Australian Government

Fisheries Research and Development Corporation

ANNUAL REPORT 2012–13

GOVERNMENT RECOMMITS TO RDCs

The importance of research and development (R&D) for the primary industries sector cannot be overestimated, nor should it be taken for granted. Fishing and aquaculture in Australia wouldn't be where they are today without R&D. Over the past 30 years, our fishers and fish-farmers have grown to become some of the most productive and innovative in the world.

The skill of Australia's fishers and fish-farmers has led to their industries being regarded as among the best in the world, based on R&D that has helped with advancements in technology, practices, and with our understanding of the aquatic environment. R&D is central to our industries remaining internationally competitive, environmentally sustainable and socially responsible.

On 15 June 2011, the Productivity Commission released the final report into the inquiry of the rural research and development corporations (RDCs). On the same day the preliminary government response to the Productivity Commission's report was also released. The response to the report has many elements however, key areas relevant to the FRDC are the:

- opportunity to implement marketing and promotion functions following changes to the PIERD Act,
- development of a statutory funding agreement with the Department of Fisheries, Forestry and Agriculture,
- preparation for an independent review of FRDC operations and consistent benefit cost analysis of projects,
- incorporation of extension and adoption pathways as part of strategic research development and extension (RD&E) plans,
- improvement of collaboration and cross-sector investment, and reporting on this annually.

After due consideration of the Productivity Commission's report, the government released its response —the Rural Research and Development Policy Statement—in July 2012. It highlighted a strong commitment and support for the existing RDC investment framework.

The rural R&D policy looks to build on the strengths of the RDC model, and the strong partnership with industry in funding and setting priorities.

The R&D model as it stands has proven results. The changes the FRDC and other RDCs will now begin to implement will help build on those results and drive productivity into the future. They will also improve the adoption of innovation across the sector.

In the two decades before 2005–06, rural productivity in Australia increased at more than twice the rate of other industries in this country. The government's new Rural Research and Development Policy Statement recognises that achievement, and will help our fishers and farmers to build on it into the future.

Australian Government
Fisheries Research and Development Corporation

19 September 2013

The Hon. Barnaby Joyce MP
Minister for Agriculture
Parliament House
CANBERRA ACT 2600

Dear Minister,

On behalf of the directors of the Fisheries Research and Development Corporation (FRDC), I have pleasure in presenting the Corporation's annual report for the year ended 30 June 2013.

It has been prepared in accordance with section 28 of the *Primary Industries and Energy Research and Development Act 1989*; and approved by the Board in accordance with section 9 of the *Commonwealth Authorities and Companies Act 1997*.

The contents of the report highlight achievements and activities against the FRDC's Research, Development and Extension Plan 2010–2015. It is intended to enable an informed judgement of the Corporation's performance during the year ended 30 June 2013 by you, the Minister for Agriculture and the Australian Parliament.

The report is also intended to inform the FRDC's other stakeholders—in particular the financial contributors from the fishing industry and other sectors; as well as the broader members of the commercial, recreational and indigenous sectors of the fishing industry; and members of the research and development community and general public.

I take this opportunity to acknowledge the strong support of my fellow directors in guiding the Corporation towards outcomes that will greatly benefit the fishing industry, the natural resources on which it depends, and the Australian community.

Yours faithfully,

The Hon. Harry Woods
Chairman

Quick guide to the annual report

If you do not have time to read this report in detail, look first in the following sections:

1. For an outline of the FRDC's investments and income, read page v and the financial statements starting on page 114.
2. For an overview of operations during the past year, read 'The Directors' review of operations and future prospects' starting on page 4.

More detailed coverage is in these sections:

- The key strategic imperatives that drive the FRDC's activities are shown on pages 5–11 and 13–14.
- Outcomes by recent and current projects are in the R&D programs reporting starting on page 35 (Environment), page 48 (Industry), page 63 (Communities), page 69 (People development) and page 79 (Extension and adoption).
- Performance reporting for the Management and accountability program starts on page 88.
- Financial contributions by industry and governments are listed on pages vii and 136.
- Coverage of corporate governance information is in the section starting on page 99.
- The financial statements start on page 114.

Front and back cover photo: Richard Jupe, courtesy of the Tasmanian Salmonid Growers Association.

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

ANNUAL REPORT 2012–13

2012–13 ACHIEVEMENTS THROUGH INVESTMENT

Five years at a glance

TABLE 1: FINANCIAL INDICATORS OF R&D INVESTMENT

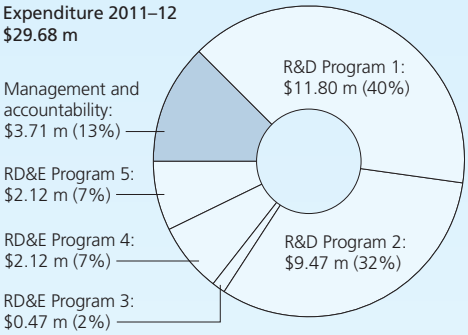
Expenditure	2008–09	2009–10	2010–11	2011–12	2012–13
	$m	$m	$m	$m	$m
Total expenditure	27.75	28.93	25.76	29.68	25.69
Total of R&D projects*	23.62	24.45	21.56	25.98	22.14
R&D Program 1 (Environment)*	11.97	13.75	10.14	11.80	8.25
R&D Program 2 (Industry)*	9.77	8.68	8.34	9.47	9.57
R&D Program 3 (Communities)*	**		0.16	0.47	0.74
R&D Program 4 (People development)*	1.88	2.02	1.90	2.12	1.80
R&D Program 5 (Extension and adoption)*	**		1.02	2.12	1.78
Management and accountability	3.36	3.67	3.40	3.71	3.55

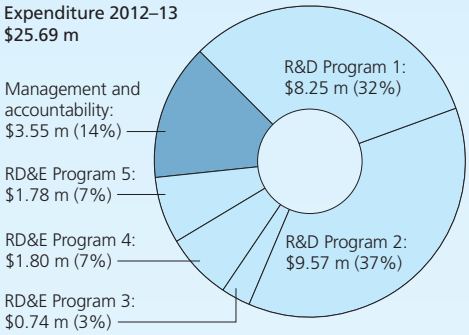
Figures in this table have been rounded, hence totals may not agree with component figures. For exact figures see the financial statements beginning on page 114.

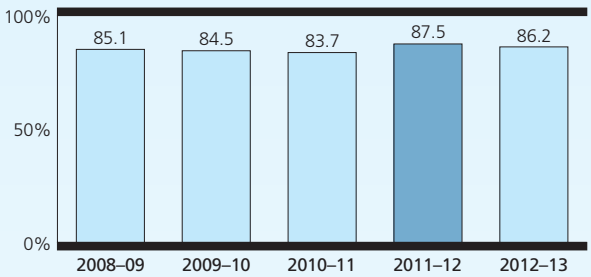
* In 2010–11 the research and development programs changed to be in line with the FRDC's RD&E Plan 2010–2015, as such direct comparisons with the previous year is not possible. This table provides only a historic snapshot of expenditure.

** This program did not exist in the previous RD&E plan.

	2008–09	2009–10	2010–11	2011–12	2012–13
Number of approved new projects	158	147	141	146	123
Total number of active projects under management	436	384	412	483	476
Number of final reports completed	125	150	111	129	138







Expenditure on R&D projects as a percentage of total expenditure

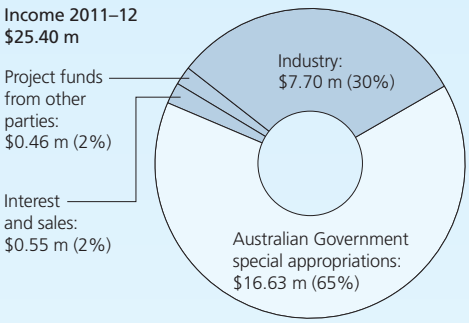
TABLE 2: INDUSTRY CONTRIBUTIONS TO FRDC AS A PERCENTAGE OF MATCHABLE GOVERNMENT CONTRIBUTIONS

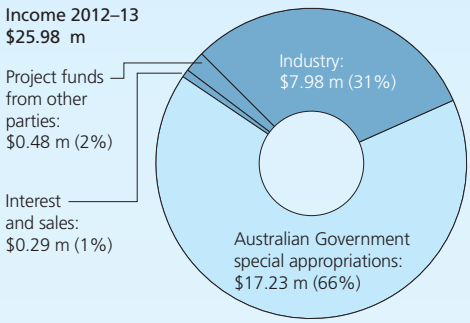
	2008–09	2009–10	2010–11	2011–12	2012–13
Commonwealth	322	195	189	104	95
New South Wales	74	11	105	113	193
Northern Territory	517	439	923	290	187
Queensland	90	94	121	83	70
South Australia	199	139	179	208	194
Tasmania	104	96	108	109	99
Victoria	110	231	365	292	335
Western Australia	164	99	133	125	105
Total all fisheries	**169**	**132**	**153**	**135**	**128**

TABLE 3: INCOME TO THE FRDC

	2008–09	2009–10	2010–11	2011–12	2012–13
	$m	$m	$m	$m	$m
Industry contributions	9.52	8.37	8.46	7.70	7.98
Maximum matchable (government) contribution	5.50	5.50	5.50	5.56	5.83
Actual government matched [1]	5.30	5.36	5.50	5.51	5.57
Government unmatched [2]	11.00	10.97	11.03	11.22	11.66
Total government contributions	16.30	16.34	16.53	16.63	17.23
Project funds from other parties	2.41	5.91	1.12	0.46	0.48

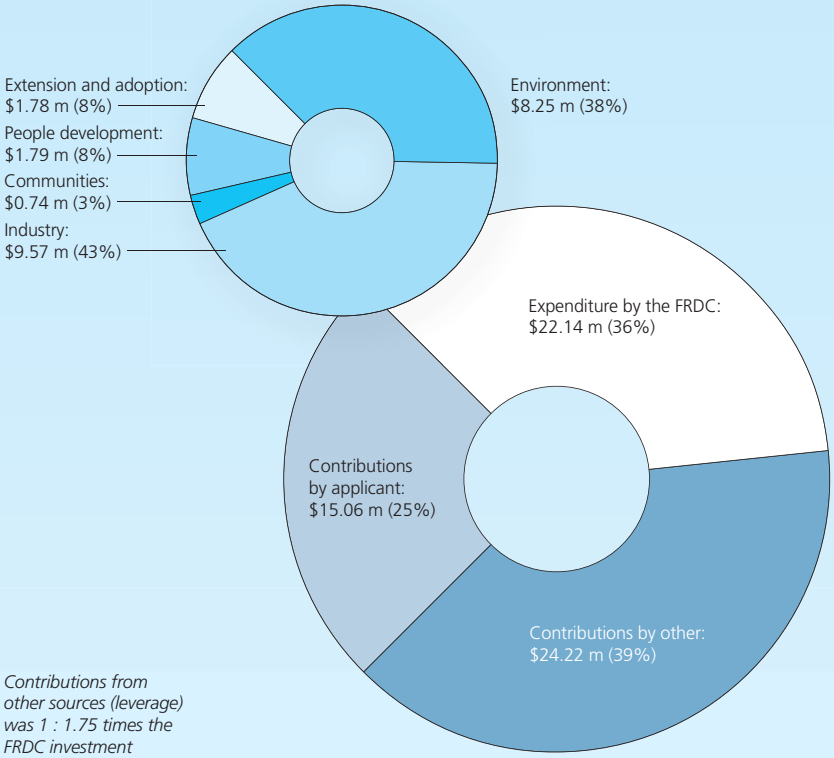
1. 'Maximum matchable contribution' is the maximum amount to which the Australian Government will match industry contributions in accordance with the criteria detailed on page 158 (including when industry contributions exceed 0.25 per cent of average gross value of production (GVP)).
2. 'Government unmatched' is an Australian Government contribution set at 0.50 per cent of average GVP, in accordance with the criteria detailed on page 158.





FRDC project funds under management

TOTAL FRDC PROJECT FUNDS UNDER MANAGEMENT
Total: $61.42 m



Contributions from other sources (leverage) was 1 : 1.75 times the FRDC investment

Summary of contributions

TABLE 4: CONTRIBUTIONS, MAXIMUM MATCHABLE CONTRIBUTIONS BY THE AUSTRALIAN GOVERNMENT AND RETURN ON INVESTMENT, 2012–13

Fisheries	A	B	C	D	E	F
	Maximum matchable contribution (0.25% of AGVP) ($) [see note 1]	Actual contribution 2012–13 ($) [see note 2]	B÷A as per cent	Distribution of FRDC R&D investments 2012–13 ($) [see note 3]	Return on contribution (D:B) [see note 4]	
					2012–13	5 years
Australian farmed prawns total	150,682	127,232	84	238,797	1.88	1.21
Commonwealth total [5]	776,024	737,508	95	3,291,076	4.46	3.11
New South Wales total	329,595	636,244	193	1,622,197	2.55	3.89
Northern Territory total	142,186	265,444	187	787,189	2.97	1.63
Queensland total	557,360	388,000	70	1,916,753	4.94	3.35
South Australia total	994,098	1,933,328	194	3,954,260	2.05	2.49
Tasmania total	1,689,591	1,676,617	99	4,280,636	2.55	2.41
Victoria total	191,479	641,545	335	1,506,691	2.35	2.82
Western Australia total	1,000,105	1,047,162	105	3,334,341	3.18	3.57

1. 'Maximum matchable contribution' is the maximum amount to which the Australian Government will match industry contributions in accordance with the criteria detailed on page 158.
2. The contribution figures are accrual based. Contributions come from the commercial and recreational sectors, research partners, government, project specific contributions.
3. Distribution of FRDC RD&E investments is based on the estimated flow of RD&E benefits to the respective fisheries.
4. Ratios in column F are derived from the distribution of FRDC investments (column D) for 2012–13 and the previous four years. The figures for these five years are relevant to the 1995 Ministerial direction, summarised on page 100, concerning spending of industry contributions.
5. There are timing issues in some jurisdictions:
   - matching may not occur in the year in which the invoice is raised because:
     - jurisdictions ask for invoices late in the financial year
     - matching is triggered by cash received
     - Department of Agriculture, Fisheries and Forestry closes its processing prior to financial year end.

Building Australia's new Marine National Facility, the research vessel (RV) *Investigator*…

About 60 per cent of Australian territory is ocean, but only 12 per cent of this area has been mapped. Research is vital to the responsible development and management of the ocean, and to understanding its influence in the region and around the world.

The RV *Investigator* will give Australia's marine researchers state of the art capacity to undertake research from the tropical north to the Antarctic ice-edge and across the Indian, Southern and Pacific oceans.

ABOUT THE FRDC

The Fisheries Research and Development Corporation (hereafter the FRDC, or the Corporation) is a co-funded partnership between the Australian Government and the fishing industry. It was formed as a statutory corporation on 2 July 1991, under the provisions of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act) and in 2012–13 was responsible to the Minister for Agriculture, Fisheries and Forestry. More information on the FRDC's history is available in the 'Evolution of the FRDC (historic review)'—frdc.com.au/about_frdc/corporate-documents/Pages/default.aspx.

The FRDC is unique among the rural research and development corporations (RDCs) because it must balance its investment between natural resource management (sustainability) and industry productivity and development. As an outcome, the FRDC's strategic investments in research, development and extension (RD&E) activities benefit all stakeholders in Australian fishing industry: commercial (wild catch and aquaculture), recreational, indigenous as well the broader community.

The FRDC's role is to plan and invest in fisheries RD&E activities in Australia. As a national organisation with strong linkages to industry, managers and researchers it has a fundamental role to provide leadership and coordination. The FRDC achieves this through establishing strong relationships and putting in place mechanisms to identify and address RD&E priorities with industry and government stakeholders. In addition, the FRDC monitors and evaluates the adoption of R&D outputs to better inform future decisions. Key areas of the FRDC's focus are:

- project planning, management, and extension across government agencies, the seafood industry and the community nationally,
- maximisation of RD&E funding across Australia,
- facilitation and partnership activities with research partners,
- collaboration with other RDCs, state/territory government agencies and international organisations.

FRDC is strategically placed between the Australian Government, industry, research partners and the Australian community. This positioning also allows the Corporation to communicate and network with partners to leverage funds, and to get the best results from RD&E investment made by government and industry.

The FRDC is seen as an independent source of unbiased information. As a result the Corporation has a significant responsibility to ensure that funds received are invested in areas that will return an optimal benefit to all its stakeholders—industry, the Australian Government and the people it represents.

FRDC BOARD AND STAFF

The FRDC is governed by a Chair and Board of Directors, with the Executive Director leading the Corporation's business activities on a day-to-day basis. The Board's role is to oversee corporate governance, set strategic direction, and monitor the ongoing performance of the FRDC and the Executive Director. The FRDC Board is responsible for strategy, policy and evaluating the organisation and its investments, and for reporting to government and the fishing industry.

The FRDC staff are the Corporation's most important resource, and a key factor in the ongoing success of the organisation. In 2012–13, the FRDC operated with 12 full-time-equivalent staff members (on average). In addition to the core staff the FRDC partners with over 100 organisations annually who employ around 200 principal investigators on FRDC research projects, and many more researchers, communicators and technicians—not to mention the numerous industry people who work on projects.

FISHERIES RESEARCH ADVISORY BODIES (FRABs)

The FRDC supports a network of FRABs—one covering Commonwealth fisheries and one in each state and the Northern Territory. The FRABs have an extremely important role in optimising the efficiency of the FRDC's planning, investment processes and development of project applications. The FRDC works to ensure a majority of 'annual open call' and 'tactical research fund' applications are submitted through, reviewed and prioritised by the FRABs.

The FRABs represent sectors of the fishing industry, fisheries managers and researchers, and most also have environmental and other community interest representation.

INVESTMENT STRATEGY

The FRDC invests in RD&E across the whole value chain of the commercial fishing and aquaculture industry, and is also for the benefit of both indigenous and recreational fishers. The FRDC seeks to achieve maximum leverage from its investment by providing research administration and services to projects using a value-adding model. This process provides input during the development and assessment phase to ensure each project delivers a specific outcome, and is actively managed and monitored.

The reason for running the value-adding model, instead of a simple 'granting' model for R&D funding (carried out at minimal cost), is that the returns are significantly better. This is because more time is spent ensuring the design and implementation of each project is correct and aligns with the desired outcomes of stakeholders. The FRDC manages the implementation of the value-adding model through its ongoing investment in systems that deliver best practice in project development management and assessment (see previous page on FRABs), integrated project, financial and human resource management.

The FRDC invests in RD&E through a variety of flexible approaches. These include:

- an open call for project applications,
- formal partnership agreements with industry sectors,
- subprograms and coordination programs that address cross-sector needs at a national level,
- short-term tactical research investment,
- specifically targeted commissioned RD&E, especially where there is market failure by private investment.

The focus for investment aligns with the 14 themes (below) outlined in the FRDC's strategic RD&E plan for 2010–2015. In any given year the investment balance between themes may vary depending on strategic needs, see page iv for current percentages.

TABLE 5: FRDC R&D PROGRAMS AND THEMES

Program	Theme
Environment	1. Biosecurity and aquatic animal health
	2. Habitat and ecosystem protection
	3. Climate change
	4. Ecologically sustainable development
Industry	5. Governance and regulatory systems
	6. Resource access and allocation
	7. Production, growth and profitability
	8. Consumers, products and markets
	9. Value from aquatic resources
Communities	10. Resilient and supportive communities
People development	11. Leadership development
	12. Workforce development
	13. Innovation skills
Extension and adoption	14. Extension and adoption

FRDC'S PEOPLE DURING 2012–13

Portfolio minister

During the year the portfolio Minister for Agriculture, Fisheries and Forestry was Senator the Hon. Joe Ludwig.

FRDC Board members during the year

The Hon. Harry Woods	Chair
Ms Heather Brayford	Director
Ms Renata Brooks	Director
Mr Brett McCallum	Director
Dr Bruce Mapstone	Director
Dr Peter O'Brien	Director
Mr David Thomason	Director
Dr Patrick Hone	Executive Director

FRDC staff

Mr John Wilson	Business Development Manager
Ms Cheryl Cole	Manager Corporate Services
Mr Rita Lin	Office Administrator
Mr Crispian Ashby	Programs Manager
Ms Annette Lyons	Projects Manager—Finance
Ms Kylie Giles	Projects Manager—Research
Ms Pele Cannon	Projects Manager—Research
Dr Carolyn Stewardson	Projects Manager—Research
Ms Jo-Anne Ruscoe	Projects Manager—Research
Mr Peter Horvat	Communications Manager
Ms Julie Haldane	Communications Officer
Ms Ilaria Catizone	Communications Science Writer
Ms Rachelle Etienne-Breidenbach	Digital Communications

CONTENTS

THE AUSTRALIAN FISHING INDUSTRY

The fishing and aquaculture industry is one of the most complex of Australia's primary industries in terms of both its structure and the natural resources on which it depends. Most of the industry's business environments are made more complex by their dependence on access to natural resources that are publicly managed in the interests of present and future generations. The Australian fishing industry comprises three main sectors:

- commercial sector; comprising wild-catch fishing, aquaculture and through-chain activities undertaken by seafood importers, processors, manufacturers, handlers and retailers,
- recreational fishing; which includes the tackle, tour guides and charter sectors,
- indigenous customary fishers.

The 'fishing industry' is further defined in the FRDC Regulations 1991 under the PIERD Act such that it includes any industry or activity carried on in or from Australia concerned with:

- taking, or
- culturing, or
- processing, or
- preserving, or
- storing, or
- transporting, or
- marketing, or
- selling,
- of fish or fish products.

The commercial sector comprises approximately 120 wild-catch fisheries and 70 aquaculture species. Commercial seafood and marine products (e.g. pearls) were valued at $2.4 billion in 2011–12. The recreational sector has 3.4 million participants, who were estimated in a 2001 survey to spend $1.9 billion on their fishing. Aboriginal and Torres Strait Islander people participate in commercial and recreational fishing, as well as customary fishing. The legal rights around indigenous fishing are being refined over time and some aspects are now part of existing legislation and court decisions.

In 2011–12, there were 10,633 people employed in the commercial fishing, hunting and trapping industries, with 6991 employed in the fishing, hunting and trapping sector, and 3642 in aquaculture enterprises. Of this total, 8216 people (77 per cent) worked full-time and 2417 (23 per cent) part-time. Compared with 2010–11, total employment in the commercial fishing, hunting and trapping industry decreased by 8.7 per cent (1010 people); full-time employment decreased by 5.9 per cent (520 people) in 2011–12; while part-time employment fell by 17 per cent (490 people). The Australian Bureau of Statistics, for the Labour Force Survey, does not provide separate employment statistics for the fishing sector, these figures are included in the hunting and trapping sector. However, separate statistics are available for the aquaculture sector.

Demand for seafood remains strong across Australia. A key driver is the awareness of seafood's prominent role in a healthy diet. In some Asian markets consumption is also increasing with the growth of the middle class, especially in China and India. Consumers are concerned with environmental issues and perceptions of the sustainability of seafood caught, or produced, both domestically and internationally. This has led to a focus on industry and government demonstrating their commitment to best management practice and in some cases pursuing independent assessment through third-party accreditation.

Historically, the Australian commercial seafood industry has maximised returns through exports. Australia commercial seafood production contributes approximately 28 per cent of domestic seafood demand. Combined with the strength of the Australian dollar during the year some sectors in the commercial industry are now looking to re-orient their market portfolio towards increasing their share of the Australian market. Increasingly, companies will seek to improve their profitability and efficiency through focusing on the whole value chain through to consumers. This will see more companies become either vertically integrated or build partnerships to achieve similar results. Other factors, such as further improvements in fisheries management and better utilisation of catch, will also be important in meeting domestic demand. But it is not only seafood for consumption that Australia produces. Pearls are a high value consumer item that is produced at the highest level of quality through leading edge technology and environmental credentials, making it one of Australia's most valuable and sustainable fishing and aquaculture industries.

The FRDC has a significant responsibility in ensuring, on behalf of its investors, the Australian Government and the commercial industry, that research is undertaken to assist in the management of the fisheries resource for ongoing sustainability. This means a significant proportion of funding is directed at research that has a public good benefit.

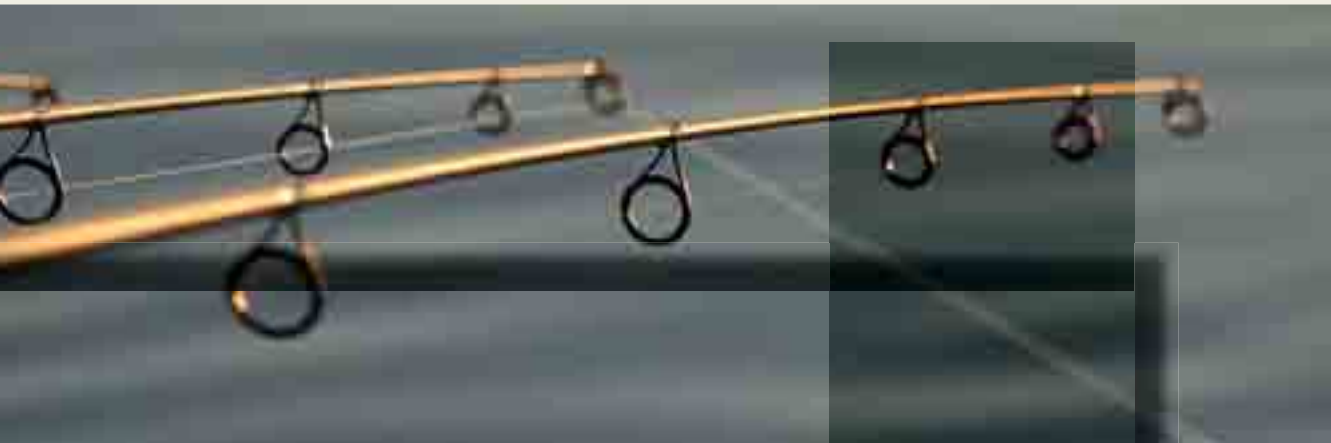


TABLE 6: FISHING INDUSTRY RESULTS 2011–12 *

Australian Fisheries Statistics **	2009–10	2010–11	2011–12	Change
The wild-catch sector earned and caught slightly less	$1.34 billion for 173,357 tonnes	$1.32 billion for 164,180 tonnes	$1.30 billion for 157,505 tonnes	$: –1.10% t: –4.07%
The aquaculture sector earned and produced more	$878 million for 73,829 tonnes	$954 million for 76,671 tonnes	$1,054 million for 84,605 tonnes	$: +10.45% t: +10.35%
Overall production was more and the value was greater	$2.19 billion for 243,255 tonnes	$2.24 billion for 237,065 tonnes	$2.32 billion for 237,540 tonnes	$: +3.36% t: +0.20%

* The figures quoted from *Australian Fisheries Statistics* are for 2011–12, and are from the latest edition that can be downloaded from the FRDC website—**www.frdc.com.au**

** To avoid double counting, total has been reduced to allow for Southern Bluefin Tuna caught in the Commonwealth Southern Bluefin Tuna Fishery, as an input to farms in South Australia.

TABLE 7: TRADE FIGURES 2011–12

Top five, by volume in 2011–12		Top five, by value in 2011–12	
Salmonids	43,989 tonnes	Salmonids	$513 million
Australian sardine	41,319 tonnes	Rocklobster	$384 million
Prawns	22,537 tonnes	Prawns	$266 million
Oyster	15,745 tonnes	Tuna	$172 million
Tuna	10,071 tonnes	Abalone	$170 million

Top five exports, by value in 2011–12		Top five export destinations in 2011–12	
Rocklobster	$387 million	Hong Kong	$576 million
Pearls [1]	$207 million	Japan	$299 million
Abalone	$197 million	China	$61 million
Tuna [1, 2]	$163 million	United States	$45 million
Prawns	$67 million	Singapore	$44 million

1. Includes items temporarily exported and re-imported. 2. Exports of tuna landed in Australia.

Top five imports, by value in 2011–12		Top five import sources in 2011–12	
Prepared and preserved fish [1]	$406 million	Thailand	$366 million
Frozen fish [2]	$258 million	China	$237 million
Frozen prawns	$203 million	New Zealand	$206 million
Prepared and preserved prawns	$147 million	Vietnam	$175 million
Pearls [3]	$138 million	Malaysia	$74 million

1. Predominantly canned. 2. Mostly fish other than hake, salmonids, tuna and toothfish. 3. Mostly re-imports.

The figures quoted are from *Australian Fisheries Statistics* 2011–12.

REPORT OF OPERATIONS

PART 1

THE DIRECTOR'S REVIEW OF OPERATIONS AND FUTURE PROSPECTS

LOOKING OUT—THE EXTERNAL OPERATING ENVIRONMENT

INDUSTRY overview

The Australian fishing and aquaculture industry is complex and diverse in nature. The year saw some sectors have very strong commercial returns, with future prospects also looking good (see salmonids on the following page). Other sectors maintained a steady keel, while some remain at a crossroads with the future looking uncertain.

Overall, Australia's fishing and aquaculture industry continues to demonstrate a high level of performance, stewardship and focus on best practice. Despite this, the community perception of the (global) fishing industry remains poor. Concerns continue to be raised on issues such as catching methods, the use of fishmeal for fish feed, the effect on marine environments from climate change—spikes in water temperature and algal blooms—and interactions with marine mammals and sharks. The FRDC has sought to provide robust scientific information to inform the wider community on these issues.

The fishing industry has had its own concerns with the effects of changes to climate, changes to access and fishing grounds, and sharing of the resource between sectors continuing to cause tension. These issues are being worked on, but more will need to be done in the coming years. Adaptation to climate variability, in particular, will require industry to look to implement long-term planning and changes to management and operational practice.

Aquaculture value and volume of production increased in 2012–13, underpinned by research and development advances in genetic breeding, feeds and animal health.

The level of recreational fishing participation has been a core focus for sector representatives as well as fisheries managers. The lack of quantifiable data on participation and catch rates for this sector will need to be addressed in the coming two years with a number of states having started recreational surveys.

| | SALMONID industry expansion approved

During the year the Federal Government approved the expansion and future development of the Atlantic Salmon industry in Macquarie Harbour on the west coast of Tasmania. This approval allows for an increase in salmonid farming leases from the current 2 per cent to 3.3 per cent of the total water space, although only a fraction of the area will actually be farmed.

An environmental impact statement—underpinned by scientific data and research, sampling, modelling and local community consultation—supported the application. The expansion is expected to create more than 100 jobs during construction and a further 160 production and processing jobs.

| | TASMANIAN shellfish biotoxin event

In October 2012, a shipment of mussels that came from the east coast of Tasmania was rejected by Japanese import authorities due to the presence of unacceptable levels of paralytic shellfish toxins. This was caused by the mussels feeding on a bloom of the dinoflagellate algae (*Alexandrium tamarense*), a naturally occurring algae found world-wide.

The Tasmanian Government (Departments of Health and Human Services and Primary Industries, Parks, Water and Environment) acted to close some wild-catch fisheries, several shellfish fisheries and marine farms in areas where the algal blooms occurred. However, the full impact of the bloom and subsequent closures is estimated to have cost the bivalve (shellfish) sector in the vicinity of $5–7 million and the rocklobster industry around $3–5 million. The closures also had flow-on impacts for the recreational sector.

The FRDC with support from the Tasmanian Government and industry commissioned Safefish to review the event. The overarching recommendation from the review, which has national implications for biotoxin risk management, is the critical need to reform the national regulatory framework and associated policies to ensure the Australian Shellfish Quality Assurance Program provides the foundation for internationally acceptable public health protection and ongoing market access.

MANAGEMENT of fisheries

The year has seen major work undertaken that will underpin and help advance Australian fisheries management. The Australian Fisheries Management Forum (AFMF) with support from the FRDC, initiated a project to develop a set of National Fishery Harvest Strategy Guidelines. The guidelines were completed during the year and will allow for the creation of harvest strategies across the full range of fisheries. They provide practical assistance to help overcome challenges such as multi-jurisdictional, data poor recreational and customary fisheries, that may have had difficulties developing and implementing harvest plans in the past.

Comprehensive reviews of the Commonwealth Fisheries Harvest Strategy: Policy and Guidelines (2007), and the Commonwealth Policy on Fisheries Bycatch (2000) were also completed during the past year with final reports released in May.

While both reviews point to improved fisheries management as a result of implementing the policies, they also provide suggestions for improvements. Among these are the need for greater stakeholder understanding of policy objectives in order to improve implementation, along with clearer definitions of important terms, the need for more data to assess performance, and greater integration of the two policies.

Fisheries resource access and allocation has been, and remains, one of the top priorities for AFMF. With this in mind, the FRDC Board agreed to form a 'research oriented' sub-committee to examine possible approaches to access and allocation issues that would help fisheries managers undertake policy development around allocation matters. The sub-committee completed their work in July 2012.

| | STATUS of key Australian fish stocks reports

Following 18 months of work between the FRDC, the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), and state and territory fisheries management agencies the first *Status of key Australian fish stocks reports* was completed. The reports and associated website —www.fish.gov.au—were launched on 10 December 2012 by the Minister for Agriculture, Fisheries and Forestry and are a significant step forward for transparency and reporting of fish stock health.

The reports, prepared by over 80 scientists, bring together available biological, catch and effort information on the status of Australia's key wild-catch fish stocks and provides a resource to inform the general public, policy makers and industry on the sustainability of stocks

Forty-nine species (or species complexes) were assessed across Australia. Those chosen were key wild-catch fish stocks representing over 80 per cent of the value and 70 per cent of the volume of Australian catch. There are many species not currently included, that may be in future editions.

In total, 150 stocks were assessed across 49 key species, with 98 stocks being classified as sustainable (these contribute 90.6 per cent of the total catch of the species assessed). There were eight stocks classified as transitional–recovering, three as transitional–depleting and two as overfished.

The two stocks classified as overfished were Southern Bluefin Tuna and School Shark. Both stocks have management plans in place—see more on page 34.

RURAL R&D policy statement

In July 2012, Senator the Hon. Joe Ludwig, Minister for Agriculture, Fisheries and Forestry, released the Rural Research and Development Policy Statement in response to the Productivity Commission's inquiry into the rural RDCs. Key areas for the FRDC are the:

- opportunity to implement marketing and promotion functions following changes to the PIERD Act,
- development of a statutory funding agreement with the Department of Agriculture, Fisheries and Forestry (DAFF),
- preparation for an independent review of FRDC operations and consistent benefit cost analysis of projects,
- incorporation of extension and adoption pathways as part of strategic RD&E plans,
- improvement of collaboration and cross-sector investment, and reporting on this annually.

SENATOR JOE LUDWIG WITH MEDIA AT THE LAUNCH OF THE AUSTRALIAN FISH STOCKS REPORTS

| | MARKETING and promotion

The policy statement supported the current RDC model. It also highlighted that some changes should be made to the PIERD Act to broaden the FRDC's role to manage investment of levies raised by industry for purposes other than R&D, such as marketing and promotion.

In preparing for the changes, the FRDC will position itself to establish the necessary processes and resources to manage marketing and promotion activities requested by stakeholders. Much of the initial preparatory work will be conducted in partnership with the Seafood Cooperative Research Centre (Seafood CRC) who are investing in market research and development that will underpin many of FRDC's activities.

It is important to note that the timing and commencement of this activity will be entirely dependent on changes to the PIERD Act passing through parliament, and industry agreeing to contribute to marketing activities through the FRDC.

| | PRIMARY Industries Standing Committee RD&E Framework

The National Fishing and Aquaculture RD&E Strategy was endorsed by ministers at Primary Industries Ministerial Council on 23 April 2010. The implementation of the strategy is being led by the Strategy Governance Committee (formerly the National Priorities Forum), and supported through an Extension Working Group and Research Providers Network. The FRDC is playing a major role in these activities.

The FRDC has continued to take a lead role in implementing the strategy. It has worked in partnership with AFMF and FRDC's representative bodies to advance funding and management arrangements within a regional and national approach.

| | SEAFOOD CRC

The FRDC is a core participant in the Seafood CRC and will invest over $24 million during its life. The focus for this investment is industry development. The end of the 2012–13 financial year marked the fifth year of the Seafood CRC. To date some of the key achievements include:

- developing a national prawn promotion strategy,
- supporting R&D in the Southern Bluefin Tuna hatchery,
- developing a genetic selection program for oysters resistant to Pacific Oyster Mortality Syndrome,
- supporting 47 PhD candidates, with 13 now having attained their doctorates,
- having 77 per cent of graduating students being employed in the Australian seafood industry, or in research,
- having PhDs being completed with the Seafood CRC by three Honours students and three Masters-by-research students,
- industry participating as a co-supervisor for 35 per cent of student projects,
- seafood industry employing 14 PhD and MSc students while they are undertaking their study.

During the year, participants in the Seafood CRC unanimously agreed to seek a one-year extension from the responsible Commonwealth Department of Industry, Innovation, Science, Research and Tertiary Education. This extension was sought to improve the impact of proposed legacy projects.

LOOKING IN—THE INTERNAL OPERATING ENVIRONMENT

The FRDC Board is responsible for governance of the Corporation and sets its strategic direction. During 2012–13 the focus of the FRDC Board was on:

- implementing the National Primary Industries Research, Development and Extension Framework,
- developing strategic investment options to ensure delivery of outcomes against the FRDC's RD&E Plan 2010–2015,
- responding to findings of the Productivity Commission's inquiry into the RDCs and implementing the Rural Research and Development Policy Statement,
- developing a plan to improve the perception of the fishing industry by making research results more publicly available and addressing factually incorrect media (and similar) reports.

The Board met five times during the year, with a number of meetings held in fishing ports around the country. The Board considers it essential to visit the key fishing regions to gain first hand feedback and an appreciation of the main issues that commercial and recreational fishers are facing. Regions visited were south Queensland, northern New South Wales and the east coast of Tasmania.

NEW faces on the FRDC Board

Three new directors were appointed to the FRDC Board in September 2012 by the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig. The Board, chaired by the Hon. Harry Woods, welcomes Dr Bruce Mapstone, Dr Peter O'Brien and David Thomason (pictured above) who join Heather Brayford, Renata Brooks and Brett McCallum who were reappointed. Immediate past members are Dr Daryl McPhee, Stuart Richey AM, Professor Keith Sainsbury and Richard Stevens OAM.

The Board was selected under a process established by the PIERD Act. Appendix G provides the Selection Committee's report of the process.

STRATEGY to promote science and best practice

In November 2011, the FRDC Board endorsed developing a strategy to promote the science and best practice that underpins the Australian seafood and angling industry, and to work with stakeholders to implement that strategy. The strategy aims to respond to poor community perception of the seafood industry by pro-actively promoting the results of research to the Australian community, media outlets and seafood consumers, and to formally respond to factually incorrect media stories, or information in the public arena.

The strategy continued in 2012–13 (some 18 months) and has delivered a range of outcomes including responding to inaccurate media articles about the Australian seafood industry and generating new information sources including the seafood consumer education site—**fishfiles.com.au**.

In addition, a number of projects have been implemented that support the strategy, '2011/502—Status of key Australian fish stocks reports', '2012/301—Let's Talk Fish: Assisting industry to influence conversations about the sustainability of wild-catch fishing', '2011/400—Improving two-way communication industry bodies of the fishing and seafood industry', and '2011/409—Strategic media training for the Australian seafood industry'.

PEOPLE development

In December 2012, the FRDC completed a review of its five-year (2008–13) People development program which supports the ongoing investment in people development with a focus on integrating it with FRDC's existing program areas of environment, industry and communities, and extension and adoption.

A new 'People development plan' has been developed taking into consideration the recommendations of the review. The plan will run for two years (2013–15) which will allow these activities to align with the FRDC's five-year strategic RD&E plan.

While the goal is to integrate people development with the FRDC's other planning structures, the evidence shows that at this time a dedicated program is still needed. This approach is consistent with findings from other RDCs, and supports the government's capacity building priorities.

It also means that investment will need to continue to be delivered through a combination of FRDC's various funding rounds, and FRDC-initiated activities, as per the FRDC RD&E Investment Framework Policy.

CLIMATE change

The FRDC created a coordinated funding program to enhance the fishing industry's capacity to adapt, mitigate against, and take advantage of further climate change. The FRDC's investment in climate-related research over the last three years exceeds $10 million. This has been achieved through co-investment from DAFF and the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (formerly the Department of Climate Change and Energy Efficiency).

The climate change research program will be completed by September 2013. A series of extension activities are planned to ensure results are efficiently and effectively communicated to stakeholders.

PERFORMANCE evaluation

The FRDC started undertaking economic evaluations of randomly selected clusters of FRDC project investments in 2010. Projects were grouped into clusters that focused on a similar issue, i.e. supply chains or genetics. In total, 25 clusters were reviewed using benefit cost analyses over two years. These evaluations are available on the FRDC website at http://frdc.com.au/research/benefits_of_research/Pages/default.aspx

In 2012–13, the next phase of FRDC project evaluations was completed. Eight clusters were evaluated from the following themes:

- one cluster from Theme 1 (Biosecurity and animal health),
- two clusters from Theme 2 (Habitat and ecosystem protection),
- one cluster from Theme 11 (Leadership development),
- one cluster from Theme 12 (Workforce development),
- two clusters from Theme 13 (Innovation skills), and
- one cluster from Theme 14 (Extension and adoption).

The majority of benefits identified from a total of 173 projects were economic in nature although significant numbers of environmental and social/community benefits were also identified. The major beneficiary from the impacts of the eight clusters of research investment has been the fishing industry (56 per cent of benefits identified), with 44 per cent of the identified benefits being public in nature. The results demonstrate the significant spillover of these benefits to the public sector.

When all eight clusters are aggregated, the benefit cost ratio for the $99.3 million investment (FRDC and partners) is 2.5:1, with present value benefits of $251.7 million and net present values of $152.4 million. FRDC's component comprised $32.9 million in present value terms with a net present value of $48 million.

The analysis was undertaken by Agtrans Research (economics consultants and strategic policy advisors). Summaries of five completed benefit cost analyses are on pages 45, 60, 66, 76 and 85.

THANK you

Continued support from the Australian Government and industry stakeholders across the three diverse sectors has been greatly appreciated by the Board over the last 12 months. Government and industry have high regard for the FRDC, and this has been critical in ensuring high quality research outcomes. The Board is committed to working in an open and constructive way with all of our stakeholders.

The FRDC Board thanks its four representative organisations for their continued strong support. The Corporation is dependent on the support of numerous bodies and agencies for its success, these include:

- representative and peak industry bodies and members (including recreational and indigenous),
- Commonwealth, state and territory fisheries management and research agencies,
- Fisheries Research Advisory Bodies,
- FRDC subprogram and coordination program leaders and their committees,
- Seafood CRC.

The dedication and passion of FRDC staff is critical to the Corporation's success, and the Board is very thankful for this. The Board would welcome your feedback and invites you to contact any director after reading this annual report.

SIGNIFICANT events after 30 June 2013

FRDC Chair re-appointed

On 27 July, the new Minister for Agriculture, Fisheries and Forestry is the Hon. Joel Fitzgibbon MP who confirmed the re-appointment of the Hon. Harry Woods as the FRDC Chair for a further three years.

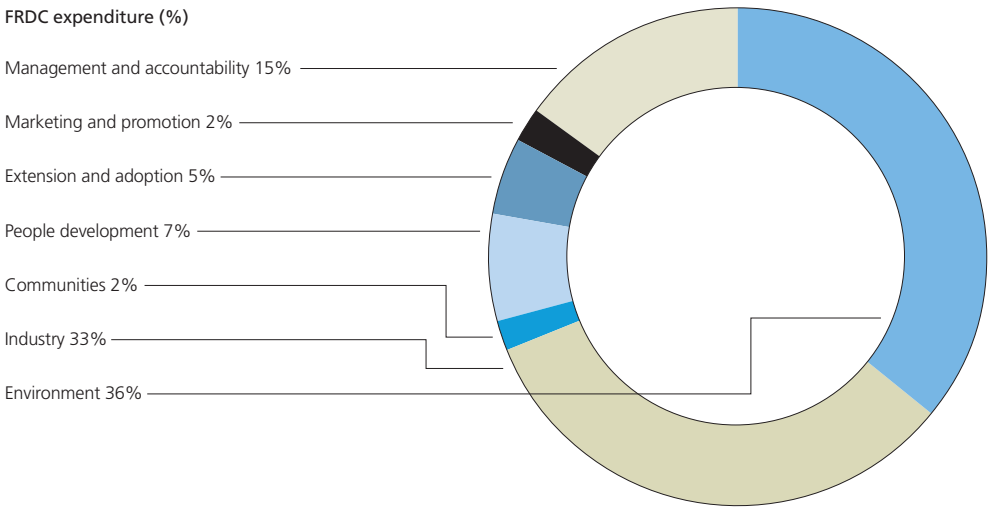
Closure of Seafood Services Australia

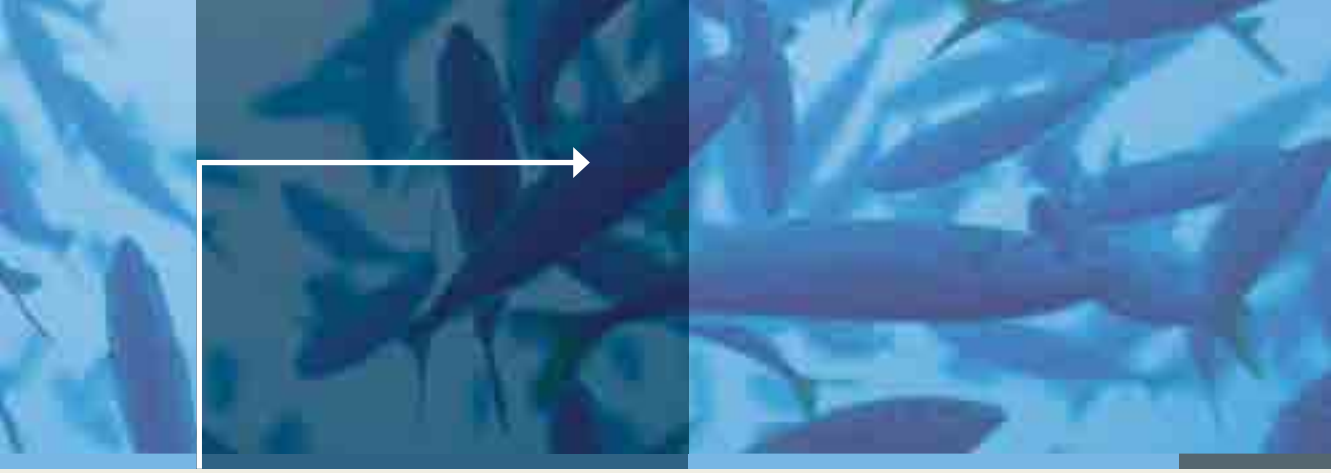
Seafood Services Australia (SSA) announced on 22 July that it would cease trading and close its doors. This decision was reached after long and serious consideration by the SSA Board and its members. Following the announcement the primary focus was to ensure FRDC-funded projects with SSA were transitioned to other organisations to be completed.

SSA was established in 2001 by the FRDC and the Australian seafood industry as a not-for-profit organisation that aimed to enhance the profitability, international competitiveness, sustainability and resilience of the seafood industry.

ANNUAL OPERATIONAL PLAN 2013–14 BUDGET

REVENUE	$	%	$
Total revenues from the Australian Government		**64.0**	**17,291,815**
Australian Government 0.50% AGVP	11,527,877	67.0	
Australian Government matching of industry contributions	5,763,938	33.0	
Sub-total	17,291,815	100.0	
Contributions revenue from the jurisdictions	7,929,842	**29.0**	
Projects revenue from other parties	900,000	**3.5**	
Other revenue	395,000	**1.5**	
Marketing and promotion (project funds Seafood CRC)	500,000	**2.0**	
TOTAL REVENUE			27,016,657
EXPENDITURE	**$**	**%**	**$**
Projects expenditure		**84.0**	**22,567,000**
Environment	9,703,810	43.0	
Industry	9,026,800	40.0	
Communities	451,340	2.0	
People development	2,031,030	9.0	
Extension and adoption	1,354,020	6.0	
Sub-total	22,567,000	100.0	
Marketing and promotion expenditure		**1.7**	**460,000**
Seafood image (project funds Seafood CRC)	110,000	70.0	
Seafood markets (project funds Seafood CRC)	300,000	20.0	
Seafood trade and market access (project funds Seafood CRC)	50,000	10.0	
Sub-total	400,000	100.0	
Management and accountability		**14.7**	**3,987,423**
TOTAL EXPENDITURE			27,014,424
NET RESULT FOR THE YEAR			**2,234**





PRIORITIES FOR 2013–14

Development of a National Fisheries Standard—Fisheries management in Australia is administered across multiple jurisdictions. The development of a national management standard seeks to provide a best practice framework for management across all these jurisdictions, reducing duplication and improving efficiency. Progression of harmonised harvest and bycatch strategies, as well the development of the second Status of Key Australian Fish Stocks Reports, will help underpin the development of the national fisheries management standard.

Improving profitability and understanding value—FRDC's investment aims to optimise the use of wild-catch fisheries resources, and increase capacity in the aquaculture sector. A number of social science research projects will look to define the values the Australian community place on, or associate with, seafood and the fishing industry. The results will be incorporated into other areas of research being carried out by the Seafood CRC who (with the FRDC) is looking to improve seafood products, retail supply chains and overall consumption.

The FRDC will fund work on trade and market access issues in a number of international markets, including China and the European Union to assist Australian industry access these markets in a more efficient way.

Bycatch—Mitigation of incidental catch of threatened, endangered or protected (TEP) species will continue to be an area where investments are made. A key area of research is to reduce the interaction between certain gear types and TEP species, including sharks, cetaceans, pinnipeds and seabirds. FRDC will also provide input and advice into the DAFF review of the Commonwealth Policy on Fisheries Bycatch.

Climate change—The FRDC has created a coordinated funding program to enhance the fishing industry's capacity to adapt, mitigate against, and take advantage of future climate change. The climate change research program will be completed by September 2013 with a series of extension activities being planned to ensure results are efficiently and effectively communicated to stakeholders. The program partners are DAFF, and the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, and participating state government agencies.

People development—During the course of the year a range of opportunities to develop skills and share knowledge will be provided including a visiting experts program, travel awards and conferences. FRDC will enhance the opportunities for young industry members and government participants to build their leadership capabilities.

Resource access and allocation—Methods will be explored for incorporating spatial management into fishery management arrangements (including harvest strategies) and developing improved data collection techniques for recreational fishers relevant to resource-sharing. New techniques for collecting fine-scale recreational catch data will be trialled and this work will also look at ways to identify and value, commercial and recreational fishing activities.

Enhance the value from customary fishing—The Indigenous Fisheries Reference Group will assist the FRDC to gain feedback and input into management, planning and project assessment that focuses on indigenous fishing and seafood-related issues. The FRDC has a number of projects to find ways that will improve consultation between representatives of the indigenous community and other fishing sectors.

Extension and adoption—The FRDC will look to apply the key principles of the National Fishing and Aquaculture Extension and Adoption Strategy. A focus will be on improving how researchers incorporate extension into the development of research project applications, with a view to planning for better uptake of the research outputs and transference of knowledge to stakeholders.

Marketing and promotion—The release of the government's Rural Research and Development Policy Statement indicated that changes to the PIERD Act would allow the RDCs to undertake marketing and promotion activities. Foreshadowing these changes, the FRDC will begin preparations to put in place the necessary processes and resources to carry out marketing and promotion activities as required by industry.

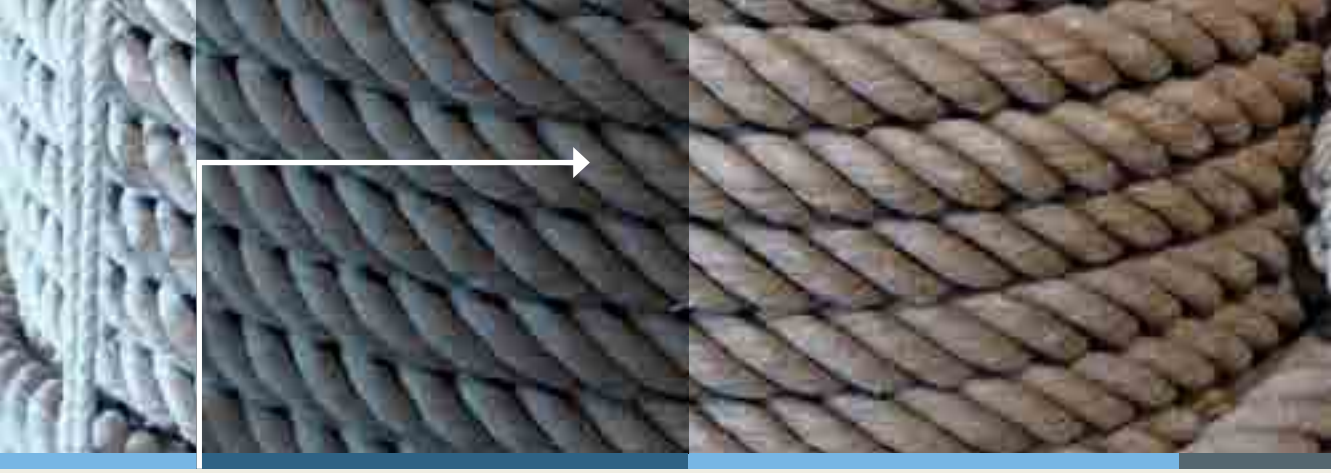
The timing and start of these activities will be entirely dependent on changes to the PIERD Act passing through parliament and industry agreeing to contribute to them.

Joint Rural Research and Development Council and government initiatives

National Fishing and Aquaculture RD&E Strategy—The FRDC will continue to take a lead role in implementing the strategy. It will work in partnership with the AFMF and FRDC's representative bodies to advance funding and management arrangements within a regional and national approach.

Shared services—In partnership with other RDCs, FRDC is working to share services to reduce administrative costs and ensure efficient delivery of RD&E investment. In line with this, the FRDC will have shared office space with Horticulture Australia for its out-posted staff.

Rural Research and Development Policy Statement—The FRDC will work with the Australian Government to implement any changes that are made to the operation of the RDCs to align with government policy.



RELATIONSHIPS WITH STAKEHOLDERS

The FRDC's business revolves around its stakeholders. The priorities of its two biggest stakeholders (industry and government on behalf of the Australian community) set the direction of FRDC's investment framework and priority setting. Our researcher partners are vital to its delivery of research outputs and outcomes. The FRDC also engages with stakeholders and the community on fisheries science, management, policy and social issues and providing advice based on its knowledge base.

The FRDC values maintaining good working relationships with its stakeholders. It formally monitors and surveys the relationships (approximately every two years) to gain feedback on how effectively the Corporation is performing, and to determine areas that require action.

In the coming year, the FRDC will continue to work with its stakeholders and partners.

Industry stakeholder research priorities

One of the primary challenges for the FRDC is to gain a solid understanding of the needs and priorities of its industry stakeholders—many of whom come from a diverse range of sectors and operations. FRDC in assisting with developing the National Fishing and Aquaculture RD&E Strategy and its RD&E plan has consulted widely with most of these groups. In addition, the FRDC has undertaken industry research to build on this knowledge. While there are common, national issues, each sector faces unique challenges and has specific RD&E needs, and these vary around Australia.

To ensure a balanced portfolio, and to align with industry research priorities, the majority of project applications are developed and reviewed by the FRABs. The FRDC tries to ensure, where possible, that industry and management are directly engaged and integrated into the delivery of every project.

Australian Government

The Minister for Agriculture, Fisheries and Forestry is integral to the running of the FRDC. The Minister, the Parliamentary Secretary and the Department outline the areas, or priorities, that need to be addressed from a government perspective. The Department acts as the day-to-day policy intermediary between the Minister's office and the FRDC. The Australian Fisheries Management Authority and the Department of Sustainability, Environment, Water, Population and Communities also play an important role in contributing to research priorities.

Fishing and Aquaculture RD&E Strategy Governance Committee

The FRDC has worked closely with key stakeholders to develop, and now implement, the National Fishing and Aquaculture RD&E Strategy. A key component is the development of the Fishing and Aquaculture RD&E Strategy Governance Committee (the Committee), a Research Providers Network and an Extension and Adoption Working Group. Over the coming year these three groups under the direction of the Committee will meet and focus on developing the major–support–link framework and governance arrangements to improve RD&E for the fishing and aquaculture industries.

Australian Fisheries Management Forum

The Forum comprises the heads/CEOs of the Commonwealth, state and territory government agencies responsible for the management of fisheries. AFMF discusses issues relating to fisheries and aquaculture management.

The FRDC understands that adoption of research outputs by management agencies is a key to optimising management outcomes. It will continue to work with the Forum, sitting as an invited representative at their meetings, providing advice and ensuring their priorities are incorporated into RD&E planning processes.

Consultation with representative organisations

The FRDC consults with four representative organisations, with the National Seafood Industry Alliance gazetted as a representative body to the FRDC in 2011. The organisations are:

- Australian Recreational and Sport Fishing Industry Confederation Inc. (trading as Recfish Australia),
- National Aquaculture Council Inc.
- Commonwealth Fisheries Association Inc.
- National Seafood Industry Alliance.

Consultation with levy organisations—Australian Prawn Farmers Association

The FRDC administers a R&D levy on behalf of the Australian Prawn Farmers' Association (APFA). The levy is collected by the Levies Revenue Service (LRS) of DAFF. An administration cost is charged by LRS to manage the levy. In the coming year it is not expected that any overpayments will occur.

The FRDC's investments in prawn farming R&D is driven by APFA's RD&E plan, with APFA nominating that most of its investment is to be through co-investment with the Seafood CRC. The FRDC and APFA enjoy a very close working relationship with APFA having a lead role with FRDC in ensuring its priorities are met. The table below outlines the financial record of the relationship.

Year	2010–11	2011–12	2012–13
APFA contribution	$176,932	$165,606	$127,232
FRDC expenditure on projects	$178,880	$263,623	$230,582

FRDC is investing with APFA in:

- research that improves the price per kilogram,
- research that improves the growth per week,
- research that helps to reduce the cost of feed.

Sector industry bodies

The FRDC has continued its close relationship with the National Seafood Industry Alliance (NSIA). The NSIA represents the commercial fishing, pearling and aquaculture industries through state industry councils and peak sector associations.

The FRDC will build upon the partnerships established with individual industry sectors, such as Southern Rocklobster Ltd, Australian Southern Bluefin Tuna Industry Association, Tasmanian Salmonid Growers' Association, Australian Pearl Producers and both the Prawn and Barramundi Farmers' Associations in funding research priorities that are required and co-funded by their sectors.

Rural research and development corporations

The FRDC will continue partnerships with other RDCs on a range of activities to enhance joint strategic outcomes. Most significant of these include climate change, evaluation of RD&E, and the 'Appetite for Excellence' primary producer's tour—a chef, waiter and restaurateur competition.

Not only will the FRDC partner other RDCs at the project level, but it will also work more broadly to collaborate in functional areas. The FRDC will continue to attend meetings of the Council of Rural Research and Development Corporations, as well as meetings of executive directors, business managers and communications managers. In conjunction with the other RDCs, the FRDC will assist in coordinating sponsorship and participate in events such as the *Outlook* and producer conferences. Additionally, the FRDC will continue to provide advice and services in relation to project management and the FRDC's project management software—OmniFish.

Seafood CRC

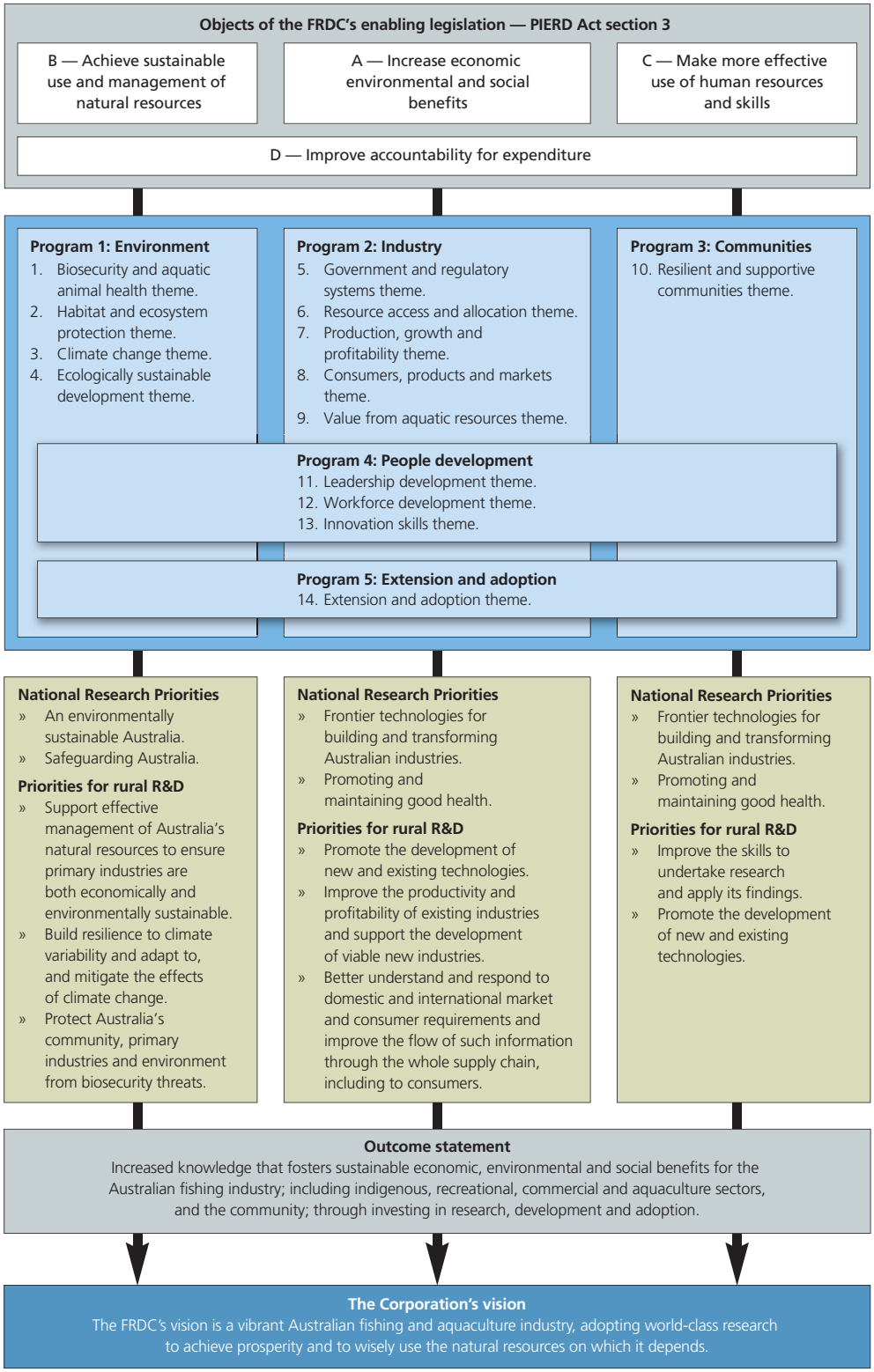
The FRDC is a core participant of the Seafood CRC whose research program aims to increase the profitability and value of the Australian seafood industry, increase access to premium markets and increase demand for Australian seafood. These priorities are aligned with FRDC's R&D programs, in particular Program 2: Industry. This partnership provides a mechanism for the FRDC to extend RD&E along the value chain and enhance the focus on development activities.

Research partners

Investment in research is the FRDC's core business. As a result, it is vital to the FRDC's success that good relationships are built and maintained with its research partners. In any given year, FRDC will have under management around 300 active projects. The key research partners are:

- the Department of Agriculture, Fisheries and Forestry (DAFF),
- the Australian Fisheries Management Authority (AFMA),
- state/territory fisheries research centres,
- Commonwealth Scientific and Industrial Research Organisation (CSIRO),
- universities,
- cooperative research centres (CRCs),
- other rural RDCs and companies,
- industry groups,
- co-investors from the private sector.

FIGURE 1: THE FRDC'S FRAMEWORK FOR INTEGRATING LEGISLATIVE, GOVERNMENT AND INDUSTRY PRIORITIES



THE PLANNED OUTCOME FOR THE CORPORATION

Increased knowledge that fosters sustainable economic, environmental and social benefits for the Australian fishing industry, including indigenous, recreational, commercial and aquaculture sectors, and the community, through investing in research, development and adoption.

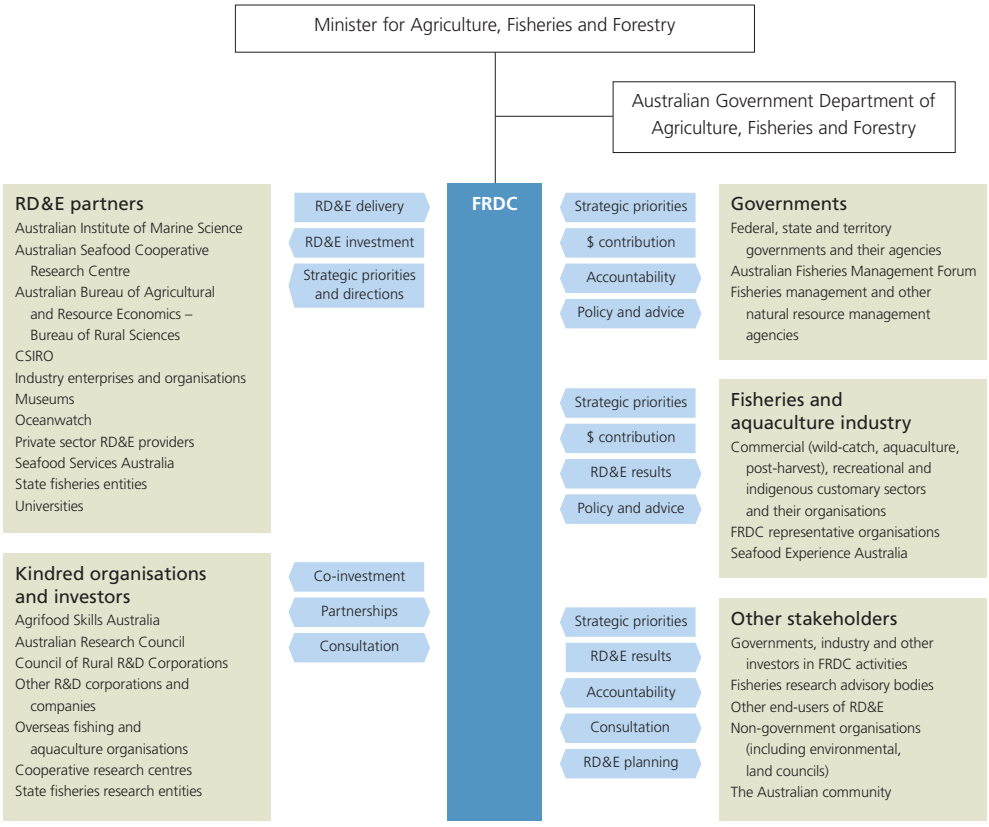
THE Corporation's vision

The vision of the FRDC is a vibrant Australian fishing and aquaculture industry, supporting and adopting world-class research to achieve prosperity, and wisely using the natural resources on which it depends.

FRDC'S stakeholders

Stakeholders in the FRDC are the fishing industry and the Australian Government. There are many other partners, collaborators, beneficiaries and interest groups who influence the FRDC in its priority setting processes, and assist in the conduct of its business and the adoption of its RD&E. These arrangements are addressed in this report. In addition the legislation recognises that the people of Australia ultimately are the principal beneficiaries of much of the work of the FRDC.

FIGURE 2: THE FRDC'S STAKEHOLDER FRAMEWORK



Not all entities involved with the FRDC are shown. For simplicity, only the relationships between the FRDC and other entities are shown—not relationships between those entities. Many of the entities have multiple relationships with the FRDC, for example, CSIRO is a co-investor and a research provider.


VESTIGATOR

NATIONAL PRIMARY INDUSTRIES RESEARCH, DEVELOPMENT AND EXTENSION FRAMEWORK OVERVIEW

The Australian, state and Northern Territory Governments, rural RDCs, CSIRO, and universities are jointly developing the National Primary Industries Research, Development and Extension Framework to encourage greater collaboration and promote continuous improvement in the investment of RD&E resources nationally. This is an initiative of the Standing Council on Primary Industries and supported by the Primary Industries Standing Committee.

Under the framework are 14 sector strategies and eight cross-sector strategies. The National Fishing and Aquaculture RD&E Strategy was endorsed by ministers at the Primary Industries Ministerial Council on 23 April 2010 (see http://www.npirdef.org/). Implementation of this strategy is being led by the Strategy Governance Committee, and supported through a Research Providers Network and an Extension Working Group.

NATIONAL Fishing and Aquaculture RD&E Strategy

The establishment of the National Fishing and Aquaculture RD&E Strategy in 2010 provided direction to improve the focus, efficiency and effectiveness of RD&E to support Australia's fishing and aquaculture industry.

It was acknowledged in the development of the strategy that the existing RD&E system was characterised by fragmented planning processes, and lack of focus on national issues. With no common forum for stakeholders to work together on RD&E, the system contributed to confusion, competition, inefficient investment and suboptimal adoption rates.

Subsequent review of the strategy has made it clear that there was a gap in articulating priorities for the indigenous sector, and a means for formal engagement at a national level. National priorities have now been articulated via a national Indigenous Reference Group, and FRABs and research hubs have been asked to consider these in their future planning.

| | STRATEGY Governance Committee

The Strategy Governance Committee is charged with setting and reviewing national priorities. As the committee establishes credibility with its stakeholders it is likely to develop as the forum to obtain national synthesis of strategic issues. In setting its RD&E priorities, the FRDC synthesises information from various sources. With membership of the committee including the FRDC, industry and government, this body can develop as a key group to advise the FRDC in its investment planning to address cross-jurisdictional issues and assist setting priorities.

| | RESEARCH Providers Network

The Research Providers Network has established three regional research hubs, that recognise the significant differences in the habitat, species distribution, and aquaculture in different parts of Australia. These are the south-eastern, south-western and northern hubs. There is also an aquatic biosecurity and health hub, which operates across all regions.

The network responds to the strategy's RD&E plan, leading efforts to address R&D priorities. The network hub approach adopts the major–support–link concept, whereby agencies with acknowledged capability in a particular R&D field or sector are assigned 'major' status and take a lead role in related research. Other agencies with lesser capability, but with a strategic interest, take a 'support' role, while agencies without R&D capability in that field, but who still require R&D play a 'link' role. Major providers may be a lead agency within a formal or informal partnership that collectively applies capability to deliver research. Under the structure, research funds will generally be guided to 'major' providers, where capability and commitment are located.

The relationship between FRDC's FRABs and their relevant hub(s) needs to be strengthened to ensure there is timely dialogue so applications are developed that address regional priorities as well as jurisdictional ones. Hubs are advised of the FRDC call for expressions of interest via the FRABs, and then teams will work with the relevant FRAB or subprograms/coordination programs to shape the application.

The deliberations of the Research Providers Network and hubs have been a positive process that has engendered goodwill and collegiality. The approach to determine major–support–link has been through pursuing coordination and collaboration at the regional and national level. Enhanced regional approaches are being realised and efficiencies are being gained through greater collaboration. FRDC's commitment to the strategy has resulted in improved efficiencies in planning through less fragmented advice. It is anticipated that the FRDC and its stakeholders will derive further benefits from a more consolidated approach to planning, consultation and investment.

Southern monitoring

In the south-eastern region, the Department of Environment and Primary Industries Victoria, and the South Australian Research and Development Institute (SARDI) have established an aquatic sciences alliance, as part of the major–support–link strategy.

Through this alliance, SARDI now oversees monitoring and stock assessments for both South Australian and Victorian populations for Southern Rocklobster (*Jasus edwardsii*) and Giant Crab (*Pseudocarcinus gigas*). This makes sense biologically and geographically, given the similarities in the monitoring and assessment requirements of both species between the two states. It will allow population indicators, such as rocklobster puerulus settlement to be directly compared across a larger spatial scale, leading to greater certainty in decision making. The project includes managing fishery field operations and data collection, as well as data analysis and modelling for consideration in setting harvest quotas. There will also be cost savings for both governments because of the greater economies of scale.

SARDI has been nominated as a 'major' research provider in the south-east region. This means the organisation can confidently commit resources to build particular areas of expertise, and increases the potential to deliver on identified research priorities.

| | EXTENSION Working Group

The Fisheries and Aquaculture Extension and Adoption (E&A) Strategy was completed in 2012 and endorsed by the Strategy Governance Committee. The objective of the E&A strategy is to improve the capacity for extension and achieve improved adoption rates in the Australian fishing and aquaculture sector to maximise RD&E outcomes for all. The strategy describes the framework for E&A based on research and experience, highlighting the key factors that can enable effective E&A. It is important to note the strategy does not assign responsibility to any particular organisation for the provision of an activity or service, it merely highlights the area and opportunity.

FRDC engagement in national cross-sectorial strategies

Animal Biosecurity RD&E Strategy—Priority: Medium

The development of the animal biosecurity strategy is being led by Animal Health Australia. The strategy has a strong focus on terrestrial biosecurity, for example, ship ballast water is not within its scope. FRDC has participated in the meetings for development of this strategy. Biosecurity is a high priority for the fishing and aquaculture industry, and is addressed by theme one in the National Fishing and Aquaculture RD&E Strategy. By participating in this strategy development, our sector can ensure that RD&E areas in common can be identified and jointly addressed.

Animal Welfare RD&E Strategy—Priority: Medium

FRDC participates in the welfare strategy forums to ensure fish welfare issues are included in the strategy's implementation. The reason for FRDC's medium participation is because the major emphasis of this strategy is on terrestrial farming welfare issues. The main theme industry has nominated to be of interest is theme five 'public attitudes, social science and community'. FRDC has provided support for both commercial and recreational fishing industry experts to attend forum meetings. In partnership with DAFF, the FRDC is ensuring its RD&E investment is consistent both with this strategy, and the Australian Animal Welfare Strategy.

Climate Change Research Strategy for Primary Industries —Priority: Support via CCRSPI

The Climate Change Research Strategy for Primary Industries (CCRSPI) has been reviewed over the last 12 months. This was the first national cross-sectoral strategy that was approved. A revised strategy has been developed with input from all RDCs. FRDC takes a medium support role in this strategy as the strategy's primary focus is on terrestrial industries, in particular soil carbon and methane. FRDC has requested that blue carbon sequestration be included in the new strategy.

Food and Nutrition RD&E Strategy—Priority: High

CSIRO is taking the lead on the development of this new strategy and FRDC has participated in the planning meetings. The strategy is being developed to align with the proposed new National Food Plan. FRDC has provided a submission to the National Food Plan development process.

Biofuels and Bioenergy Strategy—Priority: Medium

FRDC has carriage on investment in microalgae RD&E for feed and human consumption. The Rural Industries Research and Development Corporation is taking the lead of this strategy. There are cross-over opportunities in technology between energy and food developments.

Plant Biosecurity RD&E Framework—Priority: Low relevance

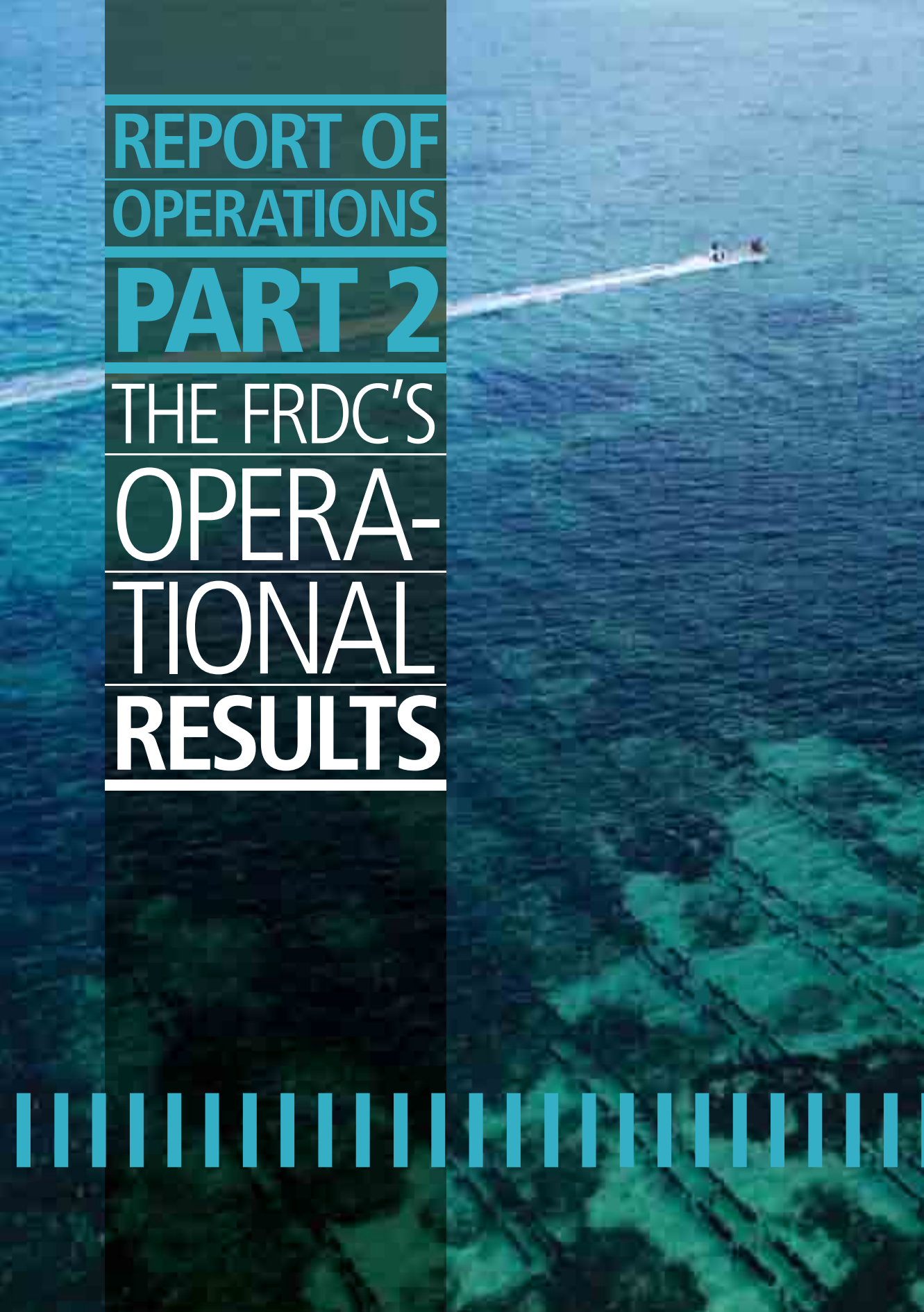
This strategy has little cross-over to the priorities of the fisheries and aquaculture sector.

Soils RD&E Strategy—Priority: Low relevance

This strategy has little cross-over to the priorities of the fisheries and aquaculture sector.

Water Use in Agriculture RD&E Strategy—Priority: Low relevance

This strategy has little cross-over to the priorities of the fisheries and aquaculture sector.



REPORT OF OPERATIONS PART 2

THE FRDC'S OPERATIONAL RESULTS

BUILDING BLOCKS FOR THE BIG PICTURE

REVIEWS ASSESS POLICY STRENGTHS AND GAPS

FRDC research codes: 2001/099, 2007/016, 2010/046, 2010/061, 2010/306, 2011/029, 2011/200, 2011/251, 2012/046, 2012/225, 2012/237

A review of fisheries management policies has identified opportunities for improvement in order to maximise the benefits and sustainability of our marine resources. While Australia's Commonwealth fisheries management policies are widely regarded as representing best practice, a lack of information, particularly for low-value fisheries and bycatch species, remains an ongoing challenge.

Comprehensive reviews of the Commonwealth Fisheries Harvest Strategy: Policy and Guidelines (2007) and the Commonwealth Policy on Fisheries Bycatch (2000) have been undertaken during the past year, with final reports released in May.

While both reviews report improved fisheries management outcomes as a result of the policies, they also provide suggestions for future improvements. Among these are:

- the need for greater transparency and stakeholder consultation,
- an extension of the policy framework to byproduct stocks,
- that discards of commercial and non-commercial species be constrained,
- the development of policy guidelines for bycatch management, improved performance assessment and monitoring,
- greater integration of the two policies.

In addition to the policy reviews, a third review of the Commonwealth fisheries legislation (the Fisheries Management Review) was undertaken by David Borthwick in late 2012.

Submissions to that review suggested that an explicit ecosystems policy along with an overarching fisheries policy framework could address identified policy gaps.

The overarching policy could describe the high-level objectives and principles for Commonwealth fisheries management and ensure that all species are appropriately managed, regardless of where they sit on the policy continuum from key commercial species to bycatch. It would also highlight the role of ecological risk assessment and ecological risk management in ecosystem-based fisheries management.

The harvest strategy and bycatch policies could then sit as individual components within the overarching framework that better describes how policies and procedures interact and relate to one another in a way that is clear to fisheries managers, users and the general community.

|| FIVE years on

The review of the harvest strategy policy has found that its implementation during the past five years had helped to improve the status and economic yield of many important Commonwealth fish stocks, while boosting Australia's reputation for good fisheries management.

DAFF led the review in consultation with a stakeholder advisory committee, resulting in the final report (May 2013) on the review of the Commonwealth Fisheries Harvest Strategy: Policy and Guidelines.

The review process included:

- stakeholder consultation and public submissions,
- a technical review of the science that underpins harvest strategies,
- comparison with international best practice harvest strategy settings,
- a review of harvest strategy implementation.

Advisory committee members included representatives from the commercial and recreational fishing sectors, environmental non-government organisations, CSIRO, government and the FRDC. DAFF also developed a discussion paper for public consultation, as part of the review process, and received submissions from a range of stakeholders, including those from the commercial and recreational fishing sectors, environmental non-government organisations, science providers and the general public.

The review found that the Commonwealth Fisheries Harvest Strategy: Policy and Guidelines met or exceeded world's best practice, and are widely regarded as being successful in optimising the benefits from harvesting Commonwealth marine resources. However, the report suggests that as fisheries management and science continue to develop, some aspects of the policy and guidelines could be further refined and updated to address existing weakness. These include harvest target and limit reference points, fisheries economics and management of data-poor stocks.

The report also suggests incorporating a more explicit statement in the policy, in line with ministerial directions, to cease overfishing, avoid other species becoming overfished in the short and long term, and recover overfished stocks to levels that will ensure long-term sustainability and productivity. While these requirements are reflected in the policy's approach, an explicit statement to this effect would be valuable.

The review found that AFMA has implemented harvest strategies consistent with the policy across most Commonwealth fisheries and that doing so in such a short period was a significant achievement. However, cost limitations, limited data availability or a need for further scientific development had made implementation of some policy aspects difficult in some fisheries. Cost recovery requirements had also limited the effort that can be put into managing small and less valuable fisheries.

The review identified that harvest strategy settings and performance were not always well understood by stakeholders. Greater consultation during the development of non-technical elements of harvest strategies, such as including high-level aspects of harvest strategies in management plans, might help improve understanding. The policy could also benefit from the development of practical and cost-effective performance indicators and a reporting regime on the implementation and performance of harvest strategies, developed in consultation with stakeholders.

"The information to support this will generally already be available in many fisheries and should be incorporated in any new reporting systems to avoid unreasonable reporting burden," the report says.

|| SCIENCE and implementation

The technical review of the science and economics that underpin the harvest strategy policy and harvest strategy settings was jointly funded by the FRDC and DAFF and carried out by CSIRO and ABARES.

The science review considered matters such as:

- reference points appropriate to life-history characteristics,
- buffered targets and meta-rules,
- data-poor fisheries and tiered harvest strategies,
- total allowable catch (TAC) settings and multi-year TACs,
- rebuilding strategies and TACs for bycatch-only species,
- spatial management and meta-rules.

The review identified potential improvements, many of which relate to the implementation guidelines, as a result of the experience accumulated in developing and implementing the existing harvest strategies, and from improvements in stock assessment and management strategy methodology.

The economic review considered how the aim of maximising economic returns in the harvest strategy policy has been, or could be, better incorporated into daily operations across Commonwealth fisheries.

| | BYCATCH defined

DAFF also led the bycatch policy review, in conjunction with ABARES. The report (April 2013) on the review of the Commonwealth Policy on Fisheries Bycatch suggested that a new definition for the term 'bycatch' is needed. It acknowledged that 'bycatch, byproduct and discards' have been interpreted differently under the current policy framework, with sometimes poorly defined and interchangeable terms.

The new definition suggested is: Species that physically interact with fishing vessels and/or fishing gear and which are not usually kept by commercial fishers. The report says this more clearly identified what components of a commercial fishing catch are managed under the bycatch policy and what would be managed under another harvest strategy policy or any potential ecosystem policy.

Stakeholders also raised the lack of baseline and ongoing performance data as an issue in monitoring the success of the bycatch policy.

The review found that there was substantial anecdotal evidence to show that efforts by AFMA and the fishing industry were helping to meet the policy objectives. However, there was no program of agreed performance measures or monitoring and assessment of the various mitigation measures adopted since the policy was implemented. This made it difficult to determine how effective the various mitigation measures were and whether some were more successful than others. The review has also suggested strengthening the policy objectives as part of guidelines for implementation.

All stakeholders agreed that a revised bycatch policy was needed and that it should reflect Australia's domestic and international obligations, providing a more accountable approach for future bycatch management in Commonwealth fisheries. It should include implementation guidelines and improved performance monitoring, with practical and cost-effective management. DAFF has indicated that any revision to either the harvest strategy policy or bycatch policy will be subject to further consultation with stakeholders and fisheries experts.

For further information: http://daff.gov.au/fisheries/domestic/harvest_strategy_policy/review, http://daff.gov.au/fisheries/environment/bycatch/review

NATIONAL MODEL GUIDES HARVEST STRATEGIES

FRDC research code: 2010/061

Underpinning the high level of confidence in Australia's fishing practices is the substantial effort put into developing the best possible policy and reporting frameworks.

One component required for good fisheries management is good data collection and reporting of stock status. In December 2012, *The status of key Australian fish stocks reports*, which involved more than 80 fishery scientists and managers, was released. This was the first time that data from all Australian jurisdictions had been brought together in a single, consistent document for direct comparison and analysis.

Other important components of effective fisheries management include the processes for making decisions on harvests and the impact on ecosystems. The Commonwealth Policy on Fisheries Bycatch and Commonwealth Fisheries Harvest Strategy: Policy and Guidelines have recently been reviewed in the process of ongoing improvement.

As with stock status reporting, harvest strategies have varied widely across Australia in their form and application from fishery to fishery and jurisdiction to jurisdiction. AFMF identified the need for a coordinated, nationally consistent approach to harvest strategy development across all fisheries management jurisdictions.

As a result, the project 'National guidelines to develop fishery harvest strategies' was developed. The project was led by Sean Sloan, director of fisheries and aquaculture policy at the Department of Primary Industries and Regions South Australia (PIRSA), and supported by the FRDC. The aim was to establish a framework and guidelines for fishery harvest strategies that could be applied in all jurisdictions.

The new guidelines allow for the creation of harvest strategies across the full range of fisheries. They provide practical assistance to help overcome challenges such as multi-jurisdictional, data-poor, recreational and customary fisheries that may have made it difficult to develop and implement harvest plans in the past.

Harvest strategies help fisheries respond to the increased community concern about fishing harvests. Well-designed harvest strategies ensure that catches are managed to ensure sustainability and to maximise economic performance, social outcomes and fishing experiences. The reference points and decision-rules in a well-constructed harvest strategy ensure that catches are set objectively, using the best available science, and are less able to be influenced by external pressures.

The existence of an effective harvest strategy ensures that fishery management agencies and key stakeholder groups think about and document how they will respond to various fishery conditions, before they occur, to provide for greater certainty and to avoid ad-hoc decision making.

In its simplest form, a harvest strategy provides a formal and structured framework to guide fishery management decision-making processes to assist in achieving fisheries management objectives. A harvest strategy brings together all of the key elements and management functions used to make decisions about the level of fishing that should be applied to a fish stock or a fisheries management unit to maximise the likelihood of achieving ecological, economic and social objectives.

A set of national harvest strategy guidelines in place helps to build consistency and a clearer understanding among all jurisdictions, by providing definitions, a common language and important contextual information for everyone to use. This is particularly important when a fishery straddles several different jurisdictions, each with a different approach to managing its resources.

Although the National Fishery Harvest Strategy Guidelines are voluntary, they have been endorsed by the AFMF as a set of best practice guidelines for future ratification by fisheries ministers through the Primary Industries Standing Committee.

The guidelines identify the key components of a harvest strategy, the design principles that should be applied when catering to specific fisheries and the key process steps that should be followed when developing a harvest strategy. A harvest strategy should include:

- defined operational objectives for the fishery,
- indicators of fishery performance related to the objectives,
- a statement defining acceptable levels of risk to achieving the objectives,
- reference points for performance indicators,
- a monitoring strategy to collect relevant data to assess fishery performance,
- a process for conducting assessment of fishery performance relative to objectives,
- decision rules that control the intensity of fishing activities and/or catch.

Although the basic design characteristics are common to all fisheries, it is important to pinpoint specific issues for individual fisheries and modify the harvest strategy accordingly.

| | RECOGNISING differences

To see how some existing harvest strategies stack up against the new guidelines, a few examples were documented, including for the South East Trawl Fishery (Blue Grenadier), the Southern Squid Jig Fishery and the South Australian Rocklobster and Pipi fisheries. The existing harvest strategies for these fisheries are substantially different—mostly because different levels of data are available in these fisheries. It highlights the need to tailor harvest strategies to specific fisheries and that is not possible to do without perfect data or significant resources.

Blue Grenadier stocks are annually monitored through industry-based acoustic surveys, which provide estimates of biomass. In contrast, there are no biomass estimates for the stocks of Gould's Squid. Consequently, the Blue Grenadier total allowable catch is based on percentages of the carefully calculated unfished spawning biomass, while for Gould's Squid, catch limits and effort triggers are defined by recent catch history.

The research shows all Australian jurisdictions apply elements of harvest strategies in varying degrees. Most jurisdictions use harvest strategies but there is little consistency in their development, application or the definitions and language being used.

At a national level, most stock assessments feeding into harvest strategies were found to be based on empirical evidence about stock status, with about 30 per cent of fisheries, species and stocks evaluated using quantitative stock assessment models. This demonstrates that effective harvest strategies do not rely on having complex (and at times costly) mathematical stock assessment models. They can be more cost effective to construct and use. However, it is still useful to update the quantitative assessments regularly to make sure that harvest strategies are continuing to achieve their management objectives.

The broad principles established as part of the harvest strategy guidelines include:

- consistency with legislative objectives, including the principles of ecologically sustainable development,
- pragmatic and easy to understand,
- cost effective,
- transparent and inclusive,
- precautionary,
- adaptive.

Getting all jurisdictions to agree on the same guidelines was the most challenging part of the developing the guidelines. There were national technical workshops and wide industry consultation. A project working group involved a range technical experts from CSIRO, the University of Tasmania, PIRSA, Department of Environment and Primary Industries Victoria, DAFF and the Australian Southern Bluefin Tuna Industry Association.

The national guidelines have already informed reviews and development of policies in Victoria, Western Australia, South Australia and the Commonwealth.

|| SOUTH Australian Pipis a test case

The application of the new guidelines in the Pipi fishery in South Australia's Coorong region has provided a positive test case for the project. Commercial fishing for Pipi in this area caters to the recreational fishing bait market and the human-consumption market. For years, the groups focusing on these different markets within the industry had struggled to agree on a catch level for the fishery and the process for setting the catch level, and this had caused considerable angst within the industry over the key values to influence the setting of the total allowable commercial catch.

The new guidelines were used to develop a harvest strategy for the Pipi fishery. Once the Pipi harvest strategy was finalised and adopted it took all of the heat out of the annual catch setting process and made it easy for all involved to understand the key values driving a balanced decision and reach an agreement.

A well-constructed harvest strategy that is applied consistently can deliver significant benefits to managers, fishers and other key stakeholders. Knowing which criteria are used to set the annual catch quota helps fishers to make better business decisions for the future as they can predict how their catch allowance will vary in the next few years, in line with the harvest strategy.

When applied by Australian fisheries management agencies, the guidelines will provide greater certainty for commercial, recreational and customary fishers and other key stakeholders such as conservation groups, particularly in relation to the way in which fishery management agencies will respond when certain conditions (desirable or undesirable) arise in a fishery.

The next step is to develop more case studies to test the practical application of the guidelines.

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ASSESSING THE STATUS OF AUSTRALIA'S KEY FISH STOCKS

FRDC research code: 2011/513— The status of key Australian fish stocks reports 2012

The launch of *The status of key Australian fish stocks reports 2012* provides a single source of information about the state of our fish stocks for consumers and fisheries managers alike. It also provides the first national assessments of our wild-catch fish stocks, incorporating information from all eight fisheries management jurisdictions into a single set of reports.

The productivity and sustainability of wild-catch fisheries depends heavily on the state of wild fish stocks. A fundamental aim of fisheries management is to ensure that fish stocks are maintained at sustainable levels.

Australian marine fish stocks are managed by Commonwealth, state and territory jurisdictions. Traditionally each jurisdiction reports separately on the fish stocks and fisheries that they are responsible for. The jurisdictional reports vary in the scope and information included, with differences in terminology and benchmarking for stock status.

The *Status of key Australian fish stocks reports 2012* (SAFS) will provide a scientific resource for the general public, policy makers and industry on the sustainability of fish stocks. It has taken two years of collaborative effort from more than 80 marine scientists across state, territory and Commonwealth jurisdictions to complete the first series of assessments.

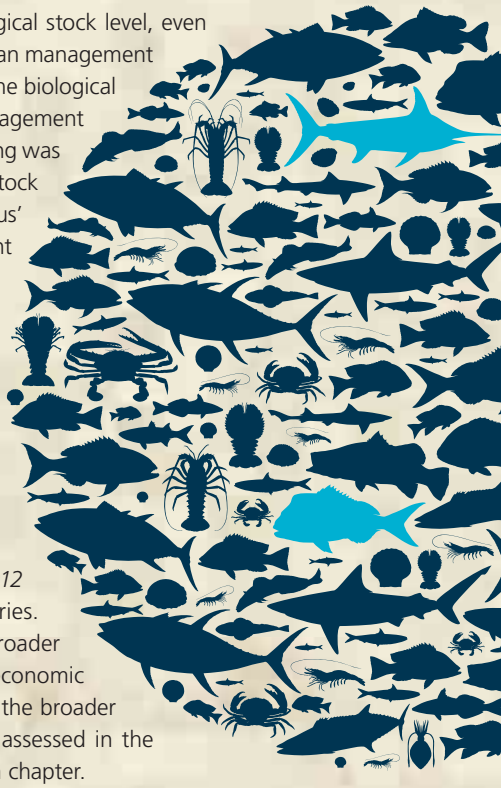
The reports bring together biological, catch and effort information to assess the stock status of the 49 key fish species (or species complexes) that contribute more than 80 per cent of the value of Australian wild-catch fisheries production and about 70 per cent of the annual catch. Australian waters support more than 4500 marine species, of which about 600 are commercially fished. The number of these species assessed is expected to increase in future editions of the reports.

TABLE 8: STOCK STATUS CLASSIFICATIONS SUMMARY

	Total stocks	Catch ('000 tonnes)	Percentage of catch reported in SAFS
Sustainable stock	98	109.8	90.6
Transitional–recovering stock ↑	8	0.9	0.7
Transitional–depleting stock ↓	3	0.8	0.7
Overfished stock	2	4.3	3.5
Undefined stock	39	5.4	4.5
Total	150	121.2	100.0

Fish do not recognise lines in the water and their population structure may be complex. The same fish species may be caught in several jurisdictions, in several fisheries and in some cases, outside Australian waters. The catch in these different jurisdictions may be from separate biological stocks that have little interaction, or may be from a single biological stock.

Wherever possible the reports provide classification at the biological stock level, even where biological stocks span the waters of more than one Australian management jurisdiction (i.e. shared stocks). This level of reporting recognises the biological boundaries of fish stocks rather than man-made boundaries of management units or jurisdictions. Management unit or jurisdiction level reporting was only used in cases where stock delineation was not known or stock numbers were very high. Within the reports the term 'stock status' is applied generically to the status of biological stocks, management units and populations assessed at the jurisdictional level.



A national approach to assessing and reporting on the status of fish stocks is critical to understanding the state of wild-catch fish stocks.

The Department of Sustainability, Environment, Water, Population and Communities report *Australia state of the environment 2011* identified the lack of a nationally integrated approach as inhibiting effective marine management.

The inaugural *Status of key Australian fish stocks reports 2012* focuses on the fish stocks that underpin our wild-catch fisheries. Future editions or companion reports are planned to provide broader assessments of Australian fisheries such as ecological impact, economic performance, management performance and social good. While the broader ecological effects of fishing, such as bycatch, are not formally assessed in the current edition of these reports, they are discussed briefly in each chapter.

The reports were initiated by the FRDC and ABARES. They have been produced in collaboration with government fishery research agencies in all Australian jurisdictions: the Institute for Marine and Antarctic Studies, Tasmania; the New South Wales Department of Primary Industries; the Department of Fisheries Western Australia; the Department of Primary Industry and Fisheries, Northern Territory; the Department of Environment and Primary Industries Victoria; the Department of Primary Industries and Regions, South Australia; SARDI; the Department of Agriculture, Fisheries and Forestry, Queensland; and CSIRO.

This is the first time that production of national reports on the status of fish stocks has been undertaken in Australia and is a major step forward for Australian fisheries management towards improving the transparency around fisheries reporting.

Species reports

The *Status of key Australian fish stocks reports 2012* consists of 49 separate chapters and assesses stock status based on data and information from 2010.

Each chapter includes information on the main fishing methods, management measures, number of vessels that catch the species and the amount of catch from commercial, recreational and indigenous fisheries. There is a summary of the possible environmental effects of fishing and the impact of environmental changes on the species. The key references on which assessments were based are also provided as background.

Assessment results

Across the 49 species, there were 150 stocks assessed (stock equals biological stock, management unit, or jurisdictional area). The same species may appear in more than one stock, management unit or jurisdiction.

For most of the assessments there was sufficient information to classify the stock status. However there were 39 'undefined stocks' (see table on previous page). Although all of the fisheries that take catch from these stocks have management systems in place, there was just not enough data available to make a definitive classification.

The 'undefined stock' classification does not necessarily mean the stock is at increased risk. It means that there is limited or conflicting information available to undertake the assessment. As a result managers take account of the uncertainty and put in place more conservative management strategies.

A significant outcome of the report is the identification of undefined stocks. This provides a clear road map for areas of future work for all stakeholders.

Within the reports two stocks were classified as 'overfished'—the Southern Bluefin Tuna stock and the School Shark stock. Since 2002 fisheries managers and industry have implemented changes to reduce School Shark catch and developed methods to monitor potential recovery. A global management procedure for Southern Bluefin Tuna was also adopted by the international Commission for the Conservation of Southern Bluefin Tuna in October 2011 and this is expected to help rebuild stocks by 2035 with 70 per cent certainty.

The *Status of key Australian fish stocks reports 2012* is the first step to a more comprehensive national reporting framework for Australian wild-catch fisheries. As future editions are developed, they will consider the inclusion of more species and broader socioeconomic and environmental information.

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PROGRAM 1
ENVIRONMENT

SCIENCE FOR SUSTAINABILITY

Australia has a broad range of freshwater and marine habitats that support a diverse range of aquatic species. Australia's maritime zone is one of the largest in the world covering about 13.6 million square kilometres: about twice the area of Australia's land mass. This zone contains about 4500 known species of finfish (and perhaps tens of thousands of invertebrate species)—most in relatively small numbers.

Federal, state and territory government agencies have legislative responsibility under fisheries legislation and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for managing the fisheries and aquaculture activities within their jurisdictions sustainably. Large components of the R&D undertaken by the FRDC focus on providing information that will assist these agencies improve the sustainable use of Australia's aquatic resources. The projects outlined on the following pages highlight the diversity and excellence of the FRDC's current research portfolio. For a full listing of projects funded visit the FRDC website—**www.frdc.com.au**

PRINCIPAL INPUTS

During 2012–13, there was $8.23 million (about 37 per cent of the total R&D investment) invested in R&D activities within this program.

SUMMARY OF PERFORMANCE INDICATORS FOR PROGRAM 1

Strategic challenges	Performance indicators	Targets	Achievements
Biosecurity and aquatic animal health	Development and dissemination of protocols, techniques and technologies to mitigate and minimise the impact of disease outbreaks. Development of knowledge to assist industry to register vaccines and veterinary chemicals.	Two projects to respond to disease outbreaks.	» A series of projects were funded to assist in the management of Pacific Oyster Mortality Syndrome. » The cause and solution to blood flukes in Southern Bluefin Tuna was identified during the year.
Habitat and ecosystem protection	Demonstrated improved sustainability performance from the use of RD&E outputs. Development of innovative technologies to reduce fishery take and interaction with bycatch and with threatened, endangered and protected species.	Assessment of one alternate gear to minimise interaction with threatened, endangered or protected (TEP) species.	» Alternate approaches were trialled in the Commonwealth Shark Fishery in South Australia. » Several mitigation options to reduce fur seal interactions with aquaculture operations.
Climate change	Improvement in understanding of the impacts of climate change that leads to adaptation by fisheries management and industry. Development of mitigation methods to reduce greenhouse gas emissions of industry.	Two reports outline adaption measures are used by industry.	» FRDC partnered with the former Department of Climate Change and Energy Efficiency to implement a program of climate change projects, including projects that dealt with adaptation. » Reports have been prepared on identifying adaptation options for four key fisheries in south-eastern Australia.
Ecologically sustainable development	Development of mechanisms and technologies to collect economic, environmental and social data to inform management processes. Improvement in knowledge of the relationship between environmental processes and known biological processes. Development of techniques for incorporation of ecosystem-based fisheries management in fisheries. Development of knowledge to help the industry to meet environmental standards.	Alternate data collection methodology trialled for recreational anglers. Project to understand environmental flow impacts on tropical estuarine species.	» FRDC has invested in research that will result in improved collection and storage of recreational fishing data. In the future this will include a data portal. » FRDC is funding a trial of alternative methods for estimating catch of Southern Bluefin Tuna. » Final report of the flow impacts on estuarine finfish fisheries of the Gulf of Carpentaria was circulated to industry and managers outlining substantial benefits to fisheries-related industries with increased production by having freshwater flows reach the estuary.

CLIMATE DRIVERS FOR SUPPLY-CHAIN CHANGE

FRDC research code: 2011/233—FRDC–DCCEE: Growth opportunities and critical elements in the value chain for wild fisheries and aquaculture in a changing climate

All around Australia we are observing the effects of climate change on the marine environment. Warming ocean temperatures, altered currents, more intense cyclones and marine heatwaves are affecting the distribution and availability of fish.

These new conditions, together with a growing population and increased demand for seafood, mean fishery supply chains need to change.

When it comes to climate change research, the biophysical end of the supply chain has received the most attention, but several joint FRDC and Department of Climate Change and Energy Efficiency (DCCEE) projects are now taking a broader perspective to seize opportunities right across the supply chain.

The focus of this project is documenting and evaluating adaptation options across the supply chains for a range of seafood industries, including wild and aquacultured prawns, oysters, and Western, Southern and Tropical Rocklobster.

Supply chains are largely about people. This project emphasises stakeholder participation and it is built around a multidisciplinary team working to develop holistic solutions. Understanding the business constraints and decision-making processes of people along the chain is essential to develop the best opportunities in response to climate change.

Social research is an important element of this project as it maximises benefits for people involved in research by engaging them throughout the process. Social research also helps to communicate information from researcher to stakeholder and vice versa, shaping research and making it more relevant to users.

In the initial stages of this project, more than 30 in-depth interviews were conducted with people at different levels of the supply chain, including fishers, processors, marketers and managers. These interviews explored different perspectives on the supply chain, opportunities for enhancement, known and potential risks, and the support that might be needed for each industry.

Australian supply chains vary widely, some involve direct sales to the consumer, others require multiple processing and transport steps. They also span both national and international markets. Commonalities do exist, but several industry-specific issues and opportunities have been identified.

The interviews explored both climate and non-climate issues and all participants highlighted the need for more collaboration to produce better marketing strategies, raise awareness of sustainable practices and combat product substitution. In particular, interviewees stressed the need for policies aimed at simplifying complex regulations that may contradict industry priorities, such as improving efficiency of the fishing technique via changes in vessel size.

In many cases, climate change is seen as less urgent than other issues. However, some immediate concerns are related to climate change, including:

- management of fuel, transport and energy prices,
- management of species changes in location and abundance,
- monitoring and research of climate effects (temperature, acidification, sea level),
- management of extreme events such as cyclones and heavy rain.

In most cases participants across the supply chain see themselves as adaptable to climate change, either because of the resilience of the target species or the skills and abilities of people involved. However, recruitment of skilled and motivated staff is an ongoing challenge. The information gathered to date is being used to understand where inefficiencies exist in the chain and to suggest how policy and management could facilitate adaptation.

The next step in the social component of the project is to meet with stakeholders to discuss future supply chains, explore opportunities and weaknesses, and develop adaptation options that overcome challenges across the supply chain.

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POMS STRIKES ANOTHER AUSTRALIAN ESTUARY

FRDC research code: 2012/032 and 2011/053

The devastation wreaked by Pacific Oyster Mortality Syndrome (POMS) in the Hawkesbury River, New South Wales, is a warning for oyster growers in other parts of Australia. For oyster growers on the Hawkesbury the outbreak of POMS was every bit as vicious—and heartbreaking—as outbreaks in Europe and New Zealand, which halved production of Pacific Oysters (*Crassostrea gigas*).

POMS first arose as a threat to aquaculture in Australia in 2010, and little is known about its transmission here or overseas. The University of Sydney Aquatic Animal Health team, which has worked closely with the Hawkesbury growers since 2011, was well positioned to study the POMS outbreak as it unfolded when the disease hit the Hawkesbury in January 2013.

Bruce Alford, co-president of Broken Bay Oysters, was one of the Hawkesbury growers affected by the recent POMS outbreak, which began in Mullet Creek, a tributary of the river and major nursery area for most of the businesses. "It wiped out [our Pacific Oysters] in about 36 hours, probably about 10 million oysters over a 3-kilometre radius."

Like most of his peers, he was only partially surprised by the mortality event in the Hawkesbury's Mullet Creek. POMS (which poses no risk to human health) arrived in the nearby Georges River in 2010. Since then, Bruce Alford and other growers have worked with University of Sydney researchers to develop mitigation strategies against the disease. "We were expecting it, but we were still hoping that we would get another couple of years. The economic loss from the Pacific Oyster mortalities for the Hawkesbury growers is estimated to be more than $3 million."

This was compounded in February when widespread rainfall in the catchment and release of water from Warragamba Dam resulted in the estuary being closed, and oyster harvesting was suspended until potential pollutants in the stormwater runoff had cleared.

Richard Whittington, a professor of Veterinary Science at the University of Sydney, describes POMS as the worst transmissible disease he has seen during his 30 years in the aquaculture and livestock sectors.

Researchers in the university's Aquatic Animal Health team worked intensively on the Hawkesbury River since January to better understand the transmission of the disease.

Their efforts are supported by funding from the FRDC, the University of Sydney, the Sydney Metropolitan Catchment Management Authority and, more recently, the Seafood CRC and Tasmanian Oyster Research Council.

While it is still unknown how POMS arrived in Australia, or how it moves from estuary to estuary, the research team's experiments are shedding new light on the disease, which they expect will spread nationally. In particular, they have found that the presence of the causative Ostreid herpesvirus does not necessarily lead to an immediate outbreak of the disease.

Researchers indicate there are various strategies of preparation for oyster growers across New South Wales, South Australia and Tasmania, who are as yet unaffected by the disease. These measures include diversifying the business to more than just a single species of oyster and investing in flexible infrastructure for leases.

POMS research in the Georges River has found that mortalities of adult oysters were halved if—before the disease struck—the trays were raised by 30 centimetres (so that oysters were submerged for less time as tides moved in and out). Unfortunately for the Hawkesbury farmers in January, those who had invested in flexible cultivation systems were also those first hit by POMS in Mullet Creek, and there was insufficient warning to lift the oysters.

Being prepared also means making basic risk assessments, and planning for POMS must begin long before the disease arrives and needs to include things such as an assessment of the business model of the individual oyster business. This includes looking at the impact of a sudden and complete cessation of cash flow.

The outbreak is likely to lead to the most dramatic change the industry has seen in New South Wales in terms of risk management and business preparedness. At the New South Wales Department of Primary Industries' (NSW DPI) Elizabeth Macarthur Agricultural Institute, an FRDC-funded project is also underway for developing an infection model of POMS so that it can be used to test the resistance of various Pacific Oyster families. Another project, funded through the Seafood CRC, with input from CSIRO, the NSW DPI and Australian Seafood Industries (an industry-owned company with a selective-breeding focus), is aiming to develop a POMS-resistant Pacific Oyster.

For further information: www.oysterhealthsydney.org

DECLINE OF SPAWNING SPECTACLE

FRDC research code: 2011/054—Monitoring the relative abundance and biomass of South Australia's iconic giant cuttlefish breeding population

Scientists are searching for clues to the decline in the annual mass spawning of the world's largest giant cuttlefish, which has been a major tourist drawcard for South Australia.

South Australian researchers are investigating the recent decline of giant Australian cuttlefish in the northern Spencer Gulf—the only known place in the world where cuttlefish aggregate in their hundreds of thousands to spawn.

The discrete area of rocky reef adjacent to Point Lowly, near Whyalla, has become a hotspot for tourists, scientists and recreational divers since the late 1990s, when commercial fishers identified it as a breeding location for the Australian giant cuttlefish (*Sepia apama*).

The giant cuttlefish is endemic to Australia's southern coastal waters, from Moreton Bay in Queensland to Ningaloo Reef in Western Australia. They can be identified by two rows of three skin-flap-like papillae over each eye. Their cuttlebones lack a spine and have a rough V-shaped thickening (callus) at the posterior end. The adult's outer cone is wide and flared.

This species is the world's largest cuttlefish. It can reach up to 60 centimetres in mantle length, and more than 10 kilograms in weight. During mating, the cuttlefish link their eight arms for head-to-head insemination. The females attach the eggs to the underside of rocky ledges to hatch months later. Cuttlefish live fast and die young, reaching maturity in seven to eight months. Adults typically die after one spawning season.

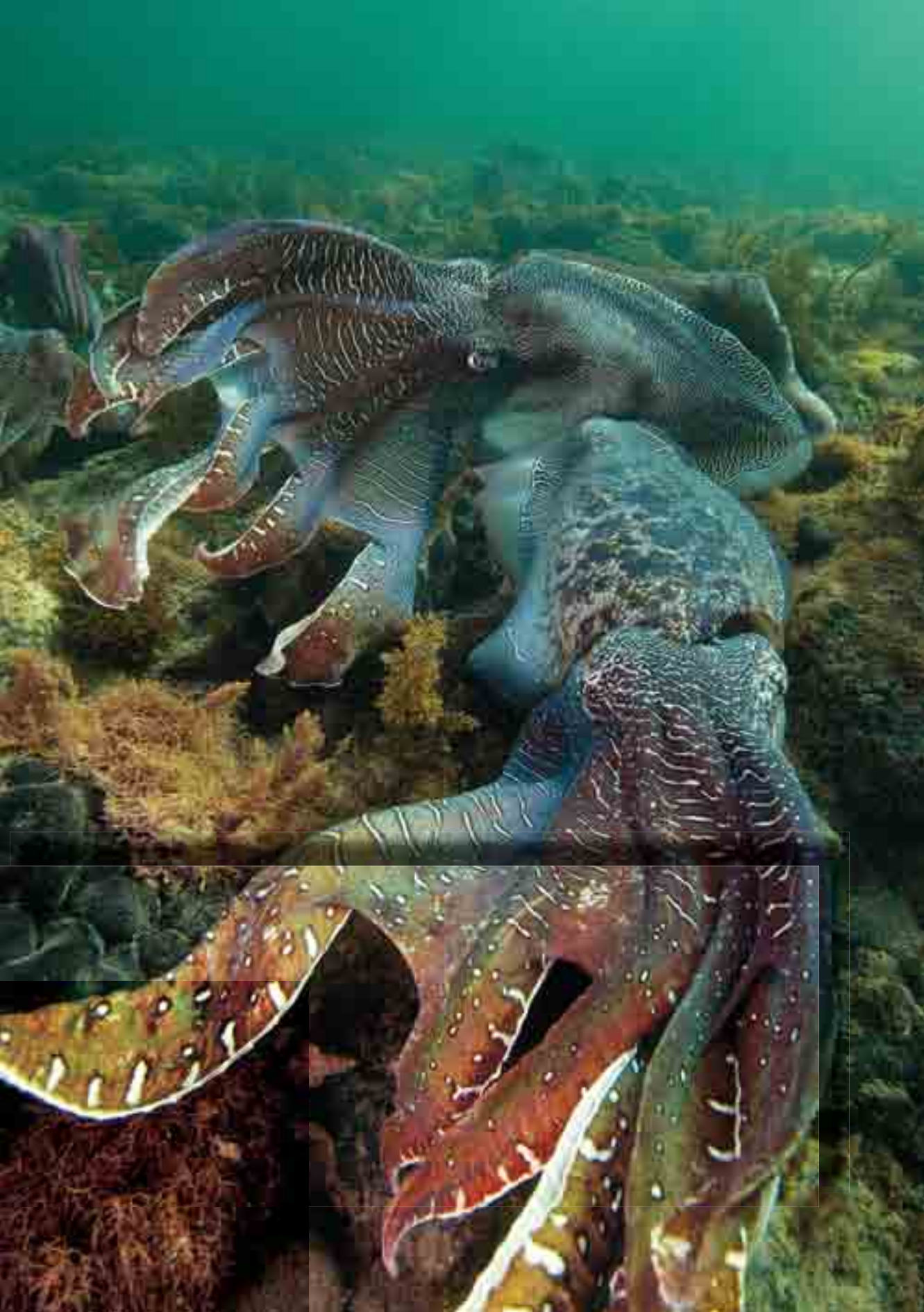
Protected areas

The largest mass spawning occurs in the Spencer Gulf near Whyalla, South Australia, between March and July.

The South Australian Government established a fishing closure through the *Fisheries Management Act* in 1999 to prohibit removal of all cephalopods (cuttlefish, squid and octopus) in the Upper Spencer Gulf waters of False Bay. This was in response to a rapid increase in catches and concerns about the species' sustainability.

The closed area was extended in August 2011 to incorporate the breeding ground immediately adjacent to the Point Lowly headland, following anecdotal reports of a 90 per cent decline in cuttlefish numbers, which had typically exceed 180,000.

Despite the huge interest in the spawning spectacular, there have been no structured public cuttlefish surveys conducted since 2005, which has made it difficult to ascertain the magnitude of the annual cuttlefish variation.



Population study

FRDC-backed research, supported by SARDI, began in July last year to develop a 'standard' methodology for ongoing assessment of the cuttlefish population.

The 18-month study, 'Monitoring the relative abundance and biomass of South Australia's iconic giant cuttlefish breeding population', will examine the spawning ground with reference to population biomass, water quality and habitat condition. It includes a controlled environmental monitoring and evaluation program to investigate potential causal links between local environmental conditions and fluctuations in cuttlefish numbers.

Environmental pressures

Early observations suggest 2012 cuttlefish numbers in the Point Lowly spawning ground are lower than usual, mirroring the 2011 decline. While the reason is unknown, speculation ranges from natural variation in population dynamics to changes in habitat, water quality, fishing pressure, climate change, pollution or predator abundance.

Finding an exact cause could be difficult, given the number of potential contributing factors. Declines in cephalopod populations are usually linked to changes in environmental factors determined by temperature and food availability, which is also temperature-driven to a large degree.

Marine waters in Australia's south-east are also warming at more than three times the global average, which affects fish productivity, species distribution and timing of life-cycle events such as spawning, creating significant challenges for sustainable fisheries management.

Ongoing monitoring

Developing 'standard' methodology for ongoing monitoring and assessment of the cuttlefish population and the breeding environment where they aggregate to spawn is a crucial part of the project.

Monitoring since 2005 has relied on 'snapshot' surveys that did not account for within-season variation and may have missed the peaks in seasonal abundance. The new methodology will ensure consistency in the way data are collected and interpreted, with monitoring extended throughout the March to July spawning season. It aims to incorporate more comprehensive and cost-effective sampling techniques, including the use of surface high-definition video technology to assess spawning habitat and estimate cuttlefish abundance.

Data will establish a reference point that will be archived to help scientists document yearly variations in the cuttlefish aggregation and environmental factors. This will generate a long-term dataset that will allow further investigation of environmental drivers and inform management approaches.

The research team has successfully completed three field trips this year to survey habitat characteristics of 13 sites within the Point Lowly spawning grounds, and has been given access to findings from BHP's ongoing environmental assessment program. The investigations have contributed to a baseline understanding of the area.

The team is also sourcing 'desktop' meteorological, oceanographic and fisheries data to determine whether 2012 abundance and biomass statistics retrospectively correlate with the limited historical data available. The exercise is expected to further identify causative agents, if dwindling cuttlefish numbers are confirmed.

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CLIMATE CHANGES PUT HEAT ON FISHERIES

FRDC research codes: 2010/535—FRDC–DCCEE: Management implications of climate change effect on fisheries in Western Australia, 2012/015: Improving confidence in the management of the Blue Swimmer Crab (*Portunus armatus*) in Shark Bay

Something strange has been happening in the waters off Western Australia. Something that indicates a significant shift in the ocean environment. Fishers as far south as Albany have reported for the first time catching Spanish Mackerel (*Scomberomorus commerson*), which is usually confined to the tropics. Other tropical species such as Threadfin (*Polynemidae*) and Common Dart (*Trachinotus botla*) are regularly turning up in catches off Perth. Even Manta Rays (*Manta birostris*) have been spotted.

While the change may appear positive for these tropical species, the impact on temperate species, particularly in the transition zone between tropical and temperate waters around Shark Bay, midway up the Western Australian coast, are less welcome. The fisheries for Saucer Scallops (*Amusium*) and Blue Swimmer Crabs (*Portunus armatus*), once prevalent in Shark Bay, are doing it tough and there are real questions being raised about the potential effects on Snapper (*Pagrus auratus*) that are at the northern-most end of their range there.

These unprecedented changes are the result of a warmer south-east Indian Ocean over the two past summers, which has seen an increase of 1°C to 2°C in Western Australian waters. These warmer temperatures followed the extreme marine heatwave of 2010–11, in which waters were more than 3°C above long-term seasonal averages, peaking at more than 5°C above average for two weeks across February and March between Shark Bay and the Abrolhos Islands.

Caused by several climatic drivers including unusually hot, still weather, this dramatic event allowed tropical species to move south on an abnormally strong Leeuwin Current. But it also had a severe impact on the marine ecology. Fish kills were reported down the coast, corals were bleached and a Roe's Abalone (*Haliotis roei*) fishery at Kalbarri was wiped out.

To make matters worse for Shark Bay, which has already been hit by the marine heatwave, two major cyclones caused the Gascoyne and Wooramel rivers to flood and flush fresh water and sediment into Shark Bay. This contributed to the devastation of its scallop and, in particular, Blue Swimmer Crab populations and the forced closure of both valuable fisheries.

Since the heatwave, fisheries managers in Western Australia have been keeping a keen eye on the effects. A workshop held in the weeks afterwards detailed an inventory of fish kills, coral bleaching and species reported out of their traditional ranges by recreational and professional fishers, researchers, divers and beach-walkers all along the coast.

This included thousands of dead fish, eels, crabs and rocklobster washed up on beaches, as well as dead pelagic fish floating on the sea surface. Coral bleaching was reported at the Abrolhos Islands and Rottnest Island, where new records of Red Bass (*Lutjanus bohar*) and Parrotfish (*Scaridae*) were also reported. At Dunsborough, a dead Leatherback Turtle was washed up well south of its normal range.

But it is information gleaned from a follow-up workshop, 'The heatwave: Two years on', that is helping build a fuller picture of the effect on fisheries of not only the heatwave, but also the above-average sea temperatures that have followed. That workshop, held in March 2013 was part of a broad FRDC-funded project looking at the effects of climate change on Western Australian fisheries, heard from fisheries scientists investigating a range of marine species including crabs, prawns, scallops, seaweeds, seagrasses, finfish and even penguins.

The research is still work-in-progress, but a clear theme is emerging from the workshop that species are moving from their traditional ranges at unprecedented rates. This is prompting fisheries managers to re-evaluate the landscape of the fisheries themselves.

The evaluation of fishery boundaries is an important consideration not only because higher sea temperatures over the past three years have led to species' movement, but also because the average temperature of Western Australian waters is expected to rise permanently by 1°C to 2°C in the next 50 years. Therefore, the changing distributions of species are likely to be more lasting.

Evidence of this from the ocean is that fish species have already adapted to the changing conditions and are being found in new areas that can support their survival. This has happened in two waves. First, adult fish species as well as eggs and larvae came down on the strong 2010–11 Leeuwin Current and then, in the ongoing warmer conditions further south, were able to survive.

The real test of whether conditions are changing will be to see if a tropical species can move hundreds of kilometres and find conditions so that individuals are able to go through a full life cycle and reproduce.

While tropical fish species that are extending their range southwards could be considered 'winners' of the changed conditions (along with the recreational fishers who are happy to see them), there have also been species—and fishers—that have lost out.

While the ink is not yet dry on much of the science, researchers are working closely with fisheries managers and fishers in the Shark Bay fishery—and others—to monitor the progress of the affected stocks and to discuss future options including whether fisheries are opened, closed, expanded or changed. Fisheries scientists and managers are operating in 'uncharted waters' but while they have no control over a warming ocean they can control the management of the mobile marine populations and protect the breeding stocks.

One of the biggest challenges is that facing the scallop and Blue Swimmer Crab fishers operating in Shark Bay, whose resource was decimated by the conditions and whose fishery two years later remains closed. While an FRDC-funded project into Blue Swimmer Crabs is showing signs of rejuvenation, the outlook is not so optimistic for the scallops, which are showing little sign of recovery.

The goal for researchers and managers into the future is to try and understand the changes that are going on and look ahead to try to manage the fisheries sustainably the way we always have but now against a backdrop of the warming oceans.

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AN ECONOMIC ANALYSIS OF FRDC INVESTMENT IN THEME 1

BIOSECURITY AND AQUATIC ANIMAL HEALTH (PART A)

BACKGROUND

The FRDC currently has five research programs that translate into 15 themes. Under the Environment program (Program 1) there are four themes:

- Theme 1: Biosecurity and animal health
- Theme 2: Habitat and ecosystem protection
- Theme 3: Climate change
- Theme 4: Ecologically sustainable development

The objective of Theme 1 is to develop the capability, systems, knowledge and technologies to detect and identify pathogens to mitigate their impact on aquatic animals, ecosystems, profitability and viability.

There are 41 projects in Theme 1 divided into three clusters: (1) Atlantic Salmon and Southern Bluefin Tuna (SBT), (2) abalone, Yellowtail Kingfish and oyster, and (3) Other. The investment evaluated here is the Atlantic Salmon and SBT cluster.

Most of the FRDC-funded projects in this cluster were managed by the Aquafin CRC of which FRDC is a contributing partner. All eight projects relating to health of Atlantic Salmon addressed amoebic gill disease (AGD), which is caused by amoebae that attach to the salmon's gills and impacts heavily on productivity, industry costs, and constrains industry expansion.

SUMMARY OF PROJECTS

There are 13 projects in Theme 1 (Part A) included in this analysis.

Project number	Project title	Total
2001/200	Aquafin CRC–SBT Aquaculture Subprogram: Tuna cell line development and application to tuna aquaculture health surveillance	$304,989
2001/205	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Treatment and pathophysiology of amoebic gill disease (AGD)	$388,050
2002/251	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Development of a vaccine for AGD–genomic and complementary DNA (cDNA) library screening for antigen discovery	$315,812
2003/225	Aquafin CRC–SBT Aquaculture Subprogram: Investigation of the relationship between farming practices and SBT health	$702,509
2004/085	Aquafin CRC–SBT Aquaculture Subprogram: Detection of SBT pathogens in environmental samples	$126,002
2004/213	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Commercial AGD and Atlantic Salmon health project	$199,869
2004/214	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Effects of husbandry on AGD	$83,977
2004/215	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Establishment of challenge for AGD	$260,889
2004/217	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Development of an AGD vaccine, phase II	$200,329
2004/217.20	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Development of an AGD vaccine, phase II	$190,843
2004/218	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: Molecular assessment of resistance to AGD in Atlantic Salmon	$42,420
2006/225	Aquafin CRC–SBT Aquaculture Subprogram: Improving fish husbandry and performance through better understanding of the relationship of fish stress and health	$569,032
2008/234	Australian Southern Bluefin Tuna Industry Association: Investigation of causes of mortalities in farmed SBT–variation to project 2008/228	$71,278
Total investment		$3,455,999

Source: FRDC project management database

BENEFITS

| | PUBLIC versus private benefits

Both private and public benefits arose from investment in these projects. On the basis of the distribution of the benefits classified by beneficiary, and equal weighting for each, it could be concluded that public benefits to Australia could make up only 40 per cent of total benefits. If subjective weightings are taken into account, public benefits would make up only about 30 per cent of total benefits.

| | DISTRIBUTION of benefits along the supply chain

The private benefits and costs from a reduction in health/stress impacts on Atlantic Salmon and SBT would mainly be captured by aquaculture producers. However, these costs and benefits will be shared to some extent along the supply chain, including with seafood consumers.

| | BENEFITS to other industries

It is likely that most benefits will be confined to the aquaculture industry.

| | BENEFITS overseas

As other countries farming Atlantic Salmon are subject to AGD impacts, it is likely that some benefits could accrue to those industries.

OBSERVATIONS FOR FUTURE INVESTMENT AND EVALUATION

These observations include:

- The FRDC project management system was found valuable in extracting funding information by financial year across a range of R&D areas. However, it could be improved if an annual time series for R&D expenditure within individual R&D areas was also available. This could help track and report R&D investment across areas over time.
- As with other clusters, final reports and technical summaries were not always easy to find in the related documents section of the database. For evaluation purposes it would be helpful if there was a separate field containing the final report and the technical summary (separately) to save time and ensure the correct report is located.
- The ratio of FRDC funding to total funding for FRDC projects in this cluster was 37 per cent. This was close to the average percentage of 40 per cent found for 18 clusters in 2009.
- It would be of value to economic assessments such as this if industry information on disease costs including treatment, mortality, and productivity losses could be monitored over time. As well as aiding evaluation of past research, such information may be useful in setting priorities for future research.

CONCLUSIONS

Within this cluster there were 13 projects to which the FRDC contributed about 37 per cent of total costs. There were eight projects relevant to Atlantic Salmon and five to SBT.

On the basis of the distribution of benefits as classified by beneficiary, and equal weighting for each, public benefits to Australia could make up 40 per cent of total benefits. If subjective weightings are taken into account, public benefits would still make up 30 per cent of total benefits.

The principal benefits valued from this cluster of projects were reduced costs in treating AGD in Atlantic Salmon (predominantly from the resistance breeding initiative to which the cluster contributed to some degree) and averted productivity losses in SBT.

Project 2008/228 has been lauded by industry as averting significant mortality in SBT. The SBT benefits valued in the current analysis would have been significantly greater if the full benefits from improved management of blood fluke could have been attributed to the investments included in the cluster. Project 2008/228 was not included as it was not completed when the cluster was defined.

The investment criteria estimated for the total investment of $14.7 million (present value of costs) in the cluster were positive with a present value of benefits of $35.1 million, a net present value estimated at $20.4 million, and a benefit-cost ratio of 2.4 to 1. These were all estimated using a discount rate of 5 per cent (benefits estimated over 30 years from the final year of investment).

PROGRAM 2
INDUSTRY

SCIENCE INFORMING BEST PRACTICE

Demand for high-quality seafood is predicted to outstrip supply in both domestic and export markets. Similarly in the recreational and customary sectors the demand for high-quality fishing experiences will outstrip supply. There is a need to increase both the production and the value of the catch, and to take advantage of future opportunities. For the commercial sector, business profitability and international competitiveness is an overriding concern. This program aims to assist all sectors improve their overall performance. The following pages provide examples of the R&D currently underway. For a full listing of projects visit the FRDC website—**www.frdc.com.au**

PRINCIPAL INPUTS

During 2012–13, there was $9.57 million (about 43 per cent of the total R&D investment) invested in R&D activities within this program.

SUMMARY OF PERFORMANCE INDICATORS FOR PROGRAM 2

Strategic challenges	Performance indicators	Targets	Achievements
Governance and regulatory systems	Development of processes and technologies to improve the efficiency of governance and regulatory systems for fishing and aquaculture. Development of methods to incorporate economic knowledge into fisheries management.	One project to improve real time data collection and storage.	» The FRDC in partnership with Southern Rocklobster Limited are developing a phone/tablet application to allow industry to enter data while at sea.
Resource access and allocation	Development of processes for efficient, transparent allocation of shares and associated property rights for all aquatic resource users.	One workshop held to progress resource access and allocation in Queensland.	» FRDC has been working with members of the Coral Reef Finfish Fishery on resource sharing arrangements. The second stage of the project is being progressed and will continue over the coming year.
Production, growth and profitability	Development of knowledge, processes and technologies to improve productivity and profitability of the commercial sectors. Development of knowledge and technologies in the areas of domestication and breeding genetics to support growth of the aquaculture sector.	Bio-active potential of three new species explored.	» Bio-active potential of three species—Barramundi, abalone and Atlantic Salmon are being investigated in partnership with the CSIRO.
Consumers, products and markets	Development of knowledge and technologies to support the industry's development of new products. Development of knowledge and technologies to improve seafood value chains and support trade and market access.	Market research undertaken on the domestic prawn market (aquaculture and wild capture).	» Seafood CRC has worked with the Australian Council of Prawn Fishers and Prawn Farmers Association to examine seafood consumers' preferences to Australian prawns. This research will underpin future marketing and promotion activities of the prawn industry.
Value from aquatic resources	Development of knowledge, processes and technologies to understand and enhance the societal and personal values obtained from recreational and indigenous customary fishing. Development of knowledge regarding indigenous customary fishing practices, and processes to incorporate this knowledge into fisheries management.	One project to examine the potential enhancement of iconic recreational species.	» A number of projects are underway to look at improving the management of Murray Cod and restocking Jungle Perch into Queensland's freshwater river system.

ON TRACK TO REBUILD SBT STOCKS

FRDC research codes: 2007/034—Fishery-independent estimate of spawning biomass of Southern Bluefin Tuna through identification of close-kin using genetic markers, and 2003/002—Spatial interactions among juvenile Southern Bluefin Tuna at the global scale: A large scale archival tag experiment

Fewer genetic matches between Southern Bluefin Tuna (SBT) adults and offspring is good news for efforts to rebuild populations of one of the world's most widely harvested species

Calculating catch quotas for SBT (*Thunnus maccoyii*), has historically been a highly political and internationally sensitive issue. At the heart of the problem has been the need to balance the ongoing harvesting of SBT by nine international fishing fleets with efforts to conserve and rebuild stocks of this overfished species.

CSIRO scientists have been leading SBT research for decades. In the 1980s they calculated the extent of the species' decline from the heavy fishing since 1955 to have resulted in a population that was about 5 per cent of the size of the unfished population in 1931. Since then they have continually developed new approaches to more accurately assess fish stocks and underpin management procedures designed to allow populations to rebuild.

Researchers, from CSIRO Marine and Atmospheric Research, say in the past, catch quotas would be argued and worked through each year. But a new formula was adopted in 2011 to set quotas within a range that will help rebuild stocks to the international target of 20 per cent of unfished level.

This formula is a simulation-tested decision that is based on inputs acceptable to countries participating in SBT conservation efforts through membership of the Commission for the Conservation of Southern Bluefin Tuna. The simulation is used to calculate a total allowable catch (TAC) for the fishery for three-year periods. Richard Hillary says the new approach is more orderly and scientifically based and has helped to remove the wrangling and uncertainty from the process.

Improvements in data about SBT populations, combined with the new management procedure, have allowed quotas to be increased in recent years after drastic cuts were made in 1988, and smaller cuts in 2006 and 2009, to help stocks rebuild.

Industry partnership

The Australian SBT industry is significantly smaller today (in volume not value) than it was at its peak in 1982, and it has supported efforts to improve the science behind the management of the fishery for more than two decades. The Australian SBT industry has invested strategically with the FRDC in key pieces of research that have greatly improved knowledge of the species and stock status.

This includes CSIRO's work to develop a new quota calculation formula as well as 'close-kin' matching and tagging projects that directly estimate the abundance and movement of SBT populations respectively. The Australian Southern Bluefin Tuna Industry Association highlights the long-term partnership between the FRDC, researchers and industry has produced valuable research.

Calculating quotas

Two key inputs are used to calculate the TAC formula for the SBT fishery. The first is the catch per unit of effort, which is an indicator of the current abundance of older fish. This is measured by the number of fish caught per 1000 hooks (adjusted for the season, the location and the vessels).

The data for this indicator is taken from the Japanese longline fishery, which covers the widest area of all the fisheries and represents a continuous time-series dating back to the late 1950s. But catch-per-unit-effort rates are not always a direct indicator of the number of fish—they can vary dramatically according to the fishing location, the season and the ships collecting the data.

The second input is the data collected during an annual aerial survey of juveniles in the Great Australian Bight, where most juveniles spend their first two to three summers before dispersing across the southern oceans. This is an indicator of how many juvenile fish are coming up through the system to replenish the adult population in the future.

Different management procedures using these two inputs' data series were tested using an operating model, or 'virtual reality', of the SBT stock and fishery. This allows for a range of scenarios to be tested to select the best-performing strategy—that is, the one that still achieves the rebuilding of the stock despite worst-case scenarios. Researchers indicate that the science is not set in stone. A lot of 'what if scenarios are used' to stress test the management procedure to make sure it will still meet a target given a range of possible 'alternative realities'.

Among these alternative realities is an increasing database of information on migration habits and productivity patterns drawn from a suite of projects pioneered by CSIRO in recent years to develop a deeper understanding of SBT.

Close-kin matching

The CSIRO and FRDC-funded close-kin DNA matching project aims to detect genetic matches between juveniles and adults in the spawning stock. This project developed at the CSIRO is based on a research program developed in Norway in the early 2000s on the minke whale catch.

Researchers were already collecting genetic material there as part of their registry program, and then someone thought to use the collected genetic material to measure the abundance of the whales.

Six years later, the gene-matching technology has advanced to a level where using it to match SBT juveniles off Port Lincoln with their parents in the Java Sea had become feasible and cost-effective. Basically, researchers catch a certain number of juveniles and adults and measure how many matching parent-offspring pairs there are. From that data researchers can calculate the actual adult population size—the smaller the number of matches, the bigger the overall population.

In the past five years researchers have sampled 14,000 SBT (6000 adults and 8000 juveniles) uncovering just 45 matches. The result indicates a larger population level than was originally anticipated.

Other insights gleaned from DNA matching include adult survival rates and the productivity of different segments of the adult stock. The data tells us for instance, that older, bigger adults contribute more offspring than younger smaller adults do, a pattern seen in the 45 parent-offspring pairs.

Another input that helps make sense of the more basic abundance data, is collected from tagging programs. SBT have long been tagged with conventional dart tags that indicate where and when a captured fish was first tagged, and thus give some indication of survival rates.

Travel tags

According to the CSIRO's pelagic fisheries team, conventional tagging methodology is limited in that it only captures information from where the fish are released and subsequently caught. There is no indication of where the fish are roaming between those times and whether they are mixing with individuals that were in other areas when they were tagged in the Great Australian Bight. This information is important to understand the migration patterns of SBT, and also for interpreting data from the conventional dart tags and catch rate information.

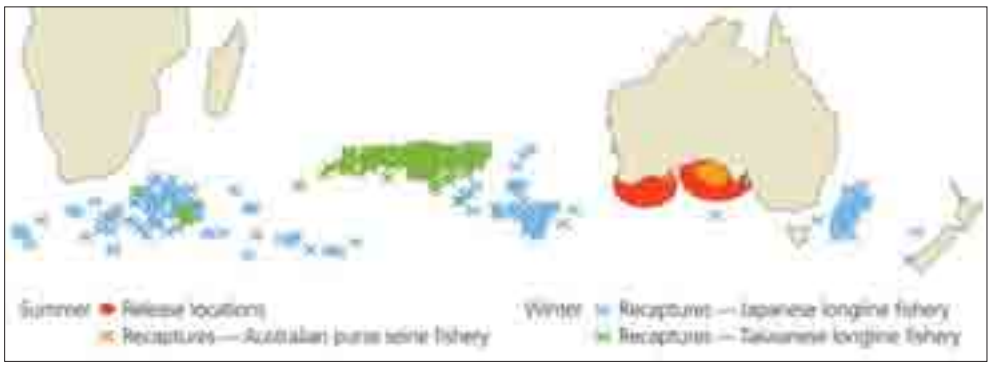
To obtain more information, CSIRO has used a form of tagging that can record, in real time, ongoing information about where tuna are moving. Archival tags incorporate a tiny computer that is implanted in the abdominal cavity of a captured live tuna, which is then released. Over the life of the fish, the computer continuously records internal and external temperature, swimming depth and light intensity, which can be used to estimate latitude and longitude, and thus the location of the fish.

Fish that contain archival tags are specially marked with a conventional dart tag, and tuna fishers in all countries have been informed of the project and are offered a reward when they return a tag to CSIRO.

Unlike conventional tagging, it is not just about finding out where the fish was released and where it has been captured, the tags give a picture of what is happening in between. It represents not just time data point but also a spatial one. For example, where they spend time in winter and for how long, what depth in the water column they use and how often they feed, and the timing of arrivals into, and departure from, the Great Australian Bight each year.

Between 2005 and 2008, there were 568 tags inserted in juvenile SBT. Of those, 74 (13 per cent) have been returned so far. It is somewhat lower than the hoped-for return rate of 20 per cent. However, researchers are hopeful that more of the tags still in fish will be returned in the future.

Each tag when returned and the data downloaded, holds a potential rich treasure trove of information. A tag from a fish caught in 2008 contained three years worth of data from 2005 to 2008 and showed the enormous distances the fish had travelled. The data gives an extraordinary insight into the diving behaviour and movements of a fish.



Changing patterns

The data has given researchers the tools to start working out the kinds of habitats SBT prefer and to better investigate what they are feeding on, based on the depths to which they are diving and the specific areas of the oceans. But, the data is also generating as many questions as it is answering.

When compared with historical information, the new data shows some significant changes in SBT movements in the past 20 years, particularly a contraction in the movement eastward from the Great Australian Bight. There was a smaller proportion of the fish travelling to the Tasman Sea in the 2000s than in the 1990s. These changes in spatial behaviour are relevant in terms of interpreting the conventional tag data.

For now, this information, along with that from the close-kin DNA matching project, is helping to inform the scenarios used in the operating model to test management procedures. In the long term there is scope to incorporate the data directly into a revised management procedure.

The data inputs to the management procedure are reviewed each year and the procedure may be revised every five to 10 years to take account of new data or a new data stream. Researchers say that there does have to be a real trend before the quotas will substantially change. This helps strike a balance between providing stability for the industry by not reacting unnecessarily to 'noise' in the input data and ensuring that the procedure will react sufficiently to real signals in a way that proves a high probability of rebuilding the stock.

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TIPS FOR BUOYANCY IN A QUOTA SYSTEM

FRDC research code: 2010/229—Tactical Research Fund: Empowering industry RD&E assisting fishing businesses adjust to implementation of quota control management in their fishery

The concerns of business owners in fisheries transitioning to quota-based systems have been addressed through a practical resource, published by the FRDC, to assist with business decisions.

From hunter to harvester: Adapting your fishing business to quota management recognises that while fishers have a solid understanding of the quota system there are knowledge gaps around practical issues, such as what are the steps in deciding whether to dispose of, or hold on to, a quota. The 40-page publication was commissioned in 2010 through the FRDC's 'Empowering industry RD&E project'.

In preparing the guide, the researcher interviewed fishers who have experienced the transition from input-based to output-based systems. She also reviewed the existing literature on quota systems and found that many of the publications were aimed at explaining compliance. There was almost nothing that explained to fishers how individual transferable quotas could be used to improve business sustainability.

Most fishers interviewed reported commercial and lifestyle benefits from the move to a quota system, although the initial process was traumatic, particularly the initial allocation of quota. And it is really only two or three years in, when the system has settled down and the pain and heartache of the allocation is over and people move on with their business, that they see the benefits of the quota system.

More than 40 fisheries in Australian waters are now managed under quota systems. Some state-managed fisheries, such as the Victorian Abalone Fishery, have been managed under a quota since the early 1980s, while the Commonwealth first implemented quota systems in the early 1990s.

Interviews were conducted with 35 people primarily from the Northern Territory Demersal Fishery, Timor Reef Fishery and Western Australian Rock Lobster Fisheries, all of whom have moved to a quota-based system in recent years. In addition, bank managers based in coastal or port towns were asked to gauge how they viewed quota as security, compared with the traditional fishing licence.

The financial sector were initially reticent to treat a quota any differently to a fishing licence until there was evidence that the fishery's sustainability and profitability were improving from the new management regime. The key for the banks is to get a better understanding of what a quota right is, so it becomes seen as a less risky asset.

From Hunter to Harvester was developed following intensive industry consultation and several drafting stages with interviewees. The book also outlines the changes that individuals could expect to see in a fishery managed by quota. These include improved economic performance of the fishery, reduction in catch-per-unit-efforts, greater attention being paid to market demand, higher cost of entry into the fishery, and rising ownership of quota by processors (who wish to guarantee the supply of stock).

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LOW PRICES HINDER SQUID POTENTIAL

FRDC research code: 2006/012—Arrow squid: Stock variability, fishing techniques, trophic linkages—facing the challenges

Australia's southern waters are fertile fishing grounds for Gould's Squid (*Nototodarus gouldi*), but the market potential for this species is yet to be recognised.

Gould's Squid—commonly known as arrow squid—live fast, breed hard and die young. The latest research on the species has found that they live for less than 12 months, can breed at any time, and are such aggressive feeders that they will sometimes eat their own.

The findings are part of an FRDC-funded project looking at Gould's Squid, a species found in large numbers across Australia's southern waters. Researchers have discovered that harvesting levels are making little impact on squid populations, and catches could potentially be significantly increased.

The report, *Arrow squid: Stock variability, fishing techniques, trophic linkages—facing the challenges*, says results indicated that Gould's Squid populations were robust and capable of withstanding high levels of fishing pressure.

Despite the potential, there is no real push to increase squid catch quotas because the sale price is simply too low. Gould's Squid are commonly sold domestically as bait and to international markets such as Hong Kong, Canada and China, where they are processed into calamari rings. Wholesale prices in Australia range from only $1.30 to $1.70 per kilogram.

This is far lower than the price fetched by Southern Calamari squid (*Sepioteuthis australis*), the more tender and flavoursome species that gives calamari rings their name. Gould's Squid are undervalued, and are approximately a tenth of the price of calamari. This is despite the squid not being that far behind the flavour of calamari.

That is not the only challenge for fishers, as unlike calamari squid, Gould's Squid prefer deeper waters, which require longer trips to sea. The cost of fuel alone makes the low sale price untenable. Gould's Squid is a major bycatch for trawlers in the Great Australian Bight, along with small pelagic species such as Jack Mackerel (*Trachurus declivis*) and Blue Mackerel (*Scomber australasicus*). The only large-scale local operation that specifically targets the species is the Southern Squid Jig Fishery, in south-east Australia. The fleet is based in Bass Strait and off western Victoria, fishing in depths of 60 to 120 metres. Vessels operate at night and use high-powered lamps to attract squid.

Machines lower jigs into the water, which the squid attack and their tentacles become ensnared on barbless hooks. The jigging technique works because Gould's Squid are such aggressive feeders, and unlike calamari squid, they will attack virtually all baits and jigs, showing absolutely no fear. Even if they do not get caught, Gould's Squid still live for less than a year, a fact that was confirmed through the examination of statoliths—ear bones—which acquire rings with age.

The pure nature of Gould's Squid is what makes the fishery so sustainable and potentially expandable—they have a short life, are able to breed throughout the year, plus they are opportunistic feeders able to vary their diet. Stomach contents and fatty acid signature analyses provides clear evidence of seasonal dietary shifts, dependent on prey size, abundance and availability.

Researchers collected squid 'every month or two' between 2007–09 and analysed 3609 specimens from both trawl and jig fisheries. Neither fishing method resulted in significant catches of juvenile squid. This is advantageous from a management and sustainability perspective, as it allows a greater portion of younger squid time to mature and later reproduce, rather than being exploited.

When it comes to regional differences, both male and female Gould's Squid were found to grow faster and end up larger in the cooler waters of Victoria compared with the warmer waters of the Great Australian Bight. The research points to growth variability being driven by environmental and oceanographic conditions experienced during early life and less influenced by conditions experienced during adult stages.

While male and female squid were in better reproductive condition during summer than winter in Victoria, reproductive condition did not vary with season for squid caught in the Great Australian Bight.

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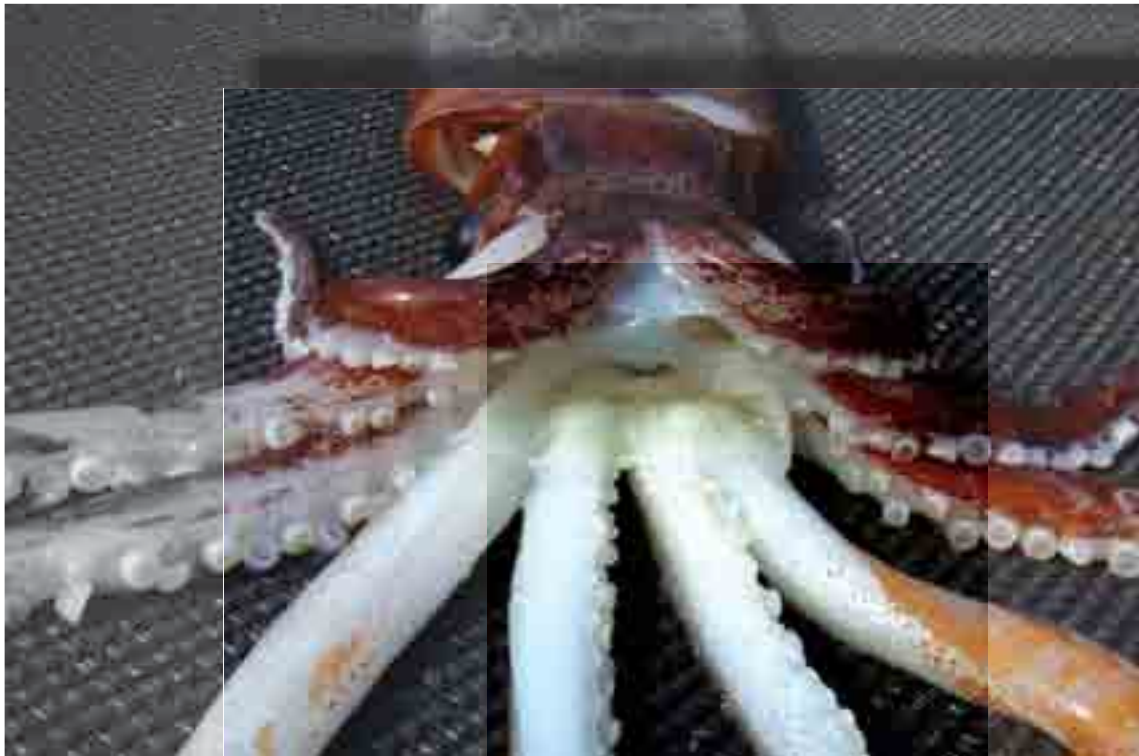

MORETON BAY FISHERS COMMIT TO NEW CODE OF PRACTICE

FRDC research code: 2003/062—Driving innovation in environmental performance in the Queensland fishing industry

A new code of best practice and associated brand are helping ensure that the south-east Queensland fishing industry is developed sustainably and promotes the efforts of tunnel net fishers in doing so.

The Moreton Bay Seafood Industry Association (MBSIA) has received numerous awards for its efforts to ensure the fishery, operating for almost 150 years, can continue to operate sustainably for many years to come. These efforts include the development of an Environmental Management System (EMS) for MBSIA members, which in 2006 received the prestigious United Nations Association of Australia World Environment Day Award for Excellence in Marine and Coastal Management.

The fishers are not resting on their laurels. Using an Australian Government 'Caring for our Country' grant, they have built on the EMS by developing a code of best practice for the Moreton Bay Tunnel Net Fishery. This has been launched in conjunction with the 'Moreton Bay Fresh' branding for fishers who commit to the code.

Researchers were engaged by the MBSIA to work closely with the tunnel net fishers to develop the code. Several joint industry and agency meetings were held to identify issues, discuss existing practices and clarify how the code would be developed. There were also several 'at sea' trips to document the fishery practices.

Although the Moreton Bay tunnel netters operate on Brisbane's doorstep in a marine park with high concentrations of turtles and dugongs, they also produce most of south-east Queensland's fresh fish without any negative interactions with these species.

The research showed how efficient this fishery was and how little impact there was on non-target species. The project provided a great opportunity to work with the 21 tunnel net operators in Moreton Bay, to document their existing practices and to identify opportunities to operate more sustainably, especially in respect to interactions with protected species and the release of any fish bycatch.

The code provides a guarantee from the industry to stakeholders and the wider community that tunnel netters will continue to improve their environmental performance and adopt better fishing practices through the 16 commitments in the code.

To highlight the importance of the code, the MBSIA has asked the Queensland Government to incorporate three key commitments into the licensing conditions for all Moreton Bay tunnel net fishers. The commitments require fishers to use specialised sorting and grading trays to maximise survival of released fish, to install exclusion grids in the gear to maximise exclusion of bycatch and protected species, and to release all sharks greater than 1.5 metres in length.

The MBSIA indicates the tremendous support from seafood consumers who are keen to get fresh, local, sustainably caught product. This is why industry must continue to demonstrate best practice when fishing—using the code of best practice as a guarantee.

Tunnel net fishers who adopt the code and EMS will be able to display the new 'Moreton Bay Fresh' logo on their product. The logo can be considered a guarantee that the product is from an operation that complies with the EMS and the rules described in the code to maximise quality and minimise environmental impact.

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DOUBLE THE COOL FACTOR

FRDC research codes: 2003/237—Development of a quality index for Australian seafood, and 2010/305—Extension of OH&S and quality index project outputs to seafood industry across Australia

It is 2.30 am and the quality assurance officers at Sydney Fish Market are already beginning their day's work, checking through up to 50 tonnes of fresh seafood to be auctioned later in the day.

The quality assurance procedures involve checking the temperature of product as it arrives at the market coolroom to ensure it is less than 5°C, which is the legal temperature threshold for food safety.

Each consignment is inspected and graded, with any notes on the quality of the catch provided to the auctioneer and passed on to buyers before bidding. The market's quality assurance program quickly identifies which operators are putting in the effort to ensure their product is in a premium condition, and which are doing just enough for an 'acceptable' product.

The good operators do it well, a lot of people do an average job and some people are barely adequate. The general industry attitude seems to be that if product is stored at less than 5°C then it is OK. But a few degrees lower can make a big difference to the spoilage rate. By keeping the temperature of their product four degrees lower, they can double its lifespan.

With seafood coming from throughout New South Wales, interstate and overseas, the timelines and temperatures can prove the critical difference between a marketable product and one rejected as unsaleable.

In 2011–12, Sydney Fish Market seized almost 6000 kilograms of seafood submitted for auction because of its poor condition. 'Temperature abuse' is the main cause for downgrading or rejecting the fish inspected. Product that is not at the correct temperature needs to be cooled before it can be sold and any entry will only be offered for auction on a maximum of three consecutive days.

Depending on how long it has been in transit, how long since it was caught, and how it has been treated since then, the product could be beyond its shelf life even before it is offered for sale. The basic science on spoilage has been around for decades, but the implementation of best practice is often still lacking.


SYDNEY
FISH MARKET

Ice days

As soon as seafood is harvested or killed it begins to deteriorate, and the rate at which this happens is determined by temperature. The temperature of melting ice, 0°C, is the standard reference point for comparison of deterioration rates.

Shelf life is expressed in terms of 'ice days', that is the number of days stored at 0°C. Seafood deteriorates twice as fast at 4°C and four times as fast at 16°C, than it does at 0°C. If a product has a useable shelf life of 12 ice days, this will drop to only six days if it is stored at 4°C. At 10°C, the useable shelf life will be only three days, and at 16°C, just two days.

Sydney Fish Market has developed *Seafood Handling Guidelines* as part of its internal guidance to suppliers and resellers to encourage the adoption of best practice. It includes a revised recommendation to hold product at 4°C or lower, with fresh seafood ideally be held at 0°C, or even –1°C.

Chilling difference

The way freshly harvested seafood is initial chilled can make a significant difference to the life and quality of the product. As part of work co-funded by the FRDC and the Seafood CRC, the Australian Maritime College at the University of Tasmania assessed the difference between three icing techniques: the standard industry boxing practice of ice on top; an ice slurry; and layered ice (ice, fish, ice, fish, ice) in a case.

The results indicate that ice slurries are the best method for cooling. An ice slurry maintains contact with the whole fish surface to efficiently extract the heat in the fish body, dropping to below 1°C within one hour and down to zero in two to three hours.

In the standard treatment, fish at the top of the top-iced-only case were well chilled and close to a 0°C temperature within five hours. However, fish in the middle and bottom were barely below 4°C after 24 hours, and spent half of this time around 6°C.

Cooled quickly

Treatment at the point of harvest is crucial in providing product for sale in the best possible condition as fish begin to deteriorate rapidly if not iced quickly, particularly on a warmer day. Ice slurries onboard are the best way to remove heat from fish and to bring the internal temperature down to 0°C. Slurries of freshwater and freshwater ice can leach colour from the flesh and eyes. Using a mix of fresh and salt water in the slurry can prevent this, although the ratios change, depending on the species.

Once cooled, fish should be removed from the slurry and packed into flake ice, larger ice is more prone to damaging the flesh. Where possible, soldier packing of fish (where they are placed side by side by hand), is also a good option. Using liner bags to prevent fish coming into contact with the ice will prevent leaching. From there, it is just a matter of making sure the cold chain is not broken as the product is delivered to market.

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AN ECONOMIC ANALYSIS OF FRDC INVESTMENT IN THEME 2

HABITAT AND ECOSYSTEM PROTECTION (PART A)

BACKGROUND

The FRDC currently has five research programs that translate into 15 themes. Under the Environment program (Program 1) there are four themes:

- Theme 1: Biosecurity and animal health
- Theme 2: Habitat and ecosystem protection
- Theme 3: Climate change
- Theme 4: Ecologically sustainable development

The objective of Theme 2 is to minimise the effects of fishing, aquaculture, pollution, habitat destruction and land-based activities and non-fishing occurrences on fish, aquatic habitats and ecosystems.

Theme 2 of the Environment program is concerned with the effects of fishing and other activities on fish and their aquatic habitats. Changes in the broader environment directly affect the sustainability of regional habitats and ecosystems for aquatic species. The effects of degradation and destruction of habitat, sediment runoff and urban development affect aquatic ecosystems and the fishing and aquaculture operations they support.

The outputs of these projects are aimed at assisting end-users to mitigate the adverse impacts of activities, developing and adapting technologies to reduce bycatch, reducing the impacts on threatened, endangered and protected species as well as the effects of fishing on aquatic habitats. The projects also provided information to the community to demonstrate improvements in the fishing and aquaculture industry's performance.

SUMMARY OF PROJECTS

There are 19 projects in Theme 2: Habitat and ecosystem protection (Part A) included in this analysis.

Project number	Project title	Total
1999/230	Inventory and assessment of Australian estuaries	$495,000
2000/163	The toxicity and sub-lethal effects of persistent pesticides on juvenile prawns and a common inter-tidal seagrass species	$385,391
2000/257	Analytical techniques for assessment of water quality, contamination and quality assurance in farmed Pacific Oysters in South Australia	$535,589
2001/022	Environmental flows for subtropical estuaries: Understanding the freshwater needs of estuaries for sustainable fisheries production and assessing the impacts of water regulation	$414,451
2001/023	Spatial arrangement of estuarine and coastal habitats and the implications for fisheries production and diversity	$553,689
2001/036	Assessment of the importance of different near-shore marine habitats to important fishery species in Victoria using standardised survey methods, and in temperate and sub-tropical Australia using stable isotope analysis	$504,172
2001/060	Characterising the fish habitats in the Recherche Archipelago, Western Australia	$814,610
2001/097	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: System-wide environmental issues for sustainable salmonid aquaculture	$184,327
2001/102	Aquafin CRC–SBT Aquaculture Subprogram: Tuna environment—development of novel methodologies for cost-effective assessment of the environmental impact of aquaculture	$510,828
2001/103	Aquafin CRC–SBT Aquaculture Subprogram: Tuna environment subproject—evaluation of waste composition and waste mitigation	$93,735
2001/104	Aquafin CRC–SBT Aquaculture Subprogram: Tuna environment —development of regional environmental sustainability	$98,182
2003/050	Linking habitat mapping with fisheries assessment in key commercial fishing grounds	$615,278
2004/045	Relationships between fish faunas and habitat type in south-western Australian estuaries	$304,127
2004/066	Understanding shelf-break habitat for sustainable management of fisheries with spatial overlap	$440,733
2004/074	Aquafin CRC–Atlantic Salmon Aquaculture Subprogram: A whole-of-ecosystem assessment of environmental issues for salmonid aquaculture	$470,486
2005/059	Aquafin CRC–SBT Aquaculture Subprogram: Risk and response—understanding the tuna farming environment	$254,032
2005/072	Water use across a catchment and effects on estuarine health and productivity	$20,000
2005/081	Assessment of information needs for freshwater flows into Australian estuaries	$30,560
2007/246	Tactical Research Fund: A review of the ecological impacts of selected antibiotics and antifoulants currently used in the Tasmanian salmonid farming industry and development of a research programme to evaluate the environmental impact of selected treatments	$6,725,191
Total investment		**$13,450,381**

BENEFITS

| | PUBLIC versus private benefits

Both private and public benefits will arise from the investment in these projects. On the basis of the distribution of benefits, and equal weighting for each, public benefits to Australia could make up 50 per cent of total benefits. If subjective weightings are taken into account, public benefits would still make up nearly 50 per cent of total benefits.

| | DISTRIBUTION of benefits along the supply chain

The private benefits and costs from expanded aquaculture industries and the continued viability of commercial fisheries would be shared along the supply chains.

| | BENEFITS to other industries

It is likely that industry benefits will be confined to the fishing industry.

| | BENEFITS overseas

There may be some scientific knowledge spillovers to overseas fishing industries.

RESULTS

All past costs and benefits were expressed in 2010/11 dollar terms using the consumer price index. All benefits after 2010/11 were expressed in 2010/11 dollar terms. All costs and benefits were discounted to 2010/11 using a discount rate of 5 per cent. The base run used the best estimates of each variable, notwithstanding a high level of uncertainty for many of the estimates. Investment criteria were estimated for both total investment and for FRDC investment alone. All analyses ran for the length of the investment period plus 30 years from the last year of investment (2009/10) to the final year of benefits assumed.

CONCLUSIONS

Investment was made in a total of 19 projects within the cluster with the FRDC contribution approximating 27 per cent of the total costs of investment.

On the basis of the distribution of benefits, and equal weighting for each, public benefits to Australia could make up 50 per cent of total benefits. If subjective weightings are taken into account, public benefits would still make up nearly 50 per cent of total benefits.

Of the benefits valued, productivity benefits made up some 65 per cent of total benefits with environmental benefits contributing 35 per cent.

Seven of the 19 projects were associated with environmental aspects of two major aquaculture industries, Atlantic Salmon and SBT. Together, these seven projects contributed 27 per cent of the total benefits valued.

Overall, the investment criteria estimated for the total investment of $43 million (present value of costs) in the cluster were positive with a present value of benefits of $136 million, a net present value estimated at $93 million, and a benefit-cost ratio of 3.2 to 1. All were estimated using a discount rate of 5 per cent (benefits estimated over 30 years from the final year of investment).

PROGRAM 3
COMMUNITIES

SCIENCE TO ENGAGE COMMUNITIES

The fishing industry forms an integral part of many rural and regional communities. For the long-term sustainability of the fishing industry, it is important the interactions and co-dependence between the community and industry understood. For a full listing of projects visit—**www.frdc.com.au**

PRINCIPAL INPUTS

During 2012–13, there was $0.74 million (about 3 per cent of the FRDC's R&D investment) invested in R&D activities within this program.

SUMMARY OF PERFORMANCE INDICATORS FOR PROGRAM 4

Strategic challenge	Performance indicator	Target	Achievement
Resilient and supportive communities	Development of knowledge to better inform the community's perceptions of the industry and to increase support for the industry. Development of knowledge that can help the industry to adapt to change.	One project to investigate drivers of community perception of fishing industry.	» The FRDC has funded the project 'Let's Talk Fish: Assisting industry to understand and inform conversations about the sustainability of wild-catch fishing'. This project aims to investigate the drivers and beliefs community perception of the fishing industry.

EXTENSION FOR 'PEOPLE-FOCUSED' RESEARCH PROGRAM

FRDC research code: 2012/300—Social Science Research Coordination Program

It is not just fish stocks that need to be considered in the development of fisheries research and management strategies.

People are at the centre of all research, business and society; they are the critical factor in industry adoption of research outcomes. How people react and interact can be the difference between a successful research project and, more importantly, successful and viable businesses and industries.

The FRDC Board realised that industry research could achieve better results if the social dimension of industry issues could be integrated into the development of research projects and their outcomes.

In 2009, the FRDC initiated the Social Sciences Research Co-ordination Program (SSRCP), which has now been extended for a further three years. The program has increased awareness in the industry about how social science can improve outcomes. It has developed several tools to help researchers and industry groups incorporate people considerations into their projects.

In the past few years, more researchers are proposing projects that examine the social impact of decision making on the fishing industry. The social sciences program has provided and strengthened the opportunity to pursue this research.

Among the program's projects is one that has attempted to identify and quantify the health and wellbeing benefits of recreational fishing, looking beyond the economic and environmental impacts of the industry. Another study has evaluated the social and economic contributions of the fishing industry to communities on the mid and north coast of New South Wales. The findings have helped to inform negotiations on the development of marine reserves in the region.

Another project has evaluated the effectiveness of the financial adjustment program that followed changes to zoning within the Great Barrier Reef Marine Park. This evaluation is being used to develop compensation options for those affected by the expansion of marine reserves in other areas.

In South Australia, PIRSA is leading an FRDC-funded project to develop social objectives for fisheries management across Australia, which should be completed this year. The project has shown there is still a long way to go to better integrate social challenges and opportunities into fisheries decision-making processes. But there is a need for a continuing, dedicated social sciences program beyond the scope of the current project.

The explicit task of the SSRCP for the next three years is to work with industry and government agencies to improve their ability to re-orient daily approaches and incorporate social dimension in research issues. The program aims to see industry and fishery managers confident with the concepts of social research and able to engage with researchers to improve outcomes. The steering committee's objective is to elevate the industry's capacity to a point where the appropriate inclusion of social science research is routinely applied to fisheries issues.

While it might be easier to think that it is the fish that are managed, in reality it is people's behaviour, including how they interact with, and think about, fish stocks and the marine environment.

The program has been funded through to 2015, by which time the FRDC envisages that social science research concepts will be integrated into fisheries management approaches. The continuation of the program will embed social and economic elements in research and provide the opportunity for industry and management to make decisions that are based on the 'full picture'. Good decision making can only be achieved when all aspects of the issues are considered.

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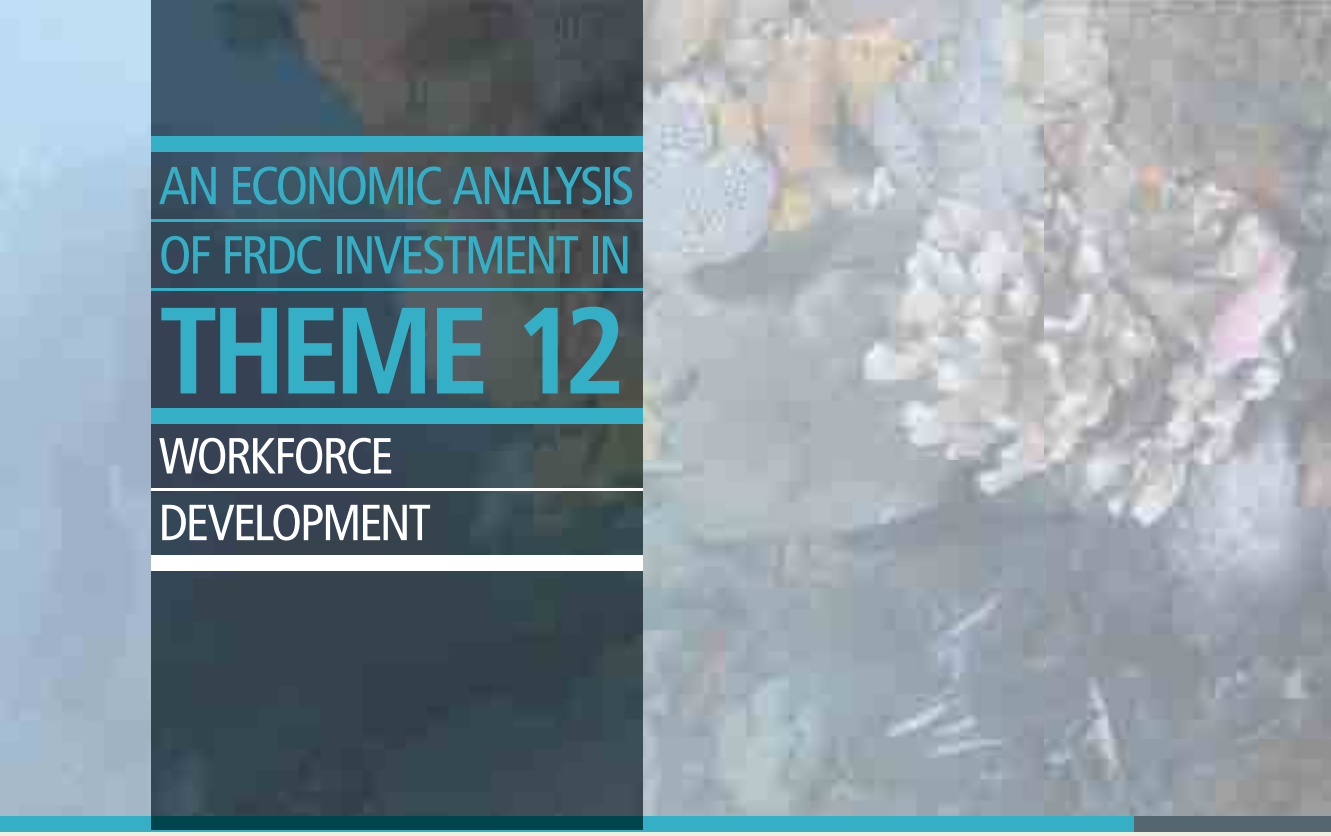


AN ECONOMIC ANALYSIS OF FRDC INVESTMENT IN THEME 12 WORKFORCE DEVELOPMENT

BACKGROUND

The FRDC currently has five research programs that translate to 15 themes. Under the Program 4: People development, there are three themes:

- Theme 11: Leadership development
- Theme 12: Workforce development
- Theme 13: Innovation skills

The following economic analysis is concerned with Theme 12: Workforce development. The objective of this theme is to understand, and plan to meet, the needed capabilities of the industry's future workforce.

The economic analysis of Theme 12 includes 11 projects which include investment in occupational health and safety (OH&S), ecosystem modelling, a database on R&D capacity and an employment web page. Several projects addressed current and future needs for workforce, skills and training. One of the 11 projects, on developing an online course, was discontinued.

SUMMARY OF PROJECTS

There are 11 projects included in the analysis of Theme 12: Workforce development.

Project number	Project title	Total
2000/311	Development of research methodology and quantitative skills for integrated fisheries management in Western Australia	$579,814
2002/232	A case study into the development of OH&S processes in the *Pinctada maxima* pearling industry to benchmark world's best industry diving practice	$71,656
2002/321	Pilot project for a national database on fisheries R&D capacity	$28,740
2002/322	Development of a fisheries stream in a new and innovative online course in environmental statistics offered by the University of Canberra	$8,000
2003/236	Accident statistic tool	$73,700
2003/415	Development of an OH&S induction training video for the post-harvest sector of the seafood industry	$42,000
2005/228	A pilot project conducted in the Western Rock Lobster industry to create a software audit tool for assessing occupational health and safety compliance with industry best practice on board a commercial fishing vessel	$120,264
2005/641	Aquatic Animal Health Subprogram: Current and future needs for aquatic animal health training and for systems for merit-based accreditation and competency assessments	$20,000
2007/307	Further development of an employment web page for the Western Rocklobster industry	$$27,550
2008/341	People development program: Workforce and skills summit	$31,626
2008/355	People development program: Progressing initiatives—career information and partnering in the Primary Industry Centre for Science Education	$12,544
Total investment		**$1,015,894**

BENEFITS

| | **PUBLIC** versus private benefits

The majority of benefits that have arisen (or may arise in future) from the investment are private in nature however, there are some public benefits as well. The fishing industry has been identified as the key beneficiary for all benefits identified, but most of these will also spillover to the public.

| | **DISTRIBUTION** of benefits along the supply chain

The private benefits are likely to be shared along the supply chain including seafood consumers.

| | **BENEFITS** to other industries

It is likely that most industry benefits will be confined to the fishing industry.

| | **BENEFITS** overseas

It would be unlikely there would be any significant spillover benefits to overseas interests from the project investments.

RESULTS

All past costs and benefits were expressed in 2010/11 dollar terms using the consumer price index. All benefits after 2010/11 were expressed in 2010/11 dollar terms. All costs and benefits were discounted to 2010/11 using a discount rate of 5 per cent. The base run used the best estimates of each variable, notwithstanding a high level of uncertainty for many of the estimates. Investment criteria were estimated for both total investment and for the FRDC investment alone. All analyses ran for the length of the investment period plus 30 years from the last year of investment (2009/10) to the final year of benefits assumed.

OBSERVATIONS FOR FUTURE INVESTMENT AND EVALUATION

For some of the projects included in this analysis, it was difficult to make the connection between the project and Theme 12. For example, project 2000/311 did not address the theme's objective to understand, and plan to meet, the needed capabilities of the industry's future workforce.

The outcomes of some projects (e.g. any usage of the project's outputs) were unknown despite making contact with FRDC, the principal investigator/organisation and in some cases the industry itself. When outcomes are unknown, the actual impact of the project is unknown and hence any evaluation of its benefits is highly uncertain. It may be in FRDC's interest to develop processes for following up on projects that have finished, so that a more conclusive analysis can be undertaken of the project/s.

It is noted that there are OH&S projects in Theme 12 as well as other themes. For the purposes of evaluation, it would be beneficial for all OH&S projects to be grouped together.

CONCLUSION

Six types of benefits were identified, with some projects delivering more than one benefit type. All six benefit types are private in nature with five also of benefit to the public.

Three benefits were valued in the analysis. They were improvements in the workforce and skills base, greater R&D efficiency and effectiveness, and increased costs to the pearl industry were avoided.

The total investment of $5.04 million (present value of costs) has been estimated to produce gross benefits of $9.43 million (present value of benefits) providing a net present value of $4.38 million, a benefit cost ratio of 1.87 to 1 and an internal rate of return of 9.3 per cent. All used a 5 per cent discount rate, over 30 years from the last year of investment.

PROGRAM 4
PEOPLE DEVELOPMENT

INVESTING IN TOMORROW'S FISHERS

People are the cornerstone of any industry. For the fishing industry, it is vital that it continues to attract and develop people who will take the industry forward towards a sustainable and profitable future. The FRDC has taken a strong role in supporting people development, from employing and developing young researchers, through to facilitating access to leadership development for all levels of industry.

Projects funded under Program 4 primarily address the FRDC's People development program. However, this is also addressed, as a secondary but very important element, by projects within programs 1 and 2. For a full listing of projects visit the FRDC website—**www.frdc.com.au**

PRINCIPAL INPUTS

During 2012–13, there was $1.80 million (about 8 per cent of the FRDC's R&D investment) invested in R&D activities within this program.

SUMMARY OF PERFORMANCE INDICATORS FOR PROGRAM 4

Strategic challenges	Performance indicators	Targets	Achievement
Leadership development	Provision of knowledge and opportunities to develop leadership skills and diversity across all sectors of the industry and across aligned stakeholder groups, including researchers and resource managers. Development of knowledge, skills and processes to support industry to engage in debate, adapt to change, and move toward co-management of fisheries.	Seventeen participants complete leadership courses	» Twenty-five individuals participate in the National Seafood Industry Leadership Program, Australian Rural Leadership Program, Governance Scholarship for Women, Emerging Leader Governance Scholarship, Indigenous Development Scholarship, and Women's Industry Network Seafood Community Professional Development Scholarship. » Sixty industry representatives have received high level training in communications, interview techniques and media relations.
Workforce development	Development of knowledge and tools to meet future workforce and skill needs.	Partnership project developed to improve workforce development	» Research was undertaken to assess the quality of the current data sets on employment and education and training in the Australian fishing industry. The project, undertaken by ABARES provides a set of recommendations of the key workforce data sets that need to be further developed, collected and compiled to satisfy stakeholder needs. » FRDC is investing in schools programs to build awareness about the seafood industry and the range of employment opportunities available. The Primary Industry Centre for Science Education, Primary Industries Education Foundation, and the Seafood Industry Partnerships in Schools are key programs.
Innovation skills	Mechanisms and tools to attract and nurture RD&E capability in priority areas. Opportunities to acquire insights, knowledge and skills to create innovative, market-driven enterprises and organisations.	Fifteen participants complete bursary program	» Four international travel bursaries » Two visiting expert bursaries. » One Young Innovators and Science Award. » Eight bursaries for young industry leaders to attend national conferences.

PEOPLE INVESTMENT ADDS STRENGTH TO INDUSTRY

Leadership, innovation and industry professionalism are key themes for the continuation of the FRDC's people development program.

Following the success of the program's first five years, a two-year extension until 2015 has been approved, with more than $500,000 of funding for specific initiatives including professional development awards, partnerships and commissioned training programs.

The FRDC's People development program manager Jo-Anne Ruscoe says rather than operating as a separate 'silo' program, investment will also be integrated into the FRDC's other program areas: environment, industry, communities, and extension and adoption.

The program's advisory committee will be disbanded in favour of seeking broader advice. The committee has successfully raised the profile of the program and provided the FRDC with the direction to invest in projects that have made a real difference to individuals and associations. However, it is now the aim to integrate people development within the FRDC's other planning structures, to ensure that human capability is being built to deliver on industry priorities. There is still a need for a dedicated program, to ensure it has the necessary national focus.

People development is an 'enabling' program—it allows all other programs to work more effectively. At a FRAB level, people development is often a lower priority than other issues when resources are allocated, although it is constantly said to be a high priority for industry. The FRDC aims to spend 10 per cent of its research budget on programs that will build the skills and capacity of people in the industry.

People development initiatives will target the specific RD&E priorities identified in the FRDC's RD&E Plan 2010–2015. The management of some people development awards will be transferred to more appropriate groups such as the FRDC's Indigenous Reference Group, which will take over the indigenous development scholarships.

Raising the professionalism—and public perceptions of industry professionalism—is a high priority. Initiatives supported will include training in leadership, media engagement and good governance, in order to influence community perceptions.

New initiatives in the people development program include a greater focus on innovation. The FRDC will prepare a formal innovation strategy and will invest in training to help industry members develop their capacity for innovation and adaptability, including responding to market changes and improving competitiveness. A scholarship program will nurture the next generation of innovators and researchers to help the industry find better ways to do things.

FUTURE PROGRAMS FOR PEOPLE

The following are among the initiatives the FRDC is planning to fund as part of its continuing people development program.

FRDC Development Awards—These awards include specific programs, scholarships and bursaries for training, workshops, conferences and exhibitions to build skills, expand knowledge and help establish industry networks. This includes funding for international exchanges and visiting experts, with activities to improve leadership and corporate governance activities also receiving support. Specific initiatives sponsored include the National Seafood Industry Leadership Program, Australian Rural Leadership Program, Nuffield Australia Farming Scholarships, Women's Governance Scholarships, Emerging Leader Governance Scholarships, Indigenous Development Scholarships, and the Women's Industry Network Seafood Community Professional Development Scholarships.

Primary Industries Education Foundation—To support the development of a skilled workforce for the industry, the FRDC is a partner in the Primary Industries Education Foundation, along with other RDCs. The foundation provides national leadership and coordination of initiatives to encourage primary industries education in schools through partnerships between industry, government and educators. It also aims to provide credible, quality information about primary industry R&D for schools and industry.

Media training—This is a new activity within the people development strategy and builds on the well-received workshops held in 2012. At least one media training course will be held annually.

Environmental responsibility training—Another new initiative will engage a facilitator to build national collaboration in the delivery of training with a focus on environmental responsibility.

Innovation and entrepreneurial capacity—FRDC will seek assistance from an 'innovation adviser' to better understand what is needed to encourage and support innovation within the industry and within its own structures. It will also seek assistance to advise on appropriate training courses or programs to build innovation and entrepreneurial capacity within seafood enterprises and organisations.

Postgraduate scholarships—Top-up funding will be provided for three postgraduate scholarships annually for research that targets areas of current and emerging industry need.

For further information: Jo-Anne Ruscoe, 02 6285 0400, jo-anne.ruscoe@frdc.com.au

PEOPLE DEVELOPMENT AWARDS IN 2012–13

FRDC's People development program offered a suite of programs, scholarships and bursaries to help build leadership, skills, networks and knowledge within the Australian seafood industry. In 2012–13, the program funded the following activities.

Visiting expert awards

- Hosted by the Department of Primary Industry and Fisheries, Northern Territory, Dr Raouf Kalida of the University of New Brunswick, Canada will travel to Australia to transfer knowledge regarding crustacean ageing techniques to Australian fisheries scientists.
- Hosted by SARDI, Dr Robert Stephenson of the Canadian Fisheries Research Network will visit Australia and collaborate with managers and industry in reviewing the effective implementation of ecosystem based fisheries management frameworks and the benefits to the broader community.

International travel bursaries

- Jamin Forbes of the New South Wales Department of Primary Industries Narrandera will attend and present at the American Fisheries Society Conference and participate in mentoring with recreational survey experts Mark Allen and/or Ken Pollock.
- Mark Hilder of Salmon Enterprises of Tasmania will travel to Vancouver to develop expertise in managing facility biosecurity.
- Mr Leyland Campbell, policy officer with Recfishwest will attend the World Recreational Fishing Conference in Brazil 2014.
- Mr Brett Cleary, president of the Game Fishing Association of Australia, is also off to the World Recreational Fishing Conference in Brazil 2014.

Women's Industry Network Seafood Community Professional Development Scholarship

- Esmay Hropic, of Batemans Bay has been funded to undertake undergraduate legal studies at University of Canberra with the aim of providing future professional support for fishers.

Peter Dundas-Smith Scholarship

› Dr Trent D'Antignana (pictured) has been awarded the 2013 Peter Dundas-Smith Scholarship, valued at $10,000 to undertake postgraduate training in the area of financial and business management with an emphasis on aligning a financial strategy with a farming strategy. Trent is currently on secondment from Flinders University to Clean Seas Tuna as R&D Manager. During the period of the scholarship he will be mentored by Nick Burrows, a professional director and governance/finance specialist.

Australian Rural Leadership Program—FRDC scholarship recipients

› Ben Cameron, Cameron's Oysters, Tasmania

› Jedd Routledge, Natural Oysters, Coffin Bay, South Australia

In addition, the FRDC and Seafood CRC sponsored seven participants to undertake the Seafood Executive Program and three to take part in the company directors course run by the Australian Institute of Company Directors.

For further information: Jo-Anne Ruscoe, 02 6285 0445, jo-anne.ruscoe@frdc.com.au, www.frdc.com.au/peopledevelopment

AGE BARRIER BREAKTHROUGH

Jesse Leland recently won the FRDC-sponsored 2013 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry. He has published details of an innovative ageing technique that uses cross-sectional analysis of gastric ossicles (stomach bones) and other calcified structures.

He says the FRDC award will allow him to continue researching invertebrate ageing as his primary area of interest. Hopefully, it will be a stepping stone towards other larger projects that will keep Australia at the forefront of crustacean-ageing research worldwide, while facilitating continuing sustainable management of our fisheries.

The idea actually came from a colleague who was fascinated by the usefulness of gastric ossicles in taxonomy and after sectioning some, Jesse found that they contained growth marks. The fact that gastric growth records can be retained through moulting has been validated in the scientific literature. Until recently it was assumed that growth by moulting excluded the possibility of a permanent growth record; only indirect, and somewhat imprecise, methods for age estimation were available. Knowledge of age, growth rates and life span is critical for understanding important events in a species' life history, such as reproductive maturity, entry into the fishery and natural mortality.

Based at Southern Cross University's Lismore campus and the National Marine Science Centre at Coffs Harbour, Jesse will use his $16,000 award from the FRDC to apply his ageing methodology to two commercially and recreationally important Australian crustaceans, beginning with Redclaw Crayfish (*Cherax quadricarinatus*) and Mud Crab (*Scylla serrata*).

Jesse chose redclaw as an ideal model species for developing ageing protocols, which can then be applied to Mud Crab. However, this is just the beginning and he hopes to age many other Australian crustaceans, starting with the most economically important and potentially long-lived species in the future. He expects the protocols will also be extended internationally, especially to long-lived and deep-water species for which even indirect ageing methods are impractical. The knowledge obtained from this research will facilitate sustainable management of Australia's crustacean fisheries, which is of utmost importance to the entire industry.

One major uncertainty currently facing fisheries managers is how changing environmental conditions may affect crustacean growth rates. But as a prerequisite to this, they must first accurately understand current, or 'normal', growth rates. In the future, validated age and growth models will be a valuable tool for monitoring changes among crustacean stocks.

Jesse is completing his PhD thesis on the physiology, injury and survival of discarded crustaceans in New South Wales, and preparing scientific publications on determining the age of Australian beachworms. Soon, his research will focus solely on crustacean ageing, and he is excited about the prospects for his chosen field, crustacean biology.

For further information: Jesse Leland, jesse.leland@scu.edu.au

AWARDS RECOGNISE YOUNG RESEARCHERS

FRDC research code: 2008/351—People development program: Sponsorship of AMSA student prizes

The FRDC recognised the efforts of two young marine researchers at the Australian Marine Sciences Association's (AMSA) annual conference, held in Hobart in July.

University of Melbourne PhD candidate John Ford won the FRDC award for best student presentation at the conference. The presentation outlined his research on the complex predatory–prey relations on temperate rocky reefs in Melbourne's Port Phillip Bay.

Kate Picone, an honours student at the Institute of Marine and Antarctic Studies at the University of Tasmania, won the FRDC award for the best student poster presentation. Her poster detailed her studies of zooplankton communities in the East Australian Current.

FRDC research projects manager Carolyn Stewardson says the awards aim to encourage good research and young researchers in the early stages of their careers.

Reef predator interaction

John Ford's presentation was titled 'Predicting the consequences of predator loss on prey: An example from temperate rocky reefs'. John is completing his PhD on fish ecology and has spent the past six years researching rocky reef fish in, and around, Port Phillip Bay, clocking up almost 500 dives.

Predicting how the loss of a predator species will affect the population of prey requires an understanding of how different predators interact. Multiple predators foraging together can reduce the survival of prey by being more efficient when working together (risk enhancement) or increase the survival of prey by interfering with each other (risk reduction).

John's research has found a very high mortality among juvenile reef fish immediately post settlement from two sources—benthic and pelagic predator guilds. The few previous predator manipulation studies have found, or assumed, that mortality is independent and additive. John tested whether interacting predator guilds result in non-additive prey mortality and if the detection of such effects change over time as prey are depleted.

His test, using juvenile temperate reef fish (*Trachinops caudimaculatus*) on artificial reefs in Port Phillip Bay over two months, found an enhanced risk from combined predator threats in the first seven days. Shoaling behaviour put the prey between predator foraging domains with no effective refuge. Risk enhancement gradually declined as pelagic predator interest declined during the following two months.

John says it is possible that declines in prey density led to reduced shoaling behaviour and brought prey more often into the domain of benthic predators, with limited the mortality from predators. However, the predators may have spent less time patrolling reefs because of fewer numbers of prey.

John's observation of the changing interaction between predators and prey has important implications for assessing the role of predation in regulating populations in complex communities.

Zooplankton studies

Kate Picone's poster was titled 'Seasonal and latitudinal changes in zooplankton community composition along the East Australian Current: The AusCPR survey'. Her research aims to map zooplankton biodiversity and distribution in eastern Australian waters, providing the first long-term plankton baseline for Australia. It will help assess how plankton communities respond to climate change.

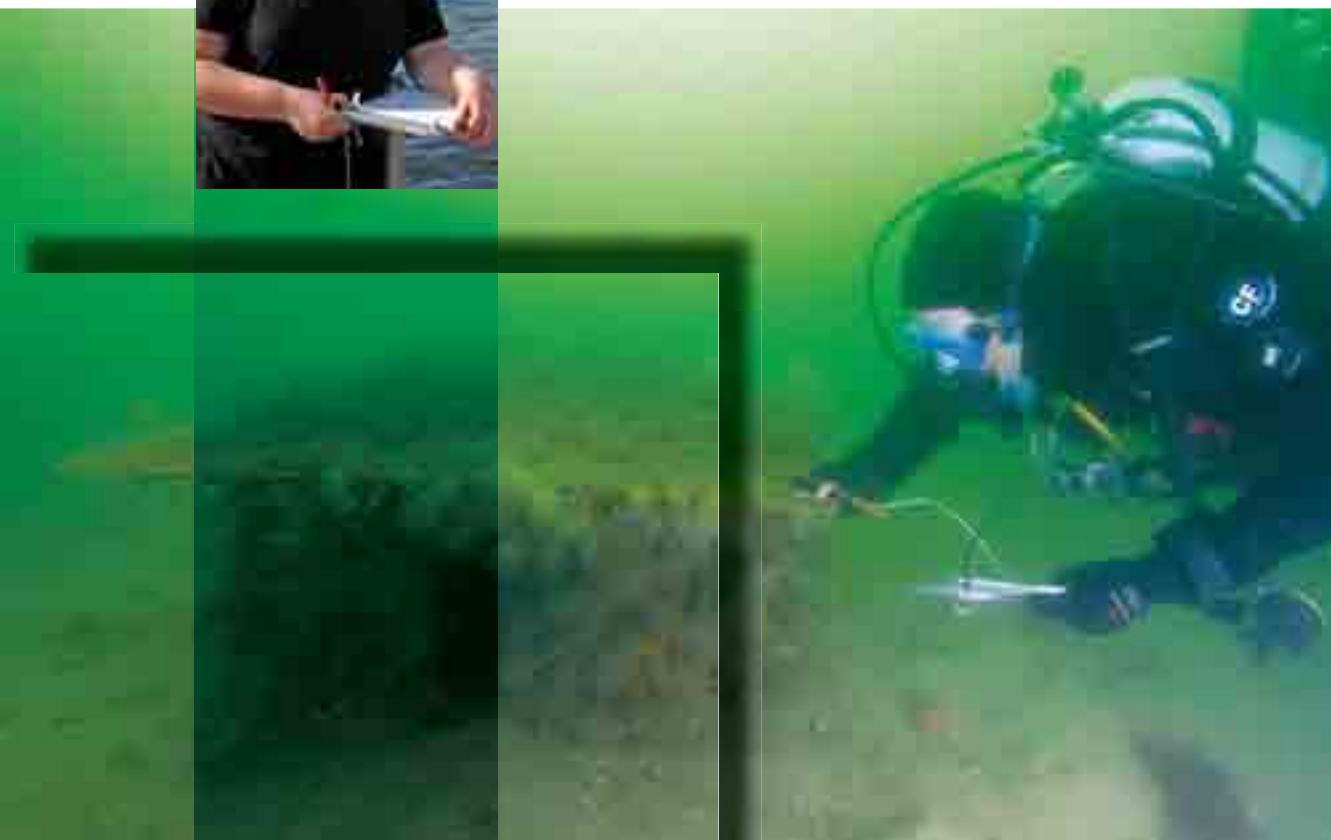
The poster presented some of her preliminary findings, showing that zooplankton communities along the east coast of Australia have high annual and seasonal variation. This highlights the importance of long-term continued studies that can provide critical information on potential impact of climate change, and how it might alter the productivity of our oceans.

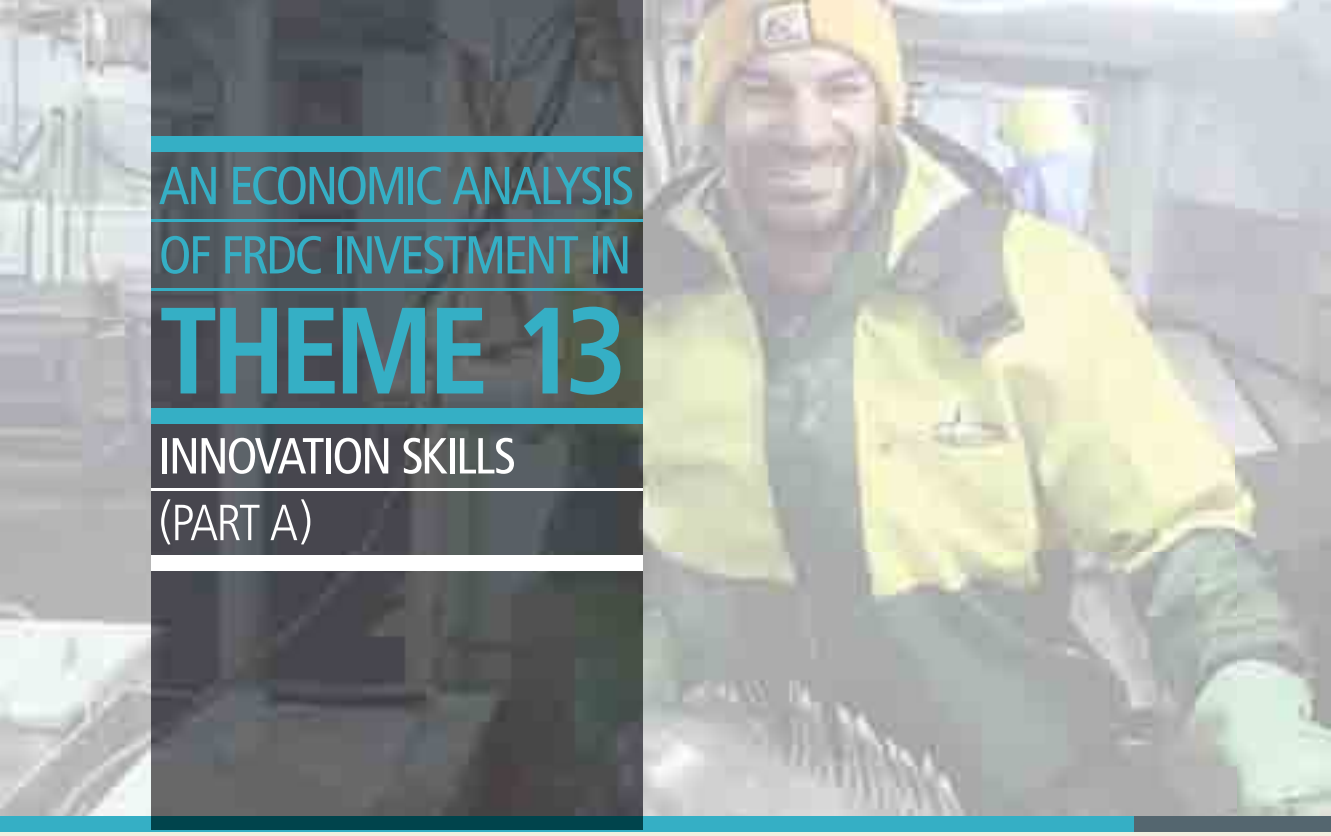
Plankton form the base of the marine food web in most of the ocean and are an important food source for almost all young fish, as well as for adults of species, such as anchovies, sardines and Whale Sharks.

In 2010, there was significantly more zooplankton compared with 2009 and 2011. The strong 2010 La Niña led to flooding in much of Australia and modified oceanographic conditions, resulting in increased upwelling of nutrients and greater abundance of zooplankton. The highest concentrations were seen in spring and autumn, and attributed to large seasonal blooms of zooplankton between Sydney and Melbourne.

To collect her data, Kate uses an ingenious yet simple device, the continuous plankton recorder which measures the patchiness of zooplankton communities over large parts of the ocean. Amazingly, this device was first used to collect plankton samples in Antarctic waters in 1926 and has remained virtually unchanged since.

For further information: John Ford, jford@unimelb.edu.au and Kate Picone, kmpicone@utas.edu.au





AN ECONOMIC ANALYSIS OF FRDC INVESTMENT IN THEME 13 INNOVATION SKILLS (PART A)

BACKGROUND

The FRDC currently has five research programs that translate into 15 themes. The People development program (Program 4) is an enabling program to build leadership and research capacity, and foster a skilled workforce and innovation at all levels. The Program has three themes:

- Theme 11: Leadership development
- Theme 12: Workforce development
- Theme 13: Innovation skills

The objective of Theme 13 is to build human capability to produce and adopt knowledge, technologies and innovative practices. This building of RD&E capability and innovation skills applies to both the fishing and aquaculture industries and their supporting research communities.

Theme 13 is divided into two clusters, Part A and Part B. The current analysis addresses Part A where projects focus on capacity building investments and planning initiatives. Capacity building investments were made in individuals, partnerships, industry structures and representation, sectoral understandings, people and technical skills (e.g. aquatic health) and networks. More strategic investment was made in people development planning at a broad level, social science research, strategic goals and R&D priority setting.

SUMMARY OF PROJECTS

There are 16 projects from Theme 13: Innovation skills (Part A) included in this analysis.

Project number	Project title	Total
2002/231	Occupational health and safety national extension strategy	$408,233
2005/309	People development review	$43,800
2005/321	Ollie's Island—interactive edu-tainment program exploring sustainable production and consumption (pilot project)	$30,000
2005/322	Establishing a recreational fishing working group to develop a national implementation plan RD&E	$78,056
2005/324	Capacity building of the Tasmanian seafood industry, developing a set of high level strategic goals	$5,000
2007/304	Empowering stakeholders to initiate and advance R&D projects in the seafood industry	$136,000
2007/312	A review of the performance of the Board of Recfish Australia	$27,600
2007/316	Capacity building in the surveillance, diagnosis, and management of disease issues of pearl oysters	$9,500
2007/317	Food Executive Program	$4,950
2008/311	Tactical Research Fund: Moving to a common vision and understanding for equitable access for indigenous, recreational and commercial fishers. Northern Territory fishing and seafood industry delegation to New Zealand	$57,123
2008/317	Aquatic Animal Health Subprogram: Intensive pathology training workshop for laboratory diagnosticians.	$9,900
2008/321	Tactical Research Fund: Assessing the technology transfer and people skills requirements for the introduction of mullet processing on the east coast similar to Shark Bay frozen sea mullet fillets	$10,387
2008/354	Tactical Research Fund: Investigating the establishment of a national aquatic animal health industry reference group	$4,500
2008/759	Seafood CRC: Helping emerging leaders develop networks and make more effective use of scientific and community resources, knowledge and skills	$7,086
2009/314	Strengthening partnerships and relationships within the recreational fishing sector	$20,257
2009/317	Tactical Research Fund: Research audit of social sciences fisheries research	$33,873
Total investment		$886,315

BENEFITS

| | PUBLIC versus private benefits

Both private and public benefits will arise from the investment in these projects. On the basis of the distribution of benefits, and equal weighting for each, it could be concluded that public benefits to Australia could make up 40 per cent of total benefits. If subjective weightings are taken into account, public benefits would still make up about 35 per cent of total benefits.

| | DISTRIBUTION of benefits along the supply chain

The private economic benefits and costs from building people capacity and more effective industry development could be captured initially anywhere along the supply chain. However, the costs and benefits resulting from change will be shared along the input supply and marketing chains, including with seafood consumers.

| | BENEFITS to other industries

It is likely that most industry benefits will be confined to the seafood industry.

| | BENEFITS overseas

It would be unlikely there would be any significant spillover benefits to overseas interests from the project investments.

OBSERVATIONS FOR FUTURE INVESTMENT AND EVALUATION

These include:

- The FRDC project management system was found to be valuable in being able to easily extract funding information by project by financial year across a range of individual R&D areas. However, it could be improved if summary tables for each year by R&D area (time series) were also available.
- The ratio of FRDC funding to total funding for projects funded by FRDC in this cluster was 29 per cent, lower than the average percentage (40 per cent) found for 18 clusters in 2009. This was surprising given the strategic nature of the projects where it could have been expected FRDC may have contributed a more significant funding percentage. However, when the Ollie's Island project (very high level of external funds) was excluded from the 16 projects, the FRDC percentage rose to 60 per cent. These percentages are worth summarising as they may be important in assessing the FRDC's current and prospective roles in different R&D areas and where public benefits are manifest, but external funding is difficult to attract.
- The projects in this cluster did not fit comfortably with the name of the theme 'Innovation skills'. While many of these projects could result in innovation skills and innovation benefits down the track, there could well be many other implications from these project investments in terms of effectiveness and efficiency without any innovation. If the 16 projects were grouped into individual topic areas, the topic areas could be better described as industry capacity building, split into two subgroups, external interfaces and internal.

CONCLUSIONS

On the basis of the distribution of benefits, and equal weighting for each, public benefits to Australia could make up 40 per cent of total benefits. If subjective weightings are taken into account, public benefits would still make up 35 per cent of total benefits.

Four benefits were valued in the analysis. The principal benefits valued from this cluster were an increase in person and industry capacity, industry development, and research effectiveness.

Overall, the investment criteria estimated for the total investment of $4.5 million (present value of costs) in the cluster were positive with a present value of benefits of $6.9 million, a net present value estimated at $2.4 million, and a benefit-cost ratio of over 1.5 to 1, all estimated using a discount rate of 5 per cent (benefits estimated over 30 years from the final year of investment). The internal rate of return was over 20 per cent largely due to the relatively short period between investment and benefits.

Investment was made in a total of 16 projects within the cluster with FRDC's contribution being about 28 per cent of total investment costs. This would have increased to 60 per cent if the Ollie's Island project was excluded, because of the very high external funds leverage apparent in this project. Moreover, if the costs and benefits for Ollie's Island were excluded altogether, the benefit cost ratio for the FRDC investment would have been significantly higher than the 1.5 reported.

PROGRAM 5
EXTENSION AND ADOPTION

Knowledge arising from R&D will be used and transformed into appropriate mediums to support stakeholder decision making, assist with achieving their objectives, and inform the broader community. For a full listing of projects visit the FRDC website—**www.frdc.com.au**

PRINCIPAL INPUTS

During 2012–13, there was $1.78 million (about 8 per cent of the FRDC's R&D investment) invested in R&D activities within this program.

SUMMARY OF PERFORMANCE INDICATORS FOR PROGRAM 5

Strategic challenges	Performance indicator	Target	Achievements
Extension and adoption	Increase in rates of adoption.	Alternate method for disseminating final reports and project outputs trialled.	» Two new approaches were trialled during the year. The FRDC established a social media presence on Facebook and this was used to promote final reports once they were loaded onto the FRDC website. This method has proven to be very effective and has increased awareness rates of final reports. » FRDC also implemented a final report e-mail newsletter. This is sent (usually bi-monthly) to over 4000 stakeholders who have subscribed to the FRDC website.

SCIENCE FOUNDATION FOR IMPROVED FISHERIES INFORMATION

The FRDC is bringing together its knowledge to provide the community with a more accurate picture of the Australian fishing and seafood industries.

It has been just over a year since the FRDC launched its strategy to promote the science and best practice that underpins the Australian seafood and angling industry. The strategy has aimed to address the community's poor perception of the sustainability of the fishing industry, which may have stemmed from a lack of awareness and understanding of the current practices and management.

The strategy covers four areas: industry unity, media relations, community relations and stakeholder advocacy 'influences'.

The FRDC's primary role in the strategy is developing and distributing factual information to stakeholders and the community, with a focus being on correcting any inaccuracies or misleading stories about marine science that come from media sources.

Industry, government, researchers and fisheries managers will implement the strategy and respond accordingly based on their area of expertise. It is appropriate that responses come from the right sources and are seen as unbiased. For instance, it is not appropriate for the FRDC to comment on management issues, and where such issues arise they are passed on to the relevant organisations for response

The FRDC's work has focused on four areas: briefings and awareness, media delivery and response, knowledge development, and website and social media development.

The role for the FRDC in the first area—briefing and awareness—is to add value and assist managers, fishers and other stakeholders to raise awareness of the issues that need addressing, or to bring together groups to discuss issues. For example, a key area for disagreement between stakeholders is concerned with not having a common understanding of a set of terminology. The FRDC has funded the development of a common language group to facilitate meetings between, sometimes disparate stakeholders (environmental organisations and industry), to look at an issue such as this, gain a common understanding and find a joint path to addressing it.

The FRDC has also actively engaged in informing chefs and the food industry about how the fishing industry is managed, and how the practices and science that underpins it is vital to its continued success. The people who sell and cook the fish that Australians eat have great potential to communicate benefits of seafood to a large number of end-point consumers and the community as a whole. The FRDC has participated in key events and programs to educate and answer questions raised by the community.

Over the year, the FRDC has assisted key media agencies prepare more than a dozen feature articles on the seafood industry. This has helped ensure that coverage remains factual and representative of the state of play. The FRDC has sought to correct inaccurate or misleading articles that have appeared where examples have been sourced from overseas (hence suggesting these reflect normal operations in Australia), or they have used incorrect data. Many times this is because the author was not aware of the most up-to-date scientific information.

A range of new knowledge products have been developed over the course of 2012–13 to explain complex issues or to help educate the community. These range from simple pieces of data analysis (see image of the size of the Australian fishing industry) through to complex science around issues like climate change (see story on the online portal Redmap on page 83). A key focus for the FRDC must be on maintaining independence and accuracy.

The FRDC will continue to develop new material in 2013–14 mainly aimed at the community. It will engage them via social media to ask and find out what issues or information they would like.

Website and social

The internet (websites, social media, e-mail, e-newsletters) are a major channel for disseminating research findings for the FRDC. The FRDC has expanded its presence, making this the central platform from which to base its communication efforts.

The three main FRDC web presences are:

- **www.frdc.com.au**—the FRDC's core science site,
- **www.fish.gov.au**—the status of key Australian fish stocks reports,
- **www.fishfiles.com.au**—a dedicated consumer education site.

During the year the functionality and usability of the FRDC website was updated and refined. A key addition has been a set of simple question and answer factsheets that provide information on a range of specific issues.

FRDC joins Facebook—http://facebook.com/FRDCAustralia

A significant step for the FRDC was stepping into the social media space. However, before taking this step, considerable work was done to ensure the correct policy settings and processes were put in place—including updating and improving staff knowledge of this medium. The Facebook page aims to promote the latest events, project updates, research facts, fish facts, photos and more.

PERFECT SEAFOOD SECRETS REVEALED IN FISHFILES

Mention seafood to most Australians and it conjures up a kaleidoscope of wonderful images and memories for many. Despite this, seafood consumption varies greatly across Australia and is generally not well understood by the public at large. There are many reasons for this: personal preferences, don't like the smell, proximity to fresh seafood supplies, cost and perceived value, difficulty assessing freshness, lack of skill in choosing a product and understanding on how to prepare it.

The negative indicators by consumers are the most salient, and underpin why the Fishfiles website was developed. The website draws on the FRDC's 20 years of research and aims to address and provide the knowledge to address consumers' confidence in buying, handling, storing and preparing seafood.

Another key driver for the development of the site is the FRDC's obligation to ensure knowledge generated from public research funds is available and benefits the community. Fishfiles aims to do this in the most easily accessed and targeted way for seafood consumers.

Website—www.fishfiles.com.au

A major component of the information provided on this website is based on the *Australian seafood users manual*. It provides a logical and easy-to-use format that explains handling and preparing seafood. In addition to the manual, recipes, videos and research on storage, quality, cooking and safety have been added. If people are after information on the status of a fish stock, Fishfiles will point them to www.fish.gov.au, which provides information on the government stock status reviews for 49 key Australian culinary seafood species.

The Fishfiles website will contain all the base information, while the Fishfiles Facebook site will communicate the information.

Fishfiles Facebook page—www.facebook.com/fishfiles

The Fishfiles Facebook page is designed to link the information on the FRDC's three websites, as well as partner sites (such as Sydney Fish Market, CSIRO and universities) and the broader community. The page also broadens the reach of the FRDC to a new food focused part of the community and provides a way to share the information that helps underpin the Australian fishing industry.

Facebook provides the FRDC with a way to start a dialogue with the community, responding to questions about the information being put forward.

Fishfiles YouTube channel

Video is an important component of the Fishfiles website. It is integrated into the website, but hosted on its own Fishfiles YouTube channel. The video content provides behind-the-scenes insight into what fishers, retailers, scientists and chefs think and know about seafood. The stakeholders taking part are experts in their chosen fields and will provide the viewer with confidence in the message being delivered.

Each segment is compiled into one of three formats designed to give information in a different way—'all access', '60 seconds with …' and 'how to?'. They are filmed in a style that gives the viewer confidence that FRDC's Fishfiles is a legitimate and reliable source of information.

Ultimately, the website helps consumers to get more from the seafood they buy through improved handling, reduced waste and a better end product—a tasty seafood meal.

For further information: Peter Horvat, peter.horvat@frdc.com.au

ONLINE PORTAL EXTENDS MARINE SPECIES MAPPING

FRDC research code: 2011/088—El-Nemo SE: Extending the Redmap pilot to south-east Australia—using citizen science for engagement and early indication of potential new opportunities

In 2009, the interactive online portal Redmap began collecting reports and photos from Tasmanian divers and fishers of 'geographically unusual' marine animal and plant life. Within four years it has attracted more than 450 sightings of marine life not normally found in Tasmanian waters and now the project is going national.

Redmap was initiated by the Institute for Marine and Antarctic Studies (IMAS) at the University of Tasmania with support from the Tasmanian Community Fund. Gretta Pecl, IMAS marine ecologist and Redmap's primary investigator, says the expansion of the program relies on a national network of scientists who study and verify sightings.

However, it has also revealed the considerable (and often untapped) knowledge of fishers and divers, who have a high accuracy rate in correctly identifying the species reported to Redmap.

Much of Redmap's appeal lies in the value of being able to communicate with sections of the community that the department does not routinely engage with, such as recreational divers and underwater photographers.

Redmap will allow researchers to collect reports from recreational and commercial fishers and divers about unusual things they are seeing in the ocean in a more structured way. Historically researchers and management agencies received information from time to time, in the form of ad hoc phone calls and e-mails, which can get lost in the system. Redmap will be able to deal with reports of unusual sightings in a more organised manner.

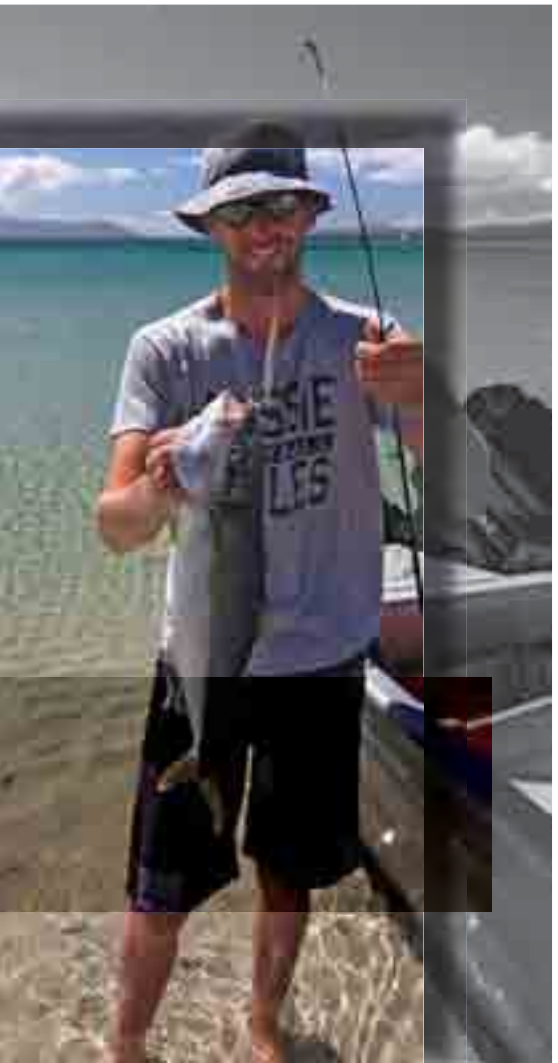
Researchers in Western Australia are using Redmap to meet several objectives, including tracking the movements of marine pest species such as Japanese kelp (wakame), European green crab, Asian green mussel and the North Pacific seastar.

The marine heatwave incident that occurred in waters along the west coast in the summer of 2010–11 (see story on page 43) provided researchers with some interesting insights into what might happen if this becomes a more regular occurrence. Warmer water species such as Whale Shark and Spanish Mackerel were reported off Albany on the south coast, many hundreds of kilometres further south of where they would be expected.

The Redmap national steering committee have started developing an evaluation tool to determine whether sightings of animals or plants reflect a range extension, or they are just vagrant individuals. If a range extension has occurred, this will not necessarily have negative consequences and there may well be some positive effects.

Over time the data collected in Redmap will feed into the various fisheries management systems. This will be particularly important for those species that straddle state boundaries and will require cross-jurisdictional management.

Whether or not that has an impact on the ecosystem is a very different question. Some species may start to move into new territory (for that species) and have virtually no impact whatsoever. However some will make their presence known—they could eat juveniles of commercial species, or have some other negative impact, like the long-spined sea urchin does.

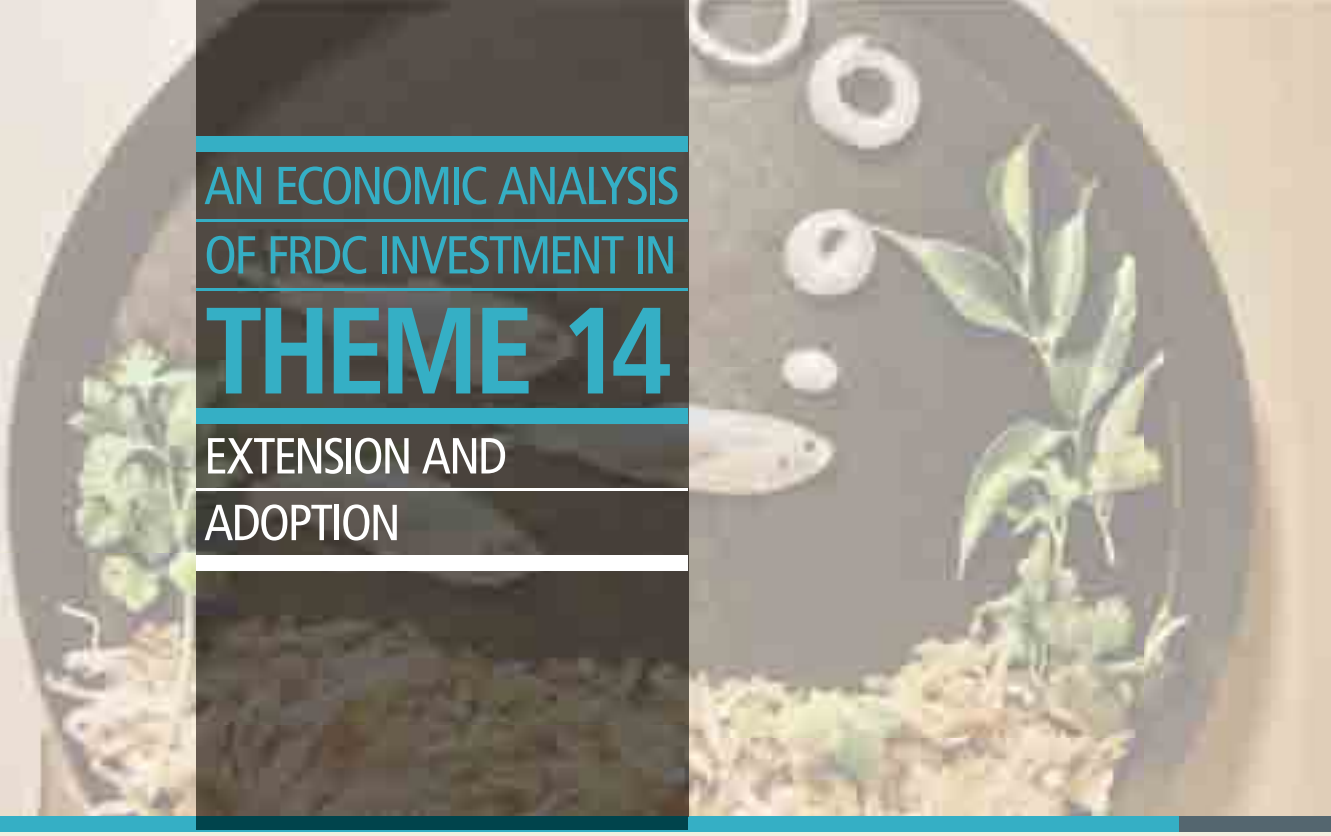


The results and sightings started coming in shortly after the site was launched, with New South Wales already contributing about 60 species to the list of those moving beyond their traditional habitat. Among these will be butterflyfish, Coral Trout, turtles, and some shark.

Researchers say it is not unusual, courtesy of the East Australian Current, to see tropical species coming into Sydney waters, but they often tend to be temporary residents. They come as juveniles and can't stay over winter. Redmap will be valuable in helping identify species taking up permanent residency, going through to adulthood and being part of a permanent population in New South Wales.

Other developments for the Redmap project will include a new smartphone application, videos and a Facebook presence. The national rollout of Redmap is also supported by the Australian National Data Service, the Australian Government's 'Inspiring Australia' strategy and DAFF.

For further information: Gretta Pecl, gretta.pecl@utas.edu.au



AN ECONOMIC ANALYSIS OF FRDC INVESTMENT IN THEME 14

EXTENSION AND ADOPTION

BACKGROUND

The FRDC currently has five research programs that translate to 15 themes. Extension and adoption (Program 5) is an enabling program to build the best possible delivery of extension and adoption activities for the fishing industry.

The objective of Theme 14 is to achieve change through timely delivery of accessible, accurate RD&E outputs to all stakeholders, including governments, managers, industry, the research community and the broader public. Priorities of Theme 14 are to assist end-users to:

- have timely access to RD&E project outputs and other knowledge,
- be part of appropriate knowledge management systems that build extension and adoption capacity.

The economic analysis of Theme 14 includes 27 projects. The projects include workshops, conferences, books, manuals, data management strategies, technology trials, and media tools. All outputs are aimed to increase adoption of better technologies, as well as to raise awareness about fisheries and aquaculture issues.

SUMMARY OF PROJECTS

There are 27 projects from Theme 14: Extension and adoption included in this analysis.

Project number	Project title	Total
2002/314	Third National Rock Lobster Congress 2003	$20,000
2002/653	Aquatic Animal Health Subprogram: Aquavet aquatic disease disinfection manual	$10,000
2003/300	Molluscan Fisheries and Aquaculture, World Congress of Malacology, Perth 2004	$15,000
2003/302	Zoological Catalogue of Australia, volume 35.2 Pisces. Completion of book and electronic publication	$15,000
2003/645	Aquatic Animal Health Subprogram: The development of media tools to increase the awareness of aquatic animal diseases	$113,630
2004/203	Innovative Solutions for Aquaculture: Extension, communication and adoption of outputs from PIRSA and FRDC initiative	$67,971
2004/246	*Australian Fisheries Statistics*	$190,938
2004/302	Seafood Directions 2005	$64,575
2004/304	Third National Prawn Fisheries Conference, Cairns 2004	$15,701
2004/306	The 4th International Fisheries Observer Conference	$20,000
2004/314	The 3rd National Abalone Convention 2005	$20,000
2005/054	Effects of Trawling Subprogram: Collaborative extension program by the Department of Primary Industries and Fisheries, Seanet and Ecofish for the development and adoption of square mesh codends in select prawn and scallop trawl fisheries in Queensland	$157,482
2005/302	International Aquaculture Conference 2006	$60,000
2005/314	Sharing the Fish Conference 2006	$20,000
2005/315	Data management strategy	$80,200
2006/302	Australian Society for Fish Biology Conference and Workshop 2006. Cutting edge technologies in fish and fisheries science	$20,000
2007/243	*Australian Fisheries Statistics* 2007–08	$55,213
2007/301	Australasia Aquaculture 2008	$60,000
2007/302	The 5th National Rocklobster Congress: Growing the future	$20,000
2007/308	Seafood Directions 2007	$60,000
2008/233	Tactical Research Fund: *Australian Fisheries Statistics* 2008	$59,194
2008/301	Australian Society for Fish Biology annual national workshop 2008: Assessment of recreational fisheries, current strategies, challenges and future directions	$20,000
2008/330	The 4th National Abalone Convention	$20,000
2008/336	The 2nd Biennial National Recreational Fishing Conference, 2008 Recreational Fishing Awards Ceremony and 2nd Recfishing Research National Workshop	$67,603
2008/337	Dissemination of FRDC marine turtle research at the 2009 international sea turtle biology and conservation symposium by hosting a sponsor stand	$14,000
2008/348	Sponsorship of 13th International Echinoderm Conference	$5,000
2008/352	People development program, 6th National Rocklobster Congress: Sustaining industry profits	$32,000
Total investment		**$1,303,506**

BENEFITS

| | PUBLIC versus private benefits

Both private and public benefits will arise from the investment in these projects. On the basis of the distribution of benefits to Australia, and equal weighting for each, it could be concluded that public benefits to Australia could make up over 40 per cent of total benefits. If subjective weightings are taken into account, public benefits would make up 45 per cent of total benefits.

| | DISTRIBUTION of benefits along the supply chain

The private economic benefits and costs from extension and adoption of more effective industry techniques and technologies could be captured initially anywhere along the supply chain. However, the costs and benefits resulting from change will be shared along the input supply and marketing chains, including with seafood consumers.

| | BENEFITS to other industries

It is likely that most industry benefits will be confined to the seafood industry.

| | BENEFITS overseas

There may be some spillover benefits to overseas interests from overseas attendees (e.g. New Zealand, Papua New Guinea and the United States) at the many workshops and conferences.

CONCLUSIONS

On the basis of benefits to Australia, and equal weighting for each, public benefits to Australia could make up over 40 per cent of total benefits. If subjective weightings are taken into account, public benefits would make up 45 per cent of total benefits.

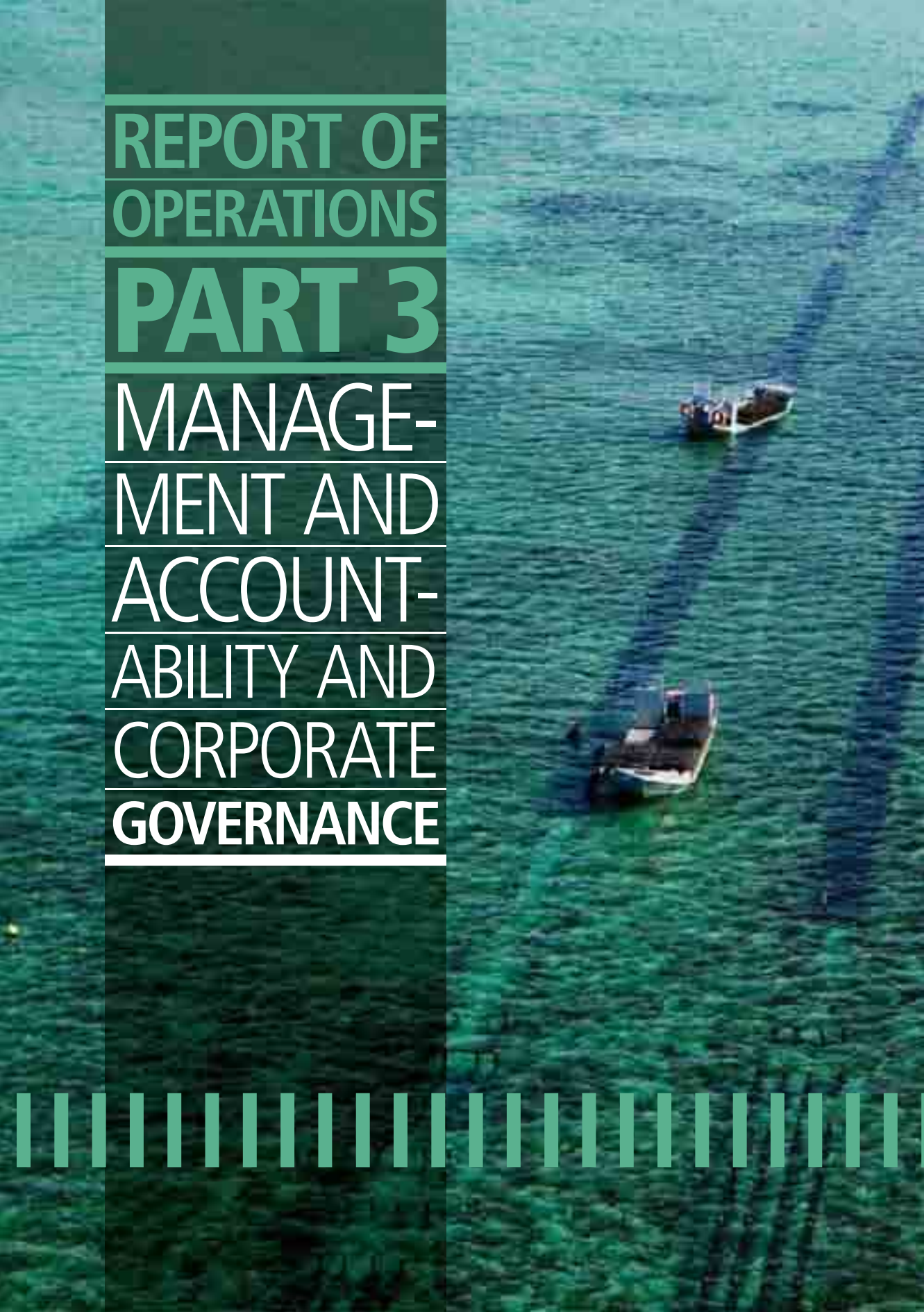
There were six types of benefits identified and only two were valued in the analysis. The benefits valued from this cluster of projects were enhanced industry development and improved research resource allocation.

Overall, the investment criteria estimated for the total investment of $4 million (present value of costs) in the cluster were positive with a present value of benefits of $6.66 million, a net present value estimated at $2.66 million, and a benefit-cost ratio of 1.7 to 1, all estimated using a discount rate of 5 per cent (benefits estimated over 30 years from the final year of investment). The internal rate of return was 45 per cent, with this high rate being largely due to the relatively short period between investment and benefits.

REPORT OF OPERATIONS

PART 3

MANAGEMENT AND ACCOUNTABILITY AND CORPORATE **GOVERNANCE**



Planned outputs for this program are focused on continually improving the FRDC management and accountability activities. Each year, information on explicit planned outputs is provided in the annual operational plan. Since these outputs contribute to the planned outcomes of the five R&D programs, they are crucial to the FRDC's effectiveness and efficiency. The FRDC's ISO-certified quality management system encompasses all these activities.

PRINCIPAL INPUTS

During 2012–13, there was $3.55 million (around 13.8 per cent) invested in activities within management and accountability.

PERFORMANCE INDICATORS

Since the management and accountability outputs contribute to the planned outcome of the FRDC's R&D programs, they are crucial to the FRDC's effectiveness and efficiency. These outputs are outlined on the following pages under the headings:

- Business strategy and planning
- Information management systems
- Corporate communications
- Risk management
- Quality system
- Human resources management
- Finance and administration
- Corporate governance

Performance indicators	Target	Achievement
Projects focus on the FRDC Board's assessment of priority research and development issues.	95%	All projects aligned to the priorities of the FRDC Board, government and industry stakeholders.
Projects are assessed as meeting high standards/ peer review requirements for improvements in performance and likely adoption.	95%	All projects met a high standard. Each project, where applicable, had an extension and development plan developed.
Maintain ISO 9001:2008 accreditation.	100%	FRDC maintained ISO 9001:2008 accreditation following an external audit.
Submit planning and reporting documents in accordance with legislative and Australian Government requirements and timeframes.	100%	Achieved: All corporate documents were submitted according to required timeframes.
Implement best practice governance arrangements to promote transparency, good business performance, and unqualified audits.	100%	Achieved: FRDC received an unqualified audit report for 2012–13 financial statements.
Demonstrate the benefits of RD&E investments by positive benefit cost analysis results.	100%	Achieved.

REPORT OF OPERATIONS PART 3

MANAGEMENT AND ACCOUNTABILITY

BUSINESS STRATEGY AND PLANNING

FRDC strategic planning and reporting documents (comprising RD&E plan, annual operating plan and annual report) were completed and presented within their duly legislated timeframes to the Minister for Agriculture, Fisheries and Forestry.

Over the course of the year, FRDC directors and staff worked together on both planning and risk management strategies documents for the Corporation. These documents aim to identify the key issues that face the FRDC, and outline strategies to take advantage of opportunities, and to minimise or mitigate against negative risks.

To increase the effectiveness and ensure the views of stakeholders are heard, the FRDC Board and staff use a range of mechanisms. These include consulting with representative organisations, FRABs, sector industry bodies, government and other RDCs through the Council of Rural Research and Development Corporations.

FISHERIES RESEARCH ADVISORY BODIES

The FRDC supports a network of FRABs covering Commonwealth fisheries and the fisheries of each state and the Northern Territory. The FRABs have an extremely important role in maximising the efficiency of the FRDC's planning and investment processes. In the 2012–13 annual competitive funding round all open call applications were submitted through, or reviewed by, the FRABs. The FRABs also played a role providing advice on Tactical Research Fund projects that related to their jurisdiction.

The FRABs represent all sectors of the fishing industry, fisheries managers and researchers, and almost all include environmental and other community interests. Their chairs in 2012–13 were as follows.

Commonwealth	John Glaister
New South Wales	Peter Dundas-Smith
Northern Territory	Andria Handley
Queensland	James Fogarty
South Australia	Catherine Cooper
Tasmania	Ian Cartwright
Victoria	Peter Rankin
Western Australia	Mark Tucek

For further information on the FRABs—www.frdc.com.au

SECTOR INDUSTRY BODIES

The FRDC has continued to build partnerships with individual industry sectors as these partnerships offer both parties a number of advantages. For industry they provide more involvement in determining and undertaking RD&E. For the FRDC they provide a more certain flow of funds and a greater understanding of the fishing industry.

OTHER CONSULTATION STRUCTURES

On 29 March 2013, the FRDC ran its annual stakeholder workshop in Canberra to discuss a number of issues including the National Fishing and Aquaculture RD&E Strategy, a review of the expression of interest approach to the annual competitive funding round, and the development of a new extension and adoption strategy.

In addition to the Corporation's fundamental operating philosophy of openness and accountability to its stakeholders, a number of other structures reinforce effective and ethical performance by the FRDC. They include steering committees at project and subprogram level, conferences, workshops and meetings.

INFORMATION MANAGEMENT SYSTEMS

During 2012–13 the FRDC maintained a status quo on its operating information technology (IT) systems. A key focus was around the development of policy and ensuring compliance with the Protective Security Policy Framework.

The FRDC joined the second phase of the whole-of-government enterprise agreement for purchasing Microsoft software.

Planning for future development continued, with a focus on the Microsoft XRM platform, that will host the FRDC customer relationship management system and how best to align and integrate it with the new systems that will be developed.

ENERGY EFFICIENCY

The Commonwealth Government's *Energy Efficiency in Government Operations Policy* seeks to improve energy efficiency in relation to vehicles, equipment and building design.

The FRDC adheres to the policy. The Corporation is a minority tenant occupying part of an office building and does not own motor vehicles or large equipment. Prudent management of power consumption is followed within the FRDC office. For example, timer switches have been placed in offices to reduce the time lights are left on and energy efficient lighting has been installed.

QUALITY SYSTEM

The FRDC is a certified AS/NZS ISO 9001:2008 organisation for quality, and undertakes both internal (cross team) and external audits annually with a recertification audit of its quality system triennially (due in 2013). The FRDC carried out five internal cross team audits in 2012 and underwent its annual external audit on 12 September 2012.

CORPORATE COMMUNICATIONS

Communication continues to be a major focus for the FRDC. Significant work was undertaken against the FRDC Board's strategy to promote science—see page 9. Interacting with the media was particularly important. The FRDC have actively engaged with journalists across Australia during the year providing information to to better inform their stories.

FRDC staff worked hard during the year to maintain their relationship with all stakeholders. One-on-one relationships are very important and underpin the 'partnership approach' the FRDC uses towards developing and disseminating RD&E. Staff use their time and opportunities to network with researchers, industry and government colleagues at many meetings over the course of the year.

FISH magazine is one of the leading fisheries research magazines in Australia and survey results indicate a high level of recognition and approval. Over the course of the year, readership increased slightly and is expected to grow in the coming year, especially with the development of a new electronic Ipad version of the magazine. *FISH* reported, and extended information, on RD&E projects that are underway or have been finalised. In the future FRDC will look to enhance hard copy editions and respond to reader requests for an electronic version designed for tablets.

The FRDC website grew in terms of the number of visitors and reports accessed. The number of final reports also increased with more than 1100 now available as free downloads. FRDC will continue, wherever possible, to make all final reports available from the website.

During the year the FRDC completed revamping its website and launched two new sites focusing on the status of fish—fish.gov.au and fishfiles.com.au. In addition to these sites, FRDC has ventured into social media—for more information see story on page 9.

RISK MANAGEMENT

There was no incidence of fraud at the FRDC during 2012–13.

The Board reviewed and approved the FRDC risk management framework at its February 2013 meeting. All staff participated in an internal risk workshop on 5 November 2012 which was used to update the Corporation's risk register. Additionally, the Board reviews the highest ranked risks at every meeting.

In 2012, the FRDC participated in Comcover's Risk Management and Benchmarking Survey which is conducted annually and provides an independent review of the FRDC's existing risk framework, involving a survey and a review of the documentation.

FRDC achieved a rating of 7.8 against the 10 elements of the Comcover benchmarking model. The average for individual peer group agencies (as defined by Comcover) was 6.9 compared to the average for the total 119 agencies evaluated which was 6.8 out of 10.

Risk management is incorporated into FRDC activities in accordance with its risk management policy, which is integrated into the Corporation's quality management system and internal audit program. The risk management policy also incorporates a fraud control framework in accordance with the Fraud Control Guidelines produced by the Attorney-General's Department which seeks to minimise the likelihood and impact of fraud. The FRDC also participated in an Australian Institute of Criminology survey during the year.

PROTECTIVE SECURITY POLICY FRAMEWORK

The FRDC has worked consistently during the year to align FRDC practices with the Protective Security Policy. It has implemented a number of physical and system changes to meet the requirements of the policy. These include installing both physical security and information technology improvements. The FRDC continues to work on improving its security policies and procedures with regards to security risk management.

INDEMNITIES AND INSURANCE PREMIUMS FOR OFFICERS

The Corporation holds directors' and officers' liability insurance cover through Comcover. During the year, no indemnity-related claims were made.

When appropriate, the FRDC may take out insurance policies to mitigate insurable risk.

FINANCE AND ADMINISTRATION

The 2012–13 audit report by the Australian National Audit Office confirmed the FRDC's financial statements gave a true and fair view of the financial position of the Corporation and there were no adverse findings associated with the audit.

The FRDC has continued to build partnerships with individual industry sectors. It currently directly invests with entities such as Southern Rocklobster Ltd, Australian Southern Bluefin Tuna Industry Association, Tasmanian Salmonid Growers Association, Australian Prawn Farmers Association and the Australian Barramundi Farmers Association. These partnerships offer both parties a number of advantages. For industry they provide more involvement in determining and undertaking RD&E. For the FRDC they provide a more certain flow of industry funds and ultimately a greater understanding of the fishing industry.

A sample of the sectors that have contributed significantly to the maximum matchable contribution is shown in table 4: Contributions, maximum matchable contributions by the Australian Government and returns on investment, 2012–13 (page vii).

FRDC also holds a share in Australian Seafood Co-products (ASCo) which is a company developed to look at alternate uses for fish processing waste. During the year ASCo has been finalising an agreement with Incitec Pivot to produce the organic fertiliser Biophos.

AGREEMENTS AND CONTRACTS

Each year the FRDC engages companies, research institutions, and government agencies to undertake research. The process for applying for funding is clearly outlined on the Corporation's website. Each organisation selected is directly engaged under contract for that project. A list of all active projects, including projects approved by the FRDC Board is available on the website—**www.frdc.com.au**

|| CONSULTANCY services and selection of suppliers

During the year, the FRDC engaged seven consultancies (as defined in the Department of Prime Minister and Cabinet document, *Requirements for Departmental Annual Reports*) to the value of $10,000 or more.

Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	Clayton Utz Legal advice $31,373.76
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	Forestier & Co Interiors Quality Management Consulting $34,245.00
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	HWL Ebsworth Lawyers Legal advice $39,656.00
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	Kyaw Kyaw Soe Hlaing Information technology advice $41,343.86
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	Mercer Human Resources Consulting Pty Ltd Review services $10,325.00
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	PPC Worldwide Total Employee Assistance program $33,365.54
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	Sustineo Pty Ltd Accounting Services $33,365.54
Name of consultant Nature and purpose of consultancy Cost (exclusive of GST)	Strategic Fitness Noosa Pty Ltd Information technology advice $128,718.78

When selecting suppliers of goods and services, the FRDC follows its procurement procedure—which seeks to achieve value for money and to deal fairly and impartially. The FRDC policies and procedures align with the principles contained in the Commonwealth Procurement Rules. Obtaining value for money does not necessarily require the cheapest supplier to be selected. Other factors considered are urgency, quality, ethical conduct of the supplier, and whole-of-life costs.

HUMAN RESOURCES MANAGEMENT

The FRDC sets strategic directions with key stakeholders, then directly engages partner organisations from all over Australia to undertake the RD&E activities. As a result, the Corporation has linkages to many research organisations across Australia. This approach to project management provides the FRDC with a great deal of flexibility, while at the same time gives it the capacity of an organisation many times its size.

To put this into perspective, each year the FRDC has partnerships with more than 100 organisations who employ around 200 principal investigators, and many more researchers, communicators and technicians on FRDC research projects. In addition, there are hundreds of industry people who work on these many projects.

STAFF

In 2012–13, the FRDC operated with 12 full-time-equivalent staff members (on average). The FRDC staff are the Corporation's most important resource and a key factor in the ongoing success of the organisation. Rita Lin joined the FRDC as office administrator in January having completed her Bachelor of Commerce (Honours) at the Australian National University (ANU) in 2012. Pele Cannon joined the Corporation in May as a project manager. Pele has a Bachelor of Arts (Honours), majoring in Human Ecology and Applied Linguistics, and First Class Honours in Human Ecology from the ANU.

The FRDC employs staff based upon their suitability for a position and organisational fit. It promotes a work environment that is free from discrimination on the basis of race, colour, sex, sexual preference, age, physical or mental disability, marital status, family responsibilities, pregnancy, religion, political opinion, national extraction or social origin, or on the basis that an individual either is, or is not, a member of a union of employees, or of a particular union of employees.

All staff are employed under terms and conditions determined by the FRDC. As part of ensuring staff activities align with the organisation, each staff member has in place a performance appraisal and development plan. The agreement outlines the key areas each staff member will focus on, and the key activities to be undertaken, to assist the FRDC deliver its outcomes.

| | BEHAVIOUR

Corporate governance practices are evolving rapidly, both in Australia and overseas. The FRDC is proactive in integrating these practices, including those governing ethical behaviour, into its own processes. The Corporation has a code of conduct that is appropriate to the Corporation's structure and activities and complies with division 4 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act), to which all directors and staff are required to adhere. New directors and staff are briefed on the code during induction training.

| | REMUNERATION policy

Remuneration of non-executive directors is determined by the Remuneration Tribunal.

Remuneration of the Executive Director and staff is determined by an FRDC policy set by the Board, and is administered through the Board's Remuneration Committee. The amount of individual remuneration of the Executive Director and staff is based on advice by Mercer Human Resources Consulting Pty Ltd. The amount is also influenced by performance measured against individual performance agreements and by the size of the program support component within the total FRDC budget, from which salaries are paid.

FRDC has, in line with government policy, commenced the process to develop a certified agreement for all staff that will cover a range of employment conditions.

| | LIABILITIES to staff

The FRDC provides for liabilities to its staff by ensuring its financial assets (cash, receivables and investments) are always greater than its employee provisions. Compliance with this policy is evidenced in the Statement of Financial Position in the Corporation's monthly financial statements.

| | WORK health and safety

The FRDC is committed to providing a safe and healthy environment for all staff, contractors and visitors to its workplace. The Corporation recognises that its people are its greatest asset and its most valuable resource. The FRDC's ultimate goal is that its workplace is free of injury, illness and disease. The FRDC complies with its legislative obligations under the *Work Health and Safety Act 2011* (WHS Act) and takes all reasonably practicable steps to ensure a safe working environment. The FRDC's working environment is reviewed periodically by occupational health and safety consultants, and training is provided in workplace health and prevention of injury.

The FRDC's Workplace Health and Safety Policy and procedure, has been developed in accordance with the requirements under the WHS Act in consultation with FRDC's employees. The FRDC also recognises that continued reviewing and improvement of its health and safety management system makes good sense legally, morally and from a business perspective.

PART 4 OF THE *WORK HEALTH AND SAFETY ACT 2011*

Statistics of any notifiable incidents of which the entity becomes aware during the year that arose out of the conduct of businesses or undertakings by the entity.	› No injuries occurred on FRDC premises during 2012–13. › One injury that occurred while an officer was off-site on a work-related activity was notified under section 38.
Initiatives taken during the year to ensure the health, safety and welfare of workers who carry out work for the entity.	› Agreed WHS policy and procedures in consultation with all staff. › Induction of staff includes WHS e-learning training. › Health and safety awareness and incidents are brought to the attention of all staff at weekly staff meetings. › Employee Assistance Program. › Occupational rehabilitation physiotherapist provides ergonomic assessments to all new staff in their immediate working environment, and when requested. › Workplace safety training. › Staff have access to influenza vaccinations. › Annual fire safety and warden training, and six-monthly checks of fire safety equipment. › Annual testing and tagging of electrical appliances. › Senior first aid training. › Refurbishing of first aid kit annually. › Assessment of risks in line with the risk framework annual review. › Improved internal security arrangements in compliance with the Protective Security Policy Framework.
Health and safety outcomes (including the impact on injury rates of workers) achieved as a result of initiatives mentioned under paragraph (a) or previous initiatives.	› Increased awareness of roles and responsibilities in WHS including responsibilities of managers.
Investigations conducted during the year that relate to businesses or undertakings conducted by the entity, including details of notices given to the entity during the year under part 10 of the Act.	› No requests were received from staff and no undertakings were given by the Corporation. › No directions or notices were given to the Corporation.

Notifiable incidents	2009–10	2010–11	2011–12	2012–13
Deaths	0	0	0	0
Dangerous occurrences	0	0	0	0
Serious personal injury	0	0	0	1
Incapacity	0	0	0	0
Total	**0**	**0**	**0**	**1**

Comcare Australia is responsible for worker's compensation insurance coverage within the Corporation. The insurance premiums are levied each year based on the level of salaries and wages costs and experience in claims made by the employees.

DISABILITIES

The FRDC's employment policies and procedures align with the *Disability Discrimination Act 1992* in the broader context of the National Disability Strategy 2010–2020. The FRDC's recruitment and staff development practices seek to eliminate disadvantage that may be contributed to by disabilities. Consultation with people with a disability and when required, with appropriate specialist organisations, is a component of the FRDC's policies and practices, recognising the effect of a disability differs widely between individuals and that often a little thought makes a big difference in meeting a person's needs.

EQUAL EMPLOYMENT OPPORTUNITY

The FRDC has a policy of equal employment opportunity. Merit-based principles are applied in recruitment and promotion to ensure discrimination does not occur. Of the FRDC's staff of 13, as at 30 June 2013, nine are female.

INDUSTRIAL DEMOCRACY

The FRDC's staff members work as a team in which all contribute freely. This process is strongly reinforced by the FRDC's total quality management philosophy and the attendant emphasis on continual improvement. Staff are provided with the opportunity at regular meetings to raise issues and discuss options as to resolve how they are handled.

JUDICIAL REVIEWS

There were no judicial reviews in 2012–13.

REPORT OF OPERATIONS PART 3

CORPORATE GOVERNANCE

Governance refers to processes by which organisations are directed and controlled—including, characteristics such as authority, accountability, stewardship and leadership. Corporate governance is concerned with structures and processes for decision making, and with controls and behaviour within organisations that support effective accountability for performance outcomes.

The Corporation's general governance arrangements are largely established by legislation and government policies, procedures and reporting requirements. In addition to the requirements of the PIERD Act, which includes an annual operational plan, a research and development plan and an annual report, the Corporation also operates under the provisions of the CAC Act which applies high standards of accountability for statutory authorities.

The Board and staff are strongly committed to ensuring good corporate governance. In doing so, the focus is on structures, processes, controls, behaviour and transparency. To support the FRDC's high level of commitment to these principles, a full list of FRDC policies and copies of the financial statements are available from the FRDC website—**www.frdc.com.au**

REPRESENTATIVE ORGANISATIONS

Under section 15(2) of the PIERD Act and the *Guidelines on funding of consultation costs by primary industry and energy portfolio statutory authorities*, the FRDC may meet travel and other expenses incurred in connection with consultation between the Corporation and its representative organisations. During 2011–12, the FRDC incurred $5976 (rounded to the nearest dollar) in such expenses. FRDC had budgeted for approximately $30,000 in expenditure during 2012–13.

This support is governed by the *Guidelines on funding of consultation costs by primary industry and energy portfolio statutory authorities* which were issued by the Hon. John Anderson MP, Minister for Primary Industries and Energy in July 1998. These guidelines require the FRDC to provide details of all project-related activities and costs in which the representative organisations have an interest. The list of project payments made to FRDC representative organisations is located at Appendix E (page 168).

ENABLING LEGISLATION

The FRDC was formed as a statutory corporation on 2 July 1991 under the provisions of the PIERD Act. It also operates under the provisions of the CAC Act, which applies high standards of accountability while providing for the independence required by the Corporation's role as a statutory authority.

The FRDC's objects, deriving from section 3 of the PIERD Act and shown in Appendix C, are incorporated in the FRDC's vision and planned outcomes. As reflected in figure 1 on page 18, the Corporation's five R&D programs mirror the industry development, natural resources sustainability and people development themes of, respectively, sub-sections 3(a), (b) and (c) of the Act. This alignment has brought simplicity and robustness to the FRDC's RD&E planning, implementation and reporting, and to many of the organisations with which it does business. Importantly, the alignment ensures the RD&E outputs resulting from the Corporation's investments fully address the legislative objects.

More information about the FRDC's legislative foundations can be found in Appendix C.

RESPONSIBLE MINISTER AND EXERCISE OF MINISTERIAL POWERS

The portfolio Minister for Agriculture, Fisheries and Forestry in 2012–13 was Senator the Hon. Joe Ludwig.

MINISTERIAL directions

The PIERD Act provides that the Minister may give direction to the Corporation with respect to the performance of its functions and the exercise of its powers. In addition, the Minister, under the CAC Act, may notify the Board of any general Australian Government policies that apply to the Corporation. At the date of this report, the following ministerial directions and notifications have been received.

- In May 1995, the Minister issued a directive in accordance with the PIERD Act that spending of industry contributions is to be of direct relevance, within a five-year period, to the fishery, industry sector, or state/territory in which funds were collected. The FRDC is to have regard to advice from management agencies and industry sectors, including FRABs.
- In July 1998, the Minister issued a directive in accordance with section 16(1)(b) of the CAC Act requiring the Corporation to comply with the reporting requirements of the *Guidelines on funding of consultation costs by primary industry and energy portfolio statutory authorities*.

- The Minister has notified the Corporation under section 28 of the CAC Act that the following policies apply to the Corporation.
  - on 21 August 2002, Commonwealth Fraud Control Guidelines 2002,
  - on 28 August 2002, Finance Circular No. 2002/01 — Foreign Exchange (Forex) Risk Management,
  - on 14 April 2003, Finance Circular No. 2002/02 — Cost Recovery by Government Agencies,
  - on 13 October 2003, National Code of Practice for the Construction Industry and the Commonwealth's Implementation Guidelines.
- On 23 September 2008 the Minister notified the Corporation under section 143 of the PIERD Act requiring the Corporation to comply with the Australian Government Bargaining Framework when exercising their power to engage employees.

| | GOVERNMENT policy

The FRDC during 2012–13 complied with all relevant Australian Government policy requirements, including:

- Commonwealth Fraud Control Guidelines 2011,
- Australian Government Cost Recovery Policy,
- Australian Government Commonwealth Procurement Rules,
- Australian Government Commonwealth Property Management Framework,
- Australian Government Protective Security Policy Framework.

MINIMISATION OF ADMINISTRATION

To increase its production of outputs in the face of greatly increasing demand for fisheries RD&E, the FRDC continually strives to improve the way in which it goes about its business.

Productivity has been increased through improved management procedures, aided by the FRDC quality management system, and through the innovation, application and professional development of staff members. As part of this process, the FRDC aims to maximise the proportion of funds expended on R&D programs by minimising the cost of administration.

FREEDOM OF INFORMATION

During 2012–13, the FRDC received no requests pursuant to the *Freedom of Information Act 1982* (FOI Act).

The FRDC is required to comply with the FOI Act. In many cases it may not be necessary to request the information under the FOI Act — the FRDC may simply provide it to you when you ask for it. At all times, however, you have the option of applying under the FOI Act.

From 1 May 2011, agencies subject to the FOI Act are required to publish information as part of the Information Publication Scheme (IPS). This requirement is in Part II of the FOI Act and has replaced the former requirement to publish a section 8 statement in an annual report. An agency plan showing what information is published in accordance with the IPS requirements is accessible from the FRDC website — **www.frdc.com.au**

More information on freedom of information see Appendix F on page 169.

THE BOARD

The Board comprises up to nine directors who are appointed in accordance with sections 17 and 77 of the PIERD Act. Directors are selected on the basis of their expertise in a variety of fields derived from the PIERD Act. These include commodity production and processing, conservation, science, economics, and business and finance management.

Directors are appointed for a term not exceeding three years. All directors except the Executive Director are appointed on a part-time basis.

The Board ensures that FRDC staff are provided with strong leadership, and their qualifications, skills and experience are enhanced with formal, and on-the-job, training. This includes a formal induction process on the FRDC and a two-day workshop run by the Australian Institute of Company Directors. In addition, the FRDC Board meets outside Canberra three times a year in regions key to the fishing industry. This provides directors with the opportunity to liaise and discuss issues with relevant industry stakeholders, as well as see first-hand, fishing industry in action.

Details of the directors who held office during the year are shown on the following pages.

THE FRDC BOARD

From left: Mr David Thomason, Dr Bruce Mapstone, Ms Heather Brayford, Dr Patrick Hone, the Hon. Harry Woods, Mr Brett McCallum, Ms Renata Brooks, Dr Peter O'Brien.

HARRY AND BRETT

DIRECTORS' BIOGRAPHIES

The Hon. Harry Woods: Chair

Appointed as Chair 1 September 2010.

Harry Woods comes from a diverse background having been an auditor, bookmaker and publican before serving many years as a politician in both federal and state governments. He was the member for Page from 1990 to 1996. Following this, Harry was elected as the Member for Clarence in the New South Wales Legislative Assembly. During his time in New South Wales Parliament he was Minister for Regional Development and Minister for Rural Affairs from 1997–99 and Minister for Local Government, Minister for Regional Development and Minister for Rural Affairs from 1999 until his retirement in 2003.

Since then, Harry has spent time as a professional fisherman, undertaken policy review work for the New South Wales Government, worked as an accredited mediator and has been involved in the development and building of commercial property. Harry has a good understanding of, not only the fishing industry, but the broader primary industries arena. As the member for Page his responsibilities included a diverse range of issues—dairy cattle, pigs, maize, tropical fruit, sugar cane, fishing, prawning, oyster farming, butter and bacon factories, breweries, timber mills, and tourism.

Brett McCallum: Deputy Chair

Appointed 9 September 2009. Member of the Finance, Audit and Risk Management Committee.

Brett McCallum is Chief Executive Officer of the Pearl Producers Association. He has held senior roles in the fishing industry and has been involved in a number of industry and government advisory committees. Previous roles include Chief Executive Officer of the Western Australian Fishing Industry Council, National Aquaculture Council director and several executive management positions in major commercial fishing companies.

PATRICK, HEATHER AND RENATA

Dr Patrick Hone: Executive Director

Appointed Executive Director from 21 April 2005.

Patrick Hone is Executive Director of the FRDC, a director of the Seafood CRC and a member of the Ocean Policy Science Advisory Group. Patrick has extensive knowledge of all sectors of the fishing and aquaculture industries. Over the last 16 years working for FRDC he has played a key role in the planning, management and funding of fishing and aquaculture related research, development and extension in Australia. Patrick has a PhD from Adelaide University, and previously worked for SARDI on a wide range of aquaculture research for Southern Bluefin Tuna, Pacific Oysters, mussels, Yellowtail Kingfish and abalone.

Heather Brayford: Director

Appointed 1 September 2009. Member of the Remuneration Committee.

Heather Brayford has extensive experience in fisheries and aquatic resource management including senior management and policy roles related to commercial fisheries, recreational fisheries, pearling and aquaculture and fish habitat protection. Heather is currently the Deputy Director General with the Western Australian Department of Fisheries and has also held the position of Executive Director of Fisheries in the Northern Territory.

Renata Brooks: Director

Appointed 1 September 2009.

Renata Brooks is the Deputy Director General, Catchments and Lands in the New South Wales Department of Primary Industries, with responsibility for the New South Wales crown land estate, delivery of natural resource management programs, particularly through catchment management authorities, the Soil Conservation Service and coordination of regional services across the Department of Primary Industries. She has previously held senior executive positions within the Department of Primary Industries in the areas of science and research, agriculture, fisheries, biosecurity and compliance and mine safety. Renata holds a Bachelor of Veterinary Science from the University of Sydney with first class honours, a Graduate Certificate in Bioethics from the University of Technology Sydney, and is a graduate of the Australian Institute of Company Directors.

BRUCE, PETER AND DAVID

Dr Bruce Mapstone

Appointed 1 September 2012.

Bruce Mapstone is Chief of Division, CSIRO Marine and Atmospheric Research. He has a research background in tropical fisheries, especially line fisheries and was previously Director, Centre for Australian Weather and Climate Research and Chief Executive Officer, Antarctic Climate and Ecosystems CRC. He has chaired and served on several advisory committees to Australian and state government agencies, mainly related to fisheries management, the Great Barrier Reef, and national regional marine planning.

Dr Peter O'Brien

Appointed 1 September 2012.

Peter O'Brien is a professional director, business operator and consultant. He is currently director and professorial fellow of the Murray–Darling Basin Futures Collaborative Research Network, and is principal of Peter O'Brien Consulting and Tempo Mentors. Peter was previously Managing Director of the Rural Industries Research and Development Corporation and Executive Director of the Bureau of Rural Sciences, DAFF.

David Thomason

Appointed 1 September 2012.

David Thomason has a 40-year career in the food industry, most recently with Meat & Livestock Australia Ltd. He is a founding Board member of Primary Industries Education Foundation Ltd, Deputy Chair of Certified Australian Angus Beef Pty Ltd and associated companies, and is a Board member of the Seafood CRC. David has extensive experience in working with, and influencing the entire supply chain from grower through to retail, with the aim of raising quality and merchandising standards.

DARYL, STUART AND KEITH

DIRECTORS WHOSE TERMS FINISHED DURING THE YEAR

Dr Daryl McPhee: Director

Director from 1 September 2009 to 31 August 2012.

Daryl McPhee is Associate Professor of Environmental Science at Bond University and director of McPhee Research Consultants. Daryl has worked on behalf of industry and government on projects involving all sectors of the fishing industry. This has included industry development and technology transfer and the development and implementation of environmental management systems. He has published numerous papers and reports on topics related to fisheries and marine ecology and fisheries economics and is the author of the textbook *Fisheries Management in Australia*. He also has extensive experience in the environmental assessment of port-related activities.

Stuart Richey AM: Deputy Chair

Director from 28 September 2006 to 31 August 2012. Chair of the Finance, Audit and Risk Management Committee.

Stuart Richey is Managing Director, Richey Fishing Company Pty Ltd and Richey Services. Stuart has held a number of senior positions in the fishing industry on behalf of industry and government. He holds Master Class IV (trading) and Skipper Class II (fishing) qualifications. He chairs the Northern Prawn Management Advisory Committee and was a founding director of the Tasmanian Fishing Industry Council, a director for a number of years of the South East Trawl Fishing Industry Association, and a previous deputy chair of AFMA.

Professor Keith Sainsbury: Director

Director from 15 September 2009 to 31 August 2012.

Keith Sainsbury is Professor of Marine System Science, University of Tasmania and a director of SainSolutions Pty Ltd. Keith is Vice-Chair, Marine Stewardship Council, science advisor for the CSIRO Wealth from Oceans Flagship, and a commissioner of AFMA. He was the 2012 recipient of the Swedish Seafood Award for contributions to achieving ecosystem based fishery management and 2004 laureate of the prestigious Japan Prize for Science for his work in understanding shelf ecosystems and their sustainable utilisation.

RICHARD

Richard Stevens OAM: Director

Director 28 September 2006 to 31 August 2012. Member of the Finance, Audit and Risk Management Committee.

Richard Stevens is a fisheries management and government relations adviser. He is also a commissioner of AFMA and a member of the Fisheries Council of South Australia. Richard chairs the Southern Bluefin Tuna Research Council and a number of fishery management advisory committees. Previous roles include New South Wales Fisheries Resource Conservation Advisory Council chair and member of the Council of the Australian Maritime College, Tasmania.

INDEPENDENT COMMITTEE MEMBER

Mr Robert Seldon—Independent member

Appointed as an independent member of the Finance, Audit and Risk Committee August 2008.

Robert Seldon has more than 40 years' experience in merchant banking, including 15 years as chief executive of a major United States banking subsidiary in Australia. He has had substantial exposure to both food and agribusiness activities, with an active participation in the provision of advice on mergers and acquisitions within that sector. Robert was formerly on the Board of Horticulture Australia Ltd and chair of the Finance and Risk Committee. He was a director of the Australian Fisheries Management Authority and chair of their Finance and Audit Committee.

ROBERT

ATTENDANCE AT BOARD MEETINGS HELD DURING 2012–13

The tables below show attendance at Board meetings held during the year. The Chairman approved all absences from Board meetings in accordance with section 71(2) of the PIERD Act.

TABLE 9A: ATTENDANCE BY DIRECTORS AT BOARD MEETINGS

Date	29/08/12	27/11/12	14/02/13	10/04/13	6/06/13
The Hon. Harry Woods (Chair)	Yes	Yes	Yes	Yes	Yes
Mr Brett McCallum (Deputy Chair) *	Yes	Yes	Yes	Yes	Yes
Dr Patrick Hone (Executive Director)	Yes	Yes	Yes	Yes	Yes
Ms Heather Brayford	Yes	Yes	Yes	Yes	Yes
Ms Renata Brooks	Yes	Yes	Yes	Yes	Yes
Dr Bruce Mapstone	n/a	Yes	No	Yes	Yes
Dr Peter O'Brien	n/a	Yes	Yes	Yes	Yes
Mr David Thomason	n/a	Yes	Yes	Yes	Yes
Mr Stuart Richey AM (Deputy Chair) *	Yes	n/a	n/a	n/a	n/a
Dr Daryl McPhee	Yes	n/a	n/a	n/a	n/a
Dr Keith Sainsbury	Yes	n/a	n/a	n/a	n/a
Mr Richard Stevens OAM	Yes	n/a	n/a	n/a	n/a

* Mr Brett McCallum became Deputy Chair after Mr Stuart Richey's tenure ended on 31 August 2012.

n/a: Signifies the director was not eligible to attend the meeting (either they had not yet been appointed or their tenure had ended).

BOARD COMMITTEES

Currently the Board has two committees.

The Finance, Audit and Risk Management Committee. The Board at the 12 August 2008 meeting, agreed to appoint Mr Robert Seldon to the Committee as an independent member. Mr Seldon has continued in this role during this financial year.

› The Finance, Audit and Risk Management Committee comprises at least two non-executive directors and the Business Development Manager. The Committee provides a forum for the effective communication between the Board and the external and internal auditors. It also oversees the FRDC Risk Management Framework.

The Remuneration Committee.

› The Remuneration Committee comprises the FRDC Chair (Chair of the Committee) and two non-executive directors elected by the Board.

› The Committee reviews the remuneration packages of the Executive Director and senior management on annual basis and makes recommendations to the Board. The packages will be reviewed with due regard to performance and other relevant factors including market relativity.

For more information on the terms of reference for these committees please visit the FRDC website —www.frdc.com.au

TABLE 9B: ATTENDANCE BY DIRECTORS, INDEPENDENT MEMBER AND BUSINESS DEVELOPMENT MANAGER AT FINANCE, AUDIT AND RISK MANAGEMENT COMMITTEE MEETINGS

Date T/C: teleconference	28/08/12	26/11/12	29/01/13 (T/C)	21/05/13 (T/C)
Mr Brett McCallum (Chair)	Yes	Yes	Yes	Yes
Ms Renata Brooks	Yes	Yes	Yes	Yes
Dr Daryl McPhee	No	n/a	n/a	n/a
Mr David Thomason	n/a	Yes	Yes	Yes
Mr Robert Seldon (Independent member)	Yes	Yes	Yes	Yes
Mr John Wilson (Company Secretary)	Yes	Yes	Yes	Yes

n/a: Signifies the director was not eligible to attend the meeting (either they had not yet been appointed or their tenure had ended).

TABLE 9C: ATTENDANCE BY DIRECTORS AT REMUNERATION COMMITTEE MEETINGS

Date	24/05/13	4/06/13
The Hon. Harry Woods (Chair)	Yes	Yes
Ms Renata Brooks	Yes	Yes
Dr Peter O'Brien	Yes	Yes

DIRECTORS' INTERESTS

The FRDC's policy on directors' interests, complies with section 21 of the CAC Act. The policy centres on the principle that a director must disclose an interest whenever he/she considers there is a potential conflict of interests. The FRDC places, where appropriate, its policies on its website.

|| PARTICIPATION by director with conflict of interests

A standing notice about directors' interests is updated at each Board meeting. All declarations of interests, and their consideration by the Board, are recorded in the minutes.

RELATED ENTITY TRANSACTIONS

The FRDC is a core participant of the Seafood CRC and will invest more than $24 million in cash and $1.4 million in-kind, over its seven-year life. Executive Director Patrick Hone and director David Thomason sit on the Board of Seafood CRC.

The FRDC Board governance policy specifically outlines the issue of dealing with conflict of interests. Such issues are also dealt with in the CAC Act as part of directors' duties. Under the CAC Act, a director of the FRDC must, subject to some limited exceptions, give the other directors notice of a 'material personal interest' in a matter that relates to the affairs of the FRDC.

Importantly, where the director has a 'material personal interest' in a matter that relates to the affairs of the FRDC, in addition to the duty of disclosing that interest, the director must not be present while the Board is discussing that matter and, importantly, must not vote on the matter unless one of a number of specific exceptions applies.

2012–13 AUDITOR-GENERAL'S REPORT


R434

INDEPENDENT AUDITOR'S REPORT

To the Minister for Agriculture, Fisheries and Forestry

I have audited the accompanying financial statements of the Fisheries Research and Development Corporation for the year ended 30 June 2013, which comprise a Statement by Directors, Executive Director and Chief Financial Officer, the Statement of Comprehensive Income, Balance Sheet, Statement of Changes in Equity, Cash Flow Statement, Schedule of Commitments, Schedule of Contingencies and Notes to and forming part of the financial statements comprising a Summary of Significant Accounting Policies.

Director's Responsibility for the Financial Statements

The directors of the Fisheries Research and Development Corporation are responsible for the preparation of the financial statements that give a true and fair view in accordance with the Finance Ministers' Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards, and for such internal control as is necessary to enable the preparation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. I have conducted my audit in accordance with the Australian National Audit Office's Auditing Standards, which incorporate the Australian Auditing Standards. These auditing standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Fisheries Research and Development Corporation's preparation of the financial statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Fisheries Research and Development Corporation's internal control. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

In conducting my audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the requirements of the Australian accounting profession.

Opinion

In my opinion, the financial statements of the Fisheries Research and Development Corporation:

(a) have been prepared in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards; and

(b) give a true and fair view of the matters required by the Finance Minister's Orders including the Fisheries Research and Development Corporation's financial position as at 30 June 2013 and of its financial performance and cash flows for the year then ended.

Australian National Audit Office

Peter Kerr

Executive Director

Delegate of the Auditor-General

Canberra

28 August 2013

FINANCIAL STATEMENTS

FOR THE YEAR ENDED

30 JUNE 2013

STATEMENT BY DIRECTORS, EXECUTIVE DIRECTOR AND CHIEF FINANCIAL OFFICER

In our opinion, the attached financial statements for the period ended 30 June 2013 are based on properly maintained financial records, and give a true and fair view of the matters required by the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* (CAC Act), as amended.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Authority will be able to pay its debts as, and when, they become due and payable.

This statement is made in accordance with a resolution of the directors.

Signed 28/8/ 2013

The Hon. Harry Woods
Chair

Signed 28/8/ 2013

Brett McCallum
Chair Finance, Audit and Risk Management Committee

Signed 28/8 2013

Dr Patrick Hone
Executive Director

Signed ..... 28 Aug 2013

John Wilson
Chief Financial Officer

STATEMENT OF COMPREHENSIVE INCOME

FOR THE PERIOD ENDED 30 JUNE 2013

	Notes	2013 $	2012 $
EXPENSES			
Employee benefits	3A	**1,951,714**	1,957,162
Suppliers	3B	**1,053,202**	1,112,348
Projects expenditure	3C	**22,135,577**	25,979,090
Depreciation and amortisation	3D	**521,327**	530,489
Finance costs	3E	**9,437**	38,242
Write-down and impairment of assets	3F	**18,847**	–
Losses from assets disposals	3G	**–**	695
Other expenses	3H	**–**	66,000
Total expenses		**25,690,104**	29,684,026
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	4A	**30,109**	76,033
Interest	4B	**256,267**	552,224
Grants	4C	**483,480**	462,682
Contributions	4D	**7,983,019**	7,699,229
Total own-source revenue		**8,752,875**	8,790,168
Net cost of services		**16,937,229**	20,893,858
Revenue from the Australian Government	4E	**17,229,825**	16,631,017
Surplus (deficit) attributable to the Australian Government		**292,596**	(4,262,841)
OTHER COMPREHENSIVE INCOME			
Items not subject to subsequent reclassification to profit or loss			
Changes in asset revaluation surplus		**–**	17,162
Total other comprehensive income		**–**	17,162
Total comprehensive income (loss) attributable to the Australian Government		**292,596**	(4,245,679)

The above statement should be read in conjunction with the accompanying notes.

BALANCE SHEET

AS AT 30 JUNE 2013

	Notes	2013 $	2012 $
ASSETS			
Financial assets			
Cash and cash equivalents	5A	**4,963,258**	4,878,725
Trade and other receivables	5B	**1,284,587**	1,290,022
Other investments	5C	**5,001**	5,001
Total financial assets		**6,252,846**	6,173,748
Non-financial assets			
Property, plant and equipment	6A,C	**76,239**	130,743
Intangibles	6B,C	**1,850,964**	2,061,215
Total non-financial assets		**1,927,203**	2,191,958
Total assets		**8,180,049**	8,365,706
LIABILITIES			
Payables			
Suppliers	7A	**152,056**	126,632
Projects	7B	**186,792**	423,306
Other payables	7C	**324,004**	638,571
Total payables		**662,852**	1,188,509
Provisions			
Employee provisions	8A	**764,467**	717,063
Total provisions		**764,467**	717,063
Total liabilities		**1,427,319**	1,905,572
Net assets		**6,752,730**	6,460,134
EQUITY			
Reserves		**194,681**	194,681
Retained earnings		**6,558,049**	6,265,453
Total equity		**6,752,730**	6,460,134

The above statement should be read in conjunction with the accompanying notes.

STATEMENT OF CHANGES IN EQUITY

FOR THE PERIOD ENDED 30 JUNE 2013

	Retained earnings		Asset revaluation surplus		Total equity	
	2013	2012	**2013**	2012	**2013**	2012
	$	$	**$**	$	**$**	$
Opening balance						
Balance carried forward from previous period	**6,265,453**	10,528,294	**194,681**	177,519	**6,460,134**	10,705,813
Adjusted opening balance	**6,265,453**	10,528,294	**194,681**	177,519	**6,460,134**	10,705,813
Comprehensive income						
Other comprehensive income	–	–	–	17,162	–	17,162
Surplus (deficit) for the period	**292,596**	(4,262,841)	–	–	**292,596**	(4,262,841)
Total comprehensive income	**292,596**	(4,262,841)	–	17,162	**292,596**	(4,245,679)
of which:						
Attributable to the Australian Government	**292,596**	(4,262,841)	–	17,162	**292,596**	(4,245,679)
Closing balance as at 30 June 2013	**6,558,049**	6,265,453	**194,681**	194,681	**6,752,730**	6,460,134
Closing balance attributable to the Australian Government	**6,558,049**	6,265,453	**194,681**	194,681	**6,752,730**	6,460,134

The above statement should be read in conjunction with the accompanying notes.

CASH FLOW STATEMENT

FOR THE PERIOD ENDED 30 JUNE 2013

	Notes	2013 $	2012 $
OPERATING ACTIVITIES			
Cash received			
Receipts from the Australian Government		**16,945,257**	16,925,229
Contributions		**8,820,060**	8,744,216
Grants		**483,480**	462,682
Interest		**251,919**	539,043
Net GST received		**1,830,228**	1,655,744
Other		**30,109**	76,033
Total cash received		**28,361,053**	28,402,947
Cash used			
Employees		**(1,904,310)**	(1,778,342)
Suppliers		**(1,388,371)**	(1,443,213)
Projects expenditure		**(24,384,416)**	(28,105,899)
Other		**–**	(66,000)
Total cash used		**(27,677,097)**	(31,393,454)
Net cash from (used by) operating activities	9	**683,956**	(2,990,507)
INVESTING ACTIVITIES			
Cash used			
Purchase of property, plant and equipment		**(30,629)**	(21,899)
Purchase of intangibles		**(244,790)**	(279,508)
Total cash used		**(275,419)**	(301,407)
Net cash used by investing activities		**(275,419)**	(301,407)
FINANCING ACTIVITIES			
Cash used			
Other	7C	**(324,004)**	(324,004)
Total cash used		**(324,004)**	(324,004)
Net cash used by financing activities		**(324,004)**	(324,004)
Net increase (decrease) in cash held		**84,533**	(3,615,918)
Cash and cash equivalents at the beginning of the reporting period		**4,878,725**	8,494,643
Cash and cash equivalents at the end of the reporting period	5A	**4,963,258**	4,878,725

The above statement should be read in conjunction with the accompanying notes.

SCHEDULE OF COMMITMENTS

AS AT 30 JUNE 2013

	2013	2012
	$	$
BY TYPE		
Commitments receivable		
Net GST recoverable on operating lease commitments	**36,447**	12,188
Net GST recoverable on project commitments	**4,145,735**	4,812,174
Total commitments receivable	**4,182,182**	4,824,362
Commitments payable		
Other commitments		
Operating leases [1]	**400,925**	134,068
Project commitments [2]	**45,603,084**	52,933,917
Total other commitments	**46,004,009**	53,067,985
Net commitments by type	**41,821,827**	48,243,623
BY MATURITY		
Commitments receivable		
Other commitments receivable		
One year or less	**2,738,231**	3,045,437
From one to five years	**1,443,951**	1,778,925
Total other commitments receivable	**4,182,182**	4,824,362
Total commitments receivable	**4,182,182**	4,824,362
Commitments payable		
Operating lease commitments		
One year or less	**129,761**	123,755
From one to five years	**271,164**	10,313
Total operating lease commitments	**400,925**	134,068
Project commitments		
One year or less	**29,990,787**	33,376,050
From one to five years	**15,612,297**	19,557,867
Total project commitments	**45,603,084**	52,933,917
Net commitments by maturity	**41,821,827**	48,243,623

Note: Commitments are GST inclusive where relevant.

(1) Operating leases included were effectively non-cancellable. The lease for the office accommodation at 25 Geils Court, Deakin expires on 31 July 2016. Lease payments are subject to an annual increase in accordance with upwards movements in the Consumer Price Index.

(2) Project commitments comprise the future funding of approved projects that are contingent on achievement of agreed milestones over the life of those projects (project agreements are exchanged prior to release of the first payment on a project). Projects, where amounts were payable but were unpaid at the end of the period, have been brought to account as project payables. The FRDC contracts to fund projects in future years in advance of receipt of the income needed to fund them. It manages this risk by having the project agreement allow for termination due to insufficient funds or change of Australian Government policy. If the FRDC were to terminate a project agreement, it would only be liable to compensate the research partner for reasonable costs in respect of unavoidable loss incurred by the research partner and directly attributable to the termination.

This schedule should be read in conjunction with the accompanying notes.

SCHEDULE OF CONTINGENCIES

AS AT 30 JUNE 2013

	Notes	2013 $	2012 $
Contingent liabilities			
Seafood CRC Company Ltd	10	**4,295,009**	4,581,168
Total contingent liabilities		**4,295,009**	4,581,168

Details of contingent liabilities listed above are disclosed in Note 10: Contingent liabilities and assets.

At 30 June 2013, the FRDC had no contingent assets.

The above schedule should be read in conjunction with the accompanying notes.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS FOR THE PERIOD ENDED 30 JUNE 2013

Table of contents—notes

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

1.1 The objective of the Fisheries Research and Development Corporation (FRDC)

The FRDC is an Australian Government controlled entity. It is a not-for-profit entity established as a statutory corporation on 2 July 1991, under the provisions of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act). The objective of the FRDC is to optimise economic, environmental and social benefits for its stakeholders through effective investment and partnership in 'research, development and extension' (RD&E). The FRDC aims to maximise the benefits from its investment, by ensuring that the activity is well targeted, meets Australian Government and industry RD&E priorities, and builds on previous achievements where applicable.

The FRDC is structured to meet the following outcome:

> *Increased knowledge that fosters sustainable economic, environmental and social benefits for the Australian fishing industry; including indigenous, recreational, commercial and aquaculture sectors, and the community; through investing in research, development and adoption.*

The continued existence of the FRDC in its present form and with its present programs is dependent on Australian Government policy, and on continuing funding by the Parliament for the FRDC's administration and programs.

1.2 Basis of preparation of the financial statements

The financial statements are general purpose financial statements, and are required by clause 1(b) of Schedule 1 to the *Commonwealth Authorities and Companies Act 1997* (CAC Act).

The financial statements have been prepared in accordance with:

a) Finance Minister's Orders (FMOs) for reporting periods ending on, or after, 1 July 2012; and

b) Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accrual basis and in accordance with the historical cost convention, except for certain assets and liabilities at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The financial statements are presented in Australian dollars, and values are rounded to the nearest dollar unless otherwise specified.

Unless an alternative treatment is specifically required by an accounting standard or the FMOs, assets and liabilities are recognised in the Balance Sheet when, and only when, it is probable that future economic benefits will flow to the entity; or a future sacrifice of economic benefits will be required, and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under executor contracts are not recognised unless required by an accounting standard. Liabilities and assets that are unrecognised are reported in the Schedule of Commitments or the Schedule of Contingencies.

Unless an alternative treatment is specifically required by an accounting standard, income and expenses are recognised in the Statement of Comprehensive Income when, and only when, the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

1.3 Significant accounting judgements and estimates

No accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period. Key balances that relate to accounting judgements and estimates are detailed in Note 6A: Property, plant and equipment and in Note 8A: Employee provisions.

1.4 New Australian Accounting Standards

Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date as stated in the standard.

The new standards, revised standards, interpretations and amending standards that were issued prior to the signing of the statements by the: Board Chair; Chair Finance, Audit and Risk Management Committee; Executive Director; and the Chief Financial Officer; and are applicable to the current reporting period, did not have a financial impact and are not expected to have a future financial impact on the FRDC.

Future Australian Accounting Standard requirements

The new standards, revised standards, interpretations and amending standards that were issued prior to the signing of the statements by the: Board Chair; Chair Finance, Audit and Risk Management Committee; Executive Director; and Chief Financial Officer; and are applicable to the future reporting period, are not expected to have a future financial impact on the FRDC.

1.5 Revenue

Contributions are paid to the FRDC under Section 30A of the PIERD Act. Contributions are recognised when they are entitled to be received by the FRDC.

Revenue from the sale of goods is recognised when:

a) the risks and rewards of ownership have been transferred to the buyer;

b) the FRDC retains no managerial involvement or effective control over the goods;

c) the revenue and transaction costs incurred can be reliably measured; and

d) it is probable that the economic benefits associated with the transaction will flow to the FRDC.

Revenue from rendering of services is recognised by reference to the stage of completion of contracts at the reporting date.

The revenue is recognised when:

a) the amount of revenue, stage of completion, and transaction costs incurred can be reliably measured; and

b) the probable economic benefits associated with the transaction will flow to the entity.

The stage of completion of contracts at the reporting date is determined by reference to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due, less any impairment allowance account. Collectability of debts is reviewed as at the end of each reporting period. Allowances are made when the collection of the debt is no longer probable.

Interest revenue is recognised using the effective interest method as set out in *AASB 139 Financial Instruments: Recognition and Measurement*.

Other contributions, including Australian Government grants, are recognised when:

a) the FRDC obtains control of the contribution or the right to receive the contribution;

b) it is probable that the economic benefits comprising the contribution will flow to the FRDC; and

c) the amount of the contribution can be reliably measured.

Project refunds from research organisations are brought to account when received.

Revenue from the Australian Government

Funding received or receivable from the Australian Government (appropriated to the FRDC as a CAC Act body payment item), is recognised as revenue from the Australian Government, unless it is in the nature of an equity injection or a loan.

1.6 Gains

Sale of assets

Gains from disposal of assets are recognised when control of the asset has passed to the buyer.

1.7 Employee benefits

Liabilities for 'short-term employee benefits' (as defined in *AASB 119 Employee Benefits*) and termination benefits due within twelve months of the end of reporting period are measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

Other long-term benefits are measured as net total of the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly.

The FRDC acts so as to ensure that its 'financial assets' (cash, receivables and investments) are greater than its 'employee provisions' (leave entitlements).

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting, and the average sick leave taken in future years by employees is estimated to be less than the annual entitlement for sick leave.

Leave liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that will apply at the time the leave is taken, including the FRDC's employer superannuation contribution rates; to the extent that the leave is likely to be taken during service rather than paid out on termination.

The estimate of the present value of the long service leave liability takes into account attrition rates and pay increases through promotion and inflation.

All leave provision calculations are based on remuneration packages as at 1 July 2013, see Note 8: Provisions.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Superannuation

FRDC staff are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS), or the PSS accumulation plan (PSSap) or an approved superannuation scheme of their choice.

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government, and is settled by the Australian Government in due course. This liability is reported by the Department of Finance and Deregulation administered schedules and notes.

The FRDC makes employer contributions to the employees' superannuation schemes at rates determined by an actuary to be sufficient to meet the current cost to the Australian Government. The FRDC accounts for the contributions as if they were contributions to defined contribution plans.

For other approved superannuation schemes, the FRDC contributes a minimum of 9% of superannuable salaries.

As at 30 June, all superannuation contributions were fully paid, therefore no superannuation liability has been recognised (2011–12: $Nil).

1.8 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

Where an asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Operating lease payments are expensed on a straight-line basis that is representative of the pattern of benefits derived from the leased assets.

The FRDC does not currently have any finance leases.

1.9 Projects

The FRDC recognises project liabilities through project agreements that require the research partner to perform services or provide facilities, or to meet eligibility criteria. In these cases, liabilities are recognised only to the extent that the services required have been performed and an invoice issued consistent with the contractual requirements, or the eligibility criteria have been satisfied by the research partner to the FRDC's satisfaction.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

1.10 Cash

Cash is recognised at its nominal amount. Cash and cash equivalents includes:

a) cash on hand; and

b) demand deposits in bank accounts with an original maturity of three months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value.

In accordance with section 42 of the PIERD Act, the Treasurer has approved the FRDC overdrawing its bank account to a limit of $900,000 on the basis that sufficient funds are held in related accounts to offset any overdrawing, with these funds to be transferred as soon as possible to clear any debt.

1.11 Financial assets

The FRDC classifies its financial assets in the following categories:

a) held-to-maturity investments; and

b) loans and receivables.

The classification depends on the nature and purpose of the financial assets, and is determined at the time of initial recognition. Financial assets are recognised and derecognised upon 'trade date'.

Effective interest method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset; or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis, except for financial assets that are recognised at fair value through profit or loss.

Held-to-maturity investments

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the FRDC has the positive intent and ability to hold to maturity, are classified as held-to-maturity investments. Held-to-maturity investments are recorded at amortised cost using the effective interest method less impairment, with revenue recognised on an effective yield basis.

Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Impairment of financial assets

Financial assets are assessed for impairment at the end of each reporting period.

Financial assets held at amortised cost—if there is objective evidence that an impairment loss has been incurred for loans and receivables or held-to-maturity investments held at amortised cost, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the asset's original effective interest rate. The carrying amount is reduced by way of an allowance account. The loss is recognised in the Statement of Comprehensive Income.

Financial assets held at cost—if there is objective evidence that an impairment loss has been incurred, the amount of the impairment loss is the difference between the carrying amount of the asset and the present value of the estimated future cash flows discounted at the current market rate for similar assets.

1.12 Financial liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities. Financial liabilities are recognised and derecognised upon 'trade date'.

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss are initially measured at fair value. Subsequent fair value adjustments are recognised in profit or loss. The net gain or loss recognised in profit or loss incorporates any interest paid on the financial liability.

Other financial liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs. These liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

1.13 Contingent liabilities and contingent assets

Contingent liabilities and contingent assets are not recognised in the Balance Sheet, but are reported in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset, or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain; and contingent liabilities are disclosed when settlement is greater than remote.

1.14 Acquisition of assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred on exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and income at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor's accounts immediately prior to the restructuring.

1.15 Property, plant and equipment

Asset recognition threshold

Purchases of property, plant and equipment are recognised initially at cost in the Balance Sheet, except for purchases costing less than $5,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items where value is $5,000).

Revaluations

Fair values for each class of asset are determined as shown below:

Asset class	*Fair value measurement*
Leasehold improvements	Depreciated replacement cost
Property, plant and equipment	Market selling price

Following initial recognition at cost, property, plant and equipment are carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date.

The FRDC organises an independent valuation annually, usually in May.

All property, plant and equipment assets were reviewed and assessed for fair value as at 30 June 2013 by the Australian Valuation Office (AVO). AVO advised that, as there was no material difference between the current carrying amount and the fair value as at 30 June 2013, a full valuation was not warranted at this time.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve, except to the extent that it reversed a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets are recognised directly in the surplus/deficit, except to the extent that they reversed a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset, and the asset restated to the revalued amount.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Depreciation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the FRDC using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date, and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2013	2012
Property, plant and equipment	**3 to 5 years**	3 to 5 years
Leasehold improvements	**Lease term**	Lease term

Impairment

All assets were assessed for impairment as at 30 June 2013. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs to sell, and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the FRDC were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

No indicators of impairment were found for assets at fair value as at 30 June 2013.

Derecognition

An item of property, plant and equipment is derecognised upon disposal, or when no further future economic benefits are expected from its use or disposal.

1.16 Intangibles

The FRDC's intangibles comprise internally developed software and purchased software for internal use. These assets are carried at cost, less accumulated amortisation and accumulated impairment losses.

Internally developed software and purchased software is amortised on a straight-line basis over its anticipated useful life. The useful life of software is 10 years (2011–12: 10 years).

All software assets were assessed for indications of impairment as at 30 June 2013.

1.17 Taxation

The FRDC is exempt from all forms of taxation except fringe benefits tax (FBT), payroll tax and the goods and services tax (GST).

Revenues, expenses and assets are recognised net of GST except:

a) where the amount of GST incurred is not recoverable from the Australian Taxation Office; and

b) for receivables and payables.

1.18 Comparative figures

Comparative figures have been adjusted so they conform with changes in the presentation of these financial statements where required.

NOTE 2: EVENTS AFTER THE REPORTING PERIOD

No reportable events have occurred after the Balance Sheet date.

NOTE 3: EXPENSES

Note 3A: Employee benefits

	2013	2012
	$	$
Wages and salaries	**1,502,882**	1,378,321
Superannuation:		
Defined contribution plans	**120,602**	163,784
Defined benefit plans	**280,825**	245,849
Leave and other entitlements	**47,405**	169,208
Total employee benefits	**1,951,714**	1,957,162

NOTE 3: EXPENSES (CONTINUED)

Note 3B: Suppliers

	2013	2012
	$	$
Goods and services		
Agency staff	–	13,383
Annual report	29,361	30,217
Asset purchases less than $5,000	28,073	19,613
Audit fees	29,000	30,000
External service providers	124,687	126,912
Insurance—general	19,952	18,274
Information technology	234,277	274,708
Joint research and development corporation (RDC) activities	39,873	45,022
Legal	33,671	62,220
Office supplies	25,409	27,959
Media monitoring and releases	33,673	–
Photos	26,396	–
Postage and courier	4,646	5,585
Property	46,139	28,980
Recruitment/director selection costs	25,733	17,672
Representative organisations consultation	5,976	13,756
Representation	15,954	19,903
Telecommunications	25,810	34,256
Training	23,751	63,814
Travel	111,986	128,858
Other	38,360	22,885
Total goods and services	922,727	984,017
Goods and services are made up of:		
Provision of goods and services—related entities	52,791	35,843
Provision of goods and services—external parties	869,936	948,174
Total goods and services	922,727	984,017
Other supplier expenses		
Operating lease rental—external parties:		
Minimum lease payments	112,605	111,072
Workers compensation expenses	17,870	17,259
Total other supplier expenses	130,475	128,331
Total supplier expenses	1,053,202	1,112,348

NOTE 3: EXPENSES (CONTINUED)

Note 3C: Projects expenditure

	2013	2012
	$	$
Australian Government entities (related entities)	**3,839,532**	5,099,043
State and territory governments	**3,603,629**	3,763,817
Universities	**4,880,129**	5,441,465
Overseas	**500**	3,500
Cooperative research centres	**3,762,686**	4,574,288
Other	**6,049,101**	7,096,977
Total project expenditure	**22,135,577**	25,979,090

Note 3D: Depreciation and amortisation

	2013	2012
	$	$
Depreciation:		
Property, plant and equipment	**85,133**	91,386
Total depreciation	**85,133**	91,386
Amortisation:		
Intangibles	**436,194**	439,103
Total amortisation	**436,194**	439,103
Total depreciation and amortisation	**521,327**	530,489

Note 3E: Finance costs

	2013	2012
	$	$
DAFF debt—unwinding of discount	**9,437**	38,242
Total finance costs	**9,437**	38,242

Department of Agriculture, Fisheries and Forestry (DAFF) debt—unwinding of discount expense represents the discount to the present value of the future cash flows for the DAFF debt payable (refer Note 7C) in accordance with *AASB 139 Financial Instruments: Recognition and Measurement*.

Note 3F: Write-down and of assets

	2013	2012
	$	$
Asset write-down and impairments from:		
Impairment of intangible assets	**18,847**	–
Total write-down and impairment of assets	**18,847**	–

NOTE 3: EXPENSES (CONTINUED)

Note 3G: Losses from asset disposals

	2013	2012
	$	$
Property, plant and equipment:		
Carrying value of assets disposed of	–	695
Total losses from asset disposals	–	695

Note 3H: Other expenses

	2013	2012
	$	$
Bad debts written off [1]	–	66,000
Total other expenses	–	66,000

(1) Bad debts written off stem from two entities that had undertaken to contribute to FRDC projects, but found themselves unable to do so. The projects were reviewed and the project budget adjusted accordingly.

NOTE 4: INCOME

OWN-SOURCE REVENUE

Note 4A: Sale of goods and rendering of services

	2013	2012
	$	$
Provision of goods and rendering of services—related entities	392	20,584
Provision of goods and rendering of services—external parties	29,717	55,449
Total sale of goods and rendering of services	**30,109**	76,033

Note 4B: Interest

	2013	2012
	$	$
Deposits	256,267	552,224
Total interest	**256,267**	552,224

4C: Grants

	2013	2012
	$	$
Public sector:		
Department of Agriculture, Fisheries and Forestry [1]	483,480	462,682
Total grants	483,480	462,682

(1) Research program funding for Department of Agriculture, Fisheries and Forestry research (refer Note 14).

NOTE 4: INCOME (CONTINUED)

Note 4D: Contributions

	2013	2012
	$	$
Fisheries:		
Australian Prawn Farmers Association	**127,232**	165,606
Australian Fisheries Management Authority	**737,508**	817,446
Australian Capital Territory	**30,000**	129,260
New South Wales	**636,244**	361,608
Northern Territory	**265,444**	408,234
Queensland	**388,000**	492,773
South Australia	**1,933,328**	1,979,103
Tasmania	**1,676,617**	1,584,539
Victoria	**641,545**	485,034
Western Australia	**1,047,162**	1,230,049
Sub-total	**7,483,080**	7,653,652
Projects		
Project funds received from other parties	**–**	23,818
Project refunds of prior years expenditure	**499,939**	21,759
Sub-total	**499,939**	45,577
Total contributions revenue	**7,983,019**	7,699,229

REVENUE FROM THE AUSTRALIAN GOVERNMENT

Note 4E: Revenue from the Australian Government

	2013	2012
	$	$
Department of Agriculture, Fisheries and Forestry:		
CAC Act body payment item		
Australian Government contribution of 0.50% of GVP [1]	**11,662,250**	11,121,560
Matching of industry contributions [2]	**5,567,575**	5,509,457
Total revenue from the Australian Government	**17,229,825**	16,631,017

(1) GVP is the average gross value of fisheries production for the current year and the two preceding financial years. The Australian Government's contribution of 0.50% of GVP is made on the grounds that the FRDC exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.

(2) Matching of industry's contributions (up to 0.25% of GVP) by the Australian Government.

NOTE 5: FINANCIAL ASSETS

Note 5A: Cash and cash equivalents

	2013	2012
	$	$
Cash at bank	1,963,258	3,878,725
Funds on term deposit	3,000,000	1,000,000
Total cash and cash equivalents	4,963,258	4,878,725

Note 5B: Trade and other receivables

	2013	2012
	$	$
Goods and services:		
Goods and services—related entities	2,026	10,344
Goods and services—external parties	806,716	875,597
Total receivables for goods and services	808,741	885,941
Department of Agriculture, Fisheries and Forestry:		
Receivable	284,568	–
Total receivable from Department of Agriculture, Fisheries and Forestry	284,568	–
Other receivables:		
GST receivable from the Australian Taxation Office	188,778	399,081
ASCo loan (1)	2,500	5,000
Total other receivables	191,278	404,081
Total trade and other receivables	1,284,587	1,290,022
Receivables are expected to be recovered in:		
No more than 12 months	1,284,587	1,290,022
Total trade and other receivables	1,284,587	1,290,022
Receivables are aged as follows:		
Not overdue	927,989	1,261,972
Overdue by:		
0 to 30 days	191,598	5,500
31 to 60 days	165,000	22,000
61 to 90 days	–	550
Total receivables	1,284,587	1,290,022

No indicators of impairment were found for trade and other receivables.

Australian Seafood Co-Products Pty Ltd (ASCo)

(1) **ASCo shareholder's loan**

Included in receivables above is a loan by the FRDC to ASCo of $2,500 under clause 14.3 of the shareholder agreement (refer also Note 5C). The FRDC does not consider the loan to be impaired or overdue—it is expected to be repaid from future profits.

NOTE 5: FINANCIAL ASSETS (CONTINUED)

Note 5C: Other investments

	2013	2012
	$	$
Shares in other company—unlisted [1]	5,001	5,001
Total other investments	5,001	5,001
Total other investments are expected to be recovered in:		
More than 12 months	5,001	5,001
Total other investments	5,001	5,001

Australian Seafood Co-Products Pty Ltd (ASCo)

(1) **Shares in unlisted company**

Australian Seafood Co-Products Pty Ltd (ASCo) is an unlisted company in which the FRDC owns a one-fifteenth share. The FRDC is not represented on the ASCo Board. The principal activity of ASCo is to invest in ASCo Fertilisers Pty Ltd, which carries on the business of commercialisation of know-how and technical information relating to the conversion of fish waste and fish nutrient into agricultural fertiliser products, and the development of production facilities for those products. As the shares do not have a quoted market price in an active market, and cannot be reliably measured, they have been carried at cost in accordance with *AASB 139*.

NOTE 6: NON-FINANCIAL ASSETS

Note 6A: Property, plant and equipment

	2013	2012
	$	$
Property, plant and equipment:		
Fair value	161,372	130,743
Accumulated depreciation	(85,133)	–
Total property, plant and equipment	76,239	130,743

Revaluations of non-financial assets

All revaluations were conducted in accordance with the revaluation policy stated at Note 1. All property, plant and equipment assets were reviewed and assessed for fair value as at 30 June 2013 by the Australian Valuation Office (AVO). AVO advised that, as there was no material difference between the current carrying amount and the fair value as at 30 June 2013, a full valuation was not warranted at this time.

On 30 June 2012 the AVO, conducted a review of the fair value of the FRDC's property, plant and equipment and the depreciation was written back for 2011–12.

A revaluation increment/decrement of $Nil for plant and equipment (2011–12: increment of $17,162) was credited to the asset revaluation reserve by asset class and included in the equity section of the Balance Sheet.

No indicators of impairment were found for property, plant and equipment.

No property, plant and equipment is expected to be sold or disposed of within the next 12 months.

NOTE 6: NON-FINANCIAL ASSETS (CONTINUED)

Note 6B: Intangibles

	2013	2012
	$	$
Computer software:		
Internally developed—in progress	–	126,436
Internally developed—in use	4,976,486	4,624,107
Accumulated amortisation	(3,125,522)	(2,689,328)
Total computer software	1,850,964	2,061,215
Total intangibles	1,850,964	2,061,215

All intangible assets were reviewed as at 30 June 2013 for impairment. Assets found to be impaired were written down accordingly.

No intangibles are expected to be sold or disposed of within the next 12 months.

Note 6C: Reconciliation of the opening and closing balances of property, plant and equipment and intangibles (2012–13)

	Property, plant and equipment	Intangibles	Total
	$	$	$
As at 1 July 2012			
Gross book value	130,743	4,750,543	4,881,286
Accumulated depreciation/amortisation	–	(2,689,328)	(2,689,328)
Net book value 1 July 2012	130,743	2,061,215	2,191,958
Additions:			
By purchase	30,629	–	30,629
Internally developed—in use	–	244,790	244,790
Impairment recognised in operating result	–	(18,847)	(18,847)
Depreciation/amortisation expense	(85,133)	(436,194)	(521,327)
Net book value 30 June 2013	76,239	1,850,964	1,927,203
Net book value as of 30 June 2013 represented by:			
Gross book value	161,372	4,976,486	5,137,858
Accumulated depreciation/amortisation	(85,133)	(3,125,522)	(3,210,655)
Net book value 30 June 2013	76,239	1,850,964	1,927,203

NOTE 6: NON-FINANCIAL ASSETS (CONTINUED)

Note 6C: Reconciliation of the opening and closing balances of property, plant and equipment and intangibles (2011–12)

	Property, plant and equipment	Intangibles	Total
	$	$	$
As at 1 July 2011			
Gross book value	274,500	4,471,035	4,745,535
Accumulated depreciation/amortisation	(90,736)	(2,250,225)	(2,340,961)
Net book value 1 July 2011	183,764	2,220,810	2,404,574
Additions:			
By purchase	21,899	–	21,899
Internally developed—in progress	–	126,435	126,435
Internally developed—in use	–	153,073	153,073
Revaluations recognised in other comprehensive income	17,162	–	17,162
Depreciation/amortisation expense	(91,386)	(439,103)	(530,489)
Disposals	(695)	–	(695)
Net book value 30 June 2012	130,743	2,061,215	2,191,958
Net book value as of 30 June 2012 represented by:			
Gross book value	130,743	4,750,543	4,881,286
Accumulated depreciation/amortisation	–	(2,689,328)	(2,689,328)
Net book value 30 June 2012	130,743	2,061,215	2,191,958

NOTE 7: PAYABLES

Note 7A: Suppliers

	2013	2012
	$	$
Trade creditors and accruals	112,670	93,829
FBT payable	1,504	–
PAYG payable	37,882	32,803
Total supplier payables	152,056	126,632
Supplier payables expected to be settled within 12 months:		
Related entities	84,351	32,831
External parties	67,705	93,801
Total supplier payables	152,056	126,632

Settlement is usually made within 30 days.

NOTE 7: PAYABLES (CONTINUED)

Note 7B: Projects

	2013	2012
	$	$
Australian Government entities (related entities)	8,250	144,890
State and territory governments	42,806	147,535
Universities	37,785	–
Other	97,952	130,881
Total project payables	**186,792**	423,306
Total projects—are expected to be settled in:		
No more than 12 months	186,792	423,306
Total projects payables	**186,792**	423,306

Project payables are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. They relate to payments approved on achievement of agreed milestones, but which were unpaid at the end of the reporting period. Settlement is usually made within 30 days.

Note 7C: Other payable

	2013	2012
	$	$
Debt payable to DAFF [1]	324,004	638,571
Total other payables	**324,004**	638,571
Total other payables is expected to be settled in:		
No more than 12 months	324,004	324,004
More than 12 months	–	314,567
Total other payables	**324,004**	638,571

(1) The debt payable to DAFF represents the recovery of GVP overpayments to the FRDC. DAFF inadvertently used an incorrect formula to determine the GVP for fisheries for the financial years between 2001–02 and 2006–07. DAFF and the FRDC have agreed the total value of the debt is $1,944,024 ($1,371,565 in relation to 0.50% GVP; and $572,459 in relation to the matching contributions). DAFF and the FRDC have also agreed that the debt will be repaid over six years, with the last payment to be made in 2013–14, and FRDC has recognised it as other payables.

In accordanceAASBwith *AASB 139 Financial Instruments: Recognition and Measurement*, the debt has been recognised initially at its fair value, and has been discounted to represent a present value of the future cash flows. Because the DAFF debt has been discounted, there will be an expense recognised in the Statement of Comprehensive Income in future periods as each debt repayment is made (refer Note 3E). The quantum of that expense will be the difference between the nominal and discounted value.

NOTE 8: PROVISIONS

Note 8A: Employee provisions

	2013	2012
	$	$
Leave	764,467	717,063
Total employee provisions	**764,467**	717,063
Employee provisions are expected to be settled in:		
No more than 12 months	699,661	638,649
More than 12 months	64,806	78,414
Total employee provisions	**764,467**	717,063

NOTE 9: CASH FLOW RECONCILIATION

	2013	2012
	$	$
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Cash and cash equivalents as per:		
Cash Flow Statement	4,963,258	4,878,725
Balance Sheet	4,963,258	4,878,725
Difference	0	0
Reconciliation of net cost of services to net cash from operating activities:		
Net cost of services	(16,937,229)	(20,893,858)
Add revenue from the Australian Government	17,229,825	16,631,017
Adjustments for non-cash items		
Depreciation / amortisation	521,327	530,489
Net write down of non-financial assets	18,847	–
Finance costs	9,437	38,242
Loss on disposal of assets	–	695
Changes in assets / liabilities		
(Increase)/decrease in net receivables	5,435	336,939
Increase/(decrease) in employee provisions	47,404	178,820
Increase/(decrease) in supplier payables	25,424	(47,777)
Increase/(decrease) in project payables	(236,514)	234,926
Net cash from (used by) operating activities	683,956	(2,990,507)

NOTE 10: CONTINGENT ASSETS AND LIABILITIES

At 30 June 2013, the FRDC had no contingent assets.

	2013	2012
	$	$
Contingent liabilities		
Balance from previous period	**4,581,168**	7,600,030
New	**550,000**	–
Obligations expired	**(836,159)**	(3,018,862)
Total contingent liabilities [(1)]	**4,295,009**	4,581,168

[(1)] Quantifiable contingencies

The Schedule of Contingencies reports contingent liabilities in respect of Seafood CRC Company Ltd (Seafood CRC) in which FRDC is a participant. The FRDC has agreements with the Seafood CRC that commit the FRDC to investing $29,184,719 ($28,634,719 as at 30 June 2012) over the life of the CRC, which finishes 30 June 2014. The FRDC recognises commitments as contracts are signed.

The FRDC recognised $24,889,710 in Seafood CRC contracts as at 30 June 2013 ($24,053,551 as at 30 June 2012).

This leaves a contingent liability of $4,295,009 as at 30 June 2013 ($4,581,168 as at 30 June 2012).

As the FRDC commits to further Seafood CRC contracts this contingent liability will reduce.

Unquantifiable contingencies

The FRDC had no unquantifiable contingencies.

Significant remote contingencies

The FRDC had no significant remote contingencies.

NOTE 11: DIRECTORS' REMUNERATION

	2013	2012
	No.	No.
The number of non-executive directors of the FRDC included in these figures are shown below in the relevant remuneration bands:		
$0 to $29,999	**9**	2
$30,000 to $59,999	**2**	6
Total	**11**	8
	$	$
Total remuneration received, or due and receivable, by directors of the FRDC	**199,128**	225,519

Remuneration of the Executive Director is included in Note 13: Senior executive remuneration.

NOTE 12: RELATED PARTY DISCLOSURES

The directors of the FRDC during the year were:

Ms H. Brayford	Director (Member Remuneration Committee) (Re-appointed 12 September 2012)
Ms R. Brooks	Director (Member Finance, Audit and Risk Management Committee) (Re-appointed 12 September 2012)
Dr P. Hone	Executive Director
Dr B. Mapstone	Director (Commenced 12 September 2012)
Mr B. McCallum	Director (Deputy Chair) (Chair Finance, Audit and Risk Management Committee) (Re-appointed 12 September 2012)
Dr P. O'Brien	Director (Member Remuneration Committee) (Commenced 12 September 2012)
Mr D. Thomason	Director (Member Finance, Audit and Risk Management Committee) (Commenced 12 September 2012)
The Hon. Harry Woods	Chair
Dr D. McPhee	Director (Retired 31 August 2012)
Mr S. Richey AM	Director (Retired 31 August 2012)
Dr K. Sainsbury	Director (Retired 31 August 2012)
Mr R. Stevens OAM	Director (Retired 31 August 2012)

Transactions with director-related parties

The FRDC's practice is to disclose all transactions with an entity with whom a director has an association. This means that directors that have disclosed a material personal interest have attributed to them all the transactions of that entity with the FRDC. Typically, the FRDC will not transact with all the entities for which a director has made such a declaration.

The FRDC Board governance policy provides guidance to directors on how the FRDC deals with material personal interests. Where a director has an association with an entity where a conflict has the potential to arise, in addition to the duty to disclose that association, the director absents him/herself from both the discussion and the decision-making process.

No loans were made to directors or director-related entities during the year.

NOTE 12: RELATED PARTY DISCLOSURES (CONTINUED)

Director	Organisation and position held	Nature of interest	Income received from entity $	Expenditure paid to entity $
Ms H. Brayford (Re-appointed 12 September 2012)	Department of Fisheries Western Australia *Director Aquatic Management*	Research projects or work undertaken by the organisation	1,151,879	1,110,300
Ms R. Brooks (Re-appointed 12 September 2012)	Department of Primary Industries (NSW) *Deputy Director, General Catchments and Lands*	Research projects or work undertaken by the organisation	654,509	488,133
Dr P. Hone	Seafood CRC Company Ltd *Director*	Research projects or work undertaken by the organisation	524,096	4,069,371
Dr B. Mapstone (Commenced 12 September 2012)	CSIRO *Member, Executive Management Council*	Research projects or work undertaken by the organisation	3,747	2,438,585
	Institute of Marine and Antarctic Studies at the University of Tasmania *Member, Advisory Board*	Research projects or work undertaken by the organisation	2,139	2,514,188
	FRDC project 2011/030: Evaluating candidate monitoring strategies, assessment procedures and harvest control rules in the spatially complex Queensland coral reef finfish fishery *Research—Co-investigator*	Research projects or work undertaken by the organisation	0	118,563
Mr B. McCallum (Re-appointed 12 September 2012)	Pearl Producers Association *Chief Executive Officer*	Research projects or work undertaken by the organisation	0	580
Mr S. Richey AM (Retired 31 August 2012)	Australian Fisheries Management Authority *Chairman of Northern Prawn Management Advisory Committee*	Research projects or work undertaken by the organisation	8,800	0

All transactions were conducted under normal terms and conditions and include GST.

NOTE 12: RELATED PARTY DISCLOSURES (CONTINUED)

Director	Organisation and position held	Nature of interest	Income received from entity $	Expenditure paid to entity $
Dr K. Sainsbury (Retired 31 August 2012)	University of Tasmania *Professor Marine System Science*	Research projects or work undertaken by the organisation	0	500,000
	Australian Fisheries Management Authority *Commissioner*	Research projects or work undertaken by the organisation	8,800	0
	Victorian Abalone Divers Association (VADA) *Advisor*	Research projects or work undertaken by the organisation	0	6,060
Mr R. Stevens OAM (Retired 31 August 2012)	Australian Fisheries Management Authority *Commissioner*	Research projects or work undertaken by the organisation	8,800	0
	Recreational Survey for the Greater Sydney Region (Department of Trade and Investment, Regional Infrastructure and Services) (NSW) *Chair*	Research projects or work undertaken by the organisation	0	66,073
	Primary Industries and Resources SA *Member of the South Australian Fisheries Council (wild fisheries only—not aquaculture)*	Research projects or work undertaken by the organisation	165,000	143,000
Mr D. Thomason (Commenced 12 September 2012)	Seafood CRC Company Ltd *Director*	Research projects or work undertaken by the organisation	524,006	4,069,371

All transactions were conducted under normal terms and conditions and include GST.

NOTE 13: SENIOR EXECUTIVE REMUNERATION

Note 13A: Senior executive remuneration for the reporting period

	2013	2012
	$	$
Short-term employee benefits		
Salary	761,322	735,533
Annual leave accrued	12,535	32,616
Total short-term employee benefits	773,857	768,149
Post-employment benefits:		
Superannuation	132,288	111,355
Total post-employment benefits	132,288	111,355
Other long-term employee benefits:		
Long service leave	17,394	84,838
Total other long-term employee benefits	17,394	84,838
Total senior executive remuneration expenses	923,539	964,342

During the year no termination benefits were paid to senior executives (2011–12: $Nil).

1. Note 13A is prepared on an accrual basis.
2. Note 13A excludes acting arrangements and part-year service where total remuneration expensed as a senior executive was less than $180,000.

NOTE 13: SENIOR EXECUTIVE REMUNERATION (CONTINUED)

Note 13B: Actual annual reportable remuneration paid to substantive senior executives during the reporting period

Actual annual reportable remuneration paid to substantive senior executives in 2013

Actual annual reportable remuneration [1]	Substantive senior executives	Reportable salary [2]	Contributed superannuation [3]	Reportable allowances [4]	Bonus paid [5]	Total reportable remuneration
	no.	$	$	$	$	$
Total reportable remuneration (including part-time arrangements):						
Less than $180,000	1	135,420	23,533	–	–	158,953
$180,000 to $209,999	1	158,151	25,631	–	–	183,782
$240,000 to $269,999	1	218,774	38,806	–	–	257,580
$270,000 to $299,999	1	248,977	44,318	–	–	293,295
Total number of substantive senior executives	4					

Actual annual reportable remuneration paid to substantive senior executives in 2012

Actual annual reportable remuneration (1)	Substantive senior executives	Reportable salary [2]	Contributed superannuation [3]	Reportable allowances [4]	Bonus paid [5]	Total reportable remuneration
	no.	$	$	$	$	$
Total reportable remuneration (including part-time arrangements):						
Less than $180,000	2	270,266	40,572	–	–	310,838
$240,000 to $269,999	1	218,985	32,313	–	–	251,298
$270,000 to $299,999	1	246,282	38,470	–	–	284,752
Total number of substantive senior executives	4					

Notes:

(1) This table reports substantive senior executives who received remuneration during the reporting period. Each row represents an actual figure for the individuals in that remuneration band.

(2) 'Reportable salary' includes the following
   a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
   b) reportable fringe benefits (at the net amount prior to 'grossing up' to account for tax benefits);
   c) exempt foreign employment income; and
   d) super salary sacrificed.

(3) The 'contributed superannuation' amount is the actual cost of superannuation benefits to substantive senior executives in that reportable remuneration band during the reporting period.

(4) 'Reportable allowances' are the actual allowances paid as per the 'total allowances' line on individuals' payment summaries.

(5) 'Bonus paid' represents actual bonuses paid during the reporting period in that reportable remuneration band. During the year no bonuses were paid to senior executives (2011–12: $Nil) (The FRDC does not pay its senior executives bonuses).

Note 13C: Other staff

During 2012–13 and 2011–12, there were no employees whose salary or performance bonus was $180,000 or more (noting that the FRDC does not pay its employees bonuses).

NOTE 14: OTHER RELATED PARTY DISCLOSURES

Agrifood Skills Australia (ASA)

On 13 August 2010, the FRDC became a member of Agrifood Skills Australia Ltd (ASA). ASA is a company limited by guarantee contracted to the Australian Government to provide advice and support to industry and enterprises on skills and workforce development. ASA was established in May 2004 as one of 11 Industry Skills Councils.

The FRDC has recognised in 2012–13: Nil (2011–12: $500) (this expense is included in Note 3C: Projects expenditure—other), and was paid to ASA in accordance with the agreement.

Department of Agriculture, Fisheries and Forestry (DAFF)

The FRDC has a Research & Development Funding Head Agreement with DAFF under which it manages a suite of projects:

2012–13

- Australian Animal Welfare Strategy (AAWS)
- Australian Biosecurity Intelligence Network (ABIN) Neptune
- Aquatic Animal Welfare Working Group: Communications Plans Coordinator
- A technical review of formal fisheries harvest strategies
- People development program: Scholarship program for enhancing the skills of aquatic animal health professionals in Australia
- Development of methods for obtaining national estimates of the recreational catch of Southern Bluefin Tuna

2011–12

- Indigenous RD&E project
- Development of industry biosecurity plans for aquatic animal industries
- Aquatic animal health training scheme
- Scientific update of formal fisheries harvest strategies
- National aquatic animal health strategic planning
- Aquatic animal health subprogram: Strategic planning, project management and adoption

The FRDC has recognised in 2012–13: $483,480 (2011–12: $462,682) (refer Note 4C: Grants), from DAFF in accordance with the agreements.

NOTE 15: REMUNERATION OF AUDITORS

	2013	2012
	$	$
Fair value of the services provided		
Financial statement audit services	**29,000**	30,000
Total	**29,000**	30,000

Financial statement audit services are provided to the FRDC by the Australian National Audit Office (ANAO). RSM Bird Cameron is contracted by the ANAO to provide audit services on the ANAO's behalf. Fees for these services are included above. No other services were provided by the ANAO or their contractors, RSM Bird Cameron.

NOTE 16: FINANCIAL INSTRUMENTS

Note 16A: Categories of financial instruments

	2013	2012
	$	$
Financial assets		
Loans and receivables:		
Cash and cash equivalents	**4,963,258**	4,878,725
Trade and other receivables	**1,093,309**	885,941
Shares	**5,001**	5,001
Loan	**2,500**	5,000
Total	**6,064,068**	5,774,667
Carrying amount financial assets	**6,064,068**	5,774,667
Financial liabilities		
Other financial liabilities:		
Trade creditors	**112,670**	93,829
Project creditors	**186,792**	423,306
Other payables	**324,004**	638,571
Total	**623,466**	1,155,706
Carrying amount of financial liabilities	**623,466**	1,155,706

NOTE 16: FINANCIAL INSTRUMENTS (CONTINUED)

Note 16B: Net income and expenses from financial assets

	2013	2012
	$	$
Loans and receivables:		
Interest revenue (Note 4B)	256,267	552,224
Net gain from loans and receivables	256,267	552,224

Note 16C: Fair value of financial assets

	Carrying amount	Fair value	Carrying amount	Fair value
	2013	2013	2012	2012
	$	$	$	$
Financial assets				
Loans and receivables				
Cash and cash equivalents	4,963,258	4,963,258	4,878,725	4,878,725
Trade and other receivables	1,093,309	1,093,309	885,941	885,941
Shares (1)	5,001	–	5,001	–
Loan	2,500	2,500	5,000	5,000
Total	6,064,068	6,059,067	5,774,667	5,769,666
Financial liabilities				
Other financial liabilities				
Trade creditors	112,670	112,670	93,829	93,829
Project creditors	186,792	186,792	423,306	423,306
Other payables	324,004	324,004	638,571	638,571
Total	623,466	623,466	1,155,706	1,155,706

(1) There are no significant differences between the carrying amounts and fair values of financial assets and liabilities; with the exception of the value of ASCo shares, which are carried at cost because they do not have a quoted market price in an active market, and a fair value cannot be reliably measured.

Note 16D: Credit risk

The FRDC's activities expose it to normal commercial financial risk. As a result of the nature of the FRDC's business, the FRDC's internal policies, and Australian Government policies dealing with the management of financial risk, the FRDC's exposure to market, credit, liquidity, cash flow and fair value interest rate risk is considered to be low.

The majority of FRDC's receivables are from government agencies, industry, universities and program contributors who have long standing relationships with the FRDC.

The FRDC held no collateral to mitigate against credit risk.

Credit quality of financial instruments not past due or individually determined as impaired

	Not past due nor impaired	Not past due nor impaired	Past due or impaired	Past due or impaired
	2013	2012	2013	2012
	$	$	$	$
Cash and cash equivalents	4,963,258	4,878,725	–	–
Receivables for goods and services	736,711	857,891	356,598	28,050
Shares	5,001	5,001	–	–
Loan	2,500	5,000	–	–
Total	5,707,470	5,746,617	356,598	28,050

Ageing of financial assets that were past due but not impaired for 2013

	0 to 30 days	31 to 60 days	61 to 90 days	90+ days	Total
	$	$	$	$	$
Receivables for goods and services	191,598	165,000	–	–	356,598
Total	191,598	165,000	–	–	356,598

Ageing of financial assets that are past due but not impaired for 2012

	0 to 30 days	31 to 60 days	61 to 90 days	90+ days	Total
	$	$	$	$	$
Receivables for goods and services	5,500	22,000	550	–	28,050
Total	5,500	22,000	550	–	28,050

As of 30 June 2013, other receivables in the amount of $356,598 ($28,050 as at 30 June 2012) were past due, but not impaired.

These relate to debtors for whom there is no recent history of default. The FRDC has been in contact with the relevant debtors, and is satisfied that the payment will be received in full.

Other balances within other receivables do not contain impaired assets and are not past due. It is expected these balances will be received when due.

Note 16E: Liquidity risk

The FRDC's financial liabilities are project payables, supplier payables and other payables. The exposure to liquidity risk is based on the notion that the FRDC will encounter difficulty in meeting its obligations associated with these financial liabilities. This is highly unlikely due to Australian Government funding and internal policies and procedures put in place to ensure there are appropriate resources for the FRDC to meet its financial obligations.

Maturities for non-derivative financial liabilities in 2013

	On demand	Within 1 year	1 to 2 years	2 to 5 years	Total
	$	$	$	$	$
Suppliers	–	112,670	–	–	112,670
Projects	–	186,792	–	–	186,792
Other payables	–	324,004	–	–	324,004
Total	–	623,466	–	–	623,466

Maturities for non-derivative financial liabilities in 2012

	On demand	Within 1 year	1 to 2 years	2 to 5 years	Total
	$	$	$	$	$
Suppliers	–	93,829	–	–	93,829
Projects	–	423,306	–	–	423,306
Other payables	–	324,004	314,567	–	638,571
Total	–	841,139	314,567	–	1,155,706

The FRDC has no derivative financial liabilities in either 2012–13 or 2011–12.

Note 16F: Market risk

The FRDC holds basic financial instruments that do not expose the FRDC to certain market risks. The FRDC is not exposed to 'currency risk' or 'other price risk'.

NOTE 17: FINANCIAL ASSETS RECONCILIATION

	Notes	2013 $	2012 $
Financial assets			
Total financial assets as per Balance Sheet		**6,252,846**	6,173,748
Less: non-financial instrument components			
GST receivable from the Australian Taxation Office	5B	**188,778**	399,081
Total non-financial instrument components		**188,778**	399,081
Total financial assets as per financial instruments note		**6,064,068**	5,774,667

NOTE 18: REPORTING OF OUTCOME

The FRDC is a co-funded partnership between its stakeholders, the Australian Government and the Australian fishing industry (wild-catch commercial, aquaculture, recreational and indigenous fishers).

The objective of the FRDC is to optimise economic, environmental and social benefits for its stakeholders through effective investment and partnership in 'research, development and extension' (RD&E). The FRDC aims to maximise the benefits from its investment, by ensuring that the activity is well targeted, meets Australian Government and industry RD&E priorities, and builds on previous achievements where applicable.

Note 18A: Net cost of outcome delivery

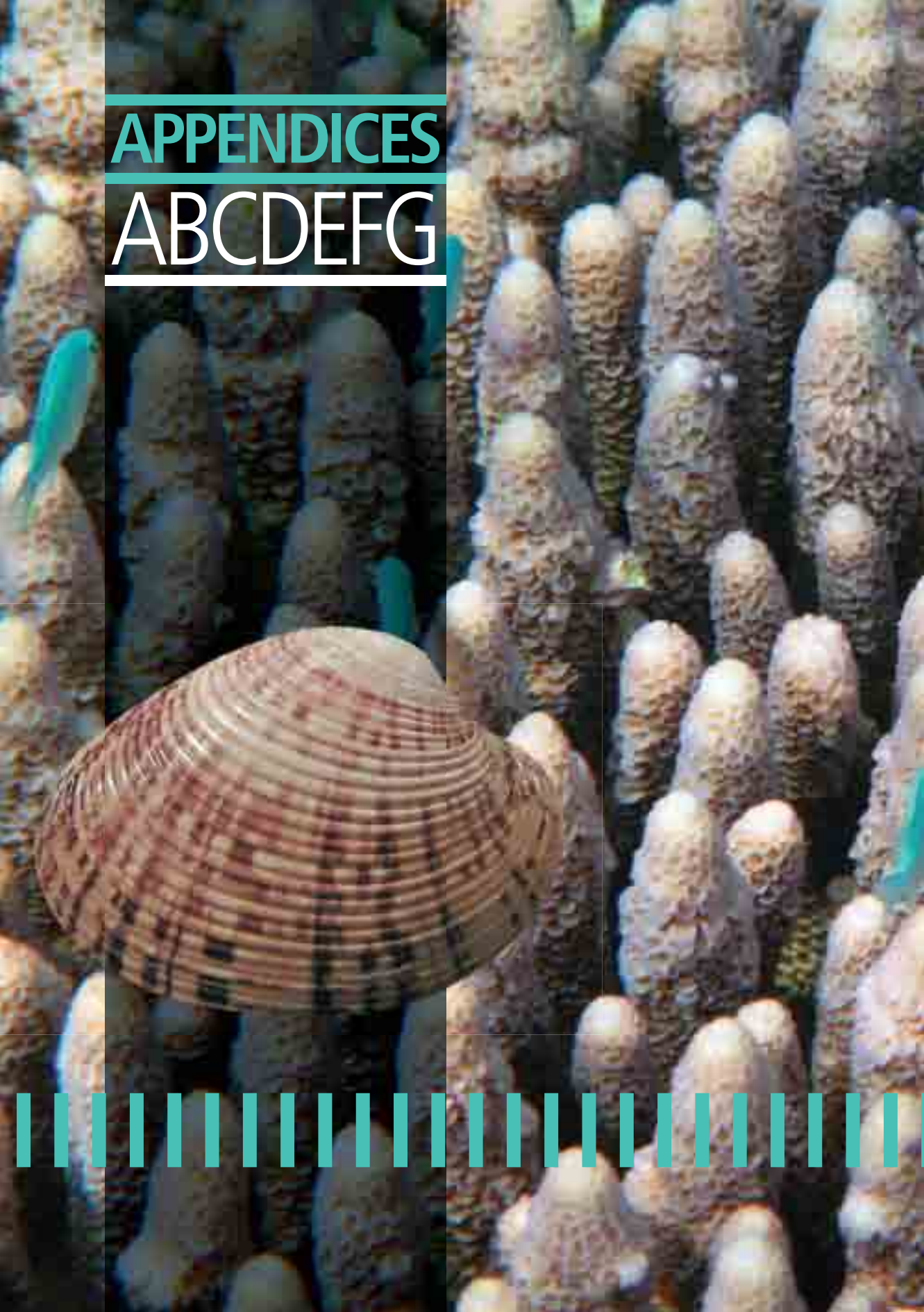
	Outcome 1	
	2013	2012
	$	$
Expenses	**25,690,104**	29,684,026
Own-source income	**8,752,875**	8,790,168
Net cost of outcome delivery	**16,937,229**	20,893,858

NOTE 18: REPORTING OF OUTCOME (CONTINUED)

Note 18B: Major classes of expenses, income, assets and liabilities by outcome

	Outcome 1	
	2013	2012
	$	$
Expenses		
Employees	**1,951,714**	1,957,162
Suppliers	**1,053,202**	1,112,348
Projects expenditure	**22,135,577**	25,979,090
Depreciation and amortisation	**521,327**	530,489
Write-down and impairment of assets	**18,847**	–
Finance costs	**9,437**	38,242
Loss from disposal of assets	**–**	695
Other expenses	**–**	66,000
Total	**25,690,104**	29,684,026
Income		
Revenue from the Australian Government	**17,229,825**	16,631,017
Sale of goods and rendering of services	**30,109**	76,033
Interest	**256,267**	552,224
Grants	**483,480**	462,682
Contributions	**7,983,019**	7,699,229
Total	**25,982,700**	25,421,185
Assets		
Cash and cash equivalents	**4,963,258**	4,878,725
Trade and other receivables	**1,284,587**	1,290,022
Other investments	**5,001**	5,001
Property, plant and equipment	**76,239**	130,743
Intangibles	**1,850,964**	2,061,215
Total	**8,180,049**	8,365,706
Liabilities		
Suppliers	**152,056**	126,632
Projects	**186,792**	423,306
Other payables	**324,004**	638,571
Employee provisions	**764,467**	717,063
Total	**1,427,319**	1,905,572

APPENDICES
ABCDEFG



APPENDIX A

THE FRDC'S PRINCIPAL··· REVENUE BASE

As stipulated in the PIERD Act, and shown in figure 3, the FRDC's primary revenue source is based on:

A. the Australian Government providing unmatched funds equivalent to 0.50 per cent of the average gross value of Australian fisheries production (AGVP) for the current year plus the two preceding years,

B. fishers and aquaculturists providing contributions, and

C. the Australian Government matches this amount up to a maximum of 0.25 per cent of AGVP.

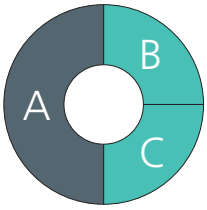
There is no legislative impediment to fishers and aquaculturists contributing to the FRDC above the maximum level at which the Australian Government will provide a matching contribution. Industry contributions for the past financial year and trends for the past five years are shown on page v.

Details of all FRDC revenue (including investments, royalties, and sales of products, information and services) are in the financial statements starting on page 114.

FIGURE 3: PROPORTIONS OF THE FRDC'S PRINCIPAL REVENUE BASE

A: UNMATCHED FUNDS
Australian Government pays 0.50% of the average gross value of fisheries production for the current year plus the two preceding years

In 2012–13, the industry contributed more than 128% of the maximum amount that is matchable by the Australian Government.



B: INDUSTRY CONTRIBUTION
Fishers using Commonwealth, state and territory fisheries, and aquaculturists (at least 0.25% of AGVP)

C: AUSTRALIAN GOVERNMENT MATCHING OF INDUSTRY CONTRIBUTION (=B, up to a maximum of 0.25% of AGVP)

RATIONALE FOR THE FRDC'S REVENUE BASE

The high component of public good in the operating environment of the fishing industry, has significance for the FRDC's revenue base. The Australian Government's contribution of 0.50 per cent of AGVP is made on the grounds that the Australian Government exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.

Industry makes its contributions to the FRDC recognising that fisheries RD&E will be oriented to its needs and will deliver economic and social benefits. In turn, the Australian Government's matching of the industry contributions is in line with policy principles that:

› beneficiaries from research should pay roughly in proportion to the benefits received, and

› the greater the spillover benefits, the greater the proportion the Australian Government should contribute.

APPENDIX B

PRINCIPAL LEGISLATIVE REQUIREMENTS FOR REPORTING

This annual report complies with the requirements of Commonwealth legislation. The principal reporting requirements, and some of their consequences for the FRDC, are outlined in this appendix. The Acts are:

- the *Commonwealth Authorities and Companies Act 1997* (CAC Act),
- the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act), and
- the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

CAC ACT REQUIREMENTS

The CAC Act is the principal legislation that specifies the content and standards of presentation of statutory authorities' annual reports for parliamentary scrutiny.

Section 9 of the CAC Act requires the FRDC's directors to prepare an annual report in accordance with Schedule 1 each financial year, and to give it to the responsible minister by 15 October. Clause 10 of the CAC Orders specifies that the report of operations and future prospects (one of the three main elements of the annual report, the others being financial statements and a report by the Auditor-General) are to include, among other things:

- a review of how the FRDC has performed during the financial year in relation to its statutory objects and functions, its R&D plan and its principal outputs and contribution to outcomes,
- factors influencing its performance over the financial year and in the future,
- significant events,
- operational and financial results, including principal outputs, major investing and financing activities, and key financial and non-financial performance indicators,
- significant changes in the FRDC's state of affairs or principal activities,
- developments since the end of the financial year, and
- matters required to be included by the PIERD Act and any other legislation.

PIERD ACT REQUIREMENTS

The PIERD Act also specifies matters that must be reported. In particular, section 28 states:

(1) The directors must include in each report on an R&D corporation prepared under section 9 of the CAC Act:

(a) particulars of:

(i) the R&D activities that it coordinated or funded, wholly or partly, during the period, and

(ii) the amount that it spent during the period in relation to each of those activities, and

(iia) which (if any) of those activities related to ecologically sustainable development, and

(iii) revisions of its R&D plan or annual operational plan approved by the Minister during the period, and

(iv) the entering into of agreements under sections 13 and 14 during the period and its activities during the period in relation to agreements entered into under that section during or prior to the period, and

(v) its activities during the period in relation to applying for patents for inventions, commercially exploiting patented inventions and granting licences under patented inventions, and

(vi) the activities of any companies in which the Corporation has an interest, and

(vii) any activities relating to the formation of a company, and

(viii) significant acquisitions and dispositions of real property by it during the period, and

(b) an assessment of the extent to which its operations during the period have:

(i) achieved its objectives as stated in its R&D plan, and

(ii) implemented the annual operational plan applicable to the period, and

(c) an assessment of the extent to which the Corporation has, during the period, contributed to the attainment of the objects of this Act as set out in section 3, and

(d) in respect of the grain industry or such other primary industry or class of primary industries as is prescribed in the regulations, particulars of sources and expenditure of funds, including:

(i) commodity, cross commodity and regional classifications, and

(ii) funds derived from transfer of:

(A) assets, debts, liabilities and obligations under section 144, and

(B) levies attached to Research Funds under the *Rural Industries Research Act 1985* under section 151 of this Act.

Further information on the PIERD Act in relation to the FRDC is in Appendix C.

EPBC ACT REQUIREMENTS

Section 516A of the EPBC Act requires the FRDC to report on ecologically sustainable development (ESD) and environmental matters. The specific reporting required by section 516A, and the FRDC's responses, are as follows.

- The extent to which the principles of ESD have been internalised in decision-making systems and processes. The objects of the FRDC, specified in the enabling legislation and detailed in Appendix C, focus its activities on economic, environmental and social matters (that is, the principal elements of ESD), including 'sustainable use and sustainable management of Australia's fisheries natural resources'. The first three of the legislated objects underlie the FRDC's vision, and are the basis for the planned outcomes of the FRDC's R&D programs. In pursuing these outcomes, the FRDC has fully internalised the principles of ESD in its decision-making systems and processes.
- The contribution to ESD of the social, economic and environmental outcomes that the Australian Government is seeking. Reporting of the FRDC's R&D programs (pages 24–87) addresses this requirement. In addition, Appendix D: Government priorities on pages 165–167 outlines expenditure against the broader government priorities including an environmentally sustainable Australia.
- Program 1: Environment and Program 2: Industry, clearly focus and deliver RD&E outcomes that are consistent with the intentions of the EPBC Act and assist management agencies.
- The environmental impacts of the FRDC's operations and actions, the measures being taken to minimise the impact on the environment, and the mechanisms for reviewing and improving performance. The FRDC implements section 516A through two functions, as follows:
  - **R&D project management**. The FRDC identifies R&D needs, and the means of addressing them, through a planning process and by entering project agreements with research providers; it does not undertake research itself. Management of fisheries R&D involves reporting against economic, environmental and/or social outcomes—at a strategic level through this annual report and in more detail in the final reports for projects. Before R&D projects start, the FRDC assesses their environmental impacts and ensures that appropriate approvals are obtained. The FRDC also has an entire R&D subprogram dedicated to developing an ESD reporting and assessment framework so that the industry can meet its obligations under the Act.
  - **FRDC internal operations**. Mechanisms for reviewing and improving performance are incorporated in the Corporation's ISO-certified quality management system, which provides a structure for continual improvement that permeates all management processes. The FRDC manages the process through the Management and accountability program.

A compliance index shows the page numbers on which the FRDC has reported on matters specified in Australian Government legislation and policies.

APPENDIX C

THE FRDC'S LEGISLATIVE FOUNDATION AND THE EXERCISE OF MINISTERIAL POWERS

ENABLING LEGISLATION

The FRDC's enabling legislation is the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act).

The FRDC Board is responsible to the Minister for Agriculture, Fisheries and Forestry and, through him, to the Parliament of Australia.

The objects, functions and statutory powers of R&D corporations are specified in the PIERD Act, the text of which is available via the FRDC website.

In the interests of clarity, the following statements of the FRDC's objects, functions and statutory powers mirror the wording of the PIERD Act but are specific to the FRDC and its business environment. Similarly, the statements of the FRDC's functions and statutory powers have been made shorter and simpler than the wording of the Act.

OBJECTS

The objects of the FRDC, deriving from section 3 of the PIERD Act, are to make provision for the funding and administration of fisheries RD&E with a view to:

- increasing the economic, environmental and social benefits to members of the Australian fishing industry and to the community in general by improving the production, processing, storage, transport or marketing of fish and fish products,
- achieving the sustainable use and sustainable management of Australia's fisheries natural resources,
- making more effective use of the resources and skills of the community in general and the scientific community in particular, and
- improving accountability for expenditure on fisheries RD&E.

FUNCTIONS

The functions of the FRDC, deriving from section 11 of the PIERD Act, are to:

- investigate and evaluate the requirements for fisheries research and development and, on that basis, prepare a five year R&D plan, review it annually and revise it if required,
- prepare an annual operational plan for each financial year,
- coordinate or fund the carrying out of R&D activities that are consistent with the annual operational plan,
- monitor and evaluate fisheries R&D activities that are funded and report on them to the Parliament; the Minister for Agriculture, Fisheries and Forestry; the Australian Seafood Industry Council; and the Australian Recreational and Sport Fishing Industry Confederation (trading as Recfish Australia), and
- facilitate the dissemination, adoption and commercialisation of the results of fisheries R&D.

STATUTORY POWERS

Subject to the PIERD Act, the FRDC is empowered under section 12 of the Act to do all things necessary or convenient to be done for, or in connection with, the performance of its functions, which may include:

- entering into agreements for the carrying out of R&D activities by other persons,
- entering into agreements for the carrying out of R&D activities by the FRDC and other persons,
- making applications, including joint applications for patents,
- dealing with patents vested in the FRDC and other persons,
- making charges for work done, services rendered, and goods and information supplied by it,
- accepting gifts, grants, bequests and devices made to it, and acting as trustee of money and other property vested in it on trust,
- acquiring, holding and disposing of real and personal property,
- joining in the formation of a company, and
- doing anything incidental to any of its powers.

The description of ministerial powers on the following page has been drawn from several sections of the PIERD Act and has been condensed from the original in the interests of clarity.

MINISTERIAL POWERS

Ministerial powers under the enabling legislation may be exercised by the Minister for Agriculture, Fisheries and Forestry. They relate to:

- directing the FRDC in writing as to the performance of its functions and the exercise of its powers,
- approving the RD&E plan and the annual operational plan,
- requesting and approving variation to the RD&E plan and the annual operational plan,
- requesting the establishment of a selection committee and determining certain conditions relating to the selection committee,
- appointing the presiding member and members of a committee for the selection of directors,
- determining the number of directors,
- determining the terms and conditions of appointment of directors (other than the Executive Director) in relation to matters not provided for by the PIERD Act,
- appointing the Chairperson,
- appointing directors, other than the Chairperson and Executive Director, from persons nominated by a selection committee,
- appointing a nominated director to be the Deputy Chairperson,
- declaring one or more specified organisations to be representative organisations in relation to the FRDC,
- determining the gross value of production of the fishing industry for the purposes of establishing the maximum payments by the Australian Government to the FRDC,
- establishing written guidelines covering the payment by the FRDC to an eligible industry body, or member of an eligible industry body, for expenses reasonably incurred in connection with consultation with the FRDC,
- causing, at least once in each financial year, a coordination meeting to be held of all R&D corporations,
- granting leave of absence to the Chairperson, and
- terminating the appointment of the Chairperson or a director other than the Executive Director.

Additional powers under the CAC Act relating to corporate governance and reporting are available to the Minister for Agriculture, Fisheries and Forestry; and the Finance Minister.

Exercise of ministerial powers during 2012–13 is described on pages 101–102.

APPENDIX D
GOVERNMENT PRIORITIES

The national research priorities and rural research priorities can be viewed at http://www.daff.gov.au/agriculture-food/innovation/priorities

National research priorities and their associated goals (for use with the tables on the following page).

Priority 1—An environmentally sustainable Australia

A1 Water—a critical resource
A2 Transforming existing industries
A3 Overcoming soil loss, salinity and acidity
A4 Reducing and capturing emissions in transport and energy generation
A5 Sustainable use of Australia's biodiversity
A6 Developing deep earth resources
A7 Responding to climate change and variability

Priority 2—Promoting and maintaining good health

B1 A healthy start to life
B2 Ageing well, ageing productively
B3 Preventive healthcare
B4 Strengthening Australia's social and economic fabric

Priority 3—Frontier technologies for building and transforming Australian industries

C1 Breakthrough science
C2 Frontier technologies
C3 Advanced materials
C4 Smart information use
C5 Promoting an innovation culture and economy

Priority 4—Safeguarding Australia

D1 Critical infrastructure
D2 Understanding our region and the world
D3 Protecting Australia from invasive diseases and pests
D4 Protecting Australia from terrorism and crime
D5 Transformational defence technologies

TABLE 10: TOTAL INVESTMENT 2012–13. GOVERNMENT RESEARCH PRIORITIES ATTRIBUTED TO EACH R&D PROGRAM ($ AND %)

Rural research priorities												
Rural research priorities	Program 1: Environment		Program 2: Industry		Program 3: Communities		Program 4: People development		Program 5: Extension and adoption		Total expenditure	
	$000	%	$000	%	$000	%	$000	%	$000	%	$000	%
Productivity and adding value	768	3.47	2,818	12.73	18	0.08	404	1.83	262	1.18	4,270	19.29
Supply chain and markets	58	0.26	1,903	8.60	94	0.42	159	0.72	270	1.22	2,484	11.22
Natural resource management	4,448	20.09	2,808	12.69	174	0.7	425	1.92	529	2.39	8,384	37.87
Climate variability and climate change	1,560	7.05	141	0.64	6	0.03	70	0.32	100	0.45	1,877	8.48
Biosecurity	1,112	5.02	211	0.95	0	0.00	51	0.23	73	0.33	1,447	6.54
Innovation skills	87	0.39	567	2.56	81	0.37	295	1.33	153	0.69	1,183	5.34
Technology	123	0.56	1,185	5.35	0	0.00	80	0.36	89	0.40	1,477	6.67
Other research	299	1.35	329	1.49	60	0.27	269	1.22	57	0.26	1,014	4.58
TOTAL	8,455	38.20	9,962	45.00	433	1.96	1,753	7.92	1,533	6.93	22,136	100.00

Notes:

› When looking at the RD&E expenditure estimates across the rural research priorities and national research priorities, note that expenditure estimates differ for similarly themed priorities as a result of differences between descriptors.

› National research priorities and their associated goals are listed on the previous page.

Figures in this table have been rounded, hence totals may not agree with component figures.

TABLE 10: CONTINUED

National research priorities												
National research priorities		Program 1: Environment		Program 2: Industry		Program 3: Communities		Program 4: People development		Program 5: Extension and adoption		Total expenditure	
		$000	%	$000	%	$000	%	$000	%	$000	%	$000	%
An environmentally sustainable Australia	A1												
	A2	769	3.75	1,642	8.00	125	0.61	720	3.51	399	1.95	3,655	17.81
	A3	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	A4	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	A5	4,566	22.26	1,515	7.39	39	0.19	77	0.37	280	1.37	6,478	31.58
	A6	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	A7	1,132	5.52	285	1.39	46	0.23	0	0.00	187	0.91	1,650	8.04
Promoting and maintaining good health	B1	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	B2	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	B3	0	0.00	412	2.01	52	0.25	299	1.46	107	0.52	870	4.24
	B4	87	0.42	267	1.30	61	0.30	0	0.00	107	0.52	522	2.54
Frontier technologies for building and transforming Australian industries	C1	89	0.43	110	0.54	0	0.00	0	0.00	0	0.00	199	0.97
	C2	251	1.22	3,490	17.01	0	0.00	33	0.16	0	0.00	3,774	18.40
	C3	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	C4	121	0.59	47	0.23	74	0.36	90	0.44	144	0.70	477	2.33
	C5	212	1.04	882	4.30	92	0.45	143	0.70	144	0.70	1,474	7.18
Safeguarding Australia	D1												
	D2												
	D3	954	4.65	238	1.16		0.00	120	0.58	103	0.50	1,415	6.90
	D4												
	D5												

APPENDIX E

REPRESENTATIVE ORGANISATIONS

Guidelines on funding of consultation costs by primary industry and energy portfolio statutory authorities were issued by the Hon. John Anderson MP, Minister for Primary Industries and Energy in July 1998 under the relevant enabling legislation and in association with paragraph 16(1)(b) of the CAC Act which obliges directors of a Commonwealth authority to provide the responsible Minister with such reports, documents and information as he or she requires.

As required by section 5(b) of the *Guidelines* FRDC is required to report:

> *Where the statutory authority has authorised an industry organisation, with which it has a formal relationship under its enabling legislation, to undertake a discrete project or consultancy on its behalf as per section 1(b) of these guidelines, then details of the nature, purpose and expected or final outcome of the project or consultancy should be provided concurrently, with details of any consultation funding, in the main body of the annual report.*

The following tables are a list of all projects FRDC had with representative bodies in 2012–13. Note that projects can run over multiple years.

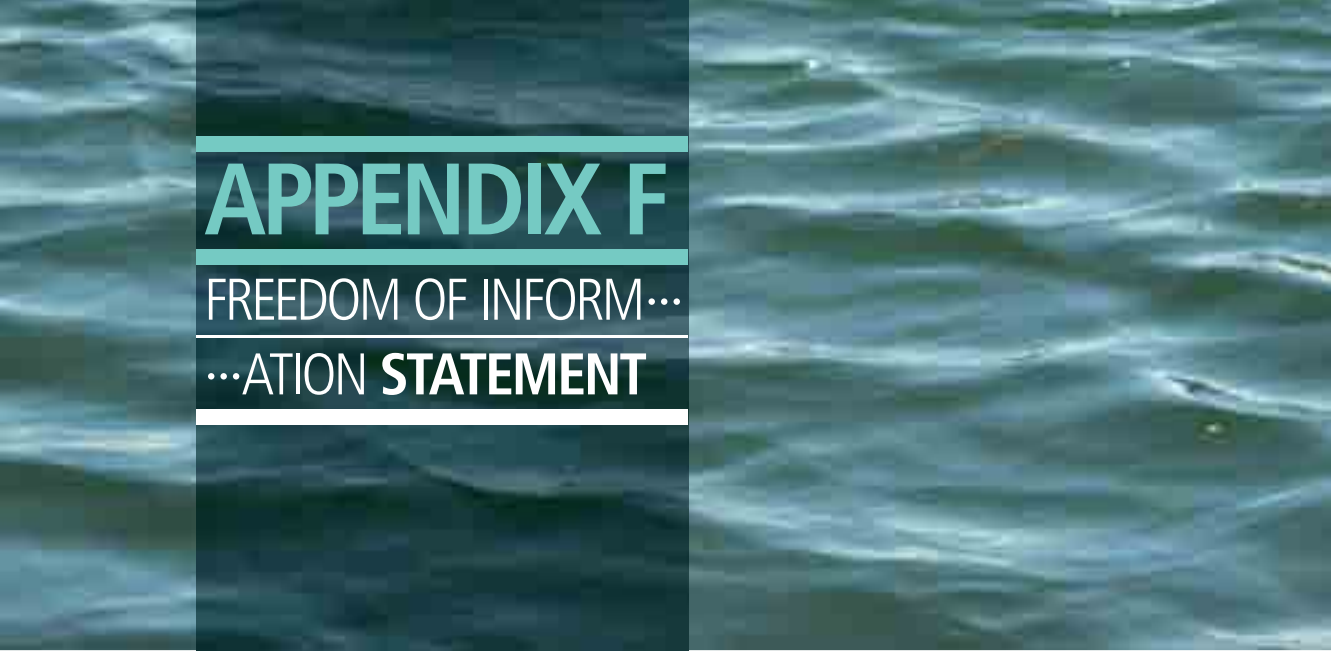
There are no projects in progress with the National Seafood Industry Association or the Commonwealth Fisheries Association.

NATIONAL Aquaculture Council

Project number	Project title	Total project cost
2009/303	Australasian Aquaculture 2010 to 2014	$240,000

RECFISH Australia

Project number	Project title	Total project cost
2010/211	Development of National Extension and Adoption Framework for Fishing and Aquaculture	$358,880



APPENDIX F

FREEDOM OF INFORM···

···ATION **STATEMENT**

Australian Government agencies subject to the *Freedom of Information Act 1982* (FOI Act) are required to publish information to the public as part of the Information Publication Scheme (IPS). This requirement is in Part II of the FOI Act and each agency must display on its website a plan showing what information it publishes in accordance with the IPS requirements.

Further information on the FRDC's agency plan is available from the FRDC website—http://frdc.com.au/about_frdc/foi/Pages/default.aspx

|| **ROLE**, structure and functions

The FRDC's role is described on page ix of this annual report; its structure and functions and legislation under which it is established are described in Appendices A to C.

|| **DOCUMENTS** available for inspection

RD&E plan (the FRDC's strategic plan)	File, publication and website *
FRDC policies	Unpublished documents, list on website *
Annual operational plan	File, publication and website *
Project details	Database, files and website *
Project agreements	Files and generic copy on website *
Final reports and non-technical summaries	Publications and website *
RD&E funding applications	Files
Annual report	File, publications and FRDC website *
FISH magazine	File, publications, Ipad and FRDC website *
Administration	Files, unpublished document
Mailing lists	Database

* The FRDC's website address is **www.frdc.com.au**

Some other information may be subject to assessment of access for such matters as commercial confidentiality or personal privacy in accordance with the FOI Act.

|| ACCESS to documents

To seek access to FRDC documents, please contact the FRDC's FOI Officer: address, telephone, fax and e-mail details are shown inside the back cover of this report. It may not be necessary to request the information under the FOI Act—the FRDC may simply provide it to you when you ask for it. At all times, however, you have the option of applying under the FOI Act.

Fees and charges for FOI

Request	Charge
Application	No fee
Search and retrieval	$15 per hour
Decision making and consultation	First five hours free, after that $20 per hour
When a FOI request is not responded to within the statutory time limit	No fee
Internal review	No fee
Request for personal information	No fee

The standard FOI application fee is nil when making your application, however processing charges will apply.

Documents are usually made available for direct access at the FRDC's office in Canberra. They may also be provided, depending on your preference:

› by post (photocopies) to an address specified in your request, or

› at the Information Access Office (established by the Attorney-General) nearest where you live.

APPENDIX G

BOARD SELECTION COMMITTEE

10 October 2012

The Hon. Joe Ludwig
Minister for Agriculture, Fisheries and Forestry
Parliament House
Canberra ACT 2600

Dear Minister

In accordance with the requirements of section 141 of the *Primary Industries Research and Development Act 1989* (PIERD Act), I write to inform you of the activities of the Fisheries Research and Development Corporation (FRDC) Selection Committee during the period 17 April – 17 September 2012.

On 31 August 2012, the term of the FRDC directors appointed in 2009, expired. In preparation for the appointment of new directors of FRDC, I was appointed Presiding Member and officially commenced the selection process as per your correspondence of 17 April 2012.

The Committee's nominations of six directors were provided to your office on 16 July 2012. On 14 August 2012, I was advised of your rejection of the nominations. You requested the Selection Committee reconsider the nominations and a revised list was provided to your office on 24 August 2012. The Minister appointed the directors on 12 September 2012.

Following notification of your appointment of the directors, I disbanded the Selection Committee, pursuant to section 129 of the PIERD Act, on 17 September 2012.

The operations of the Selection Committee and the interview and selection processes undertaken by the Committee are outlined in the following pages.

Yours sincerely

Dr Prue McMichael
Presiding Member
FRDC Selection Committee

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

SELECTION COMMITTEE 2012

The FRDC Selection Committee was established under the PIERD Act for the purpose of nominating six well-qualified persons for appointment as directors of FRDC.

On 17 April 2012, I was appointed Presiding Member by the Minister. I commenced the selection process as directed in the associated correspondence. The Committee was disbanded on 17 September 2012 after the Minister appointed six FRDC non-executive directors.

In addition to myself as the Presiding Member, the Selection Committee comprised four members, who were jointly nominated by the FRDC's representative organisations—the National Aquaculture Council, Commonwealth Fisheries Association, RecFish Australia and National Seafood Industry Alliance. All Selection Committee nominees, and I as Presiding Member, provided a current curriculum vitae and a signed private interest's declaration form. On 24 May 2012 you appointed the following Selection Committee members:

- **Mr Brian Jeffriess AM**, Chief Executive, Australian Southern Bluefin Tuna Association,
- **Dr Adam Smith**, (Acting) General Manager, Great Barrier Reef Marine Park Authority,
- **Ms Katherine Sarneckis**, Chief Executive, Northern Territory Seafood Council,
- **Mr Neil Stump**, Chief Executive, Tasmanian Seafood Industry Council.

Selection process

At the commencement of the process, I consulted with the Minister; the FRDC Chair, Executive Director and Business Development Manager; FRDC director, Mr Richard Stevens OAM; and relevant staff in the Department of Agriculture, Fisheries and Forestry [DAFF]. These consultations and the shared perspectives, comments, sentiments, observations and explanations assisted the Selection Committee deliberations.

Information about the non-executive director positions was widely distributed with the specific intention of identifying the widest possible field of candidates for nomination for appointment to the Corporation.

Applications were sought through a printed media advertisement in the *Australian Financial Review* on 18 May 2012 and the *Weekend Australian* on 19 May 2012. The department [DAFF] undertook searches of the *Balance* and *Appoint Women* databases. The advertisement was also distributed to *Balance* database registrants and posted on the *CareerOne* and the *Women on Boards* websites. The Selection Committee invited the representative organisations to nominate candidates. FRDC and the representative organisations were also provided with the advertisement and asked to alert their members and post the advertisement on their respective websites.

These processes were successful in attracting a wide field of applicants. One hundred and forty-three complete applications were received—99 males, 41 females and three from which gender status could not be determined. Applications were received from all states and the Australian Capital Territory, as well as Singapore, New Zealand and Spain. Applications were not received from the Northern Territory.

All applications were considered by each member of the Selection Committee[1] taking into account the Seven Principles of Public Life (the Nolan Principles). An interview shortlist of 15 candidates was agreed to on 18 June 2012. In developing the shortlist, the Selection Committee concentrated on the quality of applications and the core selection criteria contained in the PIERD Act. Other criteria agreed to be important and considered in deliberations were: FRDC knowledge, collective expertise and skill balance, Board continuity, gender balance and geographical spread.

Secretarial services associated with the applications, management of the Selection Committee, and preparation for the interview process, were provided by the Presiding Member and Scholefield Robinson Horticultural Services Pty Ltd. Danielle McNamara, principal consultant of Proscribing Solutions was engaged to provide scribing services during the interview process, and for draft report preparation.

Nominations for non-executive directors of FRDC

The Selection Committee unanimously agreed on six original nominations. After the rejection of nominations by the Minister, a revised list of nominations was formed but did not have unanimous support from the Selection Committee.

Several nominees on both the original, and revised lists, had outstanding expertise and experience in a number of the required selection criteria, while others were nominated for more specific expertise. The Selection Committee gave due consideration to the diversity, skills and experience of the candidates, individually and as a nominated group. Three nominees were recommended for re-appointment.

The nominees appointed by the Minister are:

Ms Heather Brayford	Re-appointment (first, 2009)	Western Australia
Ms Renata Brooks	Re-appointment (first, 2009)	New South Wales
Mr Brett McCallum	Re-appointment (first, 2009)	Western Australia
Dr Bruce Mapstone		Tasmania
Dr Peter O'Brien		Australian Capital Territory
Mr David Thomason		New South Wales

Selection process expenses

Item	17 April–30 June 2012 ($)	1 July–17 September 2012 ($)
Advertising	5,697.60	
Selection Committee: travel and expenses	1,188.50	2,155.32
Interviews: Candidates travel and expenses		9,525.76
Presiding Member: Professional time/fees	9,074.00	7,724.90
Secretarial/administrative	1,280.00	300.00
Selection Committee support, and scribing	782.90	4,042.50
services	441.88	15.82
Administration services		
	18,464.88	23,764.30
Sub-total		42,229.18
GST		4,222.92
TOTAL (including GST)		**$46,452.10**

1. Committee member, Mr Stump was an active participant in short-listing of applicants. He was however unable to attend the interviews and post-interview deliberations in-person.

LIST OF ABBREVIATIONS AND ACRONYMS

AASB	Australian Accounting Standards Board
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AFMA	Australian Fisheries Management Authority
AFMF	Australian Fisheries Management Forum
AGD	amoebic gill disease
AGVP	average gross value of production
APFA	Australian Prawn Farmers' Association
ASCo	Australian Seafood Co-products
b	billion
CAC Act	*Commonwealth Authorities and Companies Act 1997*
CEO	Chief Executive Officer
CRC	cooperative research centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
DCCEE	Department of Climate Change and Energy Efficiency
DPI	Department of Primary Industries
E&A	extension and adoption
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESD	ecologically sustainable development
FOI Act	*Freedom of Information Act 1982*
FRAB	Fisheries Research Advisory Body
FRDC	Fisheries Research and Development Corporation
GST	goods and services tax
GVP	gross value of production
ISO	International Organization for Standardisation
IT	information technology
m	million
MBSIA	Moreton Bay Seafood Industry Association
MP	member of parliament
MSc	Master of Science
NPF	National Priorities Forum
NSW	New South Wales
OH&S	occupational health and safety
PhD	Doctor of Philosophy
PIERD Act	*Primary Industries and Energy Research and Development Act 1989*
PIRSA	Department of Primary Industries and Regions South Australia
POMS	Pacific Oyster Mortality Syndrome
R&D	research and development
RD&E	research, development and extension
RDC	research and development corporation
SARDI	South Australian Research and Development Institute
SBT	Southern Bluefin Tuna
SSA	Seafood Services Australia
TAC	total allowable catch
TEP	threatened, endangered or protected species
WH&S Act	*Work Health and Safety Act 2011*

INDICES

COMPLIANCE
ALPHABETICAL

INDEX

COMPLIANCE

This index shows the page numbers on which the FRDC has reported on matters specified in Australian Government legislation and policies, and in the Global Reporting Initiative.

When this annual report has not addressed a compliance subject (usually because no activity occurred under that heading during the year), the subject entry is followed by '—' rather than by a page number.

AUSTRALIAN GOVERNMENT LEGISLATION AND POLICIES

The Australian Government legislation and policies with which the FRDC complies include the following:

- the FRDC's enabling legislation, the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act),
- the *Commonwealth Authorities and Companies Act 1997* (CAC Act) and its supporting *Commonwealth Authorities and Companies (Report of Operations) Orders 2008* made under section 48 of the Act (CAC Orders),
- the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act),
- other legislation, such as the *Freedom of Information Act 1982*, the *Work Health and Safety Act 2011*, the *Disability Discrimination Act 1992* and the *Commonwealth Electoral Act 1918*,
- ministerial notifications of Australian Government policy, including national priorities for research and priorities for rural R&D,
- other Australian Government guidelines,
- recommendations by the Australian National Audit Office.

The document *Requirements for annual reports* acknowledges that agencies vary in role and size and there is discretion as to the extent of information to include in annual reports and the sequence in which it is presented. The Joint Committee on Publications has also observed that a departmental report will necessarily be different from that of a statutory authority; a statutory authority, while accountable for its activities, has a degree of independence not shared by departments and its annual reports will thus have a greater freedom of expression and comment. The FRDC's reporting is, accordingly, appropriate to its legislative basis, functions and size.

|| *COMMONWEALTH Authorities and Companies Act 1997* and *CAC (Report of Operations) Orders 2008*

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ALPHABETICAL

PUBLICATIONS AND OTHER INFORMATION

The following information is available from the FRDC	Printed	Website
The RD&E plan (*Investing for tomorrow's fish: The FRDC's research, development and extension plan 2010–2015*), which provides comprehensive information on the Corporation; its business environment; the outlook for the fishing industry and the natural resources on which it depends; and the way in which the FRDC plans, invests in and manages fisheries R&D.	Yes	Yes
This and the previous annual report.	Yes	Yes
R&D plans for Commonwealth, states, Northern Territory, regions and industry sectors.	Yes	Yes
FISH (published in March, June, September and December, and on other occasions for special themes), which provides information on FRDC activities, summarises final reports on completed R&D projects released during the previous quarter, and lists projects that have been newly funded.	Yes	Yes
Information on completed projects (final reports and other related products).	Yes (see note 1)	Yes
Non-technical summaries of all final reports of FRDC projects.		Yes
Hyperlinks to other websites containing full final reports and fisheries R&D strategies, and to other important websites.		Yes
R&D funding application details.		Yes
Coming events of significance for the industry.		Yes
Research databases.		Yes

Note 1: Information on completed projects (final reports and other related products) are also available from:

- the National Library of Australia, Parkes ACT 2600
- the Librarian, CSIRO Marine Research, GPO Box 1538, Hobart Tasmania 7001
- state libraries and research institutions that the researcher considers appropriate.

www.frdc.com.au

The FRDC's website (**www.frdc.com.au**) provides easy access to information and publications, including the items on this page.

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ABOUT THIS REPORT

This report describes the extent to which the Corporation implemented its approved annual operational plan during the previous financial year. It meets the requirements for reporting legislated by the Australian Government and informs the FRDC's other stakeholders—especially those in the commercial, recreational and indigenous sectors of the fishing industry and in the research and development community.

Fisheries Research and Development Corporation Annual Report, 2012–13

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THE FRDC IS CO-FUNDED BY OUR STAKEHOLDERS, THE AUSTRALIAN GOVERNMENT, AND THE FISHING INDUSTRY

THE FRDC INVESTS STRATEGICALLY ACROSS ALL OF AUSTRALIA IN RESEARCH, DEVELOPMENT AND EXTENSION (RD&E) ACTIVITIES THAT BENEFIT ALL SECTORS OF THE FISHING INDUSTRY. OUR GOAL IS FOR AUSTRALIA'S FISHERIES TO BE SUSTAINABLY MANAGED.