biosecurity may also impact on fisheries.

The primary fishery management acts for each jurisdiction empower fisheries authorities to develop and enforce fishery management plans. It is typically through these plans that the environmental objectives established in legislation are translated to ‘on the ground’ regulatory requirements.

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Management arrangements for fisheries that are either managed by the Australian Government, operate in Commonwealth waters or export produce, are subject to the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) (section 7.3). The EPBC Act provides for arms-length vetting of fishery management plans by the Commonwealth Department of the Environment (DoE). About 80 per cent of all Australian fisheries are subject to the EPBC Act (and so are subject to the same environmental standard).

State and Territory-based fisheries that are subject to the EPBC Act are also subject to State and Territory fisheries and environmental laws. Broadly speaking, these are less stringent than what is required under the EPBC Act. To the extent that Commonwealth and State and Territory laws conflict, Commonwealth laws prevail.

Fisheries subject to the EPBC Act are evaluated against the criteria outlined in the Act and the Australian Government's *Guidelines for Ecologically Sustainable Management of Fisheries*. The Guidelines judge ecological sustainability on the basis of:

- the adequacy of fish stocks
- whether fisheries are managed so as to minimise the impact of fishing on ecological systems (box 7.1).

**Box 7.1      Principles of the *Guidelines for the Ecologically Sustainable Management of Fisheries***

In 2007, the Australian Government released the *Guidelines for the Ecologically Sustainable Management of Fisheries*. To satisfy Commonwealth requirements, fisheries must be managed in a way that satisfies the two principles outlined in the guidelines.

Principle 1:

A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover.

Principle 2:

Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem.

Principle 2 has several subcomponents that focus on different parts of the marine environment. These require that the fishery is conducted in a manner that:

- does not threaten bycatch species
- avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities
- minimises the impact of fishing operations on the ecosystem generally.

In addition to these principles, the guidelines also outline some characteristics that management arrangements should possess with respect to transparency, consultation, capabilities and reporting.

Source: Australian Government (2007).

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Fisheries solely regulated by State and Territory governments are subject to varying requirements. Most are subject to monitoring to ensure the sustainability of the target stock, whether through stock assessments and/or harvest strategies (chapter 2). Many fisheries also undertake environmental risk assessments that identify and measure the wider ecological risks of fishing activity (with these risks managed through fishery management plans). These assessments are done by fisheries managers in each jurisdiction but are not assessed by the relevant environment department.

Fisheries managers are granted considerable discretion with respect to the content of fishery management plans so as to allow them to address challenges unique to each fishery. Consequently, different approaches are applied across fisheries to manage risks to the environment. The most common methods of managing risks are the imposition of gear requirements (such as requirements to utilise bycatch exclusion devices) and closures of certain areas to fishing.

Fisheries management plans may be supplemented by other regulatory documents, including directives from fisheries managers, bycatch and discard plans and species management plans. In addition to fishery-wide requirements, which apply to all vessels in a fishery, individual vessels may be subject to vessel management plans if they pose additional or particular risks.

## **7.2 How are regulatory arrangements working?**

### **Fish stocks**

Available information suggests that fisheries are, on the whole, being managed well with respect to the sustainability of targeted stocks. Reports suggest that there is a small proportion of Australian stocks that are subject to overfishing. For example, according to ABARES (2016), roughly three per cent of the nearly 100 fish stocks it monitors in Commonwealth waters are subject to overfishing — down from 12 per cent in 2004 (where 74 stocks were assessed). The proportion of overfished stock is higher (about 12 per cent, but down from 19 per cent in 2004) (box 7.2).

The *Status of Key Australian Fish Stocks Reports 2014* (FRDC 2014c) found that of the 170 out of 238 fish stocks in Australia for which a status was determined, 76 per cent (129 stocks) were sustainable, four per cent (seven stocks) were recovering and 11 per cent (19 stocks) were depleting (box 7.2).

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### Box 7.2      **Overfishing vs overfished**

A stock is classified as **subject to overfishing** if the rate at which the stock is removed is considered to be unsustainable (ABARES 2016).

A stock is considered to be **overfished** if the biomass has been depleted through catch, so that average recruitment (reproduction) levels are significantly reduced and current management is not adequate to recover the stock (or measures put in place have not yet resulted in measurable improvements) (FRDC 2014c).

A fishery can be overfished without being subject to overfishing if overfishing in the past has reduced its biomass to an undesirably low level. While stocks that are overfished are still cause for concern, addressing overfishing is particularly important because unsustainable levels of harvest are still occurring.

Stocks can be considered as **recovering** if the biomass is overfished but the biomass of this stock is improving or **depleting** if the biomass is not yet overfished, but fishing pressure is too high and therefore, if continued, the stock will become overfished.

Six per cent of stocks (11 stocks) were considered to be overfished. This is an increase from two per cent (2 stocks) in 2012, the first year of national reporting.<sup>46</sup> Overfished stocks included abalone species in Victoria (both greenlip and blacklip abalone across two zones) and, in other jurisdictions, species of school shark, jewfish, gemfish, mullet, snapper and tuna.

By comparison, 16 per cent of fish stocks in the United States of America were considered to be overfished in 2015 (NOAA 2015), while in several key European seas, the proportion of stock deemed overfished is much higher (up to 41 per cent of stocks in Atlantic waters, the North Sea and the Baltic Sea and 91 per cent in the Mediterranean Sea) (European Commission 2014, pp. 7–10). Globally, the Food and Agriculture Organisation estimates that just over 30 per cent of fish stocks are overfished (FAO 2016, p. 38).

If catch, rather than number of stocks, is examined Australia's fisheries compare even more favourably, with the Fisheries Research and Development Corporation (FRDC) finding that around 90 per cent of catch by tonnage examined in 2014 was from sustainable stocks (figure 7.1).<sup>47</sup>

The proportion of fish stocks that have an unknown or undefined status has also significantly decreased over the past decade — for example, from over 70 per cent in Commonwealth waters in 2004 to presently 12 per cent (on the basis of fishing mortality). Of the 238 species examined by the FRDC across Australia, about 5 per cent of catch by tonnage (or about 28 per cent of species caught) was found to be undefined.

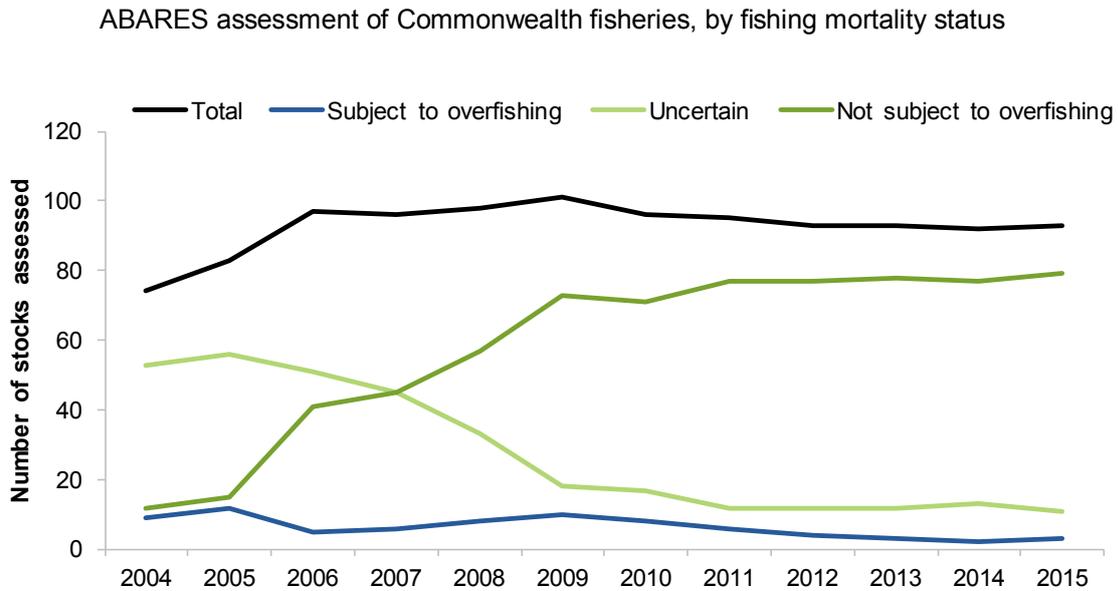
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<sup>46</sup> National reporting on the status of key Australian fish stocks based on a consistent definition commenced in 2012. The 2012 report examined 150 stocks across 49 wild caught species. The 2014 (latest) report examined 238 stocks across 68 species.

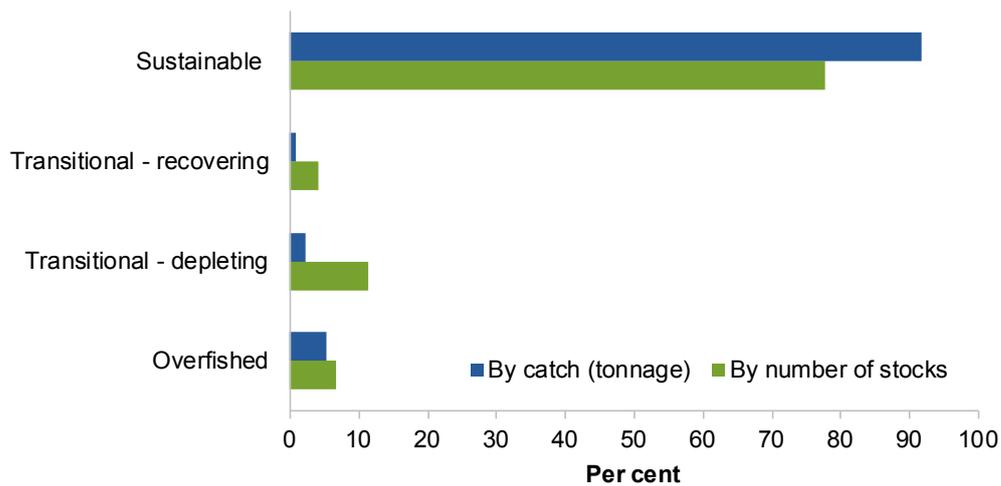
<sup>47</sup> This does not include 'undefined' stock, where information is insufficient to make a judgment about sustainability.

The above indicates that regulatory effort has generally been well-directed — providing for the restoration or better management of fish stocks at risk, and better understanding of the status of other stocks, and so the continued utilisation of fishery resources.

**Figure 7.1 Overfishing in Australia is very low**



FRDC assessment of key fish stocks, all jurisdictions (2014)<sup>a</sup>



<sup>a</sup> Does not include stock that is considered 'undefined'.

Sources: ABARES (2016); FRDC (2015).

The Commission notes that small increases in the proportion of stocks that are reported overfished, at risk or of uncertain status may be due to better information on stocks and/or

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actual deteriorations in their status. This should be considered a positive indication that the system is ‘working’ insofar as this prompts intervention or a more risk-averse approach to the use of fishery resources until risks or uncertainties are reduced. A downward or stable trend (at low levels) of overfished, at-risk and undefined key fish stocks would signal effective stock management. The relatively recent institution of a consistent national basis for reporting on key stocks is an important and welcome move towards more targeted management in this regard.

## **Ecological systems**

Unlike stocks, where sustainability can be described quantitatively through stock assessments, the wider impacts of fishing on the marine environment are harder to observe and measure. However, Australia rates reasonably highly compared to other countries in instances where effectiveness in managing the marine environment has been measured.<sup>48</sup>

Jurisdictions appear to invest significant effort in identifying risks to the wider marine environment from fishing, and almost all fisheries have management approaches in place that aim to mitigate these risks to some extent. Governments are also required to exercise precaution in their fishery management, meaning that more risk averse management is required in the presence of high or increasing uncertainty about the nature and magnitude of environmental risks.

While the pursuit of ecosystem-based management is a desirable ambition, it is also resource intensive. Before committing increasing resources in pursuit of ecosystem-based management, governments need to carefully consider the return that this would yield for the community.

## **Adequacy of ex-post assessments**

Ex-post assessments for fisheries regulated under the EPBC Act appear to be timely and well-targeted. A standard condition placed on fisheries by the Department of the Environment is that their managers must annually report on the environmental performance of the fishery. These annual reports are the primary tool used by the Department of the Environment to ensure fisheries comply with the conditions of their accreditation and, by extension, that management objectives with respect to the environment are met.

Annual reports are typically prepared by fisheries managers and must include, among other things: changes to management arrangements; relevant research results; catch data; and the number and nature of interactions with protected species. Additionally, they must contain

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<sup>48</sup> Punt et al. (2016) provide a brief summary of studies that make such comparisons, as well as pointing to the strength of Australia’s fishing management system more generally.

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information on the fishery's progress in implementing any recommendations or conditions resulting from the Department's accreditation of the fishery (DEWR 2007, Appendix B).

In the event that compliance is inadequate, export approval may be revoked, although this has rarely taken place. The Commission understands there is only one instance where this occurred.<sup>49</sup> This suggests that fisheries are compliant with conditions placed on them through accreditation.

The annual reports on fisheries subject to the EPBC Act are not published by the Department of the Environment (although in some instances they are published by individual fisheries managers). There would be benefits in the Department of the Environment publishing these reports in a central online repository. These reports contain information on changes to the management of the fishery and compliance with conditions placed on the fishery as part of its EPBC Act assessment. Therefore, such reports can provide assurance to the public that fisheries are being managed soundly, and enable commercial fishers to more readily point to their compliance with regulatory requirements, thereby strengthening their 'social licence' to operate. Publication of the reports would also allow more informed debate about any departures from standards. That is, greater transparency on outcomes could assist in ensuring that regulatory requirements are better understood and well-targeted over time.

#### RECOMMENDATION 7.1

The Australian Government should publish online the annual reports that fisheries produce as part of their accreditation requirements under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

## State and Territory-managed fisheries

The environmental assessment and monitoring undertaken in State and Territory-managed fisheries is generally less extensive than fisheries subject to the EPBC Act. This appears to reflect a view that they are of lower value and/or risk, being often small scale or niche fisheries. This may also explain why, in most cases, there is no arms-length assessment of fisheries management plans and outcomes by environment departments.

The Commission sought views from stakeholders as to whether fisheries not assessed under the EPBC Act were subject to adequate environmental management. Few stakeholders responded to this information request.

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<sup>49</sup> This occurred in 2008, when the export accreditation of the Joint Authority Northern Shark Fishery was revoked (Hawke 2009).

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Most of the responses suggested that the standards pursued through State and Territory government regulation were not high enough and all fisheries should be subject to the EPBC Act. However, there was little detail on what aspects of State regulatory frameworks were deficient or evidence of detrimental impact, and explanation of how any perceived detriment would be addressed by making State and Territory fisheries subject to provisions similar to those in the EPBC Act.

Prima facie, there do not appear to be compelling reasons for applying EPBC Act provisions to State and Territory fisheries. The small scale, low impact nature of many of the fisheries suggests that application of the approach adopted in the Act would not materially improve environmental outcomes. For example, some State and Territory fisheries are hand harvested, with no bycatch, and impose minimal impacts on the surrounding environment.

The adoption of harvest strategies and a harvest strategy policy, as recommended by the Commission would place further discipline on governments to manage stocks sustainably. State and Territory governments could also consider the merit of arms-length assessment of management plans for higher-risk fisheries by environment departments to mitigate any additional risks they pose.

## **Regulatory requirements versus public expectations**

Some participants commented that adequate heed was not being given to scientific information in setting standards. There were two sides to this, with some suggesting scientific evidence supports more stringent rules (the predominant position), and others less.

The Geelong Star was a prominent example of where regulatory requirements were considered to be insufficiently stringent by some sections of the community. While the Geelong Star has recently left Australia's jurisdiction, it faced calls to be banned while it operated. This is despite the Small Pelagic Fishery in which it was operating receiving EPBC Act approval, and scientific information indicating that its operation was not leading to the detrimental impacts claimed (box 7.3).

Environmental standards should be no less or no more than that required to prudently manage risk. To the extent that there is a significant gap between what is scientifically judged to be sustainable and what the public perceives to be sustainable, governments and industry can seek to close this, including through the publication of regular, objective reports (as discussed above), and clarification of any ambiguous standards (discussed in section 7.4).

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### Box 7.3      **The Geelong Star**

The Geelong Star is a 95 metre long freezer trawler that operated in the (quota managed) Small Pelagic Fishery (SPF) managed by the Australian Fisheries Management Authority (AFMA) from early 2015 to late 2016 (since leaving Australian jurisdiction, the vessel has been renamed). During its operation, it was subject to concerted public opposition, including a popular Facebook campaign calling for the trawler to be stopped.

Public concern relating to the Geelong Star centred on the size of the vessel, which was the largest operating in Australia, the local depletion of stocks and its impact on protected species. Little evidence, however, supported these concerns.

The CSIRO noted that the rules under which vessels operate (which have been developed to achieve and maintain sustainability) are more important to the sustainability of a target stock than the size and type of vessel (CSIRO 2015, p. 8). The size of the nets that were used by the Geelong Star are 'typical of any mid-water trawlers operating sustainably in Australian waters' (Colbeck nd).

Moreover, there is no evidence that interactions with bycatch, including protected species, are greater for one large vessel, such as the Geelong Star, than would occur with a fleet of smaller vessels that would be authorised to catch the same quantity of target species (CSIRO 2015, p. 11).

Similarly, there is little evidence that the stocks of fish in locations in which the Geelong Star operated would be subject to any more threat than would be the case if a number of smaller vessels operated in its place. The allowable catch limits in the SPF are set with reference to the stocks of target fish and the ecological environment (as per the fishery's harvest strategy), rather than the nature of the vessel.

Another concern was that the species fished by the Geelong Star, which included sardines and mackerel, form part of the diets of larger and highly sought after game fish, such as tuna and marlin and could lead to the latter's depletion. But the Institute for Marine and Antarctic Studies (IMAS) noted that fishing for such small pelagic species would not have an impact on higher-level predators that recreational fishers target:

Ecosystem modelling of the pelagic ecosystem off southern and south-eastern Australia showed that harvesting in the SPF will have minimal (negligible) impact on the species that support these related commercial and recreational fisheries. (IMAS 2015, p. 6)

Similarly, drawing on evidence provided by the Expert Panel on Declared Commercial Fishing Activity in the Small Pelagic Fishery, the CSIRO noted that many predatory species in the SPF are opportunistic feeders, and:

On very short time scales localised depletion is likely inevitable, but on longer time scales pertinent to overall ecosystem status there is no conclusive evidence of historical localised depletion leading to adverse environmental impacts in the SPF. (CSIRO 2015, p. 12)

Both IMAS and CSIRO noted that management controls have been established to address any localised depletion impacts. Further, the owners of the Geelong Star voluntarily offered to avoid fishing in certain locations where and at certain times when recreational fishing was particularly active (Seafish 2016).

Despite acknowledging much of this evidence, a recent inquiry undertaken by the Senate Environmental and Communications References Committee recommended that all factory freezer mid-water trawlers be banned from operating in Commonwealth waters due to the absence of a social licence to operate in Australia (2016, p. 101). This recommendation was not supported by the Government senators on the committee (p. 108).

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### 7.3 Efficiency of assessments under the EPBC Act

Assessments of the environmental impact of fisheries are undertaken on a fishery-wide basis. This means that individual fishers or vessels do not apply for approval of their proposed fishing practices, rather, the management arrangements for a fishery as a whole are assessed. Proposed management arrangements are developed and, upon approval (with any amendments or conditions), enforced by the fisheries managers, typically in consultation with the industry.

The Commission has focused on the role and function of the EPBC Act in examining the scope to streamline the environmental assessment of fisheries. The reason for this is twofold — the EPBC Act was identified by inquiry participants as where improvements are most likely able to be made, and the vast majority of Australian fisheries are assessed against standards set by and under the EPBC Act.

Depending on the characteristics of the fishery, assessment may be undertaken across any or all of three separate parts of the Act:

- Part 10 of the Act applies to **all Commonwealth fisheries** and assesses the impact of these fisheries on the nine Matters of National Environmental Significance listed in the Act.<sup>50</sup>
- Part 13 applies to **all fisheries operating in Commonwealth waters** and assesses the impact of these fisheries on species protected under the Act. These species include: threatened species, migratory species, listed marine species and threatened ecological communities.
- Part 13A applies to **all fisheries that export native produce** and assesses whether the fishery is managed in an ecologically sustainable way.

Despite each part of the Act serving different functions, a single assessment of fisheries is undertaken, based on the criteria outlined in the EPBC Act, and the *Guidelines for the Ecologically Sustainable Management of Fisheries* (discussed in the previous section).<sup>51</sup>

The Australian Government may also accredit State and Territory environmental assessment regimes for the purposes of approving fisheries under the EPBC Act, although no accreditations have been issued to date.

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<sup>50</sup> The Matters of National Environmental Significance are: world heritage properties; national heritage places; wetlands of international importance; listed threatened species and ecological communities; migratory species; Commonwealth marine areas; the Great Barrier Reef Marine Park; nuclear actions; and a water resource in relation to coal seam gas development and large coal mining development.

<sup>51</sup> The Guidelines define ‘ecologically sustainable’ as the ‘use of natural resources within their capacity to sustain natural processes while maintaining the life support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations.’ (DEWR 2007, p. 10)

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As noted, States and Territories do not formally assess their fisheries against their environmental laws (although plans are still developed under fishery legislation). Fishers nevertheless are required to comply with State and Territory-based regulations relating to protected species.

In addition to regulated requirements, some fisheries also opt to seek assessment through private third-party accreditation schemes — the most common in Australia being through the Marine Stewardship Council, although dozens of different schemes exist.

### **The efficiency of assessments under the EPBC Act**

Submissions to this inquiry raised concerns regarding duplication involved in meeting environmental regulations, specifically in terms of requirements:

- in the EPBC Act and those made under fisheries management plans
- across several parts the EPBC Act itself and
- in the EPBC Act and those of under third-party certification schemes.

These issues are explored in detail by Southern Rock Lobster Limited (sub. 22), the Commonwealth Fisheries Association (sub. 49), AFMA (sub. 50) and the South East Trawl Fishing Industry Association (sub. 53).

Subjecting fisheries to two different regulators, sometimes across two separate jurisdictions, raises questions about duplication. Similarly, the fact that assessments under the EPBC Act span three separate parts, yet are underpinned by the same set of guidelines, can create confusion. However, it appears that, in most instances, current regulatory arrangements do not impose unduly onerous or inefficient requirements on fishers.

In considering the efficiency of current regulations, a key focus of the Commission has been whether the degree of regulatory scrutiny placed on fisheries is proportional to the underlying risk posed by fishing.

### **The role of fisheries managers versus the role of environmental assessors**

Some stakeholders expressed concern that fishers could be fully compliant with the regulatory requirements set out by a fisheries manager (be this AFMA or a State or Territory government authority), yet fail to satisfy requirements under the EPBC Act. They suggested that this created a form of ‘double jeopardy’, whereby the activities of fishers were regulated twice — once by fisheries managers and once by the Department of the Environment — to ensure they comply with sustainability objectives (objectives that are largely shared by Commonwealth and State and Territory fishery legislation, and by the EPBC Act).

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It has been put to the Commission that one way to address this concern would be to accredit AFMA and/or State and Territory fishery managers with approval functions under the EPBC Act, including by AFMA itself (sub. 50). In effect, this would make fisheries managers responsible for ensuring fisheries meet the requirements of the EPBC Act, negating the need for an assessment by the Department of the Environment. This proposal was also conditionally recommended in the Borthwick Review (2012), on the basis it could better integrate environmental and fisheries regulation (although the review indicated that it did not know how this would be translated into legislation or changed practices (p. 69)).

Several proponents pointed to the approach to assessing petroleum activities in Commonwealth waters, where the National Offshore Petroleum Safety and Environmental Management Authority (NOPESMA) has power to approve environmental management plans under the EPBC Act. A critical difference between NOPSEMA and fisheries managers, however, is that NOPSEMA does not write the plans against which EPBC Act approval is sought.

In the draft report, the Commission's primary reservation against accrediting AFMA or State and Territory fisheries managers to undertake fisheries requirements under the EPBC Act centred on the Department's particular arms-length role in monitoring and/or assessing the impact of fisheries on the environment and the techniques employed by fisheries to manage and mitigate risks. The Commission remains of this view. Having AFMA or State and Territory fisheries managers undertake this function, while having a role in writing plans, would inevitably raise conflict of interest issues (actual or perceived), and would have the potential to erode public confidence in the regulation of fisheries.

One option put to the Commission to negate this concern was that industry, rather than fisheries managers, be responsible for the development of plans to address and mitigate potentially adverse environmental impacts of fishing.

The legislation of some jurisdictions requires that fisheries managers be the primary parties responsible for the development and/or creation of fishery management plans. For example, section 17 of the *Fisheries Management Act 1991* (Cth) provides that AFMA must determine plans of management for all fisheries, as well as outline the steps AFMA must take in determining these plans.<sup>52</sup> Removing the requirement for AFMA to produce these plans would be complicated as the remit of fisheries management plans extends well beyond environmental management and encompasses other aspects of fishery management, such as the determination of total allowable catch and regulation of statutory fishing rights.

More importantly, however, it is difficult to see how having AFMA or State and Territory fisheries managers responsible for assessing the performance of fisheries under the EPBC Act would in itself yield material efficiency gains. Given the value of an independent assessment of the environmental management of fisheries, which suggests that an arm's

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<sup>52</sup> Section 17 of the Act also gives AFMA the power to make a determination that a plan is not required.

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length assessment should remain a feature of regulation, it is unlikely to matter from an efficiency perspective whether this assessment is undertaken by fisheries managers or environment departments.

From a practical perspective, other factors would also have a bearing on any proposal to transfer responsibility for fishery management plans to industry. Presumably, the function of developing plans has been accorded to fisheries managers rather than solely to fishers due to the expertise, consistency in approach and efficiencies that can be gained from their involvement. Further, some environmental concerns are best managed at a cross-fishery, rather than individual fishery, level — for example, some populations of threatened, endangered and protected (TEP) species may be bycatch across a number of fisheries and maintaining target populations would require a cohesive approach to management.<sup>53</sup>

The case for transferring responsibility for developing environmental management plans from fishery managers to industry is therefore not strong. The Commission considers, however, that there are opportunities to better streamline environmental regulation, guided by the principle that regulatory supervision should reflect the degree of risk posed by the fishery.

AFMA and other fisheries managers have considerable institutional knowledge and experience in designing and operationalising measures that meet environmental requirements. The sustainability of many Australian fisheries has also improved markedly since the inception of the EPBC Act and, for many fisheries, the risk of severe environmental damage is lower than it has been in the past due to precautionary management. So long as sound management continues, this lower environmental risk can be expected to continue into the future.

The move by the Department of the Environment to accredit lower risk fisheries on a ten (as opposed to a five) yearly basis is a welcome step. However, the Australian Government should take this further by not compulsorily requiring accreditation (or periodic renewal of accreditation) of fisheries that represent a low environmental risk.

The Department should determine, in consultation with fishery managers, which types of fisheries are eligible for this regulatory approach. It is envisaged, however, that the Department will consider the degree of underlying environment risk posed by the fishery, whether management responses have been effective in addressing these risks over time, and whether sound management frameworks are in place to anticipate and deal with risk in the future.

Under this model, fisheries would still report annually against their management plans and the Department of the Environment would monitor fisheries for any significant changes in

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<sup>53</sup> A requirement of AFMA, for example, is that its management plans must contain measures directed at reducing to a minimum the incidental catch of species not taken under accordance with the plan and the incidental catch of other species (s.17(6D)).

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their status. The Department would have the ability to intervene should sustainability be deemed at risk (including by reinstating standard accreditation requirements), with the need for any intervention alerted by triggers determined by the Department.

The adoption of this model will allow regulatory effort to be concentrated on fisheries that pose more substantial environmental risks, while reducing the regulatory burden on fisheries where risks are low.

#### RECOMMENDATION 7.2

The Australian Government should reduce the regulatory burden involved in environmental approvals by:

- continuing to move fisheries that represent lower environmental risk to 10-yearly approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
- not requiring fisheries to be accredited or their accreditation to be periodically renewed if satisfied that they present low environmental risk.

### Duplication within the EPBC Act

A small number of stakeholders commented that having fisheries assessed under three separate parts of the EPBC Act was duplicative (the Commonwealth Fisheries Association, sub. 49; South East Trawl Fishing Industry Association, sub. 53). The Department of the Environment (sub. 54) submitted that a single assessment process is undertaken under the auspices of the *Guidelines for the Ecologically Sustainable Management of Fisheries*.

As only one assessment is undertaken, the Commission does not consider amalgamating parts 10, 13 and 13A of the EPBC Act to be a priority for reform.

### The interaction between third-party certification schemes and the EPBC Act

#### *The perceived need for third-party certification*

Third-party certification is a relatively new innovation in the fishing industry. It involves fisheries volunteering (and paying) to be assessed by a non-regulatory body — typically a non-government organisation — with a view to this body endorsing the management practices of the fishery. Typically, third-party certification schemes have an overriding objective — environmental conservation — and thus require fishery management arrangements to be far more conservative with respect to environmental requirements than that required by government regulation.

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Some supermarket chains require third-party certification as a condition of selling produce. This seems to be in response to consumer preferences and concerns regarding sustainability. Supermarkets are also likely to have adopted third-party certification as part of a broader drive to be seen by the community as socially and environmentally mindful.

In the draft report, the Commission noted that third-party certification was a divisive issue for industry, and outlined perceived advantages and disadvantages presented to the Commission of pursuing such certification. The identified benefits of certification included that it contributed to the industry's 'social licence' to operate and provided labelling and marketing advantages for certified fisheries (which may or may not contribute to a price premium). The disadvantages of certification included its cost (it is unlikely to be cost-effective for smaller or marginally profitable fisheries), and that increasing use or promotion of these schemes suggests that fisheries that are not certified are less sustainable (or even unsustainable), despite being assessed and approved by regulators. In other words, schemes may undermine the perceived credibility of existing management and regulatory regimes.

In response to the draft, a number of participants asserted that third-party certification is largely necessary because the general public often questions the sustainability of Australia's fishing industry.<sup>54</sup> A recent study on the public's perception of the seafood industry, prepared for the FRDC, suggests that the general public's perception of sustainability does not match available information on the actual sustainability of stocks (box 7.4). A majority of respondents assumed that both the fishing industry and governments are taking steps to improve the sustainability of fishing, but they were unaware of the actual steps being undertaken.

This suggests that there is an opportunity to better communicate information on both the sustainability of fishing in Australia and the initiatives of industry and governments. Moves to publish regular and consistent reports on sustainability, such as the *Fisheries Status Reports* (ABARES 2016) and the *Status of Key Australian Fish Stocks* (FRDC 2014c), are welcome and may assist in correcting any misconceptions about the sustainability of fisheries. This inquiry's recommendations to publish annual reports submitted as a condition of EPBC Act accreditation and develop harvest strategy policies should also provide more information to the public on the status of Australian fisheries.

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<sup>54</sup> See for example, the Western Australian Fisheries Industry Council presentation to the Commission at the Fremantle public hearings (trans., pp. 162-163).

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#### Box 7.4 Perceptions on the sustainability of Australian seafood

The vast majority of scientific evidence — some of which is presented earlier in this chapter — indicates that the majority of Australia's seafood is sustainably caught. However, there is evidence to suggest the public's perception of the sustainability of Australia's fishing does not match this.

A study on community perceptions of the fishing industry prepared for the FRDC in 2015 found:

- 24 per cent of respondents thought that the commercial fishing industry was sustainable, 35 per cent of people thought the industry was not sustainable and 40 per cent were not sure. The proportion of people who thought traditional fishing and recreational fishing were sustainable was higher (47 per cent and 63 per cent respectively) despite these sectors being less heavily regulated and subject to less monitoring than commercial fishing.
- 60 per cent of respondents thought that commercial fishing should continue to operate under existing rules, but subject to greater compliance monitoring. 29 per cent believed the rules were inadequate and should be changed. Only 4 per cent of those surveyed considered that commercial fishing should not be allowed to continue.

Participants generally considered that both industry and governments were doing work to improve the sustainability of fisheries, however, were generally unaware of such efforts:

- 59 per cent assumed that the industry were making efforts to be more sustainable, although were not aware of any specific work, 14 per cent were aware of the work being done by the industry, 5 per cent considered the industry was not doing work to improve sustainability, and 22 per cent did not know.
- There were similar proportions in responses to questions on the work being done by government to improve sustainability.

66 per cent of respondents considered Australia to be ahead of other countries in terms of the sustainability of the industry (compared to 16 per cent who said there was no real difference and seven per cent who said Australia was behind).

Source: Sparks (2015).

Third-party certification may provide immediate additional assurance to consumers that seafood is sustainably caught — albeit for a price — and, to the extent that it overcomes misperceptions as to sustainability of catch, is likely to promote greater overall consumption than would otherwise occur. Ultimately, whether or not to pursue third-party certification should rest with individual fisheries. They are best placed to judge the benefits of certification (of which most, if not all, are private in nature) and the costs associated with gaining and maintaining this certification.

#### *Should certified fisheries be exempt from requirements under environmental laws?*

A common argument put to the Commission was that fisheries that had received third-party certification should be exempt from some requirements under the EPBC Act and other environmental laws. The crux of this argument was that third-party certification holds fisheries to a higher environmental standard than that required by regulations, and therefore requiring compliance with two assessment regimes creates duplication without

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contributing to better environmental outcomes. In the draft report, the Commission cautioned governments against providing regulatory exemptions to fisheries that were third-party certified. The Commission maintains this view.

A major concern is one of practicality. Dozens of different certification schemes exist, and new schemes may emerge, each with different standards, processes and objectives. It would be costly for governments to vet and continuously monitor these schemes to ensure that both their standards and the application of them are and remain consistent with environmental laws. Without ongoing monitoring of the schemes and the quality of their application, government would, in effect, transfer responsibility for the environmental approval of fisheries to the private sector (while ultimately remaining accountable to the public for the outcomes achieved).

Governments also need to be mindful that third-party certification is provided on a fee-for-service basis. While third-party certification bodies seek to improve environmental outcomes, they also seek to maintain their businesses. There are potential conflicts of interest associated with third-party certification schemes setting and assessing standards and maintaining a viable business model over time. The objectives pursued by governments and those pursued by third-party certification schemes also have the potential to be significantly different and/or diverge over time.

This is not to suggest, however, that the regulatory burden could not be reduced. There is potential to do so particularly in the gathering and provision of information.

In instances where the information requirements under third-party certification are similar to requirements under regulatory environmental assessments, environment departments should use the information provided to third-party certification bodies for their assessments (or vice versa) given the fact that their assessment often takes into account the quality of local regulatory frameworks.

## **7.4 Managing protected species**

Regulation is necessary to manage the impact of fishing on protected species. However, if this regulation is excessively burdensome, lacks transparency or creates uncertainty, it may impose undue costs on fishers. This section explores the scope to improve protected species arrangements.

The EPBC Act protects marine species through four main mechanisms:

- Listed marine species provisions (established under s. 248 of the Act).
  - This list provides protection to seals, sea lions, dugongs, turtles, sea snakes, seahorses, sea dragons, pipefish and seabirds.
- Listed migratory species provisions (established under s. 209 of the Act).

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- This list contains species that Australia has committed to protect through international treaties. It includes dugongs, some shark species and multiple species of turtle and seabird.
  - Listed threatened species provisions (established under s. 178 of the Act).
    - This list provides protection to a range of species deemed by the Minister to be threatened. Some species, such as the subantarctic fur seal, the short nosed sea snake and the loggerhead turtle, appear on both this list and the list of marine protected species.
  - Protections given to cetaceans (whales and dolphins) under part 13, division 3 of the Act.

In addition, States and Territories maintain their own protected species lists, which typically overlap with the threatened species list contained in the EPBC Act.

The reality is that where there is a risk of interactions with protected species in fishing areas, some of these may result in deaths. If this fact is accepted in certain fisheries, relevant questions for policy makers are how to minimise the disturbance in those fisheries and whether there are firm thresholds to indicate when the impact on a protected species is, or is becoming, unacceptable, so as to ensure timely and appropriate intervention.

### **Is there scope to better define limits?**

In the *Guidelines for the Ecologically Sustainable Management of Fisheries*, one of the objectives against which sustainability is assessed is that:

The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities. (p. 8)

This requires that:

There are measures in place to avoid capture and/or mortality of endangered, threatened or protected species. (DEWR 2007, p. 8)

Broad principles for managing bycatch were agreed to by all governments via the National Policy on Fisheries Bycatch developed in 1999 (Ministerial Council on Forestry Fisheries and Aquaculture 1999).

Several participants in this inquiry commented that there is considerable ambiguity concerning what is considered to be an acceptable impact on protected species and that, in an operational sense, the level of impact pursued is effectively zero, which places considerable costs on fishers. For example, the Department of Fisheries (WA) stated:

One particular area of concern with respect to the implementation of the EPBC Act is the matter of interactions with Threatened, Endangered and Protected Species (TEPs). Dealing with TEP interaction is of utmost importance in fisheries management and aids industry's 'social

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license' to operate. DotE has been unwilling to express a view on, or specify 'acceptable levels' of interaction with TEP species. This has caused tension in fisheries where solutions to TEP interactions have proved particularly difficult (particularly where the interactions are seen as having no biological or ecological impacts), with DotE wanting interaction rates to continue to decrease (if not become zero) and industry feeling it has done all that it reasonably can. (sub. 21, pp. 10–11)

In the draft report, the Commission proposed greater use of explicit mortality limits as one means of clarifying what is an acceptable impact. Such limits are utilised overseas — a notable example being for the management of sea lion bycatch in the New Zealand Southern Squid Trawl Fishery (box 7.4), but are rarely utilised in Australia. One of the few examples where they are used in Australia is for Australian Sea Lions in the Southern and Eastern Scalefish and Shark Fishery (AFMA 2015b).

**Box 7.4      Managing sea lion bycatch in the New Zealand Southern Squid Trawl Fishery**

The New Zealand Government's regulation of the Southern Squid Trawl Fishery provides an example of using limits as a tool to regulate bycatch. The Government has set a fishing-related mortality limit of 68 sea lions per annum in this fishery.

This limit, along with the probability that a sea lion will be killed in any one tow, is a factor that the Minister considers when determining the total number of tows allowed to be undertaken in the fishery.

The Minister has also established explicit trigger points which, if breached, will initiate a review of the plan. A review is triggered if:

- fewer than 98 per cent of tows undertaken in the fishery use a sea-lion exclusion device that meets the specifications in the plan
- fewer than 95 per cent of tows undertaken in the fishery meet the reporting requirements specified in the plan
- more than 15 sea lion mortalities are observed by Ministry Observers in any one season
- more than 4700 tows are undertaken in any one season
- there is a pup count of fewer than 1501 pups on the Auckland Islands
- there is any new information that indicates the risk to sea lions posed by fishing in the fishery is appreciably greater than the current information suggests.

*Source:* MPI NZ (2012).

The Commission noted that greater use of explicit mortality limits alongside existing controls that seek to minimise interactions with TEP species, would:

- make limits for bycatch of TEP species transparent. Providing information on limits and how they are derived will, in turn, inform debate about what future limits should be
- provide a practical way for regulators to adjust limits in response to changes in the underlying threats to the species in question. As Hutton et al. note, such limits:

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... may be adjusted over time to reflect the state of the bycatch species stock or slowly reduced if the aim is to encourage vessels to become more efficient in this respect. (Hutton et al. 2010, p. 18)

Setting a mortality limit shares some similarities with setting a total allowable catch (TAC). As with setting a TAC, the process should be informed by objective scientific information. There should be a clear statement of intention with respect to the conservation goal — that is, whether the goal is to sustain the population at current levels, or increase it (and if so, by how much).

Setting a limit for a particular species requires an assessment of the size of the current population and its rate of reproduction, natural (non-fishing) mortality and the rate of mortality attributable to fishing. This information can be combined to set a mortality limit that meets the conservation goal.

The majority of the feedback the Commission received after its draft report did not dispute the usefulness of mortality limits per se, but sought further information on how such limits would work in practice.

All fisheries are required to undertake measures that minimise their impact on TEP species but, at times, reducing this impact to zero may not be possible without the closure of the fishery. Explicit mortality limits can be of particular value where more common controls to prevent mortality, such as gear specifications and regulation of fishing times, used in isolation, do not sufficiently allay concerns about the impact of fishing on a species. This is currently the approach adopted in the Australian Sea Lion Management Strategy for the Southern and Eastern Scalefish and Shark Fishery, where a limit of 15 mortalities of Australian Sea Lions (apportioned across seven different zones) is utilised in conjunction with area closures around breeding colonies and gear restrictions on net and mesh sizes to manage the impact of the fishery on the species (AFMA 2015b).

One concern raised by stakeholders was that mortality limits could result in sudden and heavy-handed responses to TEP species by-catch:

... to have explicit mortality limits, first of all they can be exceeded just by accident. Secondly, it could, if rigidly enforced, and it would need to be, stop a whole fishery overnight in mid-season or whatever it may be (Australian Southern Bluefin Tuna Industry Association, Canberra, public hearing, trans., p. 84).

Policy makers could consider apportioning fishery-wide limits across all vessels who access the fishery; in effect, applying an individual limit on each vessel in the fishery. The primary advantage of this approach is that only vessels that breach their limits would be penalised. This is more likely to be practical when there are a relatively small number of boats operating in a fishery.

Limits should also be based on the notion of escalating enforcement — that is, the management of vessels that interact with TEP species would become increasingly more stringent the closer to the mortality limit. For example, a vessel or fishery nearing its

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mortality limit might be directed to fish in locations where the risk of TEP species interactions is smaller. Mortality limits should not be viewed as binary, where vessels go from being able to fish as they normally would, to not being able to fish at all, as a result of one more interaction with a TEP species.

Other concerns centred on the cost and challenges of undertaking research and analysis to support the setting of mortality limits. While costs related to setting fishing limits are generally recovered from the commercial fishing sector, in some cases commercial fishing may only be one source of mortality for TEP species. Further, there were concerns about how to recover costs and manage TEP limits when TEP species are bycatch across different fisheries or different jurisdictions with different management arrangements.

In instances where commercial fishing represents only one of a range of sources of human-induced mortality on TEP species, mortality limits placed only on commercial fishers, for example, may not be fully cost-recoverable or an effective conservation tool (especially if other sources of mortality are not addressed). Of course, policy makers may decide to apply explicit mortality limits to all groups of fishers (or other users of the marine resource that interact with TEP species) if the benefits are deemed to outweigh the costs, even if costs are not fully recoverable. Where commercial fisheries are the predominant source of human-induced mortality on TEP species, limits may be more readily workable. Additionally, where commercial fishing is the predominant source of mortality (and therefore, the predominant reason for regulation), the case for industry meeting the costs of establishing and assessing such limits is strong (the principles for cost recovery in fisheries are discussed in chapter 10).

Imposing mortality limits on TEP species that straddle jurisdictions poses additional, but not insurmountable, challenges. It requires a willingness of all jurisdictions involved to subscribe to such limits and to employ robust monitoring and enforcement systems to ensure limits are effectively enforced.

Ultimately, as with all interventions, the Commission envisages that fisheries managers would employ explicit mortality limits where they are satisfied that the benefits exceed the costs.

#### RECOMMENDATION 7.3

All governments should expand the use of explicit bycatch mortality limits for fisheries that have a high risk of interaction with threatened, endangered and protected species.

Explicit mortality limits should be used in conjunction with cost-effective and reasonable controls on fishing to minimise interactions with threatened, endangered and protected species in the first place.

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## Scope to improve transparency and clarity

All jurisdictions require fishers to report interactions with TEP listed species to fisheries managers, but only two jurisdictions — the Commonwealth and South Australia — make information on these interactions available online.

This information should be made publicly available by all jurisdictions. In turn, this will inform the future adjustment of limits and strengthen accountability for meeting these limits.

AFMA's publically available information on TEP interactions represents the current leading practice in Australia. On a quarterly basis for each fishery, AFMA outlines: the number and type of species interacted with; the gear type used; the status of the specimen after the interaction; and how the interaction took place. AFMA's reporting could be further strengthened by adding the number of fishing days undertaken for each fishery over the reporting period, to allow stakeholders to gauge how common interactions are relative to the amount of effort undertaken (as opposed to just the level of interaction in absolute numbers).

AFMA's publication of TEP interactions represents a template that other jurisdictions should adopt.

### RECOMMENDATION 7.4

Governments that do not already do so should make summaries of information on interactions with protected species publically available (online).

Summaries should be provided on a fishery by fishery basis and at a minimum include the:

- species with which there was an interaction
- gear type used
- consequence of the interaction
- total number of fishing days undertaken in the fishery across the duration of the reporting period.

Jurisdictions could also consider including information on any change in the underlying conservation status of the species. This includes changes to the species status on the List of Threatened Species in the EBPC Act, changes to the species status on the IUCN Red List<sup>55</sup> or any new population assessments.

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<sup>55</sup> The IUCN (International Union for Conservation of Nature) Red List is the most prominent approach used to assess the conservation status of species on a global level.

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## Listing and delisting species

Once a species is listed under State, Territory or Commonwealth protected species legislation, it is afforded special protection. This protection is usually afforded because it is perceived to be necessary for the conservation of the species. However, it also imposes costs on parties who are likely to interact with these species (for example, fishers face the costs of modifying equipment to avoid interactions). Consequently, listing creates both costs and benefits.

This inquiry heard concerns about both the listing and delisting of species, primarily in relation to the EPBC Act, although the issues raised also have relevance for State and Territory governments.

### Listed marine species

The list of marine species was established with the implementation of the EPBC Act in 1999, identifying 11 families, genera and classes of species to be protected. Since then the composition of the list has not changed. This is despite the Minister having the power to amend the list (after consideration from the Threatened Species Scientific Committee).

The purpose of the list of marine species is not clear, nor is the rationale for determining which species were initially placed on the list. When adding to the list — something that has not been done since the list's inception — the Act stipulates that the Minister must not do so unless 'the Minister is satisfied that it is necessary to include the species in the list in order to ensure the long-term conservation of the species' (s. 250 (1)(a)).

This suggests that the primary purpose of the marine species list is conservation and its purpose is broadly similar to the threatened species list. Despite this, only around 10 per cent of listed marine species appear on the EPBC Act threatened species list. Further, the list has not changed since its inception to reflect the underlying sustainability of the listed species. This suggests that conservation is not the list's sole purpose.

This inquiry has heard that one rationale for protecting species is that they are 'charismatic' — that is, the species possesses some characteristics that the community finds appealing and therefore are sympathetic to the species being protected regardless of costs.

If the community derives significant value from protecting species because they are charismatic (rather than, or in addition to, the species being threatened), this should transparently be recognised as a factor that may be taken into account in listing. Further, in contrast to the listing process for threatened species, the criteria for listing on the marine species list, and the process by which a species is listed or delisted, is not transparent.

The fishing industry, and indeed the community as a whole, would benefit from clarity on the purpose of the marine species list and the process by which species are listed or

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delisted. This clarification does not necessarily need to be pursued through modification of the EPBC Act, but could be achieved by publically releasing guidelines on how provisions relating to the marine species list are interpreted and applied, similar to what is done for threatened species through the *Threatened Species Status Assessment Manual*.

RECOMMENDATION 7.5

The Australian Government should clarify the purpose of the List of Marine Species established in Part 13, Division 4 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and provide further information on the criteria against which species are added to or removed from this list.

### Protected species in State and Territory jurisdictions

States and Territories provide blanket protection to all native vertebrate species in their jurisdiction, including seals, dolphins and turtles through their wildlife regulation. The main rationale for such protection relates to the sustainability of native species — protected species cannot be hunted, killed, harmed, sold or kept as pets.

This protection can be exempted if the animal is deemed to be noxious or a pest. In some jurisdictions for example, some species of cockatoo are not protected in certain areas due to the damage they do to grain crops. Similarly, crows and ravens are not protected in some areas because of the damage they do to young livestock. In other cases, governments may act to minimise the impact of a protected species on its environment, for example, by relocating a species or culling them.

Native species have the potential to affect the productivity of fishing businesses, as they do with terrestrial agriculture. An example of where native wildlife is substantially affecting commercial fishing is South Australia's Lakes and Coorong Fishery (box 7.5).

As previously endangered species (such as seals) recover, tension in the management of these species due to increasing interactions with fishers can be expected to become more common. Where this happens, regulators will need to be clear about how they will balance an increasing number of protected animals against a viable fishing industry.

The Commission sought views on whether the processes under which State and Territory governments manage the impact of 'pest' native species on fisheries could be improved. Very little feedback was received, which suggests that current arrangements are not a major concern for industry.

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### Box 7.5      **New Zealand fur seals in the Lakes and Coorong Fishery**

The Lakes and Coorong Fishery is a multi-species fishery in South Australia. Species caught include bream, perch and mulloway, as well as crustaceans and molluscs. Finfish are typically caught using nets or set lines. Commercial operators in the fishery have identified that interactions with New Zealand fur seals are having an adverse impact on their ability to fish (some have even identified that their viability is threatened) (Anderson 2015; Strathearn 2016). This concern relates not only to competition between the seals and fishers for fish, but also the frequency with which seals damage expensive fishing equipment.

New Zealand fur seals are found in Southern Australia and the South Island of New Zealand. While previously hunted to low population levels, the IUCN Red List of Threatened Species lists the species as 'Least Concern' (meaning they do not qualify as threatened or near-threatened). Its assessment, undertaken in 2014, notes:

Presently the majority of New Zealand Fur Seal populations are increasing, and there is no evidence for sustained declines anywhere within their range. The breeding range of the species is still expanding in both New Zealand and Australia. Although the species is subject to some commercial fisheries bycatch in both New Zealand and Australia, those takes do not appear to be inhibiting broad scale population recovery. (Chilvers and Goldsworthy 2015, p. 1)

As with all marine mammals, New Zealand fur seals are protected in both South Australian and Commonwealth waters.

The South Australian Government has undertaken several actions to minimise the impact that fur seals are having on commercial fishers. These include temporarily waiving net fees for operators in the fishery and increasing the number of days net fishing can take place in certain areas (Bignell and Hunter 2015).

The South Australian Government has also implemented a trial of underwater fire crackers in order to attempt to scare away the seals, although fishers appear to be sceptical of the efficacy of such measures (Gage 2016). Some have called for a portion of the seals to be culled (ABC 2015).

However, the Lakes and Coorong example serves to illustrate the importance of having a clear approach. Providing compensation to fishers (or other forms of assistance, such as fee waivers) to offset the effects of protected species on their viability is unlikely to be an effective long term response — the issue is likely to be persistent (as populations of TEP species recover from historically low levels) and the subsidisation of industry to compensate for this, is likely to result in a net loss for the community.

### Threatened species

With respect to threatened species, some stakeholders expressed concern that the assessment criteria for listing were geared towards terrestrial species. It was suggested that terrestrial ecosystems and marine ecosystems were sufficiently different that the application of a terrestrial based criteria results in some marine species being identified as being threatened when they are not, and that different standards for listing marine fish be developed.

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The question of what criteria a species should meet before it is considered threatened is primarily a scientific one. That said, the Commission notes the process of listing and delisting threatened species in the EPBC Act is both transparent and accessible. Any party can nominate a species for listing or delisting, the criteria against which this nomination is assessed is publically available and nominations are assessed by an independent scientific committee with opportunity for public participation in the assessment process. When considering commercially harvested fish, the scientific committee explicitly acknowledges it will consider (but not be bound by) the Commonwealth Government Harvest Strategy Policy.

Similarly, the processes for listing and delisting species on State and Territory maintained protected species lists appear generally robust with transparent and accessible processes by which an individual can nominate a species for listing or delisting.<sup>56</sup> There are also moves to harmonise the assessment approaches used to assess threats to species across jurisdictions, thereby removing inconsistency across both different States, and the States and the Commonwealth (DoE 2015).

The Commission notes that the lists of threatened species used by all jurisdictions appear fluid, with species being listed or delisted on a regular basis. This contrasts to marine species listed under the EPBC Act, which is much more static.

### Convention on the Conservation of Migratory Species of Wild Animals

Australia is a party to the Convention on the Conservation of Migratory Species of Wild Animals (also called the Bonn Convention). In broad terms, the Convention seeks to prevent migratory species from becoming endangered and to protect species that already are. In Australia, the main instrument under which this protection is afforded is through the EPBC Act.

Species that are determined as warranting protection under the Bonn Convention can be placed on one of two lists (appendices). Appendix I comprises species that have been assessed as being in danger of extinction throughout all or a significant portion of their range. Appendix II comprises of:

...species that have an unfavourable conservation status and that require international agreements for their conservation and management, as well as those that have a conservation status which would significantly benefit from the international cooperation that could be achieved by an international agreement. (Convention of the Conservation of Migratory Species of Wild Animals 1979, Article IV)

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<sup>56</sup> While both South Australia and the Northern Territory maintain protected species lists, the processes by which a species is listed or delisted is less formal than other jurisdictions, nor does there appear to be the capacity for individuals to nominate a species for listing or delisting.

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Under the Bonn Convention, a number of marine species are listed that occur in Australian waters — most notably a number of shark species, including the great white shark (Appendix II), porbeagles (Appendix II) and two species of mako sharks (Appendix II).

Two species of hammerhead shark (scalloped hammerhead and giant hammerhead) and three species of thresher shark (pelagic thresher shark, bigeye thresher shark and common thresher shark) are also listed (Appendix II). However, Australia has lodged reservations for these species — meaning in effect that Australia is not a party for these species. The primary rationale for lodging these reservations was that these species are regularly caught by recreational fishers, and if these species were given protection under the EPBC Act, those who catch such species would be liable for fines and/or prosecution.

This reservation was required to ‘avoid triggering unintended measures under Australia’s domestic law ... which would have gone beyond Australia’s obligations under the Convention’ (Australian Government 2014, p. 3). This is because s. 209(3)(a) of the EPBC Act requires the list of migratory species include that all migratory species that are:

- native species, and
- from time to time included in the appendices to the Bonn convention.

This means any species listed in the Bonn Convention appendices are protected from being taken and traded, regardless of whether they are listed in Appendix I or Appendix II. For Appendix II species, this level of protection is beyond Australia’s requirements under the convention.

This fact was acknowledged in the Hawke Review of the EPBC Act:

The clear intent of the Bonn Convention is to differentiate between Appendix I and Appendix II species and, in turn, the level of protection required. This is not reflected in the Act. In some cases this may give rise to unnecessarily restrictive measures in relation to species that do not have an unfavourable conservation status. (Hawke 2009, p. 128)

It is important that the Australian Government has the flexibility to differentiate the level of protection afforded to Appendix I and Appendix II species listed under the Bonn Convention. To date, this flexibility has been achieved in one of two ways:

- lodging reservations against a decision to list a species in the Bonn convention
- amending the EPBC Act to make the taking of specific Appendix II species not an offence (as done with mako and porbeagle sharks caught recreationally under s. 212(1)(f)).

Both options address the implications of the list on an ad hoc, species by species basis, representing a source of uncertainty for commercial and recreational fishers. The Hawke review recommended a third option:

... that the provisions of Part 13 of the Act relating to migratory species listed on Appendix II of the Bonn Convention be reviewed and amended to allow the take of Appendix II migratory

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species, subject to management arrangements demonstrating that the take would not be detrimental to the survival of the species.

Any such amendments should ensure that the Act provides appropriate protection consistent with Australia's international obligations. (Hawke 2009, p. 129)

This is the Commission's preferred approach. This is consistent with Australia's international obligations under the convention, and allays the need for the Australian Government to exempt Appendix II listed species from EPBC Act protections on a species by species basis (thereby ensuring that all Appendix II listed species are treated similarly throughout Australia's jurisdiction.)

RECOMMENDATION 7.6

Consistent with recommendation 17 of the Hawke Review (2009), the Australian Government should modify Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) to allow the take of species listed in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals subject to management arrangements demonstrating that the take would not be detrimental to the survival of the species.



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## 8 Aquaculture

### Key points

- Aquaculture production in Australia is primarily based on Atlantic salmon, tuna, oysters (pearl and edible) and prawns, and has grown in importance as wild caught fish production has declined.
- Aquaculture is regulated to mitigate the industry's impact on the environment, provide access to publicly-owned land and water and manage potential conflicts with other users of these resources.
- Growth in Australian aquaculture production over the past decade has been underpinned by growth in Tasmanian farmed salmon. There has been little growth in production of the other major species in Australia, except for barramundi.
  - For these other major species, limited growth reflects factors other than regulation.
  - Many 'newer' species have not proceeded to commercially viable production due to technical and biological challenges in ensuring fish health and growth in a controlled production environment.
  - Regulatory arrangements have, however, impeded growth of land-based prawn production in North Queensland.
- Challenges to future growth of the aquaculture industry include producing species that are commercially viable given competition with producers in other countries, and finding suitable sites given increasing competition for access to coastal land and waters, and environmental concerns. For more remote locations, access to skills and infrastructure are key issues.
- The designation of zones for potential aquaculture development has proved to be an efficient way of identifying suitable sites, providing greater regulatory certainty and streamlining approval processes for investors.
  - The benefits of designating aquaculture zones depends, however, on the match of commercially viable species with the characteristics of the land or waters to be zoned and access to essential services and infrastructure.
  - Governments will need to decide whether there are sufficiently viable prospects to develop the necessary regulatory and planning framework.
- Concerns about the environmental and amenity impacts of aquaculture developments highlight the tensions for governments in both regulating and promoting industry growth.
  - These could be reduced by having separate agencies responsible for regulatory and industry development functions.
  - Industry also has a role in addressing community concerns by building and maintaining a 'social licence' to operate in the community.

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Aquaculture is the cultivation or farming of aquatic organisms, including finfish (such as salmon and tuna), molluscs (such as oysters), crustaceans (such as prawns) and plants (microalgae for beta-carotene) in a managed marine or freshwater environment. This usually involves some intervention in the growth cycle to enhance production, including breeding, regular feeding, stocking and protection from predators. Aquaculture is undertaken both in terrestrial and marine environments and uses a range of production systems depending on the nature of the species and environment — for example, cages or land-based tanks for the farming of marine finfish, stick and tray production for oysters and mussels and land-based pond culture for prawns.

## **8.1 What is at issue?**

Aquaculture has grown in its importance in overall fisheries production, in Australia and globally, as wild caught fisheries production has declined due to sustainability concerns. In Australia, governments see aquaculture as a potential source of economic growth, particularly in the context of projected increases in global demand for protein. (HRSCARFF 2012).

A major concern, therefore, has been to ensure that regulations do not unduly constrain the sector's growth and productivity.

Aquaculture is primarily regulated to control where and how businesses can operate. Like other businesses in Australia that compete for access to land and water, and whose activities may affect public amenity, they must be compliant with planning and development laws. As aquaculture often requires the use of publicly-owned land and waterways, one of the common aims of regulation is to manage potential conflicts with other uses of these resources — such as marine transport, fishing, recreation and nature conservation.

Aquaculture is also regulated to mitigate the industry's impacts on the environment. The environmental impacts of aquaculture production depend on factors such as the type of species being cultivated, the method of production, the capacity of the surrounding waters to assimilate nutrient discharge, and the number and location of farms. Impacts can include degradation of the marine environment, introduction of disease, impacts on wild fish stocks and ecological systems and effects on the amenity values of surrounding communities (box 8.1).

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### Box 8.1 Potential environmental impacts of aquaculture

The aquaculture industry is diverse and each type of production has different potential environmental impacts.

For example, sea cage production can affect the quality of surrounding waters and the marine floor if the discharge of nutrients (such as uneaten fish food and fish waste) and the chemicals and antibiotics used to control pests and disease exceeds the absorptive capacity of the surrounding water. Water quality can also be affected by the use of chemical agents to remove the build-up of organic material (biofouling) on cages and other submerged infrastructure.

Cages can attract other fish and predators (such as seals) and so affect other marine life in the area. Fish can also escape, introducing disease or a genetic weakening of wild stocks. The existence of cage structures can reduce the area available for other uses, and farm operations may mar visual amenity and create noise for nearby residents.

In contrast, the farming of oysters and mussels through the use of rack and tray production and rope longlines have relatively low impacts on water quality. These species are not fed, but rely on the food they filter from the surrounding water. This filter feeding may contribute positively to water quality in waters with excessive nutrients, although in some waterways can result in a reduction in nutrients that support the surrounding ecosystem. As with cages, the infrastructure associated with rack and tray and rope longline production can shade the marine floor and alter water currents and the movement of sediment. These operations can also reduce the area available for use by others and affect visual amenity.

Pond production presents the risk of nutrient discharge into adjacent waterways. For example, the production of prawns in land-based ponds in coastal areas, which draws on seawater from estuaries or directly from the sea, has been criticised for the discharge of nutrients back into those waters. The production of trout in freshwater raceways — enclosures linked to inland waterways — can also result in waste products and other nutrients entering the riverine environment.

Where aquaculture is reliant on the use of wild caught juvenile fish for brood stocks, there can be an effect on wild populations. Some have questioned the longer term sustainability of feeding fish with other fish (usually in the form of fishmeal and fish oil) sourced from wild harvested stock such as, pilchards and anchovies.

Sources: DoE (2001); PC (2004).

## The Commission's previous study

The Commission's 2004 study, *Assessing Environmental Regulatory Arrangements for Aquaculture* (PC 2004), assessed the existing regulatory arrangements and identified the key features of an efficient and effective regulatory framework (box 8.2).

For this inquiry, in line with the terms of reference, the Commission has considered the extent to which regulations examined in the 2004 review have changed, and how regulations have affected the sector's development.

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**Box 8.2 Key features of an efficient and effective regulatory framework for aquaculture**

The key features of an efficient and effective regulatory framework identified by the Commission's 2004 study include:

- clear legislative objectives to promote certainty and consistency in setting the parameters of the legislation and in guiding ministers, government agencies and others in interpreting and applying the legislation
- separate agencies for industry development and regulation to remove potential conflicts of interest and improve public confidence in environmental protection, resource planning, allocation, approvals and enforcement
- the use of a spatial planning regime for marine aquaculture to designate aquaculture development zones in suitable environmental locations
- a land use planning system that recognises and provides for land-based aquaculture and provides guidance to local government planning arrangements
- the effective provision of tenure to public waters and land to provide adequate security to meet the needs of different lease categories and uses
- the use of environmental risk assessment processes to guide decision-making based on the species, production system, site location, management practices and the condition of the local environment (such as the quality and assimilative capacity of the receiving waters)
- a limited approvals process to minimise the number of different individual approvals required for an aquaculture development, ideally by having one approval for aquaculture operations and one for environmental management.

*Source:* PC (2004).

## 8.2 How aquaculture is regulated

States and Territories are primarily responsible for the management and regulation of aquaculture given their jurisdiction over most planning and local environmental matters.

The primary modes of control (and facilitation) are the granting of leases on public land and waters so as to provide secure tenure to a site, and the issuing and administration of various development and operating approvals. These approvals may stipulate conditions such as requirements to observe specified distances between farms, stocking rates, restrictions on the type of infrastructure that can be employed and requirements to maintain the quality of water to a specified level (for example, there may be requirements to ensure there is no visible or measureable impact on the water or seabed beyond the farm lease boundaries). Regulations also usually seek to control interactions with other wildlife, such as seals and seabirds.

State governments are usually responsible for assessing marine-based aquaculture development applications, while local governments are responsible for assessing land-based aquaculture development applications. Some State governments have more

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proactively used planning and zoning to elect and define suitable areas for marine-based aquaculture (see below).

Most jurisdictions do not regulate aquaculture through dedicated legislation. In these jurisdictions, the sector is regulated under fisheries legislation in conjunction with a range of other legislation. For example, Queensland regulates aquaculture through its fisheries Act along with environmental protection legislation, land planning legislation and water quality management legislation. Western Australia regulates through its fisheries Act along with specific pearling legislation, and has recently established two aquaculture development zones. New South Wales and Victoria rely on a mixture of fisheries legislation, environmental and planning legislation, water management and coastal planning legislation.

South Australia is the only jurisdiction with legislation dedicated to supervising the development and operation of aquaculture businesses — the *Aquaculture Act 2001*. Tasmania also has specific legislation, the *Marine Farming Planning Act 1995*, relating to the planning aspects of aquaculture.

The Australian Government has had limited involvement in the regulation of aquaculture to date, as most aquaculture operations have occurred on State and Territory-controlled land and water. The exceptions are where aquaculture operations have been required to be assessed under the auspices of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), which applies to matters of national environmental significance, including export fisheries, threatened species, migratory species and the Great Barrier Reef Marine Park.

The Australian Government also coordinates policy over national issues, such as disease control, quarantine (which affects the importation of broodstock), product quality, labelling and trade.

The overall impacts of regulation differ depending on the method of production employed to farm a particular species. The range of conditions and reporting requirements placed on operators generally reflect the potential environmental impacts associated with the different methods of production and species. For example, more stringent conditions and reporting requirements are typically placed on intensive aquaculture operations where feed is provided, such as finfish farming, due to the potential impact on surrounding water quality. In contrast, operations such as oyster production, where food is not provided and the potential impact on the water quality is less, are subject to fewer conditions and reporting requirements.

### **8.3 Aquaculture trends in Australia**

Aquaculture has grown in importance as a source of seafood as wild caught production has declined. In 2014, global consumption of aquaculture products exceeded that from wild

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caught fisheries for the first time (FAO 2014). The potential for growth in the aquaculture sector is viewed as considerable given projected increases in demand for seafood and for non-food applications, for example, the farming of aquatic plants for beta-carotene.

Aquaculture's share of fisheries production by value in Australia increased from under 30 per cent in 2001-02 to around 40 per cent in 2013-14.

## **Australia compared to the rest of the world**

Australia is a minnow in world aquaculture production, accounting for less than 0.1 per cent of world aquaculture output (DoA 2015). The majority of aquaculture production occurs in Asia, with China, India, Vietnam and Indonesia accounting for nearly 80 per cent of world output.

Australia's aquaculture sector has experienced impressive growth, with total output by volume increasing by nearly 70 per cent between 2001-02 and 2013-14. This is commensurate with the growth of the two largest global producers, China and India, whose output increased by 64 per cent and 82 per cent between 2003 and 2012, respectively (albeit from much higher bases). The next two largest producers, Vietnam and Indonesia, experienced even stronger growth, with output by volume increasing by over 200 per cent over the same period (OECD 2015).

Australia, like other OECD countries, has focused production on high-value marine species such as salmon, tuna and oysters. Production in Asia is focused on low-value freshwater species such as carp and catfish (OECD 2015). Australia accounted for less than 4 per cent of the value of aquaculture production across the OECD in 2013, but growth in the value of Australian aquaculture production between 2002 and 2013 was second only to Norway (OECD 2015).

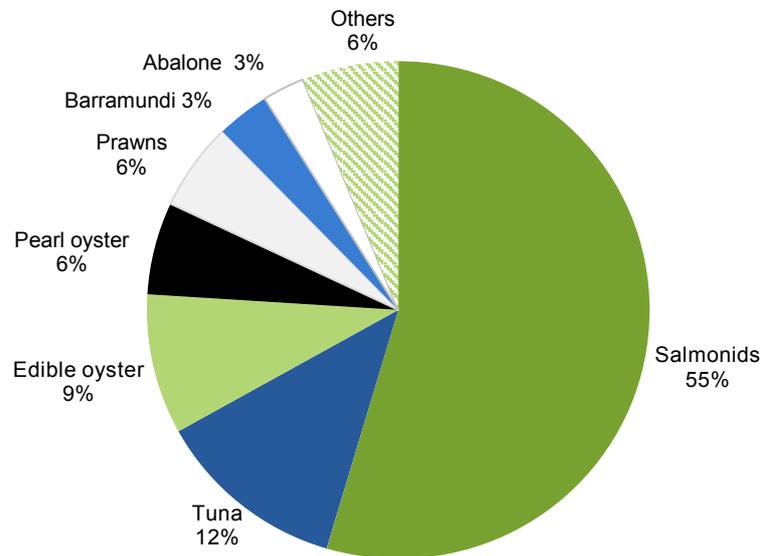
There is general consensus that Australia is unlikely to grow its share of world aquaculture output by volume relative to aquaculture producers in Asia in the medium term given its relatively stricter environmental regulations and higher production costs, such as labour.

## **What is farmed in Australia and where**

Aquaculture production in Australia is primarily based on the production of Atlantic salmon, tuna, oysters (pearl and edible) and prawns (figure 8.1). Other species include barramundi, abalone, mussels, trout, marron, redclaw (freshwater crayfish), yabbies and microalgae (beta-carotene).

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Figure 8.1 **Australian aquaculture production by value**  
Total value of production \$994 million (2013-14)



*Data source:* Savage and Hobsbawn (2015).

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Climate and geography are major determinants of where and what species are farmed. Other factors include access to suitable waterways and infrastructure.

The cooler southern ocean waters of Australia are suited to salmon, abalone and mussels, whereas prawns and barramundi are produced in the warmer northern waters. This means that the species produced around southern Australia are typically competing with aquaculture production from the more developed countries in the northern hemisphere, whereas species produced in the tropical waters of northern Australia are competing against the lower-cost producers in Asian countries.

There are also a number of site-specific factors. The Sydney rock oyster is native to the eastern Australian coast and farmed in New South Wales and southern Queensland. In Tasmania and South Australia oyster production is based on an introduced species, the Pacific oyster.

Although most jurisdictions across Australia produce a number of species, production tends to be dominated by a single species. In Tasmania, aquaculture production is dominated by the production of farmed Atlantic salmon in sea cages. In South Australia, the aquaculture industry is based on wild caught tuna grown out in sea cages and, to a lesser extent, oysters. In Queensland, aquaculture is based on land-based prawn production; in Western Australia it is pearls; in New South Wales, oysters; and in Victoria, abalone.

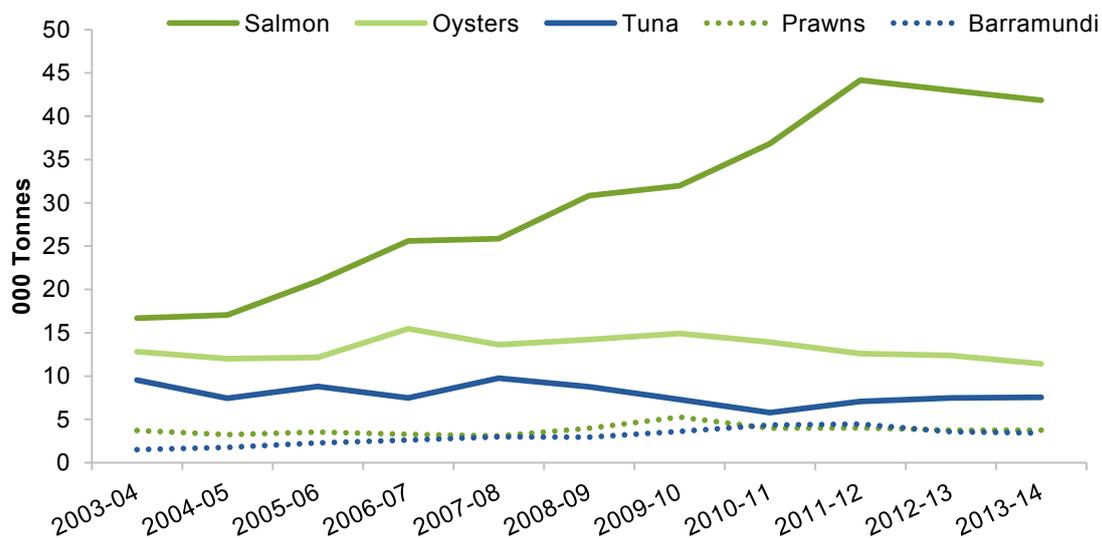
The sector in the Northern Territory remains relatively small and focuses on barramundi farmed in land-based ponds. The less heavily populated coastlines of the Northern Territory and Western Australia are considered to hold further development opportunities for aquaculture, although these locations face significant infrastructure challenges.

Although aquaculture is undertaken in all jurisdictions, Tasmania (56 per cent) and South Australia (18 per cent) account for around three-quarters of the value of Australia’s aquaculture production. Industry has indicated that these two jurisdictions have the most developed and facilitative regulatory frameworks for aquaculture development (National Aquaculture Council, sub. 2; Tasmanian Salmonid Growers Association, sub. 8; Australian Prawn Farmers Association, sub. 23; Australian Southern Bluefin Tuna Industry Association, sub. 59).

### Trends in Australian aquaculture production

The growth in Australian aquaculture production over the past decade has been underpinned by growth in Tasmanian farmed salmon. Barramundi production also increased significantly, although from a low base. For the other major species, there has been little growth, or small declines, in production (figure 8.2).

Figure 8.2 **Growth in aquaculture production, selected species**  
2003-04 to 2013-14



Data source: Savage and Hobsbawn (2015).

In real value terms, aquaculture production has declined over the past decade for six of the 11 main species farmed in Australia (table 8.1). Notable exceptions were salmon, barramundi and abalone.

**Table 8.1 Methods of aquaculture production by species**

<i>Species</i>	<i>Production method</i>	<i>Jurisdiction</i>	<i>Value of production 2013-14</i>	<i>Change in value of production 2003-04 to 2013-14<sup>a</sup></i>
			(\$ 000)	%
Salmon	Sea cages	Tas	542 956	194
Southern blue fin tuna	Sea cages (for the growing out of wild caught fish)	SA	122 400	-61
Edible oysters	Rack, raft and longline	NSW, SA, Tas	90 293	-11
Pearl oysters	Longline	WA	60 719	-62
Prawns	Land based ponds	Qld, NSW	63 522	-16
Barramundi	Sea cages, land based ponds, flow through systems and recirculation systems	NT, Qld, WA, NSW	33 857	92
Abalone	Land based tanks, ocean rafts and cages	Vic, SA, Tas	26 802	144
Blue mussel	Longline	SA, Tas, Vic	9 614	3
Silver perch	Pond	NSW, Qld, WA	4 106	13
Marron	Ponds and farm dams	WA	1 836	-11
Redclaw	Ponds and farm dams	Qld	682	-58

<sup>a</sup> Values are CPI adjusted.

Sources: PC (2004); Savage and Hobsbawn (2015).

Tasmanian farmed salmon has experienced rapid growth. In the ten years to 2013-14, production of farmed salmon in Tasmania increased by 151 per cent in volume terms and 194 per cent in value terms (Savage and Hobsbawn 2015). At present, Tasmanian salmon is mainly produced for domestic markets. In its initial stages of small scale production in the early 1990s, around 60 to 80 per cent was exported (IC 1996).

The rapid increase in production has improved the availability of and access to salmon in the domestic market and is reflected in strong growth in Australia's per capita salmon consumption. Exports accounted for around 2 per cent of the value of Tasmanian salmon production in 2013-14 (DoSG Tas 2015). However, with further expansion in production and some reported changes to arrangements for supplying major Australian supermarkets, there is likely to be a greater focus on export markets.

The rapid growth of farmed salmon in Tasmania has also encouraged other States to further develop and promote aquaculture, and producers of other aquaculture species to seek to emulate the success of the Tasmanian industry.

The production of farmed barramundi has increased over the past decade, but its growth rate is likely to have been affected by competition from other white fish, particularly lower-cost imported product. The relatively small scale of production (around 100 licensed farmers producing around 3500 tonnes per year) also makes it difficult to compete with imports. However, there are plans to develop large scale barramundi production — up to

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1000 tonnes per year — in sea cages in the Kimberley aquaculture development zone off the Western Australian coast.

Other major aquaculture species farmed in Australia have experienced little growth in production for a range of reasons. For example:

- The production of southern bluefin tuna ranched in South Australia is limited by quota.
- Oyster production is limited by the availability of sites with high water quality. Increased run-off from coastal development and the susceptibility of oysters to disease are key issues.
  - In New South Wales, oyster production peaked in the mid-1970s and has been declining since due to degradation in water quality in coastal rivers, estuaries and lakes, outbreaks of disease and changes in consumer tastes (DPI NSW 2014).
  - In South Australia, production adjacent to more sparsely populated coastlines has increased (12 per cent) over the past decade, but like all oyster production remains susceptible to disease outbreaks (Savage and Hobsbawn 2015).

## **8.4 Impacts of regulation on the aquaculture sector**

There have been few significant changes to the regulatory arrangements across Australia in the past decade. The major exception is the recent introduction of aquaculture zones by the Western Australian Government to foster development of aquaculture in the Kimberley and the mid-west regions (DoF WA 2015a).

The regulatory framework in Tasmania was introduced in the mid-1990s. The regulatory regime in South Australia has been in place since 2001, although changes to improve timing and address some areas of duplication in South Australia were finalised in 2013 and 2014 (Australian Southern Bluefin Tuna Industry Association, sub. 59).

Many features of good regulatory frameworks highlighted in the Commission's 2004 study were in place or have since been adopted in Tasmania and South Australia, and have proven important in the expansion of industry in those States.

In the other States and Territories of Australia (apart from Western Australia) there has been little regulatory change since the Commission's 2004 study and little growth. However, the main impediments to aquaculture ventures have primarily been non-regulatory in nature, suggesting that the lack of regulatory change is due to the lack of demand for change. The exception to this is land-based prawn production in North Queensland.

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## Factors affecting growth

Effective regulatory frameworks are only one of several pre-conditions for successful aquaculture developments.

Principally, aquaculture developments require access to suitable locations. That is, locations with the right climatic and environmental conditions and a surrounding environment with sufficient assimilative capacity. The suitability of a location will also depend on potential impacts on other users of the waterway and nearby coastal populations and access to necessary infrastructure. Of course, commercial viability requires that investors select species that they can produce reliably and competitively.

Major species, except for salmon and barramundi, have experienced little growth over the past decade (figure 8.2) and regulatory factors do not appear to have played a major role in this trend.

Other ‘newer’ species in Australia have often not proceeded to a commercially viable stage of production due to technical and biological challenges in ensuring fish health and growth in a controlled production environment. These challenges are even greater for those species that have not previously been farmed extensively and where there is little or no established knowledge or expertise as to how they should be farmed.

Aquaculture ventures require significant up-front investment in research and infrastructure and face considerable risks and uncertainties. These are highlighted by the experience of Western Kingfish Ltd and its investment in the sea cage farming of yellowtail kingfish off the Western Australian coast in 2007. Having listed on the Australian Stock Exchange and invested some \$8 million dollars in the venture, the company went into liquidation in less than 18 months (Ferrier Hodgson 2016; Jose 2016). The Aquaculture Council of Western Australia (sub. DR79) said that this was due to inadequate funds, which, among other things, resulted in reduced rations and staffing levels that contributed to the death of a significant number of the first cohort of fish. The fish were also affected by mishandling of a treatment to control a parasite. The Aquaculture Council’s view was that although the loss of these fish in itself contributed, the major reason for the demise of the venture was difficulty in raising adequate funds against the backdrop of global financial crisis (sub. DR79). (Since then, further commercial trials of farming yellowtail kingfish have been undertaken off Geraldton in Western Australia by Indian Ocean Fresh working with the Mid West Development Commission (Jose 2016)).

Stakeholders submit that such failures have resulted in other new projects facing difficulty in accessing financing, particularly where the failed projects have been over-promoted, resulting in unmet investor expectations and a loss of investor confidence in the sector (Australian Venture Consultants Pty Ltd 2015).

A distinguishing feature of the regulatory systems in South Australia and Tasmania, where the industry has expanded, has been the use of spatial planning to designate zones for aquaculture. The establishment of zones has helped to establish the legitimacy of aquaculture (that is, address the actual and perceived risks associated with fish farming),

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improved regulatory certainty, and reduced the red tape associated with environmental impact assessments and public consultations for new aquaculture developments.

In contrast, the most significant concerns raised by stakeholders in States without designated zones was the need to understand and comply with multiple Acts, obtain multiple approvals from different levels of government and agencies, and consequential regulatory complexity and delay. It is these jurisdictions that are likely to reflect instances where:

Fishery Agencies are supportive of development and aquaculture, but ... hold ups or impediments come from other agencies, particularly environmental and park/reserve focused groups. It is this interconnectivity and overlap of regulations, often with conflicting objectives and time frames, that can impact growth. (Australian Barramundi Farmers Association, sub. DR94, p. 2)

The regulatory arrangements in Tasmania and South Australia are considered good relative to other developed countries (box 8.3). Western Australia has recently introduced aquaculture zoning and the Queensland Government has recently announced that it will identify aquaculture development areas (discussed further below).

Other governments will need to decide, ideally in consultation with industry, whether there are likely to be sufficiently viable prospects to warrant development of the necessary regulatory and planning framework. This should avoid what the CSIRO describes as the ‘catch 22’ situation where the lack of a regulatory framework deters potential investors and the lack of projects means that the regulatory framework is yet to be developed (sub. 61).

There may be additional benefits in amalgamating legislative requirements. Again, South Australia and Tasmania are viewed as leading in this area. Aquaculture producers considered that South Australia’s ‘one stop shop’ regulatory regime gave it a competitive advantage. As noted, Tasmania does not rely on a single aquaculture Act, but has legislation dedicated to the development and planning of marine aquaculture.

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**FINDING 8.1**

The development of aquaculture requires access to suitable sites. Spatial planning assists in the efficient identification of these locations. Spatial planning may also provide regulatory predictability and a more streamlined approval process for investors.

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### Box 8.3      **The regulation of aquaculture in other developed countries**

A common feature of aquaculture in developed countries is that the sector is subject to strict environmental standards to meet community expectations. In most of these countries, aquaculture is regulated by a range of different Acts, involving different levels of government and various regulatory authorities.

One approach to reduce the time and cost associated with gaining approval for new aquaculture developments has been to designate zones for aquaculture developments. This approach, similar to some Australian States, has been used in Scotland. Criticisms of other developed countries, such as Canada, New Zealand and the United States, centre on concerns similar to those levelled at Australian States without a regulatory framework based on development zones.

**Norway** regulates aquaculture, primarily the farming of Atlantic salmon, under the *Aquaculture Act (2005)*. It aims to develop the industry, protect the environment, simplify the approval process and ensure consideration of other uses of the coastal zone. Applications for new developments are made to the regional fisheries office, which following approval sends the application on to other regional authorities for further approval (coastal administration, food safety and County Governor). Environmental monitoring requirements are undertaken by both local and regional authorities based on the level of impact of the marine farm. The Norwegian regulation has a focus on standardising equipment requirements, such as cage construction.

**Scotland** requires aquaculture to be located in designated areas or farm management areas. Within these areas there are specific requirements related to infrastructure and controls for disease management. New developments require approvals from various authorities, such as planning consent from local government, discharge and medication consent from the Scottish Environmental Authority and navigation consent. Environmental monitoring is undertaken by the environmental authority.

**New Zealand** previously required finfish farms to be located in Aquaculture Management Areas designated by local councils. Following the lengthy, complex and costly processes required to establish these areas and the lack of new water space made available, these arrangements were amended in 2011. Currently all new aquaculture developments are required to submit an environmental impact assessment and obtain a resource consent from the relevant local council. Obtaining the resource consent can be an expensive and lengthy process due to the considerable public consultation undertaken. The resource consent stipulates the location and scale of the operation, production limits and environmental monitoring and compliance standards. The Minister for Primary Industries also needs to confirm the development will have no 'undue adverse effects' on recreational, commercial or customary fishing. If there are adverse effects, compensation is required for the affected parties.

Aquaculture in **Canada** is primarily regulated at the province level although aquaculture operations are subject to relevant aspects of Federal fisheries, navigation and endangered species legislation. New aquaculture developments are required to obtain an operating consent from the provincial government and for larger scale operations an environmental impact assessment (EIA) may be required. Development zones and areas are not used. Most provinces, for example New Brunswick and Nova Scotia, use environmental monitoring programs that stipulate the conditions that have to be met and the monitoring requirements.

*Source:* Sim-Smith and Forsythe (2013).

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## Regulation is a problem for land-based prawn farming in Queensland

As much of the Queensland coastline is adjacent to the Great Barrier Reef, potential aquaculture operators are required to maintain water quality in accordance with standards that reflect its World Heritage status. Uncertainty as to how to meet these requirements has impeded the development of terrestrial-based prawn farms in North Queensland (which need to discharge into waters adjacent to the Reef). This has resulted in considerable delays in the development assessments and created uncertainty for other investors.

The Australian Prawn Farmers Association (sub. 23) drew attention to the 15 year approval process for the Guthalungra prawn farm. This long process was due to strict environmental restrictions on the level of nutrients in discharge water — the so called ‘zero net discharge’ or ‘zero net nutrient release’ requirement placed on the proposed Guthalungra development by the Commonwealth Minister for the Environment. This requirement was viewed by industry as effectively prohibiting further development of land-based prawn farms (box 8.4).

The Queensland Competition Authority (2014) and Joint Parliamentary Select Committee on Northern Australia (2016) proposed the use of zoning to overcome the impasse between aquaculture development in North Queensland and ensuring the long-term health of the Great Barrier Reef. The Queensland Competition Authority recommended that each area designated as suitable for aquaculture development be given a code setting out the regulatory conditions for that area — such as species, permitted discharge, the required environmental offsets and approved locations for water intake and discharge structures (QCA 2014).

Following these reviews, the Queensland Government has indicated it will designate aquaculture development areas (DAF Qld 2016c). The onus now rests on the Queensland Government to do so.

### *Queensland is different*

Queensland is different from other jurisdictions as most of the proposed aquaculture developments (and the major species produced there) have been land-based rather than marine-based. This has presented a number of challenges for the industry in North Queensland.

There are likely to be more competing uses for the land, which makes the establishment of land-based aquaculture development areas more problematic than for marine-based areas.

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**Box 8.4      The Guthalungra prawn farm and the ‘zero net discharge’ requirement**

Pacific Reef initially proposed a 200 plus hectare prawn farm at Guthalungra between Ayr and Bowen in North Queensland in 2001. The project finally received approval to discharge into the Great Barrier Reef marine park in 2015. Final approval from the local shire council was expected by the second half of 2016.

The Queensland Government approved the project in 2008 and in 2010 the Commonwealth Department of Environment approved the project subject to conditions, including that there was no net increase in background level of nutrients in the water at Abbot Bay into which the farm would discharge. This became known as the ‘zero net discharge requirement’ and was seen effectively as a ban on further development of the prawn farming industry in North Queensland.

The CSIRO commented that no prawn farm in the world could achieve a zero net discharge and the Australian Institute of Marine Science believed that such a requirement would not be economically feasible. In 2011, the approvals were amended to allow for discharges above the background levels in the water at Abbot Bay provided these discharges were fully offset. However, the proponent, Pacific Reef, found that initially there was little guidance on how to achieve these offsets. These will now be achieved through payments to the Reef Trust, recently established by the Queensland and Australian Governments, which will deliver funding to projects to protect the Great Barrier Reef. This is likely to involve restoring riparian zones and wetlands and funding cane growers to improve their land management practices. Provisional estimates of the annual cost of these offsets is around \$95 000 through improvements to 1689 hectares of sugar cane growing land.

In its evidence to the Joint Parliamentary Select Committee in 2015, the Department of the Environment (Cth) and the Great Barrier Reef Marine Park Authority (GBRMPA) rejected that there had ever been a regulatory standard for a zero net discharge for all new aquaculture projects. This was accepted by the Committee. The standard was a condition that had only applied to the Guthalungra project — the farm would be discharging directly into the ocean at Abbot Bay via a pipeline where the nutrient levels already exceeded water quality guidelines. Other prawn farms discharge into creeks and mangrove estuaries where the waters have a greater assimilative capacity.

The Department of the Environment and the GBRMPA told the Joint Parliamentary Select Committee that the conditions placed on the Guthalungra development were specific to that location. The GBRMPA commented that future approvals would not be so protracted due to improvements in technology, regulator learning and legislative changes that would improve the process. In addition, following amendments to the EPBC Act proponents would no longer be able to apply separately for EPBC and GBRMPA permits which had further lengthened the process.

*Source:* Joint Select Committee on Northern Australia (2016).

The special requirements of the Great Barrier Reef introduce added complexities. Land-based aquaculture operations in North Queensland are subject to strict environmental regulations relating to discharges to maintain water quality. The Australian Prawn Farmers Association (sub. DR105) provided examples of the regulatory complexities, delays and uncertainty involved in meeting the quality requirements for discharged water. It also drew attention to the different expectations of aquaculture farming and other farming operations, where a new or expanded aquaculture operation might spend years and large amounts of

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money to comply with the regulations to protect the Reef, but a new cane farm that also produces run-off into the reef can be approved within six months.

The regulation of aquaculture is more stringent than for most other coastal developments, and relative to other sectors in Queensland that may also affect water quality in the Reef because the specific source of pollution can be easily identified (being a single point — the aquaculture business). In contrast, the agricultural sector has diffuse sources of pollution relating to sediments, nutrients and chemicals from cropping and grazing lands that are not easily measured.

In addition to strict discharge requirements, the Guthalungra project has been required to purchase offsets for discharges to maintain water quality in the Great Barrier Reef. While the use of offsets can be an effective means to manage environmental impacts, requiring aquaculture operations to purchase offsets requires them, in part, to rectify the impact of land management practices of other landholders so as to maintain water quality in the Great Barrier Reef.

The Commission considers that the use of offsets should not result in aquaculture operators rectifying the adverse impacts of the land management practices of other land holders.

### The impact of regulations on aquaculture operations

The focus of government and industry has largely been on improving the regulatory framework applying to the development and approval of new projects and the expansion of existing aquaculture operations. However, there are also regulatory requirements that apply to day-to-day operations, including monitoring and reporting of water quality and interactions with other marine species. These reporting conditions are generally attached to the relevant aquaculture licence.

There are other regulations that potentially impact on aquaculture producers. For example, a problem for other primary industries and anecdotally in the aquaculture sector is the delays in or inability to access medicines and vaccines from overseas that are not registered for use in Australia due to the cost and delays associated with gaining the necessary approval. In its draft report on regulation of Australian agriculture, the Commission recommended that the Australian Pesticides and Veterinary Medicines Authority should make greater use of international evidence from trusted comparable international regulators in its assessment of these products and that reforms underway in this area be expedited (PC 2016).

As in other sectors, it is often the cumulative effect of regulation rather than individual requirements that affect aquaculture operations (PC 2007). In accordance with good practice, aquaculture regulations should be reviewed periodically to ensure that they require the minimum actions necessary to meet policy objectives. The Tasmanian Salmonid Growers Association noted that meeting the wide range of ongoing environmental regulations and reporting requirements resulted in compliance costs of

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around 4 cents per kilogram of production. Although the industry accepted this as a cost of ‘doing business’ these costs weigh on competitiveness (Tasmanian Salmonid Growers Association, sub. 8).

The aquaculture industry has looked to innovations and technology to improve productivity, provide solutions to environmental problems, and meet environmental standards. For example:

- water quality has been improved through the use of feeding systems that reduce waste and the non-chemical management of bio-fouling (CSIRO, sub. 61)
- improved structures and barriers have been adopted to protect bird and seal populations
- the use of algal treatment of water discharge has been used to lower nutrient levels in discharge to the levels required by regulators in proposed terrestrial prawn farms in North Queensland
- the more effective use of reticulated aquaculture systems has reduced effluent discharges and these systems provide the opportunity for aquaculture operations to become a stand-alone system removed from surrounding waterways
- the use of improved sensor technology and software systems have been used to improve real time monitoring of stock and environmental impacts and enable producers and regulators to respond to changes (CSIRO, sub. 61)
- technology has been key to selective breeding to improve growth, overall animal health and disease resistance, as well as the better selection of and handling of brood stock.

There is no evidence to suggest that regulations have impeded the development and use of technology in the aquaculture sector.

#### FINDING 8.2

The regulatory arrangements for aquaculture have not significantly changed since the Commission’s 2004 study. Regulation has not been a significant impediment to the growth of the aquaculture industry in Australia, except in the case of land-based prawn farming in North Queensland.

This reflects that the major aquaculture-producing States already had many best-practice regulatory features and other jurisdictions have faced challenges that are predominantly non-regulatory in nature.

## 8.5 Are the regulatory settings right for the future?

Many consider that aquaculture is a future growth industry. For example, The Joint Select Committee on Northern Australia’s view was that local aquaculture presented an opportunity to replace imported seafood, particularly in northern Australia due to the long

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coastlines, availability of suitable land, pristine waters, potential to farm tropical species and proximity to Asia (Joint Select Committee on Northern Australia 2016). The CSIRO noted that there were many opportunities for the expansion of aquaculture in northern Australia, particularly pond-based aquaculture that could also provide a market for locally irrigated crops as feed stock (sub. 61). The Tasmanian Government has also indicated its intention to expand the existing salmon farming industry.

Although the lack of regulatory change has not been the predominant influence on industry growth over the past decade, a pertinent question is whether government aspirations to further develop aquaculture can be realised with existing settings. The regulatory frameworks that exist in South Australia and Tasmania provide good examples for other States wishing to enable the expansion of aquaculture. Of course, the broader regulatory settings required to promote growth will differ for the infant aquaculture operations in northern Australia compared to the well-established industries in Tasmania and South Australia.

Increasing coastal development, growing environmental concerns and, in more remote locations, access to the necessary infrastructure present challenges to industry growth. The challenges cannot all be addressed through changes to the regulation. Industry will also need to be proactive to maintain its ‘social licence’ — or community approval — to operate and grow.

## **A crowded coastline**

Coastal development and associated population growth will place further pressure on both the industry and government. More populated coastlines increase competition for access to coastal land and water and may result in opposition to future aquaculture developments. At the same time, the proximity of aquaculture operations to coastal populations has heightened community concerns about the environmental impact of aquaculture. Land-based pond production of marine species is likely to be particularly problematic given its need for large areas of land in proximity to high quality seawater.

Regarding the prospects of developing marine fish farming, the New South Wales Department of Primary Industries said:

... a major limitation on marine fish farming in New South Wales is the likely scarcity of suitable sites in sheltered embayments for the grow out of fish to market size. ... Sites in sheltered embayments with these characteristics are relatively sparse in NSW, due to existing demand from a variety of other interest groups (population pressure on coastal zone, recreational anglers and boaters). (2016c, p. 1)

If governments want further industry growth, land and marine planning regimes will need to consider the impacts of development on potential aquaculture sites. Coexistence between competing developments may require future developments to mitigate their impacts on the environment as well, such as through restrictions on run-off into the marine environment.

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To alleviate the pressures from coastal development, there have been suggestions that future aquaculture operations, both marine and terrestrial, should be undertaken in more remote or offshore locations. These locations can offer good quality water and the opportunity to develop new species. They can also avoid competition and possible conflict with other users of marine resources (recreational fishing, commercial fishing and recreational boating) and the opposition of local residents in more closely settled coastlines.

However, challenges for remote locations include access to transport, infrastructure, adequate power and labour and, for offshore operations, the establishment of necessary infrastructure to deal with large seas, and providing feed and other inputs to facilities some distance from the shoreline.

The Commission understands that some proposals in remote locations are being explored, for example a large scale land-based prawn farm (Project Sea Dragon) in the Northern Territory close to the Western Australian border near Kununurra, and proposals for cage-based production off the Kimberley coast of Western Australia. The Tasmanian salmon farming industry has also undertaken trials of offshore farming to test infrastructure in large swells (Tasmanian Salmonid Growers Association, sub. 8). Huon Aquaculture considers that offshore farming will become ‘the new normal’ for the industry with benefits to the environment and other users of the waterways (Huon Aquaculture 2016).

Infrastructure costs are likely to be significant in more remote areas. For example, the Commission understands that the Western Australian and Northern Territory Governments are spending \$70 million to seal the road from Kununurra to the proposed site of Project Sea Dragon in the Northern Territory (Dupe 2016). There is also a commitment from the Australian Government to contribute \$40 million for the upgrade of the road (Chester, Frydenberg and Canavan 2016).

The Australian, State and the Northern Territory Governments have agreed that the States and the Northern Territory will regulate any aquaculture in adjacent Commonwealth waters. This issue is being progressed through consultations between the Commonwealth Department of Agriculture and Water Resources and the relevant jurisdictions (Department of Fisheries (WA), sub. 21).

### **Better managing the community’s concerns about aquaculture**

There are concerns in some parts of the community that current regulatory frameworks are not adequately reporting on or managing the environmental impacts of the sector, or taking into account the impact on other users of the water resources.

These concerns are prominent in Tasmania, where sections of the community consider that the growth of the salmon farming industry and its importance to the Tasmanian economy has been at the expense of the environment, other users of the waterways and nearby residents. Concerns have increased with the expansion of salmon farming operations in

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Macquarie Harbour and around the more heavily populated areas of south-east Tasmania. The Tasmanian Government has a policy commitment to partner with the salmon farming industry to grow the industry in Tasmania to a \$1 billion industry by 2030.

Other aquaculture developments along populated coastlines have also faced strong community opposition. For example, proposals to develop cage-based aquaculture in Moreton Bay in south-east Queensland faced considerable opposition from nearby communities concerned about the environmental impacts and their loss of amenity as well as from other commercial and recreational users of the waterway (QCA 2014).

Particular concerns in Tasmania centred on the perception of regulatory capture as, until recently, the functions of regulating and promoting the industry rested with a single minister and agency. Some stakeholders considered that the Tasmanian Government was regulating and acting in the interest of the salmon farming industry instead of the public interest. For example, EDO Tasmania said:

The close relationship between the three companies and the regulator, a history of under-regulation and enforcement ... and explicit support expressed by DPIPWE [Department of Primary Industries, Parks, Water and the Environment] for aquaculture projects all affect public trust in the rigour of the regulatory framework. (2015, p. 6)

To address such concerns, the Tasmanian Government recently transferred responsibility for the day-to-day environmental regulation of existing aquaculture operations from the Department (DPIPWE) to the independent environmental regulator, the Environmental Protection Authority (EPA). The environmental controls in any new or amended marine farming plan will be required to satisfy the Director of the EPA and meet the requirements of the *Environmental Management Pollution Control Act 1994* (Tasmania). The DPIPWE will retain responsibility for the overall planning and development of the marine farming sector (DPIPWE 2016).

This may go some way toward addressing concerns, although some stakeholders are likely to remain concerned about the Minister's power to approve marine farm development plans (Australian Maritime Conservation Society 2015; EDO Tas 2015).

Prior to 2011, a panel (the Marine Farming Review Panel), comprising persons with various relevant expertise appointed by the Tasmanian Government, made binding determinations on marine farm development plans (and amendments to those plans) after taking into account public submissions, evidence from public hearings if necessary, the views of the DPIPWE and legislative objectives. Since changes to legislation in 2011, the Minister is no longer required to adopt the advice of the Panel, but is required to provide a statement of reasons to the Parliament for any decision that is contrary to it.

It is appropriate that the government has direct responsibility (hence accountability to the community) for the approval of developments. The transparency of the process leading up to and following submission of the Panel's advice preserves the opportunity for public input and provides for scrutiny by both the public and parliamentary representatives of the government's final decision. Further community input could also be provided, as

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recommended by the Senate inquiry into the regulation of finfish aquaculture in Tasmania (The Senate Environment and Communications References Committee 2015), by placing a statutory obligation on the Panel to hold public hearings in relation to a draft or amended plan, rather than leaving this optional.

The Tasmanian Government has separated regulatory and industry development functions to a considerable extent to address community concerns about perceived conflicts of interest. Other jurisdictions, particularly if the industry expands, should also consider separating their regulatory and industry development functions where these are currently co-located. There are various means to achieve this, ranging from more clearly separating the functions within the agency, to establishing the functions within separate agencies, or establishing an independent overseer of decisions. There may be some size and efficiency advantages, particularly for smaller jurisdictions, to place certain functions together. However, these need to be considered against any costs arising from the potential conflicts of interest and loss of community confidence in and support for aquaculture development.

There is also obvious merit in robust and transparent stakeholder engagement processes on proposed developments if governments wish to promote the growth of their aquaculture industries.

**FINDING 8.3**

Concerns about the environmental and amenity impacts of aquaculture developments highlight the tensions for governments in both regulating and promoting industry growth. These concerns could be minimised by having separate agencies responsible for regulatory and industry development functions.

**Industry should also play a role**

Industry must also play a role in addressing community concerns. This will require industry to work to gain acceptance for its activities from the local community and other stakeholders.

This requires building trust with the local community and demonstrating the community benefits that flow from the success of the industry. In other industries, effective community relationships have been built by openly engaging with the community about the nature of the operations, how the impacts on the surrounding community will be managed, providing information on impacts in a timely and transparent manner, collaborating and consulting with the local community on problems, and sharing the benefits by investing in the local community. By investing in these relationships on an ongoing basis, industry is better placed to deal with and manage issues as they arise rather than attempting to ‘build bridges’ to the community after the event.

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Many aquaculture operators have made efforts to develop and maintain a social licence. For example, some aquaculture operators have collaborated on community projects to investigate the health of local waterways (Tasmanian Salmonid Growers Association, sub. 8). Other initiatives have involved the maintenance of surrounding foreshores and the provision and maintenance of recreational infrastructure. The aquaculture sector has also provided benefits to recreational fishing through culturing particular species for restocking. For example, Recfish West has worked with the North Regional TAFE to culture barramundi for stocking into Lake Kununurra to create a recreational fishery (sub. DR91).

The Commission recognises that the sector is exploring the greater use of third-party certification and accreditation schemes to improve the community's (and consumers') perceptions of the aquaculture industry and particularly its impact on the environment.

Both government and the industry have a role to play to further develop aquaculture in Australia. For industry, a proactive approach is required to engage with and improve relations and its reputation with the community. For governments, providing an effective regulatory framework (as outlined in box 8.2) is important to manage environmental impacts and competing claims on a shared resource, and to maintain community and industry confidence. This can be assisted through effective consultation with industry and the community, and communication of longer-term plans for aquaculture and their wider implications. Governments will also have to make decisions as to the extent of their role in providing infrastructure to prospective aquaculture developments in more remote locations.

The Commission notes that the Australian Government has committed to work with the industry to develop a national aquaculture strategy. This will reportedly focus on governments providing an efficient and effective regulatory environment that supports the sustainable growth of the industry, encourages investment, maintains strong environmental performance and manages biosecurity risks (DAWR 2014). Development of the strategy provides an opportunity, in consultation with industry, to re-visit the key regulatory challenges identified in this review.

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## 9 Downstream processes

### Key points

- Downstream processes involve the processing, wholesaling and retailing of seafood. All businesses involved in downstream processing are regulated through licensing or accreditation for food safety reasons, and to provide for traceability of product for fisheries management purposes and detection of illegally caught product.
- Most of the seafood produced in Australia (around 90 per cent by volume) is sold as fresh or frozen product, so seafood processing in Australia adds little value — mainly involving basic filleting, chilling, freezing and packaging. The value added is in the correct handling and timely delivery of product to local and overseas markets.
- The most significant issue raised by participants relating to downstream processes was a desire that mandatory country-of-origin labelling requirements be extended to seafood sold for immediate consumption in restaurants, clubs, hotels and takeaways.
  - Consumer health and safety interests would not be enhanced by such a policy change, and there are practical impediments to implementation. If such arrangements are desired to better meet consumer preferences, industry should apply them voluntarily.
- There were also calls for the voluntary Australian Fish Name Standard to be made mandatory to provide consumers with more accurate information.
  - Adoption of the Standard requires agreement between the States and Territories on the names of each particular species and extensive education and awareness-raising for industry and consumers. The Commission was not presented with evidence indicating significant detriment to the public from the current arrangements, and mandating use of the Standard does not appear warranted.
- Licensing and accreditation fees for seafood processors should be based on the actual (efficiently incurred) costs of government monitoring and enforcement activities (for example, through the use of a tiered scale of fees reflecting the size and scale of processing operations). This will reduce the scope for smaller businesses to cross-subsidise the regulation of larger businesses.

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## 9.1 Downstream processes and their regulation

After capture or harvest, seafood is processed to a varying extent before being sold to wholesalers, distributors and then on to retail outlets or the food service sector. The various flows of seafood from capture or harvest to the consumer are outlined in figure 9.1.

This section describes the major phases of downstream processing and relevant regulatory requirements.

### Processing

Around 90 per cent of the seafood produced in Australia by volume is sold as fresh or frozen product. Thus the majority of seafood processing undertaken in Australia adds very little value to the product – mainly involving basic filleting, chilling and freezing, and packaging. The value added is in correct handling and timely delivery to local and overseas markets. Almost 70 per cent of Australia’s seafood exports are transported by air (ABS 2012; DoA 2014; Spencer and Kneebone 2007).

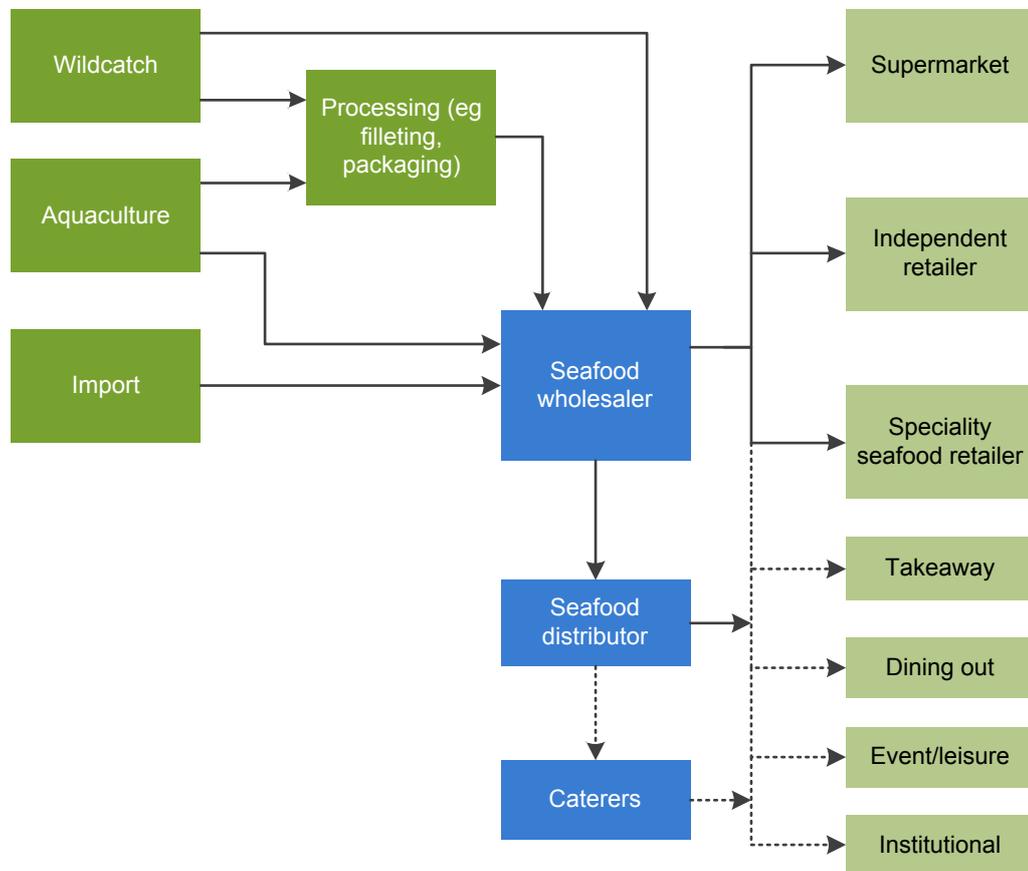
Further processing occurs for certain species. For example, some Atlantic salmon farmed in Tasmania are subject to processing to produce smoked salmon.

In 2015, there were 217 seafood processing businesses operating in Australia — down from 306 in 2008 (ABS 2016). The decrease in seafood processing businesses most likely reflects the decline in wild caught catch. The decline in the number of seafood processing businesses has been more pronounced in the non-metropolitan coastal areas of south-eastern Australia (data request from ABS 2016).

These establishments vary by size and scope of operations, but the focus is on filleting and basic preparation of the product for sale as fresh or frozen product. Some fishers have their own onshore processing facilities, and processing can also be done on board fishing vessels (for example, the cooking of crustaceans). So-called ‘factory’ trawlers utilise large scale onboard processing and freezing facilities to prepare catch for export markets. The size and scale of these vessels and their recent operation in Australia has raised concerns with various groups, which are discussed in chapter 7.

Apart from Tassal (the major salmon farming producer in Tasmania) and Simplot (the owner of major frozen brands such as Birdseye and canned fish product such as John West) the majority of seafood processors are small to medium sized enterprises (IBIS World 2015). Most seafood processing businesses (nearly 80 per cent) had fewer than 20 employees in 2015 (ABS 2016). There were just under 1800 people employed in seafood processing in total across Australia at the time of the ABS Census in 2011 (Savage and Hobsbawn 2015).

Figure 9.1 **Seafood distribution channels**



Source: Spencer and Kneebone (2007).

## Wholesaling

Seafood wholesalers supply both domestic and imported product to distributors and retailers directly or via specialised seafood distributors (figure 9.1). There were around 845 fish and seafood wholesaling businesses operating in Australia in 2015 employing just under 4000 people (ABS 2016; IBIS World 2015).

Australian wholesalers are heavily reliant on imports. Imports account for two-thirds of domestic consumption and mainly comprise low-value frozen and thawed fish from New Zealand, Vietnam, China and canned fin-fish (such as tuna) from Thailand. Australians favour white boneless farmed fish, such as basa fillets, from Asia, which are low cost and neutral in taste and are the most common and widely eaten import. Australian seafood exports consist of higher-value product such as lobster, tuna and abalone. Although available in Australia, local consumers are often unwilling to pay as high a price as is available in export markets for these products (DoA 2015).

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Wholesalers also play an important role as a supply conduit for seafood sourced from remote locations to reach major markets. Wholesalers and distributors operate through central markets in major cities, such as the Sydney and Melbourne fish markets. The dominant role of some of these central markets largely stems from past government regulation of seafood marketing. In New South Wales, between 1945 and 1997 the Sydney Fish Market held a legislated monopoly over the marketing of fish and seafood into Sydney. Outside of Sydney, fish and seafood could only be sold to the various fishermen's cooperatives operating along the New South Wales coast. Since 1997, fishers have been able to sell their catch to any buyer in New South Wales holding a licence to receive fish and seafood. In Queensland, regulated marketing arrangements were also disbanded in the 1990s.

The move away from regulated marketing has resulted in a decline in the membership of some of the New South Wales cooperatives. For some smaller cooperatives, this has reduced the ability of the cooperative to maintain critical infrastructure, such as unloading facilities and slipways. This has resulted in commercial fishers having to travel further to access facilities or relocating their base of operation, placing further pressures on the viability of the cooperatives (GHD 2014). Although deregulation has placed pressure on some cooperatives, it has expanded the marketing channels for seafood and provided commercial fishers with choice as to where and to whom they can sell their catch.

## **Retailing**

Seafood retailing is undertaken through various outlets, including large supermarket chains, independent retailers and specialist seafood outlets. Around 9800 supermarket and grocery stores and 4800 fresh meat, fish and poultry retailers were in operation in 2014 (ABS 2015).

There is little concentration in the retail market for fresh seafood. Around 17 per cent of domestic sales of fresh seafood occur in supermarkets and around 40 per cent through independent seafood outlets, with the remainder sold through takeaway and dining venues. There is considerably higher concentration in the retailing of more highly processed seafood due to the dominant market position of large supermarket chains in the sale of consumer packaged products. Canned seafood and frozen product are more likely to be sold through supermarkets, with around 87 per cent of canned seafood product and 25 per cent of frozen product sold through these stores in the mid-2000s (Spencer and Kneebone 2007).

## **Regulation in downstream processes**

### **The licensing and accreditation regime**

All States and Territories require businesses handling seafood (processors, wholesalers, seafood storage and transport) to be licensed or accredited. Most also require commercial

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fishers to be licensed or accredited. Licensing regimes for the handling of seafood are implemented under: fisheries legislation (South Australia, Western Australia and the Northern Territory); relevant food safety acts (New South Wales, Queensland and Tasmania); or specific seafood safety legislation (Victoria) (table 9.1).

Businesses that hold a licence are required to comply with the relevant food safety legislation in each jurisdiction (for example, the *Seafood Safety Act 2003* in Victoria or the *Food Act 2003* in New South Wales) that implements the National Food Standards Codes (Standard 3.2.2, *Food Safety Practices and General Requirements*; Standard 3.2.3, *Food Premises and Equipment* and Standard 4.2.1, *Primary Production and Processing Standard for Seafood*).

Some jurisdictions also require licensing and registration of those purchasing fish or particular types of fish. This is to assist in fisheries management and provide traceability of product to ensure that commercially supplied fish are legally caught by licensed commercial fishers. New South Wales requires those purchasing all types of fish from fishers for processing or resale to be registered as a fish receiver. Victoria only requires those purchasing abalone to be registered and Western Australia requires those receiving rock lobster from the West Coast Rock Lobster Managed Fishery to be licensed. In Tasmania, a separate licence is required for those handling, but not processing, rock lobster and giant crab.

Processors, wholesalers and retailers of fish caught in certain Commonwealth fisheries are also required to hold a fish receiver permit. For example, fish receivers of southern bluefin tuna are required to register with Australian Fisheries Management Authority (AFMA) and comply with the fish receiver permit conditions. This requires the permit holder to tag, weigh and measure each fish and have the correct accompanying documentation before it can be sold domestically or exported to comply with the catch documentation scheme specified by the Commission for the Conservation of Southern Bluefin Tuna (AFMA 2016d).

Processors dealing with product for export are required to be registered with the Department of Agriculture and Water Resources and those exporting seafood are required to hold an export permit. These export requirements apply to fish caught in any Australian jurisdiction. This regulation enables supervision of the export supply chain to ensure all exported seafood complies with Australian Food Standards and any additional importing country requirements (DAWR 2016a).

There is considerable variation as to how the fees for processor licences and accreditation are set across jurisdictions. Some jurisdictions apply a flat fee for all processors irrespective of the size or nature of processing undertaken. Others differentiate the licence fee by the type of species being processed or by the size and scale of the premises (table 9.1).

**Table 9.1 Licensing and accreditation of the seafood industry by State**

	<i>Relevant legislation<sup>a,b</sup></i>	<i>Who is required to hold a licence</i>	<i>How are licence and accreditation fees applied for seafood processors</i>
NSW <sup>c</sup>	<i>Food Act 2003</i>	Those processing, packaging, storing transporting or wholesaling seafood. Specific requirements apply to seafood transport vehicles.	By number of fish handlers on premises.
Vic <sup>d</sup>	<i>Seafood Safety Act 2003</i>	Different licences apply to seafood harvesting businesses, wholesalers, processors and retailers. There is also a licence for retailers operating from a boat.	By volume of species processed on the premises.
Qld	<i>Food Production (safety) Act 2000</i>	Wild animal harvesters, aquaculture businesses, seafood processors and seafood storage.	Single fee for all seafood processors.
WA <sup>e</sup>	<i>Fisheries Resources Management Act 1994</i>	Those processing fish for a commercial purpose. A licence is not required to process fish on a boat or for fish that have been harvested in accordance with an aquaculture licence (except for rock lobster, prawns and scallops).	By species. Higher fees apply for processors of rock lobster and prawns.
SA	<i>Fisheries Management Act 2007</i>	Those processing, storing, transporting and dealing in seafood. Full processor registration allows the licensee to buy products from aquaculture authority holders, registered processors and wholesalers. Restricted registration is available to those holding a fishing or aquaculture licence and only allows for the sale of product or purchase from own licence.	By species. Higher fees apply for processors of rock lobster, prawns and abalone.
Tas <sup>f</sup>	<i>Primary Produce Safety Act 2011, Food Act 2003</i>	Those growing, cultivating, picking, harvesting, catching, transporting or holding seafood and those undertaking seafood processing.	By number of full-time employees on premises
NT	<i>Fisheries Act 1988</i>	Those purchasing fish or aquatic life for processing or sale.	Single fee for all seafood traders and processors.

<sup>a</sup> Requirements may also be contained in regulations issues pursuant to the Acts listed. <sup>b</sup> All jurisdictions require licensees to comply with the Food Standards Code. <sup>c</sup> Those purchasing fish from fishers are also required to be registered as a fish receiver with Fisheries New South Wales in accordance with the *Fisheries Management Act 1994* (NSW). There is also a restricted fish receiver registration for commercial fishers who do not receive fish for resale from other commercial fishers. <sup>d</sup> Those purchasing abalone are required to be registered with the Victorian fisheries agency. <sup>e</sup> A licence is required for those receiving rock lobster from the West Coast Rock Lobster Managed Fishery. <sup>f</sup> A licence is required for those handling rock lobster and giant crab.

Sources: DPIPW (2014b); NSW Government (2015); PIRSA (2015a); PrimeSafe Victoria (2015); Safe Food Queensland (2015).

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Most jurisdictions do not require fish retailers to be licensed. Victoria requires seafood retailers to be licensed (including those operating from a boat or a vehicle), but these licences incorporate the relevant food safety requirements. The Northern Territory, under the *Fisheries Act 1988*, licenses fish retailers to ensure compliance with the Territory's labelling requirements for imported seafood. Food safety accreditation is provided separately under health legislation. In the other jurisdictions, seafood retailers are only required to comply with the relevant food safety requirements.

## Food labelling

Under the Australia New Zealand Food Standards Code (Standard 1.2.11), seafood for retail sale is required to include a country-of-origin label indicating where the seafood was harvested, processed or manufactured. Restaurants, takeaways, canteens, schools, caterers, hospitals, correctional facilities or other institutions where food is offered for immediate consumption are exempted.

For unpackaged seafood there must be a label in connection with the display of the seafood indicating the country or countries of origin or indicating the proportion of Australian ingredients if the seafood is a mix of local and/or imported product. For packaged seafood, a label is required on the packaging that identifies the origin of the product or the country where it was manufactured or packed and whether the product is made from local and/or imported ingredients. These requirements have applied to seafood sold in Australia since 2006.

New country-of-origin labelling arrangements were introduced in July 2016. These will become mandatory in 2018 under Australian Consumer Law and will replace the current requirements contained in the Australia New Zealand Food Standards Code. Under these arrangements food produced, grown or made in Australia will be required to display an 'Australian made' label (a kangaroo in a triangle symbol with a statement that the food was grown, produced or made in Australia). The minimum proportion by weight of Australian ingredients in the food will be indicated by a percentage and displayed in a bar chart as part of the label. Imported food will require the country-of-origin to be specified in a clearly defined box (ACCC 2016).

There is a separate labelling scheme for seafood sold in the food services sector in the Northern Territory (discussed further in box 9.4). Following representation from industry, the Northern Territory Government introduced legislation in 2008 requiring fish retailers (including eating establishments such as restaurants and takeaway outlets) to label seafood as 'imported' if it was not harvested in Australia as a condition of their licence. No labelling is required for seafood harvested in Australia.

The New South Wales Government has proposed a source of origin labelling scheme to promote locally caught seafood sold for immediate consumption, and indicated it would work with fishers, the catering industry and retailers on scheme design and operation (New South Wales Food Authority 2016).

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A further feature of the labelling of seafood is the display of independent third-party certification credentials by retailers to demonstrate that the seafood being sold is from a sustainable source. There is a range of certification schemes in place, the most widely used being the Marine Stewardship Council scheme (DoA 2015).

## **9.2 Issues in the downstream sector**

The Commission has not been presented with any evidence to indicate that current regulatory arrangements have resulted in significant negative impacts on the operations of the downstream sector. The most significant matter raised by the industry was a request that country-of-origin labelling requirements be extended to seafood sold in restaurants, clubs, hotels and takeaway outlets.

### **Extending country-of-origin labelling to seafood for immediate consumption**

Some in the industry (The National Aquaculture Associations, sub. 2; The Tasmanian Salmonid Growers Association, sub. 8; Sydney Fish Market, sub. 13; GA&MJ Stevenson, sub. 26; Australian Barramundi Farmers Association, sub. DR94; Northern Territory Seafood Industry Council, sub. DR78) have called for the removal of the exemption from country-of-origin labelling for seafood for immediate consumption in the Australia and New Zealand Food Standards Code on the basis that this would provide better information to consumers and a consistent approach to labelling across the supply chain (SRRATRC 2014). The Australian Barramundi Farmers Association referred to this as ‘truth in labelling’ and said:

... [the] aim is to identify origin of seafood so that consumers, including diners, can make informed purchasing decisions. (sub. 34, p. 1)

Proponents have also argued that country-of-origin labelling would remove the scope for misleading statements, misunderstanding on the part of consumers, and/or substitution of lower cost imported product for domestic product. For example, where a menu item is described as ‘barramundi’, consumers may assume it is local product when it is cheaper imported barramundi. It was claimed that there was no incentive for the food service sector to voluntarily identify imported product, and that differences in quality and misperceptions about origin could damage the reputation of local product and producers. Austral Fisheries Pty Limited considered that country-of-origin labelling would prevent fraudulent labelling of lower priced imported seafood as Australian (sub. DR84).

There was also a view that country-of-origin labelling on ready-to-eat seafood was a feature valued by consumers that the market was failing to deliver (Northern Territory Seafood Council, sub. DR78, Austral Fisheries Pty Limited, sub. DR84) (box 9.1).

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**Box 9.1      Surveying consumer attitudes towards seafood**

Some of those supporting the extension of country-of-origin labelling referred to a survey of consumer attitudes undertaken for the Seafood CRC Company and the Fisheries Research and Development Corporation (FRDC) by the University of the Sunshine Coast in 2015, *A Final Seafood Omnibus: Evaluating changes in consumer attitudes and behaviours*.

This survey reported that the majority of consumers surveyed (over 95 per cent) supported country-of-origin labelling and that over 50 per cent of these consumers assumed that the seafood purchased was Australian if the country-of-origin was not identified in the label. A large majority of consumers surveyed also indicated that they would be willing to pay a premium price for Australian labelled seafood over imported seafood (over 70 per cent indicated they would be willing to pay up to 30 per cent more).

However, factors other than country-of-origin labelling — such as freshness, how the seafood was cooked (menu option), price and species — were found to be more important to consumers when purchasing seafood in a restaurant, cafe or takeaway.

*Source:* Lawley (2015).

WWF-Australia further said that most industry groups supported country-of-origin labelling due to the opportunities it provided for increased financial returns from the current harvest without placing greater strains on ecologically limited fish stocks (sub. DR116).

Several industry participants considered that the introduction of labelling of imported seafood sold for immediate consumption in the Northern Territory was an indication that country-of-origin labelling of seafood in the food services sector was feasible across Australia.

These issues have been raised in previous reviews and inquiries, including the Blewett Review of Food Labelling and Policy, a Senate inquiry and the Joint Select Committee on Northern Australia inquiry into aquaculture in Northern Australia (box 9.2).

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**Box 9.2      Previous reviews and inquiries on extending country-of-origin labelling to seafood for immediate consumption**

The *Labelling Logic: Review of Food Labelling Law and Policy* conducted by Dr Neil Blewett in 2010 did not find sufficient arguments to justify lifting the exemption on country-of-origin labelling for seafood for immediate consumption (Blewett et al. 2011).

A Senate Rural and Regional Affairs and Transport References Committee report, *Current requirements for labelling of seafood and seafood products*, recommended that the exemption from the country-of-origin labelling for seafood under the Food Standards Code be lifted. It considered that this would provide a simple and cost-effective means of achieving a level playing field for Australian and overseas producers. Its finding was based on a Northern Territory survey of 21 establishments (box 9.4). An independent Senator introduced a Bill to put this into effect, which was rejected by the Senate (SRRATRC 2014).

The Joint Select Committee on Northern Australia report, *Scaling up. Inquiry into opportunities for aquaculture in Northern Australia*, also recommended that the exemption for country-of-origin labelling under the Food Standards Code for seafood be removed. The Committee came to this conclusion based on the Northern Territory experience, the potential stimulus that could be provided to the local industry and the need to assist consumers in making informed choices (Joint Select Committee on Northern Australia 2016).

**Is there a need for it?**

Food labelling provides information to consumers and helps address the information imbalance between producers and consumers. Certain labelling (such as ingredients and expiry dates) is required to ensure food safety where there are direct and immediate risks to the health and safety of consumers. Other labelling, such as the relationship to animal welfare, environmental sustainability or identifying the method of production (such as ‘free range’ or ‘sustainably caught’) is often used by producers to differentiate their product and assist consumers to make purchases according to their personal preferences. Country-of-origin labelling for seafood for immediate consumption falls into this category.

The rationales put for mandatory country-of-origin labelling for seafood sold for immediate consumption include that this would prevent potentially misleading country-of-origin information and/or for food safety reasons — to the extent consumers use the country-of-origin as an indicator of food safety. However, these concerns are dealt with under existing legislation.

Consumers are already protected from incorrect labelling of seafood under consumer protection legislation. For example, consumer protection legislation is in place to protect consumers from false or misleading information as to the origin of the seafood, such as the labelling of imported seafood as local product on menus. All representations made about food through the words and images on labelling or promotional material are subject to the Australian Consumer Law that prohibits false, misleading or deceptive representations — the same legislation that will set out country-of-origin labelling standards for fresh and

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packaged foods from 2018. In addition, the relevant food safety legislation in each State and Territory makes it an offence to provide misleading, deceptive or false information through the advertising, packaging or labelling of food. Not providing country-of-origin information on ready-to-eat seafood would not breach consumer protection laws, but making false claims as to its origin will (box 9.3).

Similarly, the issue of food safety is addressed through the food safety codes that apply to imported as well as domestic product.

### **Box 9.3 False and misleading claims relating to food**

The Australian Competition and Consumer Commission (ACCC) in 2013-14 received nearly 800 complaints or inquiries relating to the false representation of foods. A number of these complaints related to false claims as to the association between the product and particular geographic region or country and resulted in the businesses found to be making these claims being fined. For example:

- A food importer was fined \$10 200 for selling a honey product with a map of Australia on its label when the product largely consisted of ingredients produced in Turkey
- Carlton and United Breweries were fined \$20 400 in 2014 for implying that Byron Bay Pale Lager was produced by a small local brewer when it was produced at the company's Warnervale brewery on the central coast of New South Wales.
- A Victorian butcher was fined \$50 000 for falsely claiming that meat it was selling was from King Island – an area with a reputation for producing premium beef.

Action was also taken against false labelling claims made by a business as to the method of production used. A poultry producer was fined \$20 400 in 2014 for falsely representing on its packaging and website that its chicken, duck, quail, spatchcock and turkey were 'range reared', when their birds were grown in large commercial sheds with no access to the outdoors.

The Federal Court imposed a \$2.5 million fine on Coles Supermarkets for falsely promoting bakery products as being 'baked fresh' and 'baked in store' in 2015. It noted that 'it is important that sellers in the market recognise that consumers are entitled to reliable, truthful and accurate information'.

A penalty notice of \$1540 was issued under the *Food Act 2003* (NSW) to a coastal fish and chip shop and café in 2016 for falsely describing food in promoting its sale and a Sydney butchery received a similar penalty in 2015 for the use of misleading labelling on ready-to-eat meat products.

*Sources:* Choice (2015); ACCC (2015); ACCC&AER (2014); NSW Food Authority (2016).

The main benefit of country-of-origin labelling for food sold for immediate consumption would be to allow consumers to more readily choose products that are sourced from a particular location or in ways that are more consistent with their preferences. The proponents of mandatory labelling highlight the preference of Australian consumers for locally caught seafood and the willingness of consumers to pay a premium for locally labelled seafood (box 9.1). In this case, food outlets should have an incentive to provide

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information on product origin (so long as the cost of labelling does not exceed the potential for higher profits with higher priced local product).

There are no barriers, regulatory or otherwise, preventing food outlets from promoting locally produced seafood and identifying the source of the seafood they sell. And there is nothing to prevent consumers requesting this information and/or seeking out businesses that meet their preference for local seafood.

The industry has submitted that there is a disincentive for food outlets to provide information on the origin of seafood, as higher margins can be achieved by selling cheaper unlabelled imported product. In this case, detriment is perceived to arise not because of the existence of misleading information, but the absence of information and consumers' assumption that the product is Australian (ABFA sub. DR94, Northern Territory Seafood Industry Council sub. DR78).

To the extent there is unmet demand for local seafood and consumers are willing to pay more for the local product when eating out, it would appear to be in the commercial interests of the industry to better promote and market local product, fill any information gaps for consumers and work with the food service sector to capture the price premium available by identifying and highlighting local product on menus and blackboards.

The assumption that consumers' preference for local seafood would override price considerations may not hold true. While consumers have indicated in surveys that they are willing to pay a premium for Australian product (their 'stated preference'), this may not match their actual behaviour when purchasing seafood (their 'revealed preference'). That is, faced with a choice of cheaper imported product and a more expensive local product where the products are substitutable, it is not at all certain that most consumers would choose the local product. Several studies indicate that a consumer's stated willingness to pay for private goods, such as food, is often upwardly biased when compared to their actual purchasing behaviour (Umberger 2010).

It is worth noting that, while consumers have expressed a preference for local seafood, demand for seafood outstrips local supply. In addition, Australian producers have focused production on higher-value product such as rock lobster, tuna and abalone. These factors have resulted in local seafood being available at relatively high prices, and Australia relying on imports to meet demand. It has been suggested that local producers and importers should, in fact, collaborate to increase the supply of seafood from all sources (FRDC 2011).

If the industry considers that it is not in its commercial interest to better identify and market local product to consumers of ready-to-eat seafood, a mandatory approach would simply result in 'marketing by regulation' and impose unnecessary costs on some businesses.

On the cost side, there are practical impediments to implementing country-of-origin labelling for ready-to-eat seafood. Food service businesses need to be able to change

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menus in response to quality, seasonality and the availability of different seafood products. If mandatory labelling requirements were introduced, they would need to alter and reprint menus and identify the proportion of local and imported product in mixed seafood dishes every time sources of supply changed (which might occur frequently to maintain a constant supply of seafood) (Restaurant and Catering Association 2015). Also, if seafood for immediate consumption was subject to the country-of-origin labelling requirements applying to fresh and packaged food, the symbols and bar charts that will become mandatory in 2018 could be difficult to replicate on menus and menu boards.

The Australia and New Zealand Food Standards Code specifically exempts all food — not just seafood — for immediate consumption, sold in restaurants, takeaways, hotels, clubs, hospitals and canteens from country-of-origin labelling for these and other practical reasons (DIIS 2015).<sup>57</sup>

While the Northern Territory and New South Wales governments favour the scheme, the Queensland Government has noted in response to similar representations from industry that there is no gap in the existing regulation, and that the most effective way of addressing consumer information preferences would be the development of an industry-led code of conduct (DAFF Qld 2014). Similarly, the New Zealand Government (a member of the Food Code) considered that country-of-origin labelling was irrelevant to food safety and if consumers did distinguish between products by country-of-origin there was a strong incentive for producers to act without government intervention. However, as in Australia, any voluntary labelling is subject to consumer protection laws (New Zealand Government 2004).

The Northern Territory's labelling regime for seafood sold through the food service sector only requires imports to be identified. The Fisheries Research and Development Corporation (FRDC) commissioned a survey to gauge the impact of the scheme, but the results were mixed (box 9.4). Given the small number of businesses surveyed and the size and structure of the food services sector in Darwin compared to the rest of Australia and the 'import' only labelling regime, it is difficult to accurately use the experience of the Northern Territory as an indicator of the national impacts of removing the exemption.

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<sup>57</sup> The exemption was put in place in 2006 when the Food Standards Code was amended to include country-of-origin labelling for certain fresh and packaged foods provided for retail sale.

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**Box 9.4      The assessment of the Northern Territory seafood labelling laws**

The Northern Territory Government in 2008 introduced legislation requiring licenced fish retailers (including eating establishments such as restaurants and takeaway outlets) to label seafood as 'imported' if it was not harvested in Australia. No labelling is required for Australian harvested seafood.

These laws were introduced to assist consumers in making informed seafood choices. In 2011, an FRDC-funded assessment of the impact of these laws was undertaken by industry consultants under the supervision of a steering committee comprising industry representatives and a Northern Territory Government representative. The assessment used face-to-face interviews with 21 food service establishments in Darwin, with equal representation from restaurants/cafes, clubs/hotels and takeaway outlets. Consumers were interviewed on the Smith Street Mall in Darwin, with 279 individuals providing responses that met the survey criteria.

The survey showed that the source of seafood had not changed dramatically as a result of the labelling laws, but there had been a decline in the use of imported product provided by seafood wholesalers. However, in periods of extra demand, imported product was used to increase supply.

There was confusion from consumers as to what the labelling laws involved, particularly as imported product was labelled simply as 'imported' and local product was not labelled at all. Only 34 per cent of consumers surveyed were aware that unlabelled seafood was local product.

The cost to food services business in implementing and complying with the labelling was generally not significant. The major concerns were in having to update and change menus due to supply issues with local product and the need for ongoing training of staff. The survey indicated that consumers were willing to pay a premium for food labelled as 'local'.

*Source:* Calogeras et al. (2011).

The Commission considers that there is no case for extending mandatory country-of-origin labelling to seafood sold for immediate consumption. If such information is valued by consumers it is in the interests of the seafood industry to work with the food services sector to provide it. Any country-of-origin labelling for seafood sold for immediate consumption should therefore be based on a voluntary industry-initiated arrangement.

**RECOMMENDATION 9.1**

Governments should not extend mandatory country-of-origin labelling to seafood sold for immediate consumption.

Any country-of-origin labelling scheme for seafood sold for immediate consumption should be a voluntary, industry-initiated arrangement.

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## Labelling for additional information

The Australian Marine Conservation Society (sub. 33, sub. DR110) and the World Wildlife Fund for Nature (WWF) (sub. 62) also proposed mandatory labelling of seafood to identify the species, the origin of catch and method of catch or aquaculture used to provide additional information to consumers.

Similar to mandatory country-of-origin labelling, consumers are already protected by health and consumer protection legislation, and the labelling of seafood to identify species, origin and method of catch would primarily help to meet the preferences of consumers requiring information as to the provenance of their seafood and its method of production.

The market is already responding to the demands of consumers through the use of third-party certification schemes that provide consumers with information as to the provenance of the seafood and the sustainability and condition of the fishery from which it originates (chapter 7). These certification schemes are in place for both wild caught and aquaculture based products and are widely used by producers and retailers as a point of product differentiation to market seafood. There are also online resources that provide information to consumers as to the sustainability of common types of seafood sold in Australia. These schemes and resources are responsive to the preferences and values of consumers and other stakeholders and already provide flexible means for responding to them.

## Australian Fish Name Standards

The Australian Fish Name Standards (AS 5300-2015) (the Standard) is a voluntary standard first introduced in 2007 that specifies the prescribed fish name for fish sold to consumers or for wholesale, export and import. The Standard applies to over 4000 Australian and imported species.

The Standard aims to address confusion over fish names caused by the numerous species Australia has on offer, a species being known by more than one name, or the same name being used for more than one species. The overarching purpose of the Standard is to improve traceability of product and provide confidence to consumers. Some participants called for the Standard to be made mandatory. For example, the Sydney Fish Market claimed that a mandatory Australian Fish Names Standard would ensure consumers had accurate information as to the fish they are purchasing and assist in any product recall (sub. 13). The Australian Southern Bluefin Tuna Industry Association (sub. DR106) commented that making the standard mandatory would assist the Australian Competition and Consumer Commission (ACCC) in pursuing action against false and misleading labelling of seafood.

The 2014 Senate inquiry *Current requirements for labelling of seafood and seafood products* noted that not all species had a unique standard name and some species of fish were known by different names in different jurisdictions. For example, ‘flathead’ could be

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used to describe a number of different Australian species as well as some imported species that were not considered to be flathead. The FRDC told the Senate inquiry that while the Standard had recorded thousands of fish names, many names were group names covering multiple species to which naming conventions were not yet in place (SRRATRC 2014).

There are considerable difficulties to be overcome to institute a mandatory fish names standard. The major obstacle is that naming conventions differ for the same species across jurisdictions and that some species have widely accepted names in different jurisdictions. Consequently, standardisation would require agreement between the States and Territories on the names for each particular species and changing these names would require an extensive education and awareness campaign targeted at industry and consumers (SRRATRC 2014).

The existing arrangements do not appear to be having significant negative impacts on consumers or business. Currently businesses can sell fish and seafood using historically entrenched common use names (provided they are not misleading or deliberately mislabelled) or the names under the Standard. The ACCC is already able to act against deliberately false or misleading labelling of fish and seafood. Also, the existence of different and widely accepted naming conventions for fish across Australia and the group names that apply to multiple species suggests that making the Standard mandatory could also in itself create short to medium term confusion and associated costs.

The Commission considers that the current voluntary arrangements are a practical and proportionate response to problems arising from the use of different fish names across Australia. At this stage, the voluntary use of the Australian Fish Names Standard, and further development of the Standard by the Fish Names Committee of the FRDC to reflect the needs of industry and consumer preferences, should continue.

#### RECOMMENDATION 9.2

The Australian Fish Names Standard (AS 5300-2015) should continue to be used on a voluntary basis. The Fisheries Research and Development Corporation should continue to develop the standard in accordance with the needs of industry and the preferences of consumers.

## Other issues

### Regulation and opportunities for growth

There is no evidence of significant regulatory impediments to the expansion of downstream processing. Although the decline in the volume of wild caught fish has been reflected in the decline in the number of seafood processing establishments, there are also opportunities for the sector.

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The FRDC identified a number of opportunities for improving the profitability of the downstream sector. These include reducing and/or using the waste from fish processing plants as inputs to other products, improving the value-add of processed products and better understanding consumer needs. For example, being able to produce seafood products with a longer shelf life would provide additional opportunities in the packaged food sector.

Most businesses in the downstream sector operate in only one part of the supply chain. Tassal, as an aquaculture producer, is one of the few vertically integrated businesses. There has been limited vertical integration due to the limited processing of product (as most product in Australia is sold as fresh or frozen). Nevertheless, the FRDC considered that there were opportunities to improve profitability through improved supply chain connections (FRDC 2015). Also, advances in technology such as the availability of smaller sized and more affordable vacuum packaging equipment may provide an opportunity for those involved in harvesting to add further value to their product.

### The level of licensing and accreditation fees for seafood processors

The level of licensing and accreditation fees required for the basic handling and packaging of seafood was raised by Queensland-based fishers. The Fisherman's Portal (sub. 17) questioned why fishers only handling and packaging whole frozen fish and live crabs paid the same accreditation fees as operators involved in substantial processing of fish and removal of waste product. It said:

The accreditation is \$1700.00 per year. Processing includes (among other things) packing of live mud crabs, palletizing frozen boxes of fish and packing whole fish into boxes to prepare the product for the truck. We feel that \$1700.00 per year to have the accreditation to carry out these activities which are incidental to our operations is not necessary. (sub. 17, p. 12)

The Queensland *Food Production (Safety) Act 2000* requires seafood processors (including those handling, packing, freezing and storing seafood for retail sale) to be accredited and operate in accordance with the standards for the production and processing of seafood under the Australia New Zealand Food Standards Code. These arrangements provide for seafood from post-harvest through to retail sale to be monitored and traceable under a State-based food safety regime.

The level of fee to accredit these activities is set by the relevant Minister on the advice of the board of Safe Food Queensland. The same fee applies for processors of dairy, eggs, meat and seafood. There is no differentiation of fee based on the scale or type of processing carried out.

Most other jurisdictions vary the licence or accreditation fee for seafood processing either by the size and scale of the facility or by species.

- *By species only.* South Australia applies different fees depending on the types of species being processed irrespective of the size or scale of the processing operation. A base fee applies to those dealing in or processing fish, with higher fees for those

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processing or dealing with rock lobster, prawn or abalone. Similar arrangements apply in Western Australia, where the level of fee for renewal of the licence depends on the species being processed, with a base fee for all species other than rock lobster and prawn and higher fees for establishments dealing with those species.

- *By size and scale of the facility.* New South Wales, Victoria and Tasmania apply the licence fee for seafood processors on a tiered scale, based on the size of the facility. In New South Wales the licence fee is based on the number of food handlers employed on a premises and in Tasmania on the number of full-time equivalent employees (for both jurisdictions it is tiered on less than 5, 5 to 50 and more than 50 fish handlers or full-time employees). In Victoria, the licence fee is based on the volume of throughput for different species in each facility with larger volume establishments paying higher fees.
- *Single fee.* Queensland and the Northern Territory apply a single fee for all processing operations.

Fees for seafood processors should reflect the level of resources used by governments for monitoring and enforcement of the relevant regulatory regime. The approach of using a tiered scale of fees based on regulatory effort is a superior way of reflecting and efficiently dealing with differences between processors. This would also reduce the scope for smaller businesses to cross-subsidise the regulation of larger businesses. Fees on seafood processors should ultimately reflect the efficiently-incurred costs of regulating facilities.

#### RECOMMENDATION 9.3

All governments should ensure that licence and accreditation fees for seafood processors reflect the efficiently-incurred costs of regulating these facilities.

### The limitations of downstream regulation as an adjunct to enforcement

There was also a view that the monitoring of downstream processes was ineffective in preventing illegal sales — that is, where sales made by either recreational or commercial fishers to family, friends and work colleagues (Queensland Seafood Industry Association, sub. 29).

There are limitations to downstream monitoring processes for the enforcement of laws on illegal fishing, as they can only monitor commercial premises and operations that are part of the regulated supply chain. Illegal sales made outside of those supply chains cannot be easily enforced under the monitoring regime. Enforcement issues are further discussed in chapter 10.

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## 10 Other areas for improvement

### Key points

- Available indicators suggest that Australia's fisheries are, on the whole, managed well relative to other developed countries. This is attributable to reforms in fisheries management over the past 10–15 years.
- While fisheries administrators are broadly on the right path, there is scope to improve how fishing sectors are regulated (as discussed in earlier chapters) and how core management tasks are undertaken. On the latter:
  - Many operational decisions can be made more efficiently at the agency, rather than ministerial/executive, level and should be delegated accordingly.
  - Governments can better utilise the knowledge and capabilities of stakeholders through improved consultation structures, and policies that set out where and how stakeholders can contribute to management.
  - The efficiency of management should be subject to disciplines such as benchmarking performance against peers and/or making processes such as research, consultation and data management contestable.
  - There is scope to improve cost recovery arrangements in all States and the Northern Territory.
  - Better performance reporting would support improved evaluation of fisheries management and facilitate targeted improvement.
- All governments follow risk-based approaches to enforcement and compliance, and there appears to be generally high compliance with most regulations.

The central regulatory concerns in fisheries management are whether policy objectives are clear, regulations achieve those policy objectives, and do so in a way that encourages productivity and innovation and minimises management and compliance costs.

While each fishery is unique and necessarily managed differently, the management of all fisheries requires three core tasks: research and/or collection of data to inform management decisions; the development and implementation of fishery management controls; and enforcement of those controls. Apart from the collection of data on non-commercial fishing activity (discussed earlier in this report), the main concerns raised by participants related to the development, implementation and enforcement of management controls. These concerns included:

- questions about the division of responsibility for fishery controls between the executive branch of government and departments/agencies

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- a desire that stakeholders be more and/or better involved in the design and implementation of controls
  - improving the enforcement of fishing rules
  - ensuring that regulations are well-targeted over time by regularly reviewing outcomes.

This chapter discusses how outcomes can be improved in these areas as well as other sources of efficiency improvement, including cost recovery systems. The chapter should be considered alongside actions identified in earlier chapters that would improve the effectiveness and efficiency of fisheries regulation (in particular, chapters 2 to 7).

## 10.1 Developing and implementing fishing controls

### Responsibility for making decisions

Management decisions can be broadly categorised as either strategic decisions or operational decisions (box 10.1).

#### Box 10.1 Strategic and operational decisions

##### Strategic decisions

A strategic decision is one that shapes the overarching policy for the management of fishing or the management of an individual fishery. Strategic decisions inform the management plans and harvest strategies underpinning the management of fisheries. Strategic decisions are made on behalf of the community.

A decision that fishing will be allowed in a certain area is a strategic decision. The details that define a fishery — the species, principles for allocation of access (chapter 2) and, sometimes, the forms of control — are also strategic decisions.

##### Operational decisions

Operational decisions underpin the daily management of a fishery and are often, but not always, technical in nature. Examples include the total allowable catch/effort in a fishery and the closure of areas within a fishery due to environmental concerns. Operational decisions are both constrained and guided by earlier strategic decisions, such as the policy objectives for the fishery.

Strategic decisions entail judgements made on behalf of the community on how resources should be used. It is appropriate that strategic decisions be made by elected representatives, whose role in resource management is to reflect community preferences for the use of the resource and to judge how any trade-offs should be made.

Operational decisions are those required to put policy intentions into effect. International reviews of fisheries governance arrangements show that where there is a high level of

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political involvement in operational decisions there tends to be poor outcomes (AFMA 2012c, p. 13).

Past independent reviews of fisheries for New South Wales (Stevens, Cartwright and Neville 2012) and Queensland (MRAG Asia Pacific 2014) found a high level of political involvement in operational decision-making in those States, leading to adverse outcomes. These outcomes included unduly long decision-making processes and decisions where not all of the alternatives were considered (MRAG Asia Pacific 2014). Both reviews recommended that the fisheries management agency in each State be responsible for operational decisions, which has been accepted by the respective governments.

Participants in this inquiry also raised concerns about political involvement in operational decision-making (for example, Gardner and Ogier, sub. 16; Merimbula Big Game & Lakes Angling Club Inc, sub. DR77; Tasmanian Rock Lobster Fisherman's Association, sub. 37).

The implementation of harvest strategies and harvest strategy policies (as recommended in chapter 2 of this report) requires clear articulation of government objectives and preferences for the management of fisheries, and provides a means of delegating technical operational decisions to fishery authorities/agencies. They are also important means by which decisions on stock management can be made more transparent and predictable, and for guarding against undue political intervention. The delegation of operational decisions within such a framework (or more generally) relies, however, on capacity to exercise this discretion adequately. Good outcomes require:

- clear rules to guide decisions
- decision-making expertise within the department/agency
- sufficient resources available to the decision-maker to assemble the information (including stakeholder input) required to make well informed decisions.

Reporting on the basis for decision-making and outcomes is important to ensure that authority is exercised well over time.

#### RECOMMENDATION 10.1

All governments should ensure that operational decisions are delegated to the relevant fishery management authorities to the extent possible.

## Consultation

The Commission received submissions from across Australia expressing concern about consultation processes in their jurisdictions. Concerns ranged from inadequate consultation (Sunfish Queensland Inc, sub. 3) to fishers suffering from 'consultation exhaustion' (Western Australian Fishing Industry Council, sub. 45, p. 11). Most often, the concerns centred on the effectiveness of the consultation process.

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As noted in previous chapters, effective consultation is central to the design and implementation of fisheries management controls and allocation decisions. More generally, consultation allows stakeholders (box 10.2) to have a say on both the design and potential consequences of regulation. Studies have shown that the acceptance of, and compliance with, a regulatory decision is improved when stakeholders have been involved in making that decision (Newig and Fitsch 2009).

#### **Box 10.2 Stakeholders in fisheries management**

Stakeholders will vary depending upon the management decision being considered, and the specifics and location of a particular fishery. However, typical stakeholders include: commercial, recreational and Indigenous customary fishers; traditional owners; fish processors and receivers; seafood consumers; suppliers of fishing gear; conservation groups; individuals with an interest in the marine environment; non-extractive users of the marine environment; researchers; scientists; training organisations; and the broader community (as 'owners' of the resource).

The principles underpinning good consultation processes are well established. Consultation needs to be targeted, timed and facilitated in a manner that will enable stakeholders to be engaged and is appropriate for the decision being made. This means the nature of consultation may vary across fisheries and management decisions.

Strategic decisions should take into account community views and preferences. Given the number, dispersion and sometimes varying interests of fisheries stakeholders, drawing on the representations of sectoral peak bodies is one way jurisdictions have sought to improve the quality of consultation on strategic decisions while containing costs.

The consultation process for operational decisions can usually be more targeted than for strategic decisions because the parameters for making the decision should already have been canvassed with the broader community. Advisory groups are a means through which this targeted consultation can be undertaken.<sup>58</sup> Advisory groups can be used for range of purposes, including as a source of technical input/advice for strategic and operational decisions, interpreters of technical material for decision makers, and as a source of expert advice. Effective advisory groups are recognised internationally as a key component of effective fisheries management (Borthwick 2012; CSIRO 2012).

#### **Using peak bodies for consultation**

While consulting peak bodies can be a cost-effective way of seeking views, there are no Australian commercial, recreational or Indigenous peak bodies that can claim comprehensive membership coverage of fishers within their respective sectors or

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<sup>58</sup> Advisory groups in this context is a broad term intended to cover the array of advisory committees, working groups and technical committees that exist across the jurisdictions and their fisheries.

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subsectors. For example, in New South Wales, the major peak body (the Professional Fishermen's Association Inc) represents approximately 23 per cent of the State's commercial fishers. Further, there are a 'diversity of often conflicting voices and views presented by various groups purporting to represent the industry' (Macdonald 2015, p. ix). Similar issues exist in Queensland where rival peak bodies have been established due to the differences among fishers:

The Fishermens Portal Inc ... was formed due to a lack of focus on the welfare of our commercial sector by seafood industry representative bodies (questionably referred to as peak bodies) ... (The Fishermens Portal Inc, sub. 17, p. 1).

The absence of comprehensive membership means that effective consultation cannot be achieved simply by liaising with a single peak body. The Western Australian Department of Fisheries has sought to resolve this issue by engaging the Western Australian Fishing Industry Council (WAFIC) to provide consultation services.<sup>59</sup> A service level agreement requires WAFIC to consult with the entire commercial sector (or a subsegment of the sector, if directed) and convey views to the Department of Fisheries. To reduce the perception of a conflict of interest on the part of WAFIC (as both a contractor to the government and a body that independently advocates in the interests of its members), WAFIC has created a separate body (the Industry Consultation Unit) to be responsible for the provision of consultation services (sub. 45). Feedback to this inquiry suggests that these arrangements (and similar arrangements for recreational fishers through Recfishwest) are generally working well.

In the absence of a commercial fishing peak body capable of delivering consultation services, the New South Wales Department of Primary Industry released a request for tender for these services in 2013 (New South Wales Government 2014).<sup>60</sup> The use of a third party provider of consultation services has some advantages over using a peak body. These include the avoidance of direct conflicts of interest and potentially lower costs and/or better services through access to a wider array of consultation techniques and approaches. However, third party consultants may lack the sectoral knowledge that brings value to the consultation (and collaboration) process.

### Advisory groups

The fisheries legislation of the Commonwealth, States and the Northern Territory provide for the formation of advisory groups. Some advisory groups are specifically formed and defined by statute but, in most jurisdictions, the role of advisory groups is determined by the Minister/department.

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<sup>59</sup> The department raises the revenue to fund the consultation services via licence fees on commercial fishers.

<sup>60</sup> Ten tenders were received, including from organisations other than fisher groups. However, none were successful. As at December 2016, the New South Wales Department of Primary Industry was considering further options for sectoral representation and consultation.

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Management Advisory Committees (MACs) are a set of advisory groups serving Commonwealth fisheries. They comprise representatives from industry and, depending upon the fishery, members from other governments, policy, conservation, recreational and research fields. MACs help deliver research and other relevant information to decision makers. Past reviews and participants in this inquiry indicate that MACs are held in high regard, both for providing advice effectively and promoting collective responsibility for outcomes among those involved in their operation (for example, CSIRO (2012); Borthwick (2012)).

Concerns have been raised in relation to the operation of advisory groups. These concerns include a lack of clarity in the role of the groups, insufficient expertise on the part of members, inadequate representation of stakeholder views, conflicts of interest, biased advice to decision makers and a lack of transparency in group processes (for example, Gardner and Ogier, sub. 16, MRAG Asia Pacific (2014), NSW Wild Caught Fishers Coalition, sub. 41, Tasmanian Conservation Trust Inc (2015)).

Similar concerns in the past led to the disbanding or substantial restructure of advisory committees in New South Wales, Queensland, South Australia and Western Australia over the period 2003–2010.

Many of the concerns can be mitigated by good governance arrangements. In this regard, the governance framework for MACs in Commonwealth fisheries is a better practice model. That framework includes:

- guidance on the role and operation of MACs, including terms of reference
- selection criteria and role descriptions for members, and a performance assessment regime
- a policy for conflicts of interest, guidelines for providing advice and guidelines for interactions with stakeholders and other advisory groups (AFMA 2015d)
- timely publishing of committee meeting minutes to the web page of the relevant fishery.

In relation to appointments, members of any technical advisory group (such as a committee advising on the total allowable catch for a fishery) should be appointed based on their expertise. Where the advisory group is undertaking more of a representative function (such as providing advice on the interests of a fishing sector or subsector), the appointment of members could be made based on nominations from the relevant sector/subsector. All members of an advisory group, however, should be guided by the group's terms of reference and their role descriptions in the undertaking of their duties.

To be effective, the governance arrangements need to be backed by a power for the Minister or department to dismiss advisory group members who breach the terms of their engagement.

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#### RECOMMENDATION 10.2

The governance arrangements of advisory groups formed under fisheries laws should include: clear terms of reference; a conflict of interest policy; clear role descriptions and requirements for members; fixed membership terms; performance assessment regimes; and reporting arrangements.

Ministers or departments should have the power to dismiss advisory group members who breach the terms of their engagement.

## Co-management

In Australian fisheries, the process of involving stakeholders in the management of fisheries has centred on co-management. Neville defined co-management as:

An arrangement in which responsibilities and obligations for sustainable fisheries management are negotiated, shared and delegated between government, fishers, and other interest groups and stakeholders (2008, p. 1).

The unique nature of individual fisheries means that the scope for co-management in Australia's fisheries varies. The expertise and motivations of stakeholder groups have a significant bearing on the extent to which suitable decisions or implementation tasks can be devolved. Many stakeholders, nevertheless, consider that there should be more opportunities for them to become involved.

### Benefits of co-management

Co-management supports good outcomes by bringing stakeholder knowledge and expertise to bear in generating solutions best suited to local circumstances and fisheries. More generally, stakeholder involvement can deliver improvements in both the efficiency and effectiveness of fisheries management. Stakeholders most commonly espouse benefits of lower management costs, improved adaptability and flexibility in regulation, and improved relations between stakeholders and governments.<sup>61</sup> Successful co-management arrangements have also delivered other benefits, including improved fisher productivity and the supply of better information to decision makers (box 10.3).

Further, as noted earlier, having stakeholders involved in making and implementing management decisions can increase compliance, and can foster better stewardship over the resource.

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<sup>61</sup> For example, Seafood Industry Victoria (sub. 44), Commonwealth Fisheries Association (sub. 49) and AFMA (sub. 50).

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### Box 10.3 **Examples of Australian co-management arrangements**

There are a number of examples where fishers and fisher groups are working collaboratively with fisheries managers but there are fewer co-management arrangements that involve delegated decision-making and/or implementation. Three examples of more devolved co-managements are detailed below.

#### **Spencer Gulf and West Coast Prawn Fishery**

Commercial fishers formed a 'Committee at Sea' (the Committee) in 1985 to provide real time management of fishing activity with a view to optimising both the catch and size of prawns taken. The Committee is currently made up of nine boat skippers and is responsible for making 'real time' harvest strategy decisions during fishing trips. The management decisions undertaken by the Committee include closing areas to trawling to avoid taking small prawns.

#### **AFMA/SETFIA co-management arrangement for snapper**

The Australian Fisheries Management Authority (AFMA) and South East Trawl Fishing Industry Association (SETFIA) have entered into a co-management arrangement under which SETFIA can approve incidental catches of snapper in excess of the prescribed trip limits in certain circumstances. The arrangement was prompted by a desire to reduce the waste incurred by discarding snapper caught in excess of trip limits.

Further details on this arrangement are contained in appendix B (box B.2).

#### **Recreational fisher data collection**

Starting in 1994, a group of volunteer recreational fishers has been assisting the Western Australian Department of Fisheries in obtaining survey data on juvenile tailor within the Swan River. Using a common fishing method, the recreational fishers target juvenile fish at weekly events organised by the department. This initiative has provided the department with data to assist in the management of the tailor stock. It is an example showing that co-management arrangements can also work with recreational fishers.

*Sources:* AFMA (2016f); Hollamby et al. (2010); PIRSA (2014b); SETFIA, sub. 53; Smith (2006); Zacharin et al. (2008).

## Challenges in implementing co-management arrangements

The challenges of co-management are neatly summarised by GA and MJ Stevenson:

Success in co-management relies entirely on the willingness of all stakeholders to work together ... It only takes one or two individuals who insist on a selfish agenda to undermine the entire process. (sub. 26, p. 28)

There can be high transaction costs involved in organising fishers (or other stakeholders) into the cohesive unit required for a co-management arrangement. These costs can be ongoing — for example, the continuing administrative and internal compliance costs

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associated with the Spencer Gulf and West Coast Prawn Fishery's Committee at Sea.<sup>62</sup> Stakeholders are more likely to bear these transaction costs where the benefits can be shown to outweigh the costs.

Co-management arrangements can create a free rider problem. For example, under the AFMA and South East Trawl Fishing Industry Association (SETFIA) co-management arrangement for snapper (box 10.3), fishers who are not members of SETFIA can receive approval to exceed the trip limit for snapper. These fishers did not contribute to SETFIA's costs in negotiating the arrangement with AFMA nor do they pay a fee for using the service.

Commercial fishers also need to be mindful of the *Competition and Consumer Act 2010* (Cth) and whether an agreement among themselves could be considered anticompetitive.

Stakeholder leadership is critical to overcoming these challenges. Leaders that communicate clearly, facilitate debate and resolve disputes will lower set up and ongoing transaction costs (Emery et al. 2015; Pomeroy, Katon and Harkes 2001). Strong leaders also compel ongoing stakeholder support for, and compliance with, co-management arrangements (Nielsen and Olesen 2008). Robust succession plans are required to avoid arrangements failing following leadership changes.

### Encouraging co-management

Neville (2008) identified nine preconditions for a successful co-management agreement (box 10.4). Not every precondition must be met before a co-management arrangement is initiated, but arrangements will usually have a greater chance of success if they are. The preconditions are based on international experience (McPhee 2009) and have been tested in three co-management trials in Commonwealth fisheries (Bolton et al. 2015). These preconditions have informed the policy approaches of the Australian, New South Wales, Victorian, South Australian and Western Australian Governments.

As noted in box 10.4, governments need to be willing to consider co-management arrangements and are responsible for ensuring that adequate legislation for the delegation of powers and forming of co-management contracts is in place. Having a clear policy on co-management would mean that the government is compelled to engage with a stakeholder group that satisfies the policy's governance requirements and that wishes to work on an activity flagged for co-management in the policy.

South Australia and Western Australia have issued policy documents on co-management. Both jurisdictions have also established mechanisms whereby commercial licence holders contribute to industry organisations to fund co-management activities. South Australia's

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<sup>62</sup> Enforcing ongoing compliance of an agreement between fishers is also costly as, where it is possible, it is generally through the courts under contract law.

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policy (PIRSA 2013b) provides practical guidance to stakeholders on the types of activities that the Primary Industry and Regions (SA) would consider collaborating on or delegating. It also includes details of the capability and governance standards expected of stakeholders.

#### **Box 10.4      Preconditions for successful co-management arrangements**

Of the nine preconditions that contribute to the success of co-management arrangements, three are the responsibility of government(s):

- a willingness by governments to consider alternative management models involving greater shared responsibility
- the existence of a legislative basis to delegate powers
- the ability to generate, and commit to, legally binding undertakings through a memorandum of understanding, contract or other form of agreement between the parties.

Other preconditions are a matter for the stakeholder group alone — those being the need for:

- a significant proportion of members wanting to move to co-management
- an effective organisation structure with good governance and an ability to communicate with all fishers and other stakeholders
- sufficient resources and skills to implement and deliver services, or an ability to negotiate and attract such resources
- identified 'champion(s)' who can negotiate effectively with governments and build organisational ownership.

Finally, there are preconditions where there is a shared responsibility:

- ability for the stakeholder group to legally enforce agreements through civil, contract or company law
- existence of conflict resolution mechanisms.

The responsibility of government(s) in these final matters is as they relate to the co-management arrangement. For the stakeholder group, their responsibility extends to their own governance arrangements — that is, how they enforce compliance among their members and provide for resolution of internal conflict.

*Source:* Neville (2008).

Despite progress to date, some consider that governments could 'do more'. For example:

While South Australia has a sound policy base for co-management, to date there has been little commitment to devolving responsibility and sharing of decision making. (Wildcatch Fisheries SA, sub. 10, p. 7)

If there is a clear desire by commercial fishers to develop a substantive co-management practice, clear direction from government and with advice, implementation and oversight from AFMA is needed. (Commonwealth Fisheries Association, sub. 49, p. 9)

There needs to be mutual trust between fisheries managers and stakeholders for co-management arrangements to work. One way that AFMA has sought to increase

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interactions with fishers is through the placement of a liaison officer in the offices of SETFIA (sub. 53). More generally, regulators should be open to working collaboratively with fishers, recognising that the costs involved may bear fruit in the longer term through an improvement in the stakeholder group's ability to contribute to policy outcomes.

The fisheries legislation of all jurisdictions except Victoria provide for the delegation of certain powers to non-government third parties. Of these powers, AFMA's ability to 'delegate any powers conferred on it under a plan of management for a fishery ... to a primary stakeholder' is best suited to co-management.<sup>63</sup>

RECOMMENDATION 10.3

All governments should have clear policies on co-management in marine fisheries. These policies should provide practical guidance to stakeholders on where governments are willing to collaborate or delegate responsibilities. The policies should include details of the capability and governance standards that are expected of stakeholders seeking to enter into a co-management arrangement.

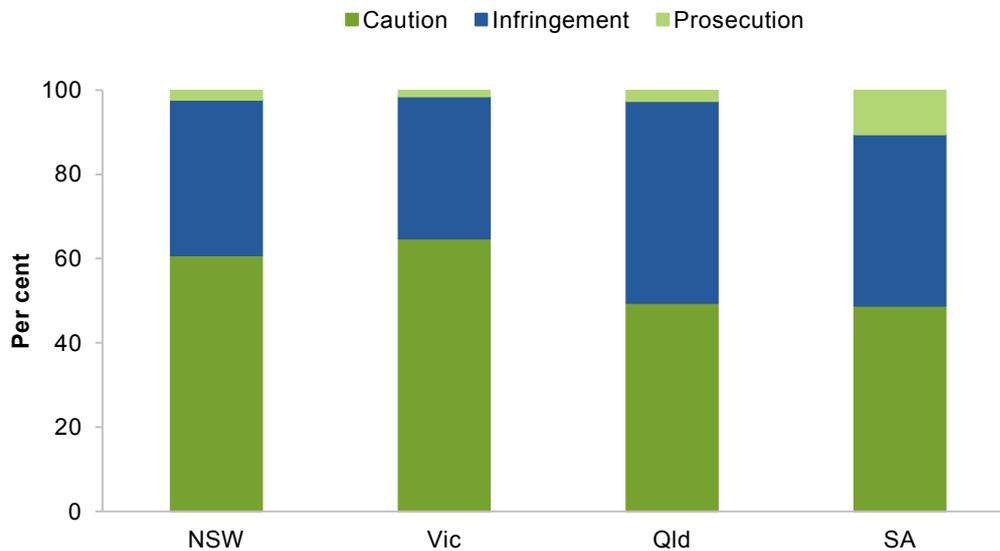
## 10.2 Enforcement and compliance

Most fisheries agencies adopt similar risk-based approaches to enforcement and compliance. These approaches are based on education, deterrence and targeted enforcement. In general, there appear to be high rates of compliance with fisheries laws. For example, information supplied by several States shows over 90 per cent of their inspections and interactions with fishers result in no action being taken while compliance with Vessel Monitoring System (VMS) and log book requirements in Commonwealth fisheries exceeds 95 per cent (AFMA 2015a; ANAO 2013). These figures bear out the view put by many to the Commission that the large majority of fishers across all sectors try to do the 'right thing'. When non-compliance with laws occurs, it is usually of a minor nature (for example, fishing without a recreational licence), attracting a caution or infringement notice (figure 10.1). Relatively few offences proceed to prosecution.

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<sup>63</sup> The power is provided at s.17(11) of the *Fisheries Management Act 1991* (Cth). 'Primary stakeholders' are defined as: (a) the holder of a fishing concession in the fishery; or (b) an incorporated body that represents those holders (including a peak body, for example); or (c) a person prescribed by the regulations.

Figure 10.1 Responses to non-compliance: 2011-12 to 2014-15



Sources: Department of Agriculture and Fisheries (Qld), pers. comm. 6 June 2016; Department of Economic Development, Jobs, Transport and Resources (Vic), pers. comm. 26 April 2016; Department of Primary Industries (NSW), pers. comm. 19 May 2016; Primary Industries and Regions SA, pers. comm. 19 July 2016.

## Illegal, unreported and unregulated fishing

Despite overall good compliance outcomes, concerns remain among both fishers and fisheries managers across Australia that illegal, unreported and unregulated (IUU) fishing is a significant problem. There are particular concerns about the illegal and large scale exploitation of high-value species (such as abalone, crab and rock lobster). There are potentially significant impacts from such illegal activity in terms of the sustainability of species, the livelihood and fishing experience of legitimate fishers, broader environmental effects (given the unregulated methods of illegal fishers), and the safety of seafood consumers.

These concerns have manifested in specific offences for the 'trafficking of fish' in the fisheries laws of New South Wales, Victoria, South Australia, Western Australia and Tasmania. The essential aim of the offence is to deter illicit trade in commercial quantities of fish, and especially high-value fish. The maximum penalties for this offence include imprisonment and substantial fines (table 10.1). The jurisdictions with fish trafficking provisions also publicise prosecutions to give greater impetus to the deterrence effect of the penalties.

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**Table 10.1 Fish trafficking penalties for individuals**

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	<i>Maximum penalty</i>
Cth	No offence for trafficking
NSW	10 years imprisonment plus a monetary penalty of 10 times the market value of the fish
Vic	10 years imprisonment
Qld	No offence for trafficking
SA	Fine of \$100 000 or 4 years imprisonment <sup>a</sup>
WA	Fine of \$400 000 plus 4 years imprisonment (first offence). 10 years imprisonment for second and subsequent offences
Tas	Fine of \$785 000 and 2 years imprisonment
NT	No offence for trafficking

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<sup>a</sup> Relates to 'priority' species such as abalone.

*Sources: Fisheries Management Act 1991 (Cth); Fisheries Management Act 1994 (NSW); Fisheries Act 1995 (Vic); Fisheries Act 1991 (Qld); Fisheries Management Act 2007 (SA); Fisheries Resources Management Act 1994 (WA); Living Marine Resources Act 1995 (Tas); Fisheries Act 1988 (NT).*

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The jurisdictions specify different thresholds for trafficking offences. For abalone in Western Australia the threshold is 10 times the recreational bag limit, in Victoria it is effectively 20 times the bag limit, and in New South Wales it is effectively 25 times the bag limit. Similarly, the actions that constitute 'trafficking' vary — in New South Wales it relates to the dishonest taking, sale, receipt or possession of fish in excess of the threshold; while in Western Australia it relates to taking, possessing, selling, delivering, processing, transporting, concealing and conduct in preparation of trafficking. The Western Australian provisions also extend to persons who supervise trafficking activities, provide premises or finance for trafficking or otherwise know about the trafficking of fish.

IUU fishing is likely to occur at varying levels of sophistication (box 10.5). Studies, such as those completed by Putt and Anderson (2007) and Putt and Nelson (2008), show that considerable information about illegal activity can be drawn from the general public. Recognising this, fisheries agencies have implemented different systems through which the public can share information.

All agencies have dedicated hotlines for reporting illegal fishing activity (for example, FishWatch and CRIMFISH). Hotlines are generally low cost methods of obtaining information from the public — for example, the cost of AFMA's CRIMFISH hotline is in the order of \$4000 per year (ANAO 2013). Fisheries managers are also increasingly using different media to convey and receive information from the public, including agency websites and/or Facebook pages. Less common, at present, is the ability for the public to report matters via a smartphone application.

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**Box 10.5 Varying sophistication in the illegal take of abalone**

Putt and Anderson (2007) describe a number of different instances of illegal, unreported and unregulated fishing. The most sophisticated was the illegal taking and export of abalone uncovered by Operation Oakum in 2002. The abalone was poached in Tasmania by out-of-state divers who dived at night and undertook surveillance of the police. A complex strategy followed that included hiding abalone in furniture crates bound for Hong Kong via Queensland and the manipulation of export documentation. Corruption appears to have been involved both in Australia and overseas with a former police inspector being implicated in Tasmania and a customs official in Hong Kong.

Less sophisticated, but still potentially significant, operations are said to involve groups of people masquerading as recreational fishers and harvesting the bag limit each to combine and sell. In Victoria, one such 'crew' is said to have involved a total of 40 people and 10 vehicles travelling to remote parts of the coastline. To avoid detection, some illegal divers are believed to be using re-breathers to hide their bubbles, working at night with underwater lights and/or using global positioning systems.

At the level of unsophisticated, but still illegal activity, are family-run abalone poachers who conceal the abalone in their clothes to avoid detection.

The value of sourcing information from the public can be undermined if the information is not used or is not seen to be used. Some stakeholders raised concerns regarding the timeliness and/or responsiveness of agencies to information supplied (section 4.4, chapter 4) and indicated that this inaction will make them reluctant to provide information in the future. To ensure the public continues to provide information, and to make the best use of that information, fisheries agencies need to be sufficiently resourced for timely and proportionate follow-up action.

### **Illegal, unreported and unregulated fishing by foreign boats**

Enforcement activities generally appear to be effective in relation to foreign boats. The extent of illegal fishing by foreign boats in northern Australian waters has decreased significantly since 2005-06 and the annual rate of apprehensions has fallen by over 97 per cent since that time. Also, there is currently no illegal, unregulated or unreported fishing in the Southern Ocean (AFMA, sub. 50, attachment 1).

Several factors have contributed to the reduction in IUU fishing by foreign boats in the Australian Fishing Zone. These factors include: an increase in monitoring, control and surveillance activity across the Australian Fishing Zone; public information campaigns in key ports within Indonesia (AFMA, pers. comm. 28 October 2016); and international co-operation on operations to stop IUU fishers (Doulman and Swan 2012). Increasing fuel prices over the period 2009–2014 also likely contributed to the reduction in IUU fishing. AFMA has noted that '... it is important to maintain an appropriate level of a surveillance and response capacity along with a sufficient level of resources to engage effectively at the

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international level to mitigate [the] risks' posed by IUU fishing (sub. 50 — attachment 1, p. 14).

## **10.3 Cost recovery and contestability of services**

### **Cost recovery**

Cost recovery refers to charging back the relevant costs of regulation and service provision to those who directly create the need for it. The benefits to users and providers of regulatory services of recovering costs, and good practice principles for cost recovery (box 10.6), are well established. In summary, a cost recovery policy based on efficiently-incurred costs for user-driven services:

- promotes allocative efficiency because it ensures the costs of regulation are reflected in prices. Further, it discourages the excessive demand for regulatory services that can be created by the lack of a price for them
- supports equity by reducing the taxation burden on those who do not directly and primarily benefit from the regulation or service(s).

Allocative efficiency and equity are compelling reasons to pursue cost recovery in fisheries. But there are also other strong imperatives for adopting or improving cost recovery arrangements. These include:

- to support essential regulatory activity and the provision of services
- to increase the accountability of fisheries managers to fishers about what, and how, services are delivered. The transparent reporting of regulatory activities and costs can also help to ensure that, over time, regulatory effort is well-designed and targeted given the value and nature of the fishery, and places pressure on regulators and fisheries managers to seek efficient methods of regulation or service delivery.

The following subsection considers current arrangements for recovering costs, priority areas for policy attention, and the areas of cost that are likely candidates for cost recovery.

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### Box 10.6 **Cost recovery: principles for implementation**

The Commission (PC 2001) examined cost recovery arrangements in government agencies and set out a number of principles for policymakers to follow. The principles include:

- cost recovery arrangements should apply to specific activities or products (those used directly by beneficiaries) and not the management agency as a whole
- cost recovery charges should be linked as closely as possible to the costs of activities or products. Fees-for-services, reflecting efficiently-incurred costs, should be used wherever possible. Where this is not possible, specific taxation measures (such as levies) can be used but only where the basis for collection is closely linked to the costs involved
- governments should not set targets requiring agencies to recover specific proportions of total agency costs. Further, agencies should not recover the costs of certain activities, such as parliamentary services or ministerial support
- cost recovery should not be implemented where: it is not cost-effective; it would be inconsistent with policy objectives; or it would unduly stifle competition or industry innovation.

The Commission advocated the use of a Cost Recovery Implementation Statement (CRIS) within cost recovery frameworks. A CRIS transparently discloses an agency's major activities, which of these are cost-recovered and why.

The Commission (PC 2001, p. 39) also recommended that all cost recovery arrangements 'should have clear legal authority'. This could be either explicit legislative authority to charge a fee-for-service or a separate tax legislation for levies.

## Current practice and areas for policy attention

### *Commercial fishing: current practice*

The management costs recovered from commercial fishers vary across the jurisdictions, both in terms of nature and magnitude (box 10.7). AFMA (2014a) recovered over 30 per cent of total management costs from commercial fishers in 2013-14 while only nominal costs were recovered in the Northern Territory in the same year (Department of Primary Industry and Fisheries (NT), pers. comm. 3 June 2016). In most jurisdictions, the extent of costs recovered did not exceed 20 per cent of the total regulatory cost (data supplied to the Commission by the jurisdictions).

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## Box 10.7 Cost recovery arrangements: commercial fishing

### Jurisdictions applying conventional cost recovery

Commonwealth fisheries and those in Victoria and South Australia are subject to cost recovery policies featuring the principles outlined in box 10.6. AFMA and the Victorian Department of Economic Development, Jobs, Transport and Resources both publish details of the major fisheries management activities, whether they are funded by the industry (through levies or fee for service) or from general revenue, and the reasons for the funding decision. PIRSA does not publish all of these details but does publish information about the cost recovery program, outlining activities delivered to each fishery and relevant costs.

### Other methods for gaining industry contributions

Queensland, Western Australia and Tasmanian fishers contribute to the costs of management through fees. Any link between fees and the cost of regulation is not obvious from publicly available information.

Queensland's fisheries regulations prescribe a mix of flat and per unit fees for licences and access to each fishery. These fees collectively fund 20 per cent of the total management costs of Queensland's fisheries (DAF Qld 2016b). The review of Queensland fisheries by MRAG Asia Pacific (2014, p. 13) recommended introducing cost recovery in Queensland's commercial fisheries. The subsequent *Green Paper on fisheries management reform in Queensland* (DAF Qld 2016b) highlighted the funding of fisheries management as a matter requiring further consideration.

Western Australia changed from an activity-based cost recovery regime to a fee system in 2010. Each fishery in Western Australia pays a fixed proportion (currently 5.75 per cent) of their gross value of production, which contributes to fisheries management costs as well as funding industry consultation via the Western Australian Fishing Industry Council (section 6.1).

Tasmania's fisheries regulations prescribe flat fees for vessels and different commercial fishing licences. The fees collected are retained in trust funds to manage the respective fisheries from which they were collected. Legislation also provides for levies to be applied to fishers for the purpose of research and 'approved services'.

### Minimal industry contribution to management costs

The Northern Territory does not have cost recovery arrangements. Licence fees for all fisheries are set by the Minister each year in consultation with industry. These fees are paid into a Fishing Industry and Development Trust Fund which is used to fund projects. Only a nominal contribution is made by fishers to management costs of their fisheries.

### In transition

New South Wales commercial fisheries are currently undergoing reform, part of which includes developing a new cost recovery policy. Pending the finalisation and implementation of the new policy, an increase in fees has been applied to recover a larger share of management costs.

*Sources:* ABARES (2015); AFMA (2014a); Department of Agriculture and Fisheries (Qld), pers. comm. 6 June 2016; Department of Economic Development, Jobs, Transport and Resources (Vic), pers. comm. 26 April 2016; Department of Primary Industries (NSW), pers. comm. 19 May 2016; Department of Primary Industry and Fisheries (NT), pers. comm. 3 June 2016; DoF WA (sub. 21); DoF WA (2014); DPIPWE Tas (2014a); Government of South Australia (sub. 63); Primary Industries and Regions SA, pers. comm. 19 July 2016 and 27 July 2016.

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The Australian, Victorian and South Australian Governments have implemented policies that feature most of the recommended implementation principles, including fees based on the cost of specific services incurred. Commercial fishers in other jurisdictions contribute to management costs through a range of different fees and charges, including flat fees per licence or vessel, fees per quota holding or endorsement, and ad valorem charges. These methods are administratively simpler, but:

- forego the efficiencies arising from transparently basing fees on the costs of specific regulatory services or products
- impose less discipline on governments to separately account for costs genuinely associated with the provision of essential regulatory services to fishers and other costs that may be incurred meeting broader policy goals (and which should be funded by governments and not fishers). Relatedly, they diminish the discipline to scrutinise costs associated with meeting the policy goals of fisheries and thereby the review of those goals (section 10.4)
- setting fees according to the total regulatory costs for a jurisdiction without regard to different management costs (and needs) in individual fisheries is likely to result in cross-subsidisation across fisheries.

Graduated (for example, tiered) fee systems accompanied by transparency on the activities that are charged back may lessen these costs and drawbacks. Overall, however, jurisdictions without activity-based cost recovery systems should consider the broader benefits and costs of the different approaches when appraising their relative merits (rather than just the immediate budgetary and compliance costs of administering systems).

#### *Commercial fishing: areas for policy attention*

The most prominent concerns raised regarding cost recovery arrangements related to a lack of transparency on what costs are, in fact, recovered, and doubt or uncertainty as to the efficiency with which services are provided.<sup>64</sup> These concerns were raised in relation to jurisdictions both with and without activity-based cost recovery arrangements, highlighting the importance of making transparent the activities and services for which fees have been charged, their costs and the level of costs recovered. This represents a minimum level of information due ‘customers’ of regulatory services, but would also help to reduce unnecessary concern associated with a lack of information.

Where activity-based cost recovery arrangements exist, governments should publish a statement outlining all services or regulatory activities for which costs are recovered and why, and the amount and extent of costs recovered. Where an alternative approach is taken

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<sup>64</sup> For example, Wildcatch Fisheries SA Inc (sub. 10), Southern Rock Lobster Limited (sub. 22), South Australian Rock Lobster Advisory Council Inc (sub. 28), Seafood Industry Victoria (sub. 44), Western Australian Fishing Industry Council (sub. 45), Recfishwest (sub. DR91) and Abalone Industry Association of South Australia (sub. DR114).

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governments should make clear how that approach and fees reflect the efficiently-incurred costs for essential regulatory services.

The ability to scrutinise what services are provided (and their costs) places pressure on those who deliver or procure them to ensure they are well targeted and efficiently provided. In some cases, however, further effort may be required to establish or maintain confidence between regulators and regulated parties, for example:

- greater consultation with regulated parties on the nature or frequency of regulatory activities or services
- instituting processes to ensure that costs are efficiently incurred, such as periodic benchmarking of the costs of standing activities or services, making some services contestable (discussed in the next subsection) and/or involving user representatives in the selection of service providers.

Participants also raised concerns about the impact of cost recovery on the viability of commercial fishing operations.<sup>65</sup> As fees should be based on the efficiently-incurred costs of necessary activities and services, full cost recovery arrangements may not be viable in some jurisdictions (such as in New South Wales) until major reforms have been implemented.

Overall, applying best practice cost recovery approaches to the commercial sector will entail a considerable shift from the present arrangements for some jurisdictions but should be pursued where cost-effective.

### *Recreational fishers*

As discussed in chapter 4 the Commission envisages that the costs of administering licensing systems would be recovered from recreational fishers. Reflecting the low marginal cost of issuing each licence, recreational fishing licences should be available at low cost for the majority of fishers. The best practice principles outlined in box 10.6 should be applied if governments choose to use recreational licensing fees to recover the cost of additional services and/or facilities.

### *Indigenous customary fishers*

Indigenous customary fishers are not presently subject to cost recovery in any jurisdiction. In principle, cost recovery should apply to regulatory services provided to Indigenous customary fishers if they benefit directly and costs can be directly traced to the services provided. However, there are significant questions as to whether cost recovery would be

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<sup>65</sup> For example, Women's Industry Network Seafood Community (sub. 12) and The Fishermens Portal Inc (sub. 17).

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cost-effective and could be applied in a way that would promote the primary objectives of government.

Customary fishers are regulated, in the first instance, by the Indigenous laws and customs they acknowledge and adhere to. Some customary fishing may therefore be managed with only partial or minor intervention by governments, and some solely by the local Indigenous community. Further, as Indigenous Australians may be afforded access rights by way of native title or other laws, rather than the grant of fishing permits/licences, there may not be an immediate mechanism by which to levy and collect fees. Where fees could be charged, the remote locations of some customary fishers and the relatively small numbers of customary fishers in many fisheries may mean that the cost of identifying beneficiaries and collecting fees is higher than revenue received.

On the policy side, charging fees for services to customary fishers may put those services beyond the reach of some Indigenous Australians — many of whom are, in some way, disadvantaged (SCRGSP 2016). To the extent this occurs and deters participation in customary fishing and/or fisheries management, it would defeat the policy aims of including customary fishing within fisheries management regimes (chapter 5).

The scope for applying cost recovery to Indigenous customary fishing activities therefore seems small. The case for doing so should be determined on a case-by-case basis by governments.

### What costs should be recovered?

The discussion below outlines some of the key management activities and who should pay for them.

#### *Research services*

Fisheries management requires a range of research and data services to inform decision-making. One common input in higher-use fisheries is a stock assessment of target species. As stock assessments are necessitated by the activity of fishing, their costs should be recovered from the relevant fishers.

The primary aim of government-funded fisheries research should be to enhance the welfare of the community, including by helping to ensure that wider economic, social and environmental policy goals of fisheries are met. To this end, governments may usefully:

- facilitate collaborative research where this would improve the quality of research outcomes and/or avoid wasteful duplication of research effort
- promote transparency and accountability in regard to research program outcomes through effective governance, evaluation and reporting requirements

- 
- facilitate future research efforts by providing for appropriate disclosure and dissemination of research results (PC 2011b).

Fisheries research projects may provide both public and private benefits — for example, research into bycatch reduction devices may improve the efficiency of commercial fishers and also improve ecological outcomes, from which the wider community benefits. It is often difficult to determine the relative size of the public and private benefit from a piece of research, especially in advance of completing it. In such cases, a practical approach is to opt for no cost recovery where the benefits to the broader public are likely to be substantial and/or the specific beneficiaries are not identifiable.

### *Enforcement and compliance*

The benefits from enforcement of (and education on) fisheries laws are not confined to certain individuals. For example, it is the Australian community as a whole (not just fishers) that benefit when illegal fishing is prevented within the Australian Fishing Zone. Given this, the cost of enforcement should not be recovered from fishers.

The Commission envisages that the cost of some compliance activities would be recovered from fishers, such as where the regulatory activities predominantly relate to ensuring compliance with conditions on fishers' entitlements to fish and costs are clearly attributable to those fishers. Such recoverable costs include monitoring compliance against quota and the cost of vessel monitoring systems.

### *Policy and management systems*

The costs of ministerial support and policy development should not be recovered from fishers given they are core functions of government. However, costs associated with administering licensing systems, cost recovery systems and quota management systems may be recovered in full or in part from licensees and quota holders.

#### RECOMMENDATION 10.4

The State and Northern Territory Governments should implement best practice cost recovery arrangements for the commercial fisheries sector. Cost recovery charges should be linked as closely as possible to the efficiently-incurred costs of essential regulatory services.

All governments should transparently disclose the services or regulatory activities for which costs are recovered, and the amount and extent of costs recovered.

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## Making some services contestable

Governments regulate fisheries to address the market failures arising from the common-pool nature of fisheries and the externalities from fishing activities. While some regulatory functions are clearly the responsibility of governments, some tasks (such as stock assessments, research and consultation services) may be delivered by third parties or subject to greater discipline by assessing their cost and quality (benchmarking) against similar services provided by the market. The example of FishServe from New Zealand shows the scope for contracting services to third parties and the savings that may result from making services contestable (box 10.8).

### Box 10.8 FishServe (New Zealand)

FishServe is the trading name of a privately owned New Zealand company. FishServe provides a range of services to the New Zealand Ministry for Primary Industries including: the issuance of fishing permits; vessel registrations; managing and maintaining the registers for annual catch entitlements and quota shares (including transfers); issuing then processing completed fishing returns; and collecting revenue on behalf of the Ministry.

With FishServe responsible for registry services, the annual cost to industry fell from NZ\$8.7 million in 2000-01 to NZ\$5.0 million in 2005-06. Meanwhile, the volume of registry transactions for which data were transferred electronically increased from 68 per cent to 95 per cent over the same period.

*Sources:* Fishserve (2016); Harte (2008).

AFMA ‘periodically tests the market to determine whether the services it provides can be delivered by the private sector as effectively and at a lower cost’ (sub. 50, p. 11). The services tested or under consideration for testing include: logbook services; electronic monitoring; observer services; and research. Subject to the inclusion of quota management and data collection/management services, Commonwealth fishers see these services as bringing the greatest potential savings from contestability (Commonwealth Fisheries Association, sub. 49; SETFIA, sub. 53). As noted in section 6.1, stakeholder consultation services are another area where there may be benefits from contestability.

The opportunities to make services contestable will change over time as new approaches and technologies emerge.

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## Making scientific research contestable

Seeking research services from the market can bring discipline to costs and access to a wider array of techniques, expertise and approaches. A number of stakeholders have been seeking increased contestability in the supply of research for these reasons.<sup>66</sup>

In-house scientific expertise can also, however, deliver benefits for fisheries management. These include a higher likelihood of the cross-pollination of ideas and expertise between fisheries managers and scientists. The use of government research services avoids many of the costs associated with sourcing suitable third party providers (for example, tendering, due diligence and then managing contracts). Finally, there are not always competitive alternative suppliers available (box 10.9).

### Box 10.9 Experience with contestable research

The experience with making research contestable in Australia has been mixed. On one hand:

... at industry's urging AFMA tendered the [Commonwealth Trawl Sector] assessment out to external contractors. The outcome was that only a single tender was received, from the incumbent contractor, and that the cost increased by 20 per cent. (SETFIA, sub. 53, p. 4)

On the other hand:

... in 2010 SETFIA independently commissioned its own pink ling assessment (supported by AFMA) from New Zealand at a cost of about one third of the incumbent contractor at the time (SETFIA, sub. 53, p. 4).

There are other benefits in having well-known and well-regarded in-house suppliers of scientific advice (such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO), South Australian Research and Development Institute (SARDI) and the Research Division of Western Australia's Department of Fisheries). The strong 'brand' of these bodies bolsters confidence in a scientific process that is not well understood by many in the broader community. The certainty of demand for services within a government research body also increases the likelihood of government investing in the body, which supports the body's ability to attract and retain talented researchers. This investment also supports longer-term research projects that might otherwise not proceed when work is resourced and allocated on a 'contract-by-contract' basis.

The quality of, and public confidence in, scientific research are important considerations for fisheries managers. A robust and widely accepted national quality assurance standard for scientific research could reduce reliance on established suppliers without compromising on research quality or public confidence. Thus, adopting a robust quality assurance standard could help to foster access to a deeper market for scientific research or at least make the transaction costs of procuring it lower.

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<sup>66</sup> For example, South Australian Rock Lobster Advisory Council Inc (sub. 28), Seafood Industry Victoria (sub. 44), Commonwealth Fisheries Association (sub. 49) and SETFIA (sub. 53).

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A quality assurance standard for scientific research was introduced in New Zealand in 2011 (Ministry of Fisheries (New Zealand) 2011). That standard deals with matters including: peer review; researcher qualifications; laboratory and equipment certifications; governance; project management; data collection and handling; acceptable technical protocols; and documentation of outcomes.

A quality assurance standard for ‘Australian fisheries research and science information’ is presently under development (FRDC 2014). The project has a budget of \$100 800 and includes within its scope the development of an agency-specific implementation plan for AFMA. Other jurisdictions should be able to leverage that plan, and learn from AFMA’s experience in implementing it, to lower their costs of putting the standard into effect for their fisheries.

## 10.4 Costs and outcomes of Australian fisheries management

Benchmarking (or comparing) regulatory costs and outcomes across jurisdictions, either within Australia or internationally, can help to identify if management practices can be improved (PC 2011a). The information presently available on Australia’s fisheries does not allow detailed benchmarking, but does indicate that Australia’s fisheries management regimes compare favourably to most other developed countries. For example:

- over the three years 2011-12 to 2013-14, AFMA’s management costs were between 11–12 per cent of the gross value of production (GVP) in Commonwealth fisheries.<sup>67</sup> While using a cost-to-GVP ratio has a number of caveats (box 10.10), this result is well within the range of 7–30 per cent of GVP for developed countries over recent history.<sup>68</sup> (Comparable multi-year data on marine fisheries for other Australian jurisdictions was not available)
- Australia rates highly in international comparisons of effectiveness in managing marine environments and the level of Australia’s overfished stocks is below the world average and well below many countries and regions (chapter 7).

At present, there is insufficient information to allow comparisons of management costs and outcomes at either the jurisdictional or fishery levels (box 10.11). Further, some fisheries do not report performance against clearly articulated and prioritised objectives. Part of the reason for this, as noted by Triantafillos et al. (2014, online appendix 17), is that ‘few fisheries managers can confidently identify the social objectives of their management

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<sup>67</sup> These ratios potentially overstate the extent of AFMA’s management costs for Commonwealth fisheries as, these costs include activities related to international co-operative efforts to reduce IUU fishing (section 10.2).

<sup>68</sup> The cost comparisons are based on data from: Costello and Mangin (2015); Ministry of Fisheries (New Zealand) (2015); Savage and Hosbawn (2015); OECD Agriculture Statistics database (DOI: 10.1787/agr-fish-data-en).

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activities, let alone monitor progress towards achieving these objectives'. Poor and/or incomplete data make it difficult to comment on the reasonableness of management effort relative to outcomes.

## Room for improvement

Better performance reporting would foster greater accountability on the part of fisheries managers. Reporting performance against objectives would also help inform decision-making and management actions. In addition, when accompanied by transparent reporting of management costs, performance reporting allows stakeholders to reach a view on whether the costs of interventions are sufficiently outweighed by the benefits.

### Box 10.10 The management cost to GVP indicator

The ratio of management costs to gross value of production (GVP) is frequently used as a measure of efficiency, but is of somewhat limited utility and should be used with caution.

- GVP measures only the value of output from the commercial sector, ignoring the value of production from the recreational and Indigenous customary fishing sectors as well as broader benefits from fishing (that is, the social and cultural benefits). Used in this way, the ratio will overstate management costs relative to output or the value generated from fisheries.
- Costs to GVP can be subject to sizable year-on-year changes due to fluctuations in catch or one-off cost items. For example, over the period 2006-07 to 2010-11, annual management costs in the southeast Australian scallops fisheries were between 13 and 33 per cent of GVP, depending on the year (appendix B).
- The ratio of costs to GVP at the jurisdictional level should be considered in light of the nature of fisheries in the jurisdiction. Factors that can have a significant bearing on management costs and methods include:
  - differences in management objectives
  - the size of the jurisdiction's waters, the number of ports or boat ramps from which fishers operate, the number of fishers across the different sectors and the attractiveness of the fisheries to illegal, unreported and unregulated (IUU) fishers
  - the mix of fishers across jurisdictions and fisheries — for example, the need to balance interests in a multi-user fishery usually increases management costs compared to a single user fishery (OECD 2003).
- Cost to GVP ratios reported by countries are not always comparable due to differing accounting practices — for example, some countries include the costs of prosecutions in their reported costs while others do not (OECD Agriculture Statistics database).
- A low cost-to-GVP ratio may be a sign of an under-resourced fisheries agency rather than an efficient one.

Best practice harvest strategies include clear management objectives and performance indicators for each objective. The broader adoption of harvest strategies would help to

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ensure that data are collected to inform assessments of performance and management decisions.

As compiling data for performance reporting can be costly, reporting requirements should be set having regard to the risks and value of the fishery. There would be merit in consistent accounting for marine management expenses to facilitate comparisons across fisheries and/or jurisdictions. In addition, cost and outcome information should be assessed both at single points and over time, given the potential for seasonal and ‘one-off’ factors to distort interpretations of performance.

**Box 10.11     Assessing costs and outcomes of Australia’s marine fisheries management**

As part of this inquiry, the Commission requested information from each jurisdiction on their fisheries management costs and reviewed public reporting of outcomes for their rock lobster fisheries.<sup>1</sup>

**No clear conclusions on management costs**

All jurisdictions provided cost data to the Commission but the data was of varying quality and was not sufficient to allow an assessment of costs against outcomes. Shortcomings in the cost data from some jurisdictions included incomplete data, the inclusion of costs unrelated to marine fisheries and lack of reporting by management activity. These features reflect several factors including: difficulties in attributing staff time to individual management activities; the relevant agency/division having responsibilities other than marine fisheries management (for example, inland fisheries and/or aquaculture); and some management activities (particularly enforcement) involving other government agencies.

**Wide variation in reporting of outcomes**

The rock lobster case study showed that, while reporting of economic and environmental indicators was common, there was much less reporting of social indicators. Similarly, there was generally more emphasis on commercial fishing outcomes compared to recreational and customary fishing. There was considerable variability between jurisdictions on the level of detail reported and the frequency of reporting.

<sup>1</sup> The Commission selected the rock lobster for a case study analysis as it is a higher-value species that is fished across Australia with the exception of the Northern Territory. Reports reviewed included: ABARES (2015c, 2016); DEDJTR Vic (2015a, 2015b); DoF WA (2015d); Econsearch (2015f); Hartmann et al. (2013); Linnane et al. (2015b); NSW Rock Lobster Fishery TAC Committee (2015); Queensland Government (2011).

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## A Conduct of the inquiry

The Commission received the terms of reference for this inquiry on 23 December 2015. It subsequently released an issues paper on 16 February 2016 inviting public submissions and highlighting particular matters on which it sought information.

In total, 116 public submissions were received and placed on the inquiry website. A list of all public submissions is contained in table A.1. Of these, 64 submissions were received prior to the release of the draft report, and 52 in response to the draft.

The Commission provided a facility on the inquiry website for interested stakeholders to complete a survey or provide general comments: 38 people completed the survey for recreational fishers; 14 people completed the survey for commercial fishers; and three people provided a 'general comment'. The Commission also provided a facility on the inquiry website for interested stakeholders to respond online to the draft report: four people provided responses.

During the course of the inquiry, the Commission held informal consultations and meetings with governments, regulatory bodies and peak bodies, as well as a number of businesses, organisations and individuals. Table A.2 lists these participants.

Three days of public hearings were held for this inquiry. Hearing participants are listed in table A.3 and transcripts are available on the inquiry website.

The Commission would like to thank all those who contributed to this inquiry.

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**Table A.1 Public Submissions**

<i>Participants</i>	<i>Submission no</i>
Abalone Industry Association of South Australia Inc	DR114
Amateur Fishermen's Association of the NT Inc	20
Aquaculture Council of WA (ACWA)	DR79
Altman, Jon	DR88
Association of Marine Park Tourism Operation	1
Austral Fisheries Pty Ltd	DR84
Australian Barramundi Farmers Association	34, DR94
Australian Fisheries Management Authority (AFMA)	50, DR111
Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS)	DR109
Australian Marine Conservation Society	33, DR110
Australian Prawn Farmers Association (APFA)	23, DR105
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	59, DR106
Bode, Dan	DR69
Brisbane Valley Anglers Fishstocking Association Inc	4
Byron Bay Deep Sea Fishing Club	DR97
Carefish	24
Centre for Aboriginal Economic Policy Research — Australian National University (ANU)	DR107
Clunies-Ross, John	5
Collins, Kenneth	6
Commonwealth Fisheries Association (CFA)	49, DR85
Coolum and North Shore Coast Care	14
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	61
Department of Agriculture and Water Resources (Cth)	56, DR108
Department of Fisheries (WA)	21, DR96
Department of Industry (NSW)	7
Department of Primary Industries, Parks, Water and the Environment (Tas)	48
Department of Primary Industry and Fisheries (NT)	46
Department of the Environment (Cth)	54
EDOs of Australia (EDOA)	DR82
Environmental Defenders Office (Tas) Inc	18
Federation of Victorian Traditional Owner Corporations	40
Fisheries Research and Development Corporation (FRDC) Indigenous Reference Group	57, DR87
Gardner, C and Ogier, E	16
GeoTrends Sustainability Consulting Pty Ltd	DR104
Government of South Australia	63
Great Barrier Reef Marine Park Authority (GBRMPA)	11, DR86
Hon Leon Bignell Minister for Agriculture, Food and Fisheries (South Australia)	DR113
Humane Society International	31, DR72
Institute for Marine and Antarctic Studies, University of Tasmania (IMAS)	DR92
Kearney, Bob	DR115
Kemna, Tony	DR68
Law Council of Australia	DR93
Mackay Recreational Fishing Alliance (MRFA)	DR90

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**Table A.1** (continued)

<i>Participants</i>	<i>Submission no</i>
Marine Stewardship Council (MSC)	DR100
Merimbula Big Game and Lakes Angling Club Inc	27, DR77
Mezo Research	DR83
National Aquaculture Council Inc.	2
National Native Title Council (NNTC)	DR102
National Seafood Industry Alliance Incorporated	58
Northern Land Council	39, DR101
Northern Prawn Fishery Pty Ltd	DR80
Northern Territory Seafood Council	43, DR78
NSW Aboriginal Land Council (NSWALC)	DR103
NSW Wild Caught Fishers Coalition	41
O'Donnell, Carol	DR98
Payne, Lance	DR66
Pearl Producers Association	52
Pender, Robert	DR65
Prokop, Frank	DR73
Professional Fishermen's Association of NSW	38
Queensland Government	60
Queensland Seafood Industry Association	29, 36
RecFish SA	35
Recfishwest	DR91
Richey Fishing Co Pty Ltd	30
Ridley Corporation	32
Rose, Robert	51
Seafood Industry Victoria	44
Shark Bay Prawn Trawler Operators' Association	55
South Australian Fishing Alliance (SAFA)	DR89
South Australian Oyster Growers Association	19
South Australian Rock Lobster Advisory Council Inc	28
South East Trawl Fishing Industry Association	53
Southern Rocklobster Limited	22
Stevenson, GA and MJ	26, DR95
Sunfish Queensland Inc	3
Sydney Fish Market (SFM)	13, DR75
Tasmanian Association for Recreational Fishing Inc (TARFish)	42
Tasmanian Government	DR99
Tasmanian Rock Lobster Fishermen's Association	37
Tasmanian Salmonid Growers Association	8, DR76
Tasmanian Seafood Industry Council	47, DR81
Thomassin, Annick	DR112
The Fishermens Portal Inc	17

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**Table A.1** (continued)

<i>Participants</i>	<i>Submission no</i>
Torres Strait Regional Authority	9
Vegan Australia	15
Vorstenbosch, John	DR67
Victorian Recreational Fishing Peak Body (VRFish)	25, DR74
West Coast Professional Fishers Association	64
Western Australian Fishing Industry Council (WAFIC)	45
Wildcatch Fisheries SA Inc	10
Williams, Nick	DR70
Winstanley, Ross	DR71
Women's Industry Network Seafood Community	12
WWF Australia and TRAFFIC	62, DR116

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## Table A.2 Stakeholder consultations

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### *Participants*

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#### **ACT**

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)  
Australian Fisheries Management Authority (AFMA)  
Australian Maritime Safety Authority (AMSA)  
Australian Recreational Fishing Foundation  
Australian Fishing Trade Association  
Commonwealth Fisheries Association (CFA)  
Craik, Wendy  
Department of Agriculture and Water Resources (Cth)  
Department of Environment and Energy (Cth)  
Fisheries Research and Development Corporation (FRDC)

#### **New South Wales**

Australia's Oyster Coast Limited  
Bermagui Fisherman's Co-op  
Clarence River Fisherman's Co-operative  
Coffs Harbour Co-op  
Department of Primary Industry  
Eden Sports and Game Fishing Club  
Kearney, Bob  
Narooma Oyster Farms  
Professional Fisherman's Association of NSW  
Southland Fish Supplies  
Wagonga Aboriginal Lands Council

#### **Northern Territory**

Amateur Fishermen's Association of the NT Inc  
Department of Primary Industries and Fisheries  
Northern Land Council  
Northern Territory Seafood Council

#### **South Australia**

Australian Southern Bluefin Tuna Industry Association (ASBTIA)  
Australian Tuna Fisheries (Stehr Group)  
Clean Seas  
Oyster Growers Association  
RecFish SA  
South Australian Rock Lobster Advisory Council Inc  
Sardine Industry Association  
South Australian Oyster Research Council  
Spencer Gulf Prawn Fishery  
Wildcatch Fisheries SA Inc

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**Table A.2** (continued)

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*Participants*

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**Queensland**

Association of Marine Park Operators  
Australian Prawn Farmers Association  
Centre for Sustainable Tropical Fisheries and Aquaculture  
Fisheries Research and Development Corporation: National Indigenous Stakeholders Forum  
Game Fishing Association  
Great Barrier Reef Marine Park Authority (GBRMPA)  
Queensland Seafood Industry Association  
Seavine Marine  
Sunfish Queensland Inc  
Tropical Finfish

**Tasmania**

Commonwealth Scientific and Industrial Research Organisation (CSIRO)  
Department of Primary Industries, Parks, Water and the Environment (Tas)  
Environment Tasmania  
Institute for Marine and Antarctic Studies (IMAS)  
Recreational Fishers Association  
Tasmanian Seafood Industry Council

**Victoria**

Farout Charters  
Lakes Entrance Co-op

**Western Australia**

888 Abalone Pty Limited  
Abalone Industry Association  
Aquaculture Council of WA (ACWA)  
Austral Fisheries Pty Ltd  
Department of Fisheries  
Kailis, George  
Marine Stewardship Council (MSC)  
Maxima Opportunity / Aarlimayi Aquaculture Project Pty Limited  
Recfishwest  
Shark Bay Prawn Trawler Operators' Association  
Western Australian Fishing Industry Council (WAFIC)

**Teleconference**

Abalone Industry Association of South Australia Inc  
Attorney-General's Department (Cth)  
Australia and New Zealand Banking Group  
Australian Financial Security Authority  
Australian Institute of Marine Sciences

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**Table A.2** (continued)

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*Participants*

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Australian Marine Conservation Society  
Australian Southern Bluefin Tuna Industry Association (ASBTIA)  
Commonwealth Bank of Australia  
Commonwealth Fisheries Association (CFA)  
Commonwealth Scientific and Industrial Research Organisation (CSIRO)  
Department of Agriculture and Fisheries (Qld)  
Department of Economic Development, Jobs, Transport and Resources (Vic)  
Department of Fisheries (WA)  
Department of Primary Industries (NSW)  
Department of Primary Industries and Fisheries ( NT)  
Department of Prime Minister and Cabinet (Cth)  
Fisheries Research and Development Corporation: National Indigenous Stakeholders Forum  
Fong, Jacyнта  
Gulf St Vincent Prawn Boat Owners Association  
Goolwa Pipi Company  
Humane Society International  
National Australia Bank  
New Zealand Ministry for Primary Industries — Fisheries Management  
New Zealand Rock Lobster Industry Council  
Northern Prawn Fishery Pty Ltd  
Department of Primary Industries, Parks, Water and the Environment (Tas)  
Organisation for Economic Co-operation and Development (OECD)  
Pew Charitable Trusts  
Primary Industry and Regions (SA)  
Rabobank  
Sea Shepherd  
Small Pelagic Fisheries Association  
South East Trawl Fishing Industry Association (SETFIA)  
Sydney Fish Market (SFM)  
Westpac Banking Corporation

**Community forums**

Coffs Harbour, New South Wales  
Narooma, New South Wales

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**Table A.3 Public Hearings**

<i>Individual or organisation</i>	<i>Transcript page numbers</i>
<b>Brisbane — 12 October 2016</b>	
Stephan Schnierer — Southern Cross University	4–15
Cameron Costello and David Nalder — Quandamooka Yoolooburrabee Aboriginal Corporation	15–24
Colin Simpfendorfer — James Cook University	24–33
Helen Jenkins — Australian Prawn Farmers Association	33–41
Margaret Stevenson	42–51, 69–71
Tor Hundloe — University of Queensland	51–69
Eric Perez — Queensland Seafood Industry Association	60–69
<b>Canberra — 14 October 2016</b>	
Brian Jeffriess — Australian Southern Bluefin Tuna Industry Association (ASBTIA)	75–87
Tristan Sloan — Amateur Fishermen's Association of the NT Inc	87–94
Emily Ogier and Klaas Hartmann — Institute for Marine and Antarctic Studies (IMAS)	94–118
Allan Hansard — Australian Recreational Fishing Foundation	119–129
Harry Petropoulos and Franca Romeo — Wildcatch Fisheries SA Inc	129–136
<b>Fremantle — 17 October 2016</b>	
George Kailis	140–150
Andrew Rowland and Leyland Campbell — Recfishwest	150–161
John Harrison, Guy Leyland and Alex Ogg — Western Australian Fishing Industry Council (WAFIC)	161–170
Steven Gill — Maxima Opportunity/Aarlimayi Aquaculture Project Pty Limited	171–174
Matthew Watson and Anne Gabriel — Marine Stewardship Council	175–184
Frank Prokop	184–200
Heather Brayford and Darren Foster — Department of Fisheries (WA)	200–213

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## B Cross-jurisdictional fishery case studies

This appendix contains case studies on the shared management arrangements for southern bluefin tuna (SBT), eastern school whiting, snapper, gummy shark and school shark, southern rock lobster and southeast Australian scallops. The case studies illustrate the range of problems presenting in the management of cross-jurisdictional fisheries.

The appendix also considers in more detail the problem of trip limits and illustrates the drafting errors within some Offshore Constitutional Settlement (OCS) fisheries arrangements.

### B.1 Case study 1: southern bluefin tuna

SBT is a highly migratory stock that is targeted by fishers on the high seas and within the Exclusive Economic Zones of Australia, New Zealand, Indonesia and South Africa. The SBT's range extends from its spawning grounds in the north-east Indian Ocean. From there, juvenile SBT move south along the Western Australian coast and onto either South Africa or eastwards along Australia's continental shelf. SBT move into Tasmanian and New South Wales waters in the colder months. The Tasman Sea is considered the likely eastern boundary for the stock (Cardno Ecology Lab 2012).

SBT is a high-value stock. It is sought by commercial fishers, aquaculturists and recreational fishers, as well as being the subject of illegal, unreported and unregulated fishing activity.

Fishing of SBT is managed against the quota issued to countries by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT – box B.1). As signatory to the CCSBT, the Australian Government is responsible for ensuring Australia's compliance with its allocated quota. This is problematic given the reportedly significant catch taken by recreational fishers (including charter operators), who are not regulated by the Commonwealth (see below).

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### Box B.1 Commission for the Conservation of Southern Bluefin Tuna

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) was formed in 1994 when Australia, Japan and New Zealand formalised a voluntary agreement for the management and conservation of southern bluefin tuna (SBT). The voluntary agreement dates to the 1980s when it was effected to deal with concerns over the sustainability of SBT.

The Republic of Korea, Indonesia, Taiwan, the Philippines, South Africa and the European Union have joined the CCSBT over time either as members or 'cooperating non-members'.

The objective of the CCSBT is to 'ensure, through appropriate management, the conservation and optimum utilisation of the global SBT fishery'. In support of this objective the CCSBT:

- sets a total allowable catch and allocates that catch among the members
- conducts and coordinates a scientific research program in support of the CCSBT's objectives
- provides a forum for the discussion of SBT conservation issues and acts as a coordination mechanism for members' activities in the SBT fishery
- cooperates and liaises with other regional tuna fishery management organisations.

Source: CCSBT (2016a).

## The OCS fisheries arrangements

The Australian Government has signed OCS fisheries arrangements for the management of SBT with the Northern Territory Government and each State Government except for New South Wales (table B.1). These OCS fisheries arrangements give jurisdiction over SBT to the Australian Government. In practice, the Australian Government (through AFMA) only manages the commercial catch.

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Table B.1 OCS fisheries arrangements for southern bluefin tuna

	<i>Vic</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas</i>	<i>NT</i>
Year arrangement took effect	1997	1995	1997	1995	1997	1995
Agreement relates to tuna and tuna-like species		Yes		Yes		Yes
Agreement relates to finfish (including SBT)	Yes		Yes		Yes	

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The OCS fisheries arrangements for SBT do not specify the fishing methods to which they apply. A literal interpretation of the arrangements is that they apply to all fishing within the prescribed areas (which includes all coastal waters except those of New South Wales). It follows that these arrangements apply to both recreational fishing and commercial fishing. The memoranda of understanding (MoUs) supporting the OCS fisheries arrangements for Victoria, South Australia and Tasmania state that the Australian Government reserves its rights to implement controls on recreational fishing. MoUs for the other jurisdictions are silent on the subject.

SBT was excluded from the scope of New South Wales' OCS fisheries arrangements. This means that jurisdiction over SBT reverts to the default position under the OCS — that is, New South Wales has jurisdiction over SBT within coastal waters and the Commonwealth has jurisdiction beyond the coastal waters. There is no MoU between the Australian and New South Wales Governments to guide the management of SBT.

## Recreational fishing of southern bluefin tuna

The catch of SBT by recreational fishers has reportedly been increasing as advances in boating and navigation technologies allow fishers greater access to Commonwealth waters. All jurisdictions have recognised the need to better manage access to SBT, but there have been few practical steps to improve the management of access. Recreational controls for SBT vary across the States (table B.2).

**Table B.2 Recreational controls on southern bluefin tuna**

	<i>Bag limit</i>	<i>Possession limit</i>	<i>Boat limit</i>
NSW	1	1	-
Vic	2 <sup>a</sup>	2 fish or 160 kilograms	-
Qld	No controls <sup>b</sup>		
SA	2 <sup>c</sup>	-	6 <sup>c</sup>
WA	3 <sup>d</sup>	-	-
Tas	2 <sup>a</sup>	2 <sup>a</sup>	4 (but only 2 over 1.5 metres long)
NT	No controls <sup>b</sup>		

<sup>a</sup> Applies to a combined total of yellowfin, bigeye and southern bluefin tuna. <sup>b</sup> SBT seldom, if ever, enter waters off the coast of Queensland or the Northern Territory. <sup>c</sup> Applies to a combined total of yellowfin and southern bluefin tuna. <sup>d</sup> Applies to a combined total of 'large pelagic finfish'.

Sources: Cardo Ecology Lab (2012); DEDJTR Vic (2015d); DoF WA (2016c); DPI NSW (2016d); DPIPWE Tas (2015b); PIRSA (2015d).

Australia's full allocation from the CCSBT has routinely been assigned to the commercial sector since the 1990s.<sup>69</sup> The CCSBT allocated Australia a total allowable SBT catch of 5665 tonnes for the 2014-15 fishing season (an increase of 472 tonnes from the allocation for the 2013-14 fishing season) (CCSBT 2016b). The Australian Fisheries Management Authority (AFMA) set the total allowable catch for commercial fishing for the 2014-15 season at 5557 tonnes — this was the CCSBT allocation less a deduction for the 108 tonne 'over-catch' against quota from the previous season.

<sup>69</sup> One exception to this was the 2012-13 season when 15 tonnes of Australia's catch allocation from the CCSBT was not included in the allowable commercial catch. Australia received an extra 15 tonne allocation in May 2013 after South Africa failed to accede to the CCSBT and the catch allocation set aside for South Africa was redistributed among the other members (ABARES 2014; CCSBT 2012, 2013).

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While data on the recreational ‘take’ are limited, the available information suggests it may be significant:

- over 200 tonnes of SBT were estimated to be caught and retained by recreational fishers in Victoria in 2011 (Green et al. 2012b)
- in Tasmania, over 70 tonnes of SBT were caught and retained by recreational fishers in 2011-12 (Tracey et al. 2013).

## **Status of southern bluefin tuna**

SBT’s high value and biological characteristics make it vulnerable to overexploitation while its range outside of Australia’s waters makes its conservation reliant on the actions of several nations (including Australia). ABARES notes that ‘[t]he spawning stock biomass of southern bluefin tuna remains at a low level and, as a result, the stock remains classified as overfished’ (2016, p. 398).

SBT was nominated for listing as a threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and recommended for inclusion on the list as ‘endangered’ by the Threatened Species Scientific Committee in 2003. The Minister rejected this recommendation on the basis that it may weaken Australia’s ability to influence the global management of the stock. Part of the Minister’s decision was based on the view that the cessation of fishing for SBT in Australian waters would likely see Australia’s CCSBT quota reallocated to another country (or countries) and so see no net decrease in the take of SBT (Cardno Ecology Lab 2012).

In 2010, SBT was listed as ‘conservation dependent’ under the EPBC Act. This does not preclude fishing for SBT but requires a management plan to be in place for its recovery.

## **B.2 Case study 2: eastern school whiting**

Eastern school whiting occur in State and Commonwealth waters ranging from southern Queensland to western Victoria, including through Tasmanian waters. In 2013, the total commercial catch was approximately 1235 tonnes (FRDC 2014c). Recreational fishers also catch a small amount, estimated to be fewer than 15 tonnes per annum (FRDC 2014c; Industry & Investment (New South Wales) 2010c). The majority of catch (over 98 per cent) is taken by commercial fishers operating in either Commonwealth or New South Wales fisheries. Concerns relating to management solely relate to these fisheries.

The main concern in relation to this stock stems from different management techniques for the stock. The Commonwealth controls catch by issuing fishers quota out of a total allowable catch limit while New South Wales controls its fishers’ catch through boat and gear restrictions. This results in risks of catches being above or below the recommended biological catch, lost productivity and some inequity among fishers.

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## Management arrangements

Eastern school whiting is subject to an OCS fisheries arrangement made between the Commonwealth and New South Wales on 25 July 1990. This arrangement:

- applies to ‘all species of fish of the family *Sillaginidae*’ (of which eastern school whiting is a member)
- gives jurisdiction to New South Wales for:
  - all fishing methods within three nautical miles of the low water mark
  - all fishing methods except purse-seining and pelagic longlining in waters no deeper than 4000 metres (ranging approximately 60–80 nautical miles from the coast) and north of Barrenjoey Point (near Sydney)
  - all fishing methods except trawling, purse-seining, Danish-seining and pelagic longlining in waters no deeper than 4000 metres and south of Barrenjoey Point.<sup>70</sup>

By default, the Commonwealth has jurisdiction over all fishing occurring more than three nautical miles from the low water mark that does not fall under New South Wales’ jurisdiction. This means that commercial fishers looking to take eastern school whiting in waters from the New South Wales coast to the limit of the Australian Fishing Zone (AFZ) require both a New South Wales shareholding/endorsement and a Commonwealth quota holding.

There are no ancillary agreements in place between the Australian and New South Wales Governments to guide management arrangements.

## Impact on management

### Setting and meeting of Commonwealth catch limits

Eastern school whiting is taken by commercial fishers in the Commonwealth Trawl Sector (CTS) of the Southern and Eastern Scalefish and Shark Fishery (SESSF — a Commonwealth fishery) and the Southern Fish Trawl Restricted Fishery (SFTRF — a New South Wales fishery). The stock is managed under a total allowable catch (TAC) and quota regime in the CTS, and via limits on boats and fishing gear (but without an explicit catch limit) in the SFTRF.

In setting its TAC for school whiting in the CTS, AFMA first establishes an overall sustainable catch (referred to as a ‘recommended biological catch’ (RBC)) and then deducts an estimate of all sources of mortality aside from the Commonwealth catch (such

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<sup>70</sup> Within the arrangement, the geographic boundaries are defined by latitude and longitude references rather than references to locations (such as Barrenjoey Point).

as New South Wales retained catches and discards). The remaining RBC is then allocated to Commonwealth fishers according to their quota holdings.

In the absence of a catch-sharing arrangement for eastern school whiting, AFMA applies an estimate based on past catch history as the New South Wales catch share. Since 2011-12, basing estimates on historic catch has not unduly limited Commonwealth fishers, with both groups catching below their allotted catch shares (table B.3). Still, the sustainability of the stock is dependent on actual catch by New South Wales fishers.

**Table B.3 Catch history: eastern school whiting**

Tonnes

	<b>RBC</b>	<i>Commonwealth</i>		<i>New South Wales</i>	
		TAC	Catch	Notional TAC	Catch
2010-11	<b>1660</b>	641	388	1019	1045
2011-12	<b>1660</b>	641	359	1019	920
2012-13	<b>1660</b>	641	507	1019	860
2013-14	<b>1660</b>	809	558	851	536
2014-15	<b>1660</b>	809	795	851	not avail

**RBC** Recommended biological catch. **TAC** Total allowable catch.

Sources: ABARES (2012, 2013, 2015c); Department of Primary Industries (NSW) (2013a, 2015); FRDC (2014c); Shelf Resource Assessment Group (2014).

### Contributions toward management costs

Stock assessments for eastern school whiting are undertaken by AFMA (the last full assessment was completed in 2010, which was updated in 2011 and 2012) and consider the catch in both Commonwealth and New South Wales fisheries (FRDC 2014c). New South Wales implicitly relies on AFMA's stock assessments in its management of the eastern school whiting. AFMA's last stock assessment was funded by Commonwealth-managed fishers (80 per cent) and the Australian Government (20 per cent) (AFMA 2012b). This means that Commonwealth fishers pay most of the costs of a stock assessment but receive only a residual interest in the catch allowance resulting from that assessment. Commonwealth fishers have raised questions about the equity of such arrangements (SETFIA, sub. 53 and Shelf Resource Assessment Group (2012)), as has the Commonwealth Department of Agriculture and Water Resources:

Equity issues may be confounded because there are no formal arrangements for cost recovery from non-Commonwealth resource users (including from state fisheries or recreational fisheries) to support data collection, research, stock assessment and overall management of Commonwealth-managed stocks ... (DAWR, sub. 56 — ABARES attachment, p. 30).

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## Single jurisdiction trip requirement

The management plan for the SESSF requires fishers to unload any fish of a quota species taken under a State permit before fishing under Commonwealth quota for the same species. This measure is, in part, aimed at preventing fishers falsely claiming that some of their catch was taken from a State-managed fishery and thereby avoiding the Commonwealth's quota controls. Fishers may seek AFMA's approval to waive this requirement, but such an approval must be provided in writing before the commencement of the fishing trip.

In practice, the single jurisdiction trip requirement means fishers need to nominate the jurisdiction in which they will be fishing before they leave port and take separate trips to fish in different fisheries. For example, a trawler leaving a southern New South Wales port must travel through the SFTRF to get to the CTS. Even if the trawler has rights to fish for eastern school whiting in both fisheries they can only trawl in one on any single fishing trip. Hence 'the fisher may be required to travel past productive fishing grounds, even when they also have rights to catch the species within that area' (DAWR, sub. 56 — attachment, p. 11).

In June 2016, AFMA commenced a seven month trial to allow so-called 'dual jurisdiction trawl trips' in Commonwealth and New South Wales waters. Fishers could nominate to participate in the trial and, if selected, would be required to carry an AFMA observer on board when completing a dual jurisdiction trip (AFMA 2016). The Commission understands that no fishers chose to participate in the trial.

## **B.3 Case study 3: snapper**

Snapper has a wide distribution across Australia. It is found in the waters off Queensland, New South Wales, Victoria, Tasmania, South Australian and Western Australia. The biological structure of the stock is complex. For example:

- fish over the range of Proserpine (north Queensland) to Wilsons Promontory (Victoria) are considered to be a single biological stock (the 'east coast snapper stock')
- there is an 'eastern biological stock' and a 'western biological stock' in Victorian waters
- there is evidence of genetic differentiation between fish located in the South East Fishery of South Australia and those in the marine waters west of the mouth of the Murray River
- there are three separate biological stocks in Shark Bay (Western Australia) (FRDC 2014c).

Snapper is targeted by commercial, recreational and Indigenous customary fishers using a number of different methods.

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## Management arrangements

In jurisdictions other than Victoria, South Australia and Tasmania, the relevant OCS fisheries arrangements for snapper are those referring to ‘fish of the family *Osteichthyes*’. The Victorian, South Australian and Tasmanian arrangements specifically include a reference to snapper. In summary, the OCS fisheries arrangements provide:

- New South Wales with jurisdiction as for case study 2
- Victoria with jurisdiction to the limit of the AFZ for all fishing methods except trawling
- Queensland with jurisdiction to the limit of the AFZ for all fishing methods (exclusions apply for the Torres Strait fisheries but that area is beyond the range of snapper)
- South Australia with jurisdiction to the limit of the AFZ for all commercial fishing methods
- Western Australia with jurisdiction over commercial fishing to the limit of the AFZ. Exclusions include trawling beyond the 200 metre isobath, fishing within the Northern Shark Fishery, and fishing using certain methods within the Southern Demersal Gillnet and Longline Fishery
- Tasmania with jurisdiction to the limit of the AFZ for all fishing methods.

All OCS fisheries arrangements preclude the States having jurisdiction over the bycatch of AFMA-licensed fishers targeting Commonwealth species.

## Impact on management

### East coast snapper stock

The capture of east coast snapper is dominated by recreational fishers. In 2013, the estimated catch by recreational fishers was 975 tonnes against a commercial catch of 442 tonnes (FRDC 2014c).

While there is a single biological stock of snapper along the east coast of Australia, it is managed separately (and differently) by New South Wales, Victoria and Queensland. Each jurisdiction conducts its own stock assessment using different methods and at different times. The most recent assessments were by Victoria and Queensland in 2011.

The combined management expenditure of the three jurisdictions is likely to be higher than it would be if a single assessment were undertaken. Further, management decisions are potentially being made without sufficient regard for the sustainability of the stock over its entire range. The lack of information on the overall stock has resulted in the status of the stock being classified as ‘undefined’ (FRDC 2014c).

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A joint project has commenced to develop a computer model for the stock and draw up protocols for inter-jurisdictional decision making processes. This project is expected to be completed during 2017.

### Bycatch: Victoria

While snapper is not targeted by Commonwealth fishers operating in Victorian waters, it is taken as bycatch. Commonwealth fishers are subject to a 200 kilogram trip limit on snapper to deter them from targeting those stocks. The South East Trawl Fishing Industry Association (SETFIA 2013) estimated that complying with this trip limit saw Commonwealth fishers discard over ten tonnes of (dead) snapper in a year in east Bass Strait alone. AFMA (2012a) has previously sought a catch-sharing arrangement with the States to reduce wasteful discarding practices but was unable to do so because agreement on an overarching approach could not be reached. As an interim measure, a co-management agreement has been made between SETFIA and AFMA to better manage the issue (box B.2).

### Bycatch: South Australia

Snapper in South Australia is taken from a number of overlapping fisheries. The majority of the commercial catch is taken from the Marine Scalefish Fishery (SA) where it is managed using input controls (PIRSA 2013c). Snapper is also taken from the Northern and Southern Zones of the Rock Lobster Fishery (SA) and the Lakes and Coorong Fishery (SA), as bycatch in the SESSF (Cth), and by recreational fishers across South Australia. The total catch in 2013-14 was estimated at 885 tonnes with recreational fishers accounting for 38 per cent of that catch (PIRSA 2016c).

There was a significant increase in the snapper catch over the period 2008–2012 as South Australia's commercial fishers switched to longlines from handlines. The commercial catch reached a record high of 1032 tonnes in 2010 (Fowler et al. 2013). By 2013-14, the commercial catch had fallen to 500–550 tonnes (FRDC 2014c; PIRSA 2016c).

Over the period 2008-09 to 2013-14, the recreational sector discarded thousands of undersized snapper (Fowler et al. 2013). The discard/release rates of recreational fishers are estimated to have ranged from 50–75 per cent during that period (Giri and Hall 2015; Jones 2009).

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## Box B.2      **AFMA/SETFIA co-management arrangement for snapper**

The co-management agreement between the Australian Fisheries Management Authority (AFMA) and South East Trawl Fishing Industry Association (SETFIA) relates to the operation of Commonwealth trawlers in waters off Victoria's coast. The aim of the agreement is to reduce discarding by allowing certain incidental catches of snapper in excess of the 200 kilogram limit to be landed.

SETFIA administers the agreement and is responsible for approving snapper landings in excess of 200 kilogram trip limit subject to the following conditions being met:

- the proposed incidental snapper catch being reported prior to landing
- the skipper of the reporting boat having satisfactorily completed a SETFIA-nominated education course prior to the catch being taken or undertaking to do so by an agreed date
- SETFIA being satisfied that the boat has complied with the SETFIA Snapper Code of Conduct
- SETFIA being satisfied that the boat was not targeting snapper and that the trawling occurred solely in either the eastern or western zone of the fishery.

SETFIA is also responsible for: ensuring all applications made by fishers are treated equally irrespective of whether the fisher is a member of SETFIA; ensuring accurate records are maintained; advising AFMA by email of approvals prior to the boat arriving in port; and advising AFMA in writing of all applications under the agreement, irrespective of whether approval is granted.

The arrangement ceases if the combined total catch of snapper taken by Commonwealth trawlers in Victorian waters exceeds 35 tonnes in any one fishing season. The 200 kilogram trip limit remains in force if the arrangement ceases. After 18 months in operation, only three approvals to exceed the prescribed trip limit had been granted by SETFIA.

*Sources:* AFMA (2016f); SETFIA sub. 53.

The decline in commercial catch and catch per unit effort, as well as measures of the stock's age structures and biomass, has seen the status of snapper listed as 'transitional depleting' in four of the six management areas applied in South Australia. Concern over the sustainability of the stocks has seen a number of controls implemented in the South Australian fisheries including:

- closures during the snapper's spawning season
- trip limits of 500 kilograms for commercial fishers
- reductions in the maximum number of longline hooks that can be used (from 400 hooks to 200 hooks) (PIRSA 2015e).

There is also a 50 kilogram trip limit for snapper taken as bycatch by Commonwealth fishers operating in Commonwealth fisheries.

Management decisions by AFMA in the SESSF have had unintended consequences for snapper. For example, a 2012 decision to close areas off the South Australian coast to gillnet fishing as a means of reducing sea lion bycatch saw a switch to longline hooks by

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Commonwealth fishers operating in the affected areas. The switch to hooks has seen increasing snapper bycatch being taken in the Commonwealth fisheries and concerns being raised by South Australian fishers that Commonwealth bycatch is contributing to the decline of snapper stocks in South Australia (DAWR sub. 56 — attachment, pp. 10–11).

## **B.4 Case study 4: gummy shark and school shark**

Gummy shark and school shark are taken from temperate waters off the coasts of New South Wales, Victoria, southern Queensland, South Australia, Western Australia and Tasmania.

The gummy shark population from southern New South Wales to Western Australia comprises a single ('southern') biological stock. A second ('eastern') biological stock extends north from around Newcastle in New South Wales. Gummy shark is taken using hook, gillnet and trawl fishing methods.

The total commercial catch of gummy shark was just over 2070 tonnes in 2013. The majority was taken by the Commonwealth (1506 tonnes), Western Australia (416 tonnes) and South Australia (104 tonnes). The full recreational catch is not known but it has been estimated at around 20 tonnes for South Australia (FRDC 2014c).

There is some uncertainty over the structure of the school shark and fisheries managers have assumed it to be a single biological stock over its range (FRDC 2014c).

The total commercial catch of school shark in 2013 was estimated at just over 190 tonnes. The full recreational catch is not known but it has been estimated at 10 tonnes for South Australia (FRDC 2014c).

### **Management arrangements**

Jurisdiction over the gummy shark and school shark is determined under various OCS fisheries arrangements:

- New South Wales's jurisdiction is as for case study 2
- Western Australia has jurisdiction over most shark stocks off its coast. Exceptions include trawling methods outside coastal waters where jurisdiction falls to the Commonwealth
- Victoria, South Australia and Tasmania have jurisdiction over gummy sharks and school sharks within their internal waters — this is particularly significant for South Australia where gummy sharks are taken in the Gulf of St. Vincent and Spencer Gulf (which form part of South Australia's internal waters)
- the Commonwealth has jurisdiction in all remaining areas.

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Victoria, South Australia and Tasmania (with the exception of their internal waters) ceded jurisdiction over the gummy shark and school shark to the Commonwealth via OCS fisheries arrangements in 2000 and 2001. This decision was made as a consequence of the ‘depletion of biomass due to catch rates, slow growth rates of the species, and the fact that they produce few young at a time’ (*Rhodes v Australian Fisheries Management Authority* [2006] FCA 1220 at [9]). The Tasmanian Department of Primary Industries, Parks, Water and Environment has stated that a quota system (as employed by AFMA) was considered the best means to deal with the pressure on the stocks (sub. 48).

This change in management has contributed to arresting the depletion of gummy shark biomass, with the FRDC (2014c) concluding that the exploitation of gummy shark is now ‘sustainable’. However, the school shark remains ‘overfished’ — a status it has held since 1992.

The school shark is subject to a rebuilding strategy issued by AFMA (2015e). The strategy targets the rebuilding of the stock over 66 years — that is, recovery of the stock is not expected before the year 2070. The extended timeframe for recovery reflects both the extent of overfishing and the school shark’s biology (for example, female school sharks do not mature until around 16 years of age).

The rebuilding strategy for school shark comprises a number of measures, including: closures to protect pupping areas and habitat; limits on the types of fishing gear that can be used; and catch limits. Catch limits and controls have been set by AFMA to allow for incidental catches only (AFMA 2015e).

Commonwealth fishers discarded over 45 tonnes of school shark in the 10 months to October 2014 against an allowable catch of 215 tonnes and a landed catch of 191 tonnes in 2013. The high level of discarding has been attributed to a combination of controls limiting the catch of school shark to 20 per cent of a fisher’s gummy shark catch and the 28 day quota reconciliation measure, which is reportedly resulting in fishers being unable to purchase quota for their over-catch at a ‘fair’ price (AFMA 2014b, p. 6,15). While some Commonwealth fishers are said to be limiting the effort applied to gummy shark in order to avoid taking school shark, over 80 per cent of the allowable gummy shark catch was taken in both 2013-14 and 2014-15 (ABARES 2015c) and over 97 per cent of the allowable catch was taken in 2015-16 (ABARES 2016).

## Memoranda of Understanding

The OCS fisheries arrangements for Victoria, South Australia and Tasmania are supported by MoUs dealing with the management of bycatch. Arrangements to deal with the bycatch of gummy shark and school shark are important as the OCS fisheries arrangements have resulted in the Commonwealth and States sharing jurisdiction over expanses of water and/or fishing methods. This means fishers targeting another species (such as snapper) under a State endorsement may inadvertently take sharks as bycatch. The problem is most acute in South Australia.

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The MoUs set bycatch limits for gummy shark and school shark for fishers targeting other species. The MoU also provide:

- that the States may choose how to manage the recreational catch of gummy shark and school shark in Commonwealth waters adjacent to their respective coastlines
- for the development of arrangements to determine global catch limits, a means for apportioning limits across the jurisdictions and enforcing those limits.

In practice, a proportion of the RBC is notionally allocated to each State by AFMA before determining the allowable catch for Commonwealth fishers (AFMA 2015c). The effectiveness of these arrangements has been questioned by industry members:

... SA state fishers in internal waters are taking large amounts of Gummy Shark with no requirement to hold quota and have exceeded the state allocation under the MOU between the Commonwealth and South Australia. (AFMA 2014c, p. 4)

Subsequent to this concern being raised by Commonwealth fishers, AFMA received assurance from Primary Industries and Regions (South Australia) (PIRSA) that they would be restraining catch to the State's notional allocation (AFMA 2014c). Stakeholders remain concerned, however, about the extent of catch and discarding of gummy shark and school shark by South Australian fishers.

### Gummy shark management arrangements in New South Wales and Western Australia

New South Wales waters have both the eastern and southern biological gummy shark stocks. Catches are relatively small (less than two per cent of the total gummy shark catch) and, while there may be benefits in moving the management of the southern biological stock to the Commonwealth's jurisdiction (as in Victoria, South Australia and Tasmania), the size of the catch makes this a lower-priority consideration.

In Western Australia, the stock is managed on a standalone basis in accordance with a discrete stock assessment process. AFMA (2012a) considers that Western Australia should cede jurisdiction over the gummy shark to the Commonwealth as this would allow the entire southern biological stock (except for the small portion in New South Wales waters) to be managed under a single regime by a single jurisdiction. However, participants have not raised concerns about the costs arising from the dual Commonwealth/Western Australia management arrangements and there is no evidence of pressure on the stock's biomass. Such an arrangement would also cut across the relative simplicity of the overall OCS fisheries arrangements in Western Australia — arrangements that have been particularly successful in removing the problems associated with the management of shared fisheries (chapter 6).

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## Single jurisdiction trips

Similar to eastern school whiting (case study 2), gummy shark fishers are only allowed to fish in a single jurisdiction on each fishing trip. This results in the need to take separate trips for those holding both Commonwealth and State fishing rights, as well as wasteful discarding (box B.3). These outcomes are particularly acute in South Australia.

### **Box B.3      Single jurisdiction trip requirement — gummy shark**

A fisher can hold both Commonwealth quota for gummy shark within the Shark Gillnet and Shark Hook sectors (SGSHS) of the Southern and Eastern Scalefish and Shark Fishery and an endorsement for snapper within South Australia's Marine Scalefish Fishery (MSF). The SGSHS and MSF 'exist' in the same waters off the South Australian coast and both extend to the limit of the Australian Fishing Zone.

The fisher can use the same boat and gear (say 200 longline hooks) to fish in either the SGSHS or the MSF, but they cannot fish in both concurrently. They must nominate a fishery before leaving port.

If the fisher decides to target snapper, they will nominate the MSF as the fishery for their trip. If during that trip they bring up 11 gummy sharks in their catch, six would be discarded as there is a five gummy shark trip limit for the MSF (within coastal waters). The fisher is compelled to discard the fish even if they have available Commonwealth quota for the species because they are fishing under the MSF 'rules'.

## **B.5      Case study 5: southern rock lobster**

The southern rock lobster is distributed around Australia's southern mainland, Tasmania and New Zealand. It is considered to be a single biological stock across this range (FRDC 2014c; PIRSA 2015e). The majority of Australia's commercial catch of southern rock lobster in 2012-13 occurred in South Australia (1552 tonnes) and Tasmania (1064 tonnes). Catches in Victoria and Western Australia were more modest at 306 tonnes and 45 tonnes, respectively (FRDC 2014c).

The concerns raised with the Commission relate to the lobster fisheries in Victoria, South Australia and Tasmania. Accordingly, the following analysis focuses on these jurisdictions.

### **Management arrangements**

The respective OCS arrangements for Victoria, South Australia and Tasmania provide those States with jurisdiction over the capture of southern rock lobster both within and beyond the three nautical mile limit. The South Australian and Tasmanian arrangements (both signed in 1996) relate to 'all activities by way of fishing'. The Victorian arrangement (signed in 1997) gives jurisdiction to Victoria for all methods except trawling.

## Current management arrangements

The southern rock lobster is best managed in zones defined by relevant biological, geological and ecological characteristics. This is because it is common for the characteristics of rock lobster populations to vary significantly across locations — for example, growth rates vary with the depth of water as does the age of maturity. Different locations also result in different rates of egg production by females (Green et al. 2012a). Recognising these differences, the South Australian Rock Lobster Fishery was separated into two zones ('northern' and 'southern') for management purposes in 1968 (PIRSA 2015e). Within Victoria and Tasmania, the management of the southern rock lobster is also undertaken according to regions or zones.

The need to manage rock lobster differently in different zones means that bringing the stock under one jurisdiction may not significantly reduce the total variety of controls with which fishers need to comply. Table B.4 lists the zones in use for South Australia and Victoria along with a small sample of the management controls. Some Tasmanian controls align with Victoria's (for example, minimum size limits), while others vary (such as the closed season — 1 May to 15 November for Tasmania's western region and 1 May to 30 November for the eastern region). In addition to controls over catch, other management methods can vary across jurisdictions and within jurisdictions — for example, there is a vessel monitoring requirement in place for the northern zone in South Australia but not in South Australia's southern zone.

**Table B.4 Selected management arrangements for rock lobster**

	<i>South Australia</i>		<i>Victoria</i>	
	<i>Northern zone</i>	<i>Southern zone</i>	<i>Western zone</i>	<i>Eastern zone</i>
Closed season	1 June to 31 October <sup>a</sup>	1 June to 30 September	1 June to 15 November for females 15 September to 15 November for males	
Minimum size limit	105 mm carapace length	98.5 mm carapace length	105 mm carapace length for females 110 mm carapace length for males	
Minimum number of pots	20 per licence <sup>b</sup>	40 per licence <sup>b</sup>	20 per boat	15 per boat
Maximum number of pots	100 per licence <sup>b</sup>	100 per licence <sup>b</sup>	140 per boat	120 per boat
Catch per unit effort limit reference point for spawning stock	0.70 kilograms per pot	0.50 kilograms per pot	20 per cent of the biomass in 1951	20 per cent of the biomass in 1951
2014-15 Total allowable commercial catch	323.2 tonnes	1245.7 tonnes	230 tonnes	59 tonnes

<sup>a</sup> In June 2016 PIRSA announced that the 'outer region' of the northern zone would not be closed over winter. <sup>b</sup> Up to two boats may be registered under a licence.

Sources: DPI Vic (2009); Linnane, McGarvet and Feenstra. (2015); Linnane et al. (2015a); PIRSA (2013a, 2014a, 2016d).

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## Scientific research

The southern rock lobster is one of Australia's most data-rich and best studied stocks (Gardner and Ogier, sub. 16, p. 2). There is a high level of cooperation between the jurisdictions on scientific research, for example:

- Victoria, South Australia and Tasmania cooperate on research, stock assessments and management objectives (Department of Primary Industries, Parks, Water and Environment (Tasmania), sub. 48). All three jurisdictions employ the same stock assessment model and researchers meet regularly to share information
- the South Australia Research and Development Institute (SARDI), which prepares the stock assessments for both South Australian zones, has also undertaken Victoria's stock assessments previously (for example, Linnane et al. (2013)).

The cooperation between the jurisdictions represents one of the better examples of management alignment, although there are obvious transaction costs associated with sharing and jointly assessing information, coordinating actions and cooperating on initiatives.

## **B.6 Case study 6: southeast Australian scallops**

Commercial scallop beds are fished in Commonwealth, Victorian and Tasmanian waters. The scallops in Port Phillip Bay (Victoria) and the D'Entrecasteaux Channel (Tasmania) are genetically distinct from each other as well as most other scallops in south-eastern Australia (FRDC 2014c). The gross value of production (GVP) across Commonwealth, Victorian and Tasmanian scallop fisheries was approximately \$7.9 million in 2015. This was the first time the GVP has been over \$7 million since 2003-04; in the intervening periods, GVP has regularly been below \$3 million (AFMA 2016b; DEDJTR (Vic) 2016; DPIPWE Tas 2016a; Sen 2011).

In 2011, there was a total of 229 entitlements across the three jurisdictional fisheries. These were owned by 99 entities (Sen 2011). Over 65 per cent of entitlements were held by operators working in two or more scallop fisheries. Cross-jurisdiction holdings have been favoured as a means to build a viable aggregate quota holding in scallops and to diversify the risks associated with individual scallop fishery closures.

### **Management arrangements**

The 1986 OCS fisheries arrangement for scallops places jurisdiction over the stock with the Commonwealth, Victoria and Tasmania, depending on the location. The Commonwealth has responsibility for scallops in the central portion of Bass Strait, and Tasmania and Victoria responsibility for areas within 20 nautical miles of their respective coasts. No fishing methods are specified within the arrangement.

Each jurisdiction undertakes its own stock assessment, has a management advisory committee and operates separate (and different) licensing and compliance regimes (including different log book requirements and data storage processes).

The high-level management arrangements for the three scallop fisheries are reasonably well aligned (table B.5) as the three jurisdictions have worked together for some time, including by commissioning common research and attending each other's advisory meetings (AFMA sub. 50). However, there is less coordination on lower-level operational matters such as pre-season and in-season surveys, governance arrangements and the criteria to be satisfied before opening an area to fishing (Sen 2011).

**Table B.5 Management of scallops in southeast Australia**

	<i>Commonwealth</i>	<i>Victoria</i>	<i>Tasmania</i>
<b>Fishing methods</b>			
<i>Commercial</i>			
Dredge	✓	✓	✓
<i>Recreational</i>			
Diving	n.a <sup>a</sup>	✓	✓
<b>Management arrangements</b>			
<i>Commercial</i>			
Limited entry	✓	✓	✓
Size limits (mm)	85	80	90
Gear restrictions	✓	✓	✓
Spatial closures	✓	✓	✓
Temporal closures	✓		✓
Relative abundance estimates	✓	✓	✓
Quota decrementation	Weighed at wharf and then at fisher receiver premises	Weighed within 20 minutes of landing	Weighed at wharf
Logbooks	✓	✓	✓
EPBC Act export accreditation	✓	✓	✓
Discard rate	<20%	<20%	<20%
Observers deployed	✓		
<b>Summary fishery details</b>			
2015 total allowable catch (tonnes)	2500	135.0 <sup>c</sup>	1033
2014 total allowable catch (tonnes)	1500 <sup>b</sup>	136.5 <sup>c</sup>	1240
Number of active boats	13	2	13

<sup>a</sup> The Australian Government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the State or Territory immediately adjacent to those waters, under its management regulations. <sup>b</sup> Excludes research and exploratory quota. <sup>c</sup> An exploratory fishing allowance of 1.5 tonne per licence.

Sources: ABARES (2015c); AFMA (2016b, 2016c); DEDJTR Vic (n.d); DEPI Vic (2014); DPIPWE Tas (2014c); FRDC (2014c); Sen (2011).

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The management costs across the three jurisdictions for the period 2006-07 to 2010-11 were estimated by Sen (2011) to be between \$865 000 and \$985 000 per annum (or 13-33 per cent of GVP depending on the year). There is some evidence that the ratio of management costs to GVP has varied further since 2011 — for example, a large decline in GVP in 2013-14 saw management costs for the Commonwealth fishery reach 60 per cent of GVP (Department of Agriculture and Water Resources, sub. 56 — attachment).

## Impact on management

Several participants (for example, Richey Fishing Co Pty Limited (sub. 30) and Tasmanian Seafood Industry Council (sub. 47)) raised concerns about unnecessary costs arising from the three separate systems used to manage scallop fisheries. However, the scope for reduction in some costs is limited by the nature of scallop management. For example, the costs associated with surveying scallop beds will not vary with the management structure. If surveying is presumed to be undertaken efficiently in each jurisdiction, there would be little savings to be gained from moving to a single jurisdiction.<sup>71</sup>

Given the separate biological stocks across the waters of the three jurisdictions, different fishing zones (and rules within those zones) would likely be in effect even if the scallops were managed under a single jurisdiction. That is, fishers may still have to comply with different harvest rules even if stocks were placed under a single jurisdiction.

That said, there are likely avoidable costs to both governments and fishers under the current arrangements. For example, there are the transaction costs for governments in negotiating management approaches and duplicated costs in managing different licensing systems across jurisdictions.

There have been four attempts to either better coordinate the OCS fisheries arrangements for scallops or integrate management into a single jurisdiction model (1986, 1994, 2004 and 2011). These have failed due to:

- differing motivations of scallop fishers in each State — for example, in the early 1990s, Victorian fishers were more dependent on scallops for their income compared to the fishers in Tasmania, who generally had more diversified interests. This led to strong differences in opinion over matters such as the length of the fishing season and minimum size limits
- concerns from Tasmanian fishers in 2004 that reform would see additional effort in Tasmanian waters and an unwillingness by Tasmanian fishers to be managed by AFMA

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<sup>71</sup> The scallop fishery is characterised by the inability of researchers to accurately predict the location or abundance of new beds. This is because scallop spat drift in the water column for several weeks before settling to the bottom. If their resting place is suitable as a scallop bed, a bed will become established otherwise the spat die. The strong currents in the Bass Strait mean that it is almost impossible to predict where the scallop spat will land.

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- a lack of resources on the part of fisheries managers to progress reform (Sen 2011).

With each scallop fishery having been subject to multiple closures over the period 1987-2010, no jurisdiction appears to have produced superior management outcomes. The FRDC (2014c) has assigned a stock status of ‘undefined’ across the three jurisdictions due to insufficient information being available to classify the status of the stock.

## **B.7 Trip limits — New South Wales and Commonwealth**

A trip limit is a restriction on how much fish of a particular species (typically defined by weight) can be caught and landed on a daily basis or per fishing trip. Trip limits were first introduced to trawl fisheries in New South Wales at the request of AFMA in 1993. They now cover a range of commercial species across a number of States, including orange roughy, pink ling, blue-eye trevalla, blue grenadier and flathead.

The original aim of trip limits was protecting the integrity of the Commonwealth’s quota system in situations where the subject species was also targeted in adjoining New South Wales trawl fisheries. Without trip limits or a means of tracking fishers (and the location of their catch),<sup>72</sup> a fisher who held rights to fish in both Commonwealth and New South Wales fisheries could declare their catch to have been taken from New South Wales-controlled waters (even if it was not) and so avoid the constraints of the Commonwealth quota system. However, there are fishers who only hold an endorsement to fish in the New South Wales fishery and so face no such incentive, yet are subject to trip limits.

Under the trip limits, fishers operating in the New South Wales fishery cannot land more than 50–1000 kilograms of catch, depending upon the species. Fishers who also hold Commonwealth quota cannot move into Commonwealth waters to continue fishing without unloading fish caught in the New South Wales fishery (under single jurisdiction trip rules).

Trip limits often result in discarding of catch to ensure the limit is complied with. Where a non-discriminatory fishing method such as trawling is in use, the risk of breaching a trip limit and, in turn, discarding will be higher.

In May 2013, the New South Wales Minister agreed to delay a proposed abolition of trip limits on State-only operators. The delay was to allow time for discussions with AFMA, Commonwealth fishers and recreational fishers to address their concerns with this proposal and, in turn, to develop more ‘effective, efficient cross-jurisdictional management arrangements’ (DPI NSW 2013c). To date, however, these arrangements have not eventuated.

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<sup>72</sup> Trip limit requirements were instituted before the introduction of vessel monitoring systems in Commonwealth fisheries (which commenced in the late 1990s).

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## B.8 Drafting issues

A number of concerns relating to complex drafting and outdated or inaccurate provisions in OCS fisheries arrangements have been drawn to the Commission's attention. The more significant instances are described below.

### The 200 metre depth contour in Western Australia

The Commonwealth is responsible for trawling in waters that are more than 200 metres deep off the Western Australian coast. In waters less than 200 metres deep, jurisdiction falls to Western Australia. This arrangement was agreed in 1988.

In 1995, Geoscience Australia refined the definition of the 200 metre depth contour (the 200-metre isobath) but this new definition has not been applied to lines of jurisdictional responsibility. The continued application of the previous definition of the 200-metre isobath means that both Commonwealth and Western Australian trawlers have been operating outside their approved jurisdiction relative to that which would apply under the 1995 Geoscience Australia definition of the 200-metre isobath (AFMA 2016g).

Discussions between AFMA and the Department of Fisheries (Western Australia) to address this issue commenced in 2004 (AFMA 2010). In January 2015, the Western Australian Fisheries Minister announced that agreement had been reached that will 'correct errors and update the inshore boundaries of two Commonwealth trawl fisheries off Western Australia and will eliminate uncertainties for both State and Commonwealth operators' (Baston 2015). However, as at early December 2016 (some 12 years after discussions first commenced), the proposed changes remain under consideration by the relevant Australian and Western Australian Ministers.

### Bight redfish

The 1996 OCS arrangement between the Commonwealth and South Australia provides for 'red snapper' (*Centroberyx gerrardi*), also known as the red bightfish, to be managed under State law. In practice, management of red bightfish is undertaken by the Commonwealth under a quota arrangement within the Great Australian Bight Trawl Sector of the SESSF.

With the courts having upheld the jurisdiction over fisheries as defined in OCS fisheries arrangements, there is a risk that current management arrangements implemented by the Commonwealth for the bight redfish could be held as invalid if challenged.

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## **Definition of New South Wales waters under the OCS fisheries arrangements**

Each of the New South Wales OCS fisheries arrangements, which were agreed in 1991, seal the southern boundary of New South Wales' waters with an east/west line along the latitude of 37°35'. However, this latitude strikes land in the vicinity of Mallacoota in Victoria. In contrast, the *Petroleum (Submerged Lands) Act 1967* (Cth) describes the southern border of New South Wales waters as proceeding north-westerly along the geodesic (from Latitude 37° 35' South, Longitude 150° 10' East) to the intersection of the coastline at mean low water by the boundary between the States of New South Wales and Victoria.

On a strict interpretation of the current OCS fisheries arrangements there is the possibility of New South Wales fishers operating in Victorian waters.

## **Exclusions under Western Australia's OCS fisheries arrangement for fish and other aquatic biological resources**

This arrangement was gazetted in February 1995 and provides Western Australia with jurisdiction over a range of fish species. The arrangement includes a number of exclusions to Western Australia's jurisdiction. In particular, at 2. (e) the following are excluded:

- ... all fish in the Class Osteichthyes and Class Chondrichthyes in waters of the fishery described in schedule 4 when demersal gillnet and lines of all kinds are used other than:
  - (i) handlines;
  - (ii) troll lines;
  - (iii) drop lines; and
  - (iv) pelagic longlines used in accordance with the exercise of a right conferred by a fishing concession granted by the Australian Fisheries Management Authority under the Management Act to permit the use of pelagic longlines for the taking of tuna and tuna-like species ...

While sub-paragraph (iv) is overridden by other OCS arrangements that positively assign jurisdiction for these methods to the Commonwealth, ambiguity in the drafting (for example, 'exclusions' followed by 'other than') leave the overall arrangements open to misinterpretation.



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## C ITQs in practice

This appendix provides examples of fisheries managed by individual transferrable quotas (ITQs) in Australia.<sup>73</sup> It describes, in particular, the technical challenges posed by certain characteristics of fisheries and how fisheries managers are addressing those challenges.

ITQ systems have been implemented more readily in high-value fisheries that have a single targeted species, where species have predictable reproduction (such as rock lobster, abalone and southern bluefin tuna), the stock is controlled by one jurisdiction and fished primarily by commercial fishers. In these cases, it is relatively easier to set and maintain harvest controls, ensure compliance with quotas and recover some of the costs of management.

However, ITQs have been implemented in a range of fisheries with a variety of characteristics, including more ‘complex’ fisheries where:

- the fishery targets multiple species
- there are multiple fish stocks within the fishery
- stocks straddle jurisdictions
- the fishery has a large recreational presence
- the fishing effort covers a wide area with many possible landing points
- the fishery is predominantly worked from small vessels or from shore
- the fish stock is highly variable and difficult to predict.

These features can present challenges for fisheries managers considering the use of ITQs, but the experience of Australia and other jurisdictions suggests that they are not reasons in themselves for not moving to ITQ management. Indeed, innovative and pragmatic ways have been developed in many cases to overcome them.

### C.1 Multi-species fisheries

The main concern with the use of ITQ systems in multi-species fisheries is that the catch rate for one species can prevent fishers from fully catching the quota for other species.

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<sup>73</sup> The descriptions in this appendix are based on Commission research and discussions held with participants during the course of the inquiry.

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Typically, separate quotas are established for each species in a fishery. Different species of fish can, however, be caught at the same time. Where the quota for one species (the ‘choke species’) is fully met, this can lead to quota for other species not being caught (and associated losses in productivity and profit) or significant wastage from discarding of the choke species.<sup>74</sup>

This problem exists in both input and output-controlled fisheries. Under input controls, fishers have limited ability to change how they fish in order to avoid this problem. Under ITQs, fishers have more flexibility to change the way they fish in order to target specific species and so reduce the impact of choke species on their operations.

Other challenges in multi-species fisheries are higher risks (relative to input-controlled systems) of high grading, and deliberate misclassification of species. The risks are higher under ITQs because the existence of quantitative limits may incentivise fishers to exceed their quota by deliberately recording catch as a different species or to discard some of the over-caught fish (typically those that would attract lower prices).

In Australia, there are several multi-species fisheries using ITQs, including the Southern and Eastern Scalefish and Shark Fishery and the Gascoyne Demersal Scalefish Fishery. These are considered below.

### **Southern and Eastern Scalefish and Shark Fishery (Commonwealth)**

The Australian Fisheries Management Authority (AFMA) has reduced the problem of choke species (for example john dory and ocean perch) in the Southern and Eastern Scalefish and Shark fishery by setting the total allowable catch (TAC) for these species at levels that would produce maximum sustainable yield. Setting the TAC at these levels for choke species allows greater catch of other species (to be closer to their respective maximum economic yields) (ABARES 2016). This approach is most useful when multiple species tend to be caught together in reasonably stable proportions.

AFMA has also permitted the rollover of over-catch so that small levels of over-catch are deducted from the next season’s quota. This may be useful in instances where the level of catch for a choke species may be unusually high in a season.

AFMA has managed high grading and misclassification concerns by using a combination of video surveillance, inspections (random or targeted) and cross-checking of catch disposal records with records from receivers.

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<sup>74</sup> Where they are identified, discarded species are still usually taken into account in the recommended biological catch.

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## **Gascoyne Demersal Scalefish Fishery (WA)**

The Gascoyne Demersal Scalefish Fishery is managed using two types of quotas. A quota is set for the key target species (pink snapper), while the lesser-value target species are managed using a basket quota. Specific exceptions to the basket quota are specified in the management plan for prohibited or protected species (DoF WA 2016b). Commonly, the basket quota is set for the least abundant species in order to prevent over-fishing. This approach is most suitable in a fishery with one main target species, but where other species are routinely caught at the same time.

## **C.2 Fish stocks**

Fish often live in subpopulations that are functionally discrete from other populations of the same species. For management purposes, these fish populations are termed ‘stocks’ and treated as separate entities (FRDC 2014c).

Regardless of the management regime used, calculating stock levels and allowable take is more straightforward when the fishery contains a single stock. Management is more complex when there are multiple stocks (of the same species) within a fishery or when one stock spans beyond a fishery into other fisheries or jurisdictions.

### **Multiple fish stocks within a fishery**

Quotas typically allow fishing over an entire fishery. Unless additional controls are implemented, fishery managers risk disproportionate fishing effort being directed to one stock (risking collapse of that stock).

Dividing a fishery into different geographical zones with different quotas could help to protect all stocks in a fishery, but may impose extra administrative, compliance and operating costs on managers and fishers (in addition to transition costs associated with establishing new quota systems).

Additional controls and innovative catch arrangements were implemented in the Southern and Eastern Scalefish and Shark Fishery to manage risks to the sustainability of one stock.

### **Southern and Eastern Scalefish and Shark Fishery (Commonwealth)**

Pink ling is fished in all three sectors of the Southern and Eastern Scalefish and Shark Fishery and the NSW Ocean Trap and Line Fishery. The species was managed as a single stock until 2013 when catch data indicated there were, in fact, different stocks (eastern and western). Catch of the eastern stock exceeded sustainable levels for a number of years (FRDC 2014b). AFMA has since set a stricter TAC for pink ling and used additional

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controls (first area closures then daily catch allowances) to restrict catch of the eastern stock.

Alternative arrangements for pink ling have been agreed by AFMA and the South East Trawl Fishing Industry Association (SETFIA). SETFIA members can voluntarily agree to further catch limitations. Under this arrangement, vessels are allowed to exceed the daily catch allowance for eastern zone pink ling if the share of pink ling caught in the eastern zone is below 25 per cent of their total quota holding (AFMA 2015f; SETFIA 2016).

### **Straddling fish stocks**

When a biological stock straddles jurisdictions, ideally there will be a single or consistent management arrangement to reduce the risk that total catch will significantly diverge from optimal levels. Both input and ITQ managed fisheries face the problems of straddling stocks, but there should be greater confidence on environmental outcomes where ITQs are used. ITQs have been successfully implemented both where stocks cross international boundaries (such as southern bluefin tuna) and domestic boundaries (for example, southern rock lobster).

## **C.3 Recreational presence**

A large presence of recreational fishers in a fishery can compromise ITQ systems when catch by the recreational sector is not monitored closely and limits are not enforced as stringently as for the commercial sector. The problem of ensuring adherence to aggregate catch limits is not unique to ITQ-managed fisheries, but is sometimes more apparent because of the enforcement of quota for commercial fishers.

Chapter 2 outlines principles for allocating catch between fishing sectors. Once an allocation is made, management controls and monitoring need to be in place to ensure sectors do not exceed their allocation. Separating the sectors by geographical area or sector-specific seasons can also be effective ways to minimise conflict. South Australia's Lakes and Coorong Fishery is an example where managers have used spatial zones to separate the sectors.

### **Lakes and Coorong Fishery (SA)**

Pipis in the Lakes and Coorong Fishery are managed under an ITQ system in conjunction with separate spatial boundaries for each sector. The area allocated to each sector aligns with the catch allocations specified in the management plan. Of the total 192km of coast used for pipi beach fishing, 19km is allocated solely to the recreational sector. The commercial sector is allocated 173km, of which 45km is accessible to both sectors (PIRSA 2016b).

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## C.4 Landing places

Large numbers of landing places within a fishery (or a long coastline) can make enforcement of catch limits more difficult and expensive.

Compliance with input controls, such as limits on number or fishing days or hours, is relatively easier to monitor. GPS technology, such as vessel monitoring systems, can track vessels' movements, allowing managers to know when and where fishing occurs.

Fisheries managers have sought to overcome enforcement challenges by either placing additional requirements on fishers when they land (for example, the South Australian Rock Lobster Fishery, below) or restricting the places fishers can land in the fishery. The latter can create both benefits and costs for fishers, including more responsive services at the point of landing and higher fuel costs if they have to travel longer distances to the designated landing locations.

### Rock Lobster Fishery (SA)

The South Australia Rock Lobster fishery is divided into two fishing zones — northern and southern. The northern zone covers a much larger area than the southern zone, and contains roughly 40 different landing locations.

Commercial fishers who land rock lobster in one of the southern zone's seven designated locations are not required to report prior to landing during core hours. In contrast, fishers in the northern zone must report one hour before removing rock lobster from vessels. In addition, all vessels operating in the northern zone are required to have vessel monitoring systems, while these are not required in the southern zone (PIRSA 2013a, 2014a).

## C.5 Vessel size

Technology such as vessel monitoring systems and video cameras have allowed for higher levels of monitoring. However, there are limits on where these technologies can be used. For example, the technology is not currently practical for some very small vessels and may not be cost effective in fisheries with large numbers of small fishing businesses (which are usually based around small boats and/or shore based activities).

When monitoring is not practical or cost effective, managers will have greater reliance on reporting requirements and auditing. Managers can reduce the cost of monitoring and enforcement with strategic or risk-based approaches.

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## Queensland East Coast Spanish Mackerel Fishery

Commercial fishing for Spanish mackerel consists of a main ship with smaller dories towing baited fishing lines. The dories used with this method of fishing are small and incompatible with vessel monitoring systems. In this fishery, vessel movements are of particular importance due to proximity to the Great Barrier Reef Marine Park.

Commercial operators must submit detailed reports covering, among other things, the date and time of capture (to a minimum nautical mile resolution), equipment, including number of dories, the location of catch, and estimates for total catch. Reporting is used in combination with inspections and audits to monitor catch levels and fishing activity (DoEH 2004; Tobin, Mapleston and Begg 2004).

## C.6 Recruitment

The key variables in population dynamics are existing stock levels, recruitment (the production of juveniles) and mortality. Fish stocks with variable recruitment levels are difficult to predict as population dynamics are not dependent on the existing stock level.

Variable recruitment poses a challenge for managers using ITQs as TACs need to be set and quotas allocated at the beginning of the season. For species subject to variable recruitment, knowledge of any changes in stock will typically lag actual changes in abundance. As TACs usually are not changed within-season, there is an elevated risk of overfishing or the allowable catch being below what can be sustainably caught, resulting in lost economic opportunity.

A more responsive TAC-setting strategy has been developed for some rock lobster fisheries in New Zealand.

## New Zealand Rock Lobster Fishery

Rock lobster fisheries in New Zealand are based on fish that live for multiple years. The main nature of uncertainty in these fisheries is the risk of downturns in stock.

In some fisheries, the approach to setting TACs involves the use of a measure of abundance (usually catch per unit of effort). Once decision and procedural rules are agreed, this approach allows for more rapid adjustment of TACs in response to falling catch rates. The development and evaluation of stock models and decision rules, however, requires extensive work (Breen, Haist and Starr 2009; MPI NZ 2016b).

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