

Background

Australian fisheries, aquaculture and recreational fishing industries

- 2.1 Production from Australian commercial fisheries and aquaculture is small by comparison with other countries. The economic value of each sector is approximately \$1.3 billion and \$0.9 billion per year respectively.¹
- 2.2 Separately, the economic value of the recreational fishing sector is exceedingly difficult to quantify, with some estimates placing it between \$4 billion and \$5 billion annually.² The Australian Fishing Trade Association's submission suggested that the figure 'could be as high as \$10 billion a year through direct expenditure associated with the activity of going fishing.'³
- 2.3 According to the Australian Bureau of Agricultural Research and Economics (ABARES), in 2010-11 the total national employment in commercial fishing and aquaculture was 12,000 people.⁴ The last detailed survey was conducted as part of the 2006 census, which estimated a total fishing and aquaculture workforce of 15,939 people (9,736 in fishing and aquaculture production and 6,203 in processing and wholesaling).⁵

1 Fisheries Research and Development Corporation, Submission 19, p.9.

2 Fisheries Research and Development Corporation, Submission 19, p.9.

3 Australian Fishing Trade Association, Submission 39, p.1.

4 Australian Bureau of Agricultural Research and Economics, *Agricultural Commodities, June Quarter 2012*, 2012, Canberra, p.121.

5 ABARES, 'Australian Fisheries Statistics 2010', August 2011, p.33.

- 2.4 Despite the geographic size of its waters, Australian wild fishery production is particularly low. The Fisheries Research and Development Corporation (FRDC) summarised the situation:

Australia's exclusive economic zone is the third-largest in the world, covering one-and-a third times the area of Australia's land mass. However, the quantum of Australia's commercial wild catch ranks 60th in the world, representing only 0.2 per cent of world tonnage but 2 per cent by value. The size of catch of one species in some countries exceeds that of Australia's total production.⁶

- 2.5 Australia's aquaculture sector has grown significantly in the past three decades, corresponding with the world-wide trend. As noted by the CSIRO:

Seafood is a major contributor to global food security with the aquaculture sector continuing to be the fastest-growing animal food producing sector in the world. Aquaculture currently accounts for nearly half (46%) of the world's food fish consumption, compared with 33.8% in 2000.⁷

- 2.6 Tasmanian salmon aquaculture, for example, is now the 'most valuable of all of Australia's seafood sectors with a farm gate value of \$370 million. The industry is based on a genetically healthy population of founder breeding stocks introduced from Canada in the mid-1960's.'⁸ Further detail about the aquaculture industry is in Chapter 4.

- 2.7 The future direction of commercial fisheries and aquaculture are linked to the broader challenges, such as ensuring sustainable economic growth, dealing with climate change and supporting development in regional Australia. Dr Patrick Hone (FRDC) said:

There is a real opportunity, as the mining boom expands in regional Australia and gives a greater focus on regional Australia, to look at how that industry, in terms of its needs, can complement the renewable industries – whether they are tourism, fisheries, food, fibre or whatever. In other words, how we build the future beyond the mining boom to the next boom, which we hope would be the food boom. So the question then is: to what degree can we build synergies in these regional areas? Can we build offset values? Can we look at other ways of doing things? Everyone talks about soil carbon, but very few people know about blue carbon,

6 Fisheries Research and Development Corporation, Submission 19, p.13.

7 CSIRO, Submission 23, p.3.

8 CSIRO, Submission 23, p.9.

and yet the oceans contribute significantly more to the sequestration of carbon than the land does.⁹

Fisheries and aquaculture governance in Australia

2.8 Australian fisheries governance is shared between the States, Territories and Australian Government. Governance issues are dealt with in more detail in Chapter 6, though a brief background is provided below:

Generally, State/Territory laws apply to coastal waters (up to 3nm) and Commonwealth laws apply from those waters out to the limit of the Australian fishing zone (200nm).

...

The Commonwealth has generally limited its jurisdiction to commercial fishing with the State/Territory fisheries departments assuming responsibility for recreational fishing.¹⁰

2.9 Fisheries that cross jurisdictional borders – between multiple state governments, or between a state government and the Australian Government – are subject to management from both levels of governments involved. Some of these fisheries are managed through ‘joint fisheries authorities’. Additionally, Australia has responsibility for a vast area of ocean surrounding the coast of the Australian Antarctic Territory.

2.10 Professor Steve Kennelly (NSW Department of Primary Industries) pointed out the artificiality of these borders:

Given the fact that these fish do not recognise borders, that they do not know that there is any difference between one side of a river and the other or that there is a boundary between Queensland and New South Wales, they just do what they have been doing for hundreds of thousands and sometimes millions of years. We have this artifice put over the top of it that involves these boundaries. We need to recognise that.¹¹

2.11 At a Commonwealth level, primary responsibility for commercial fisheries policies and programs rests with the Department of Agriculture, Fisheries and Forestry (DAFF). Management of fisheries resources in Commonwealth waters is the responsibility of the Australian Fisheries Management Authority (AFMA). AFMA’s role, as stated in its

9 Dr Patrick Hone, *Committee Hansard*, 20 June 2012, p.2.

10 DAFF, ‘Fisheries’ at <http://www.daff.gov.au/fisheries>

11 Prof Steve Kennelly, *Committee Hansard*, 15 August 2012, p.4.

submission, is 'to manage the resources of Australia's Commonwealth fisheries on behalf of the Australian community using the provisions of the *Fisheries Management Act 1991*.'¹²

- 2.12 The *Fisheries Management Act 1991* (the *FM Act*) and the *Fisheries Administration Act 1991* (the *FA Act*) are the main legislative instruments governing fishing. The objectives of the *Environment Protection and Biodiversity Act 1999* (the *EPBC Act*), however, also have an important bearing on fisheries management, policy and decision-making, which is overseen by the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC). The Committee believes that the tension between the environmental objectives of *EPBC Act* and the economic and social objectives of the *FM Act* should be resolved.
- 2.13 Recreational fishing – inland and ocean – is principally the responsibility of the States and Territories. Each jurisdiction has its own arrangements regarding licensing, catch and possession limits, permitted equipment and methods and fisheries management. Licensing arrangements in Australia vary, though rules and restrictions usually apply in terms of bag limits, possession limits, size limits, fishing methods and closed areas. Recreational fishing is discussed further in Chapter 3.
- 2.14 Aquaculture regulation rests almost exclusively with the States and Territories. However, the Australian Government is currently working with State and Territory governments to develop a regulatory framework for aquaculture in Commonwealth waters.¹³

Science priorities for fisheries and aquaculture

- 2.15 The knowledge gained through the scientific method is crucial to the future of fisheries and aquaculture. It informs breeding, management, environmental protection, food security, product development and export, biosecurity and economic sustainability. A National Research, Development and Extension (RD&E) Strategy was finalised in 2010, under the auspices of the Fisheries Research and Development Corporation (FRDC).¹⁴

12 AFMA, Submission 29, p.2.

13 DAFF, 'The Aquaculture Industry in Australia', at http://www.daff.gov.au/fisheries/aquaculture/the_aquaculture_industry_in_australia

14 Primary Industries Research Ministerial Council, 'National Fishing and Aquaculture RD&E Strategy 2010', April 2010.

2.16 According to the FRDC, 'the gap between global seafood demand and supply represents a challenge for the entire world... science will be at the forefront of progress.'¹⁵ The FRDC identified the following 'five categories of drivers' for new research in fisheries and aquaculture:

- global demographic factors;
- consumers and markets;
- climate change and variability;
- ecologically sustainable development, improved governance and resource access; and
- biosecurity and aquatic animal health.¹⁶

2.17 To meet these demands, action around the world will be necessary, and Australia will need to play its part. In its region, Australia will be able to make a big contribution, according to the CSIRO's submission:

Australia is adjacent to one of the world's largest fishing nations (Indonesia) and to the world's two largest tuna fisheries, in which it has shared interests - politically as well as through access to migrating seafood resources. Indonesia overtook the USA in 2007 as the third ranked country for fisheries production ... The Indonesian annual capture fishery catch is five million tonnes and 3.3 million people rely directly on fishing activities for part or all of their income ... Fish is a mainstay for food security for Pacific island countries and territories ... Fish provides 50-90 per cent of animal protein in rural areas and 40-80 per cent animal protein in many urban areas of the Pacific ... These fisheries share species and ecosystems with Australia.¹⁷

2.18 Australia's capacity in this field will be important beyond its role for fisheries directly. The CSIRO submitted: 'There are important opportunities for science to inform Australia's broader policy objectives regionally given the importance of fisheries in our region.'¹⁸

2.19 Science has contributed not only to the reputation of Australian fisheries management, but the quality of the science itself has been recognised internationally:

15 Fisheries Research and Development Corporation, Submission 19, p.14.

16 Fisheries Research and Development Corporation, Submission 19, p.14.

17 CSIRO, Submission 23, p.3.

18 CSIRO, Submission 23, p.1.

In a recent major international assessment of the management effectiveness of the world's marine fisheries, Australia was highly rated [...] In particular, scientific robustness, policy-making transparency and probability of sustainability of fisheries were rated in the best category¹⁹

- 2.20 Progress in Australian fisheries management can be shared to contribute to international progress and, in this sense, contribute to global outcomes.
- 2.21 The 'next-generation' of fisheries management is at an eco-system level. Governments throughout Australia are moving to adopt this level of management. The role of science, the Australian Marine Sciences Association (AMSA) submitted, 'will be even more important' as coastal ecosystems are sensitive to human-induced disturbances and changes to climates.²⁰
- 2.22 The establishment of marine protected areas (MPAs) in Australian waters will be another demand for scientific knowledge. As pointed out by the Australian Marine Sciences Association, there will be various needs for research relating to MPAs, and government decisions will need to take this research into account for the environmental, social and economic values affected by the creation of MPAs.²¹ However, funding dedicated to assessing MPAs should be proportionate, given the resources already diverted towards meeting obligations within environmental legislation (discussed further in chapter 6).
- 2.23 For aquaculture, the research demands generally differ from those of fisheries management: 'the drivers for science in aquaculture are usually focused on production (genetics, nutrition, disease management, chain management); on efficiency; and on consumers' seafood preferences.'²²
- 2.24 For an example of possible areas for future research, CSIRO has identified 'key areas' of aquaculture research:
- integrating climate change and resource use research into... aquaculture spatial planning frameworks that encompasses environmental and social values;
 - species selection;
 - production systems;
 - market demand and other uses of adjacent environments;

19 Australian Marine Sciences Association, Submission 14, p.1.

20 Australian Marine Sciences Association, Submission 14, p.3.

21 Australian Marine Sciences Association, Submission 14, p.3.

22 FRDC, Submission 19, p.15.

- increasing the speed of transition from reliance on wild broodstock to the use of domesticated selectively bred stocks, including the application of genetic tools developed for livestock breeding and human health; and
- developing cost effective aquaculture feeds that minimise or eliminate the use of wild harvest fishmeal and fish oil.²³

2.25 The 'fish-in, fish out' ratio and cost effective feed options was also identified as a challenge for aquaculture.²⁴

Structures for fisheries and aquaculture science in Australia

2.26 The Australian Government provides funding for research into fisheries and aquaculture through the FRDC. As the FRDC submission outlines, its role is to:

...plan, invest in and manage fisheries and aquaculture research, development and extension (RD&E) activities in Australia. This includes providing leadership and coordination of the monitoring, evaluating and reporting on RD&E activities, facilitating dissemination, extension and commercialisation. The FRDC achieves this through coordinating government and industry investment, including stakeholders to establish and address RD&E priorities. In addition the FRDC monitors and evaluates the adoption of RD&E to inform future decisions.²⁵

2.27 Research may also be funded through bodies such as the Australian Research Council, or in the establishment of Cooperative Research Centres (CRCs), such as the Seafood CRC (based in South Australia). The Australian Government also has conducts research directly, through organisations such as the CSIRO and the Australian Institute of Marine Science.

2.28 Many Australian universities have ongoing fisheries and aquaculture research programmes, such as the University of Tasmania's Institute for Marine and Antarctic Studies²⁶ or James Cook University's Centre for Sustainable Tropical Fisheries and Aquaculture²⁷. Universities, being state-based, tend to concentrate their research on local or regional issues.

23 CSIRO, Submission 23, p.4.

24 Prof Michael Harte, *Committee Hansard*, 29 June 2012, p.27.

25 Fisheries Research and Development Corporation, Submission 19, p.10.

26 See Institute for Marine and Antarctic Studies, Submission 27.

27 See James Cook University, Submission 28.

- 2.29 As part of the development of the National Fishing and Aquaculture RD&E Strategy 2010, the FRDC commissioned an audit of the RD&E capability supporting Australia's fisheries and aquaculture industries. Relying on data up to 2009, the audit found that the investment in RD&E grew from \$117 million in 2004-05 to \$142 million in 2008-09.²⁸ The audit found that most of this growth in investment related to the areas of environment and ecosystems research and research supporting legislative requirements.
- 2.30 However, the Committee was informed during the inquiry that funding for research is flat or reducing (see Chapter 3).²⁹

A national reporting framework

- 2.31 Stakeholders suggested that reporting of facts and figures should be improved, and that there are areas where reporting could be enhanced.
- 2.32 During the inquiry the Committee identified four national reporting areas where adequate data is needed to inform good policy decisions:
1. The level of investment in fisheries and aquaculture RD&E. This information was collated for the 'National RD&E Strategy' in 2010, but is not routinely published;
 2. The status of wild fisheries stocks and ecosystems. This information is currently published by each State and Territory individually as well as for Commonwealth waters.³⁰
 3. Data on recreational fishing impacts, catch and other statistics. The last national recreational fishing survey was conducted in the early 2000s. The States and Territories separately publish recreational fishing surveys of varying detail and regularity; and
 4. Fisheries and aquaculture industry activity statistics, as well as information relating to infrastructure, equipment and technology. ABARES produces the 'Australian Fisheries Statistics' on an annual basis, though its focus relates to industry performance and trade.

28 FRDC, *RD&E capability audit and assessment for the Australian Fishing and Aquaculture Industry*, FRDC Project 2009/217, April 2010, p.20.

29 CSIRO, Submission 23, p.4 and p.11; JCU, Submission 28, p.3.

30 Dr Ilona Stobutski, ABARES, *Committee Hansard*, 30 May 2012, p.5.

- 2.33 The Australian Government is expected to release a new publication by the end of 2012, entitled 'the State of Australian Fish Stocks Report', which will attempt to bring together State, Territory and national data. Dr Ilona Stobutski (ABARES) said:

It will be the equivalent of Australia's State of the Forests report. It is intended to be something that goes longer term and that develops over the longer term as well.³¹

Committee Comment

- 2.34 Science is central to fisheries management and aquaculture in Australia, and the role of science will only increase in importance in the future. Throughout the course of the inquiry, the Committee met with scientists conducting research fundamental to the long-term sustainability of fisheries and aquaculture, and their passion and commitment was always evident. Beyond the occasional contested issue, a broad message of strong science and a sustainable industry was consistently communicated by evidence to the inquiry. The Committee believes that the industry has a bright future, and that the role of scientists will continue to be central to that future.
- 2.35 However, in general, the Committee found that it was a challenge to understand the relationships and hierarchies between government, research institutes, industry and the strategic direction of scientific research priorities relating to fisheries management and aquaculture. The Committee was referred to a vast array of legislative objectives, strategic documents and policy guidelines during the inquiry. These issues are expanded upon throughout this report, but in particular in Chapter 6.
- 2.36 In order to assess arguments that the investment in fisheries and aquaculture research is declining, it is important to have regular national reporting on total investment. This will enable all interested stakeholders to assess the ongoing commitment to fisheries and aquaculture science across Australia. The Committee believes that the FRDC should conduct a regular audit of investment in RD&E in order to address this area of need.
- 2.37 In addition to RD&E investment data, the Committee believes that information on the status of wild fisheries stocks and ecosystems, recreational fishing statistics, and industry statistics – must all be improved to support good decisions about fisheries management,

31 Dr Ilona Stobutski, ABARES, *Committee Hansard*, 12 September 2012, p.9.

aquaculture development and consumer product choice. These areas of reporting are the topics of other recommendations within this report.

- 2.38 Furthermore, it is essential that these areas of reporting are coordinated so that they provide a comprehensive suite of information that can be relied upon by the industry, the general public, and governments.

Recommendation 1

- 2.39 **The Committee recommends that the Fisheries Research and Development Corporation conduct and publish an annual audit of total national investment in fisheries and aquaculture research, development and extension.**