FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

Annual Report

2001–02

TO THE COMMONWEALTH PARLIAMENT,
THE FISHING INDUSTRY AND OTHER FRDC STAKEHOLDERS

Highlights of the year

FRDC celebrates 10th anniversary

The FRDC celebrated a decade of achievement during the year and in the process increased awareness of the importance of R&D investment and the great changes that have occurred in fisheries R&D since 1991. Among many developments in which the FRDC has played a leading role are wide acceptance of the primacy of ecologically sustainable development in the fishing industry and the strong international competitiveness of the commercial sector.

Value of commercial sector production increases

(more information on production: pages 17, 56–57)

The value of production from the commercial sector increased over the previous year: 2.6% in gross value of wild-catch production; 8.6% in aquaculture; and 9.0% in exports. The underlying trends — increased wild-catch value derived from static tonnage and continuing growth in both tonnage and value of aquaculture — are in keeping with ecologically sustainable development of the fishing industry.

Significant R&D achievements

(more information on R&D results: pages 42–67)

Among the many R&D outcomes and outputs during the year, four were particularly significant.

The first commercial use of a manufactured fish feed for southern bluefin tuna took place, building on several years of FRDC-funded R&D.

A voluntary closure by indigenous and commercial fishers has led to a plan for sustainable management of the black jewfish in the Injinoo community of northern Cape York.

A national recreational fishing survey was conducted to collect nationally consistent and comparable fishery statistics for the non-commercial components of Australian fisheries. It found that about 3.4 million Australians fished during the year, harvesting about 125 million fish and spending more than $1 billion on fishing-related items.

Seafood Services Australia — previously a series of joint-venture R&D projects — was incorporated as a company. The company's mission is to be a catalyst for sustainable development of the Australian seafood industry. In doing so the company is expected to overcome market and institutional failure in the seafood supply chain that impedes the industry's ability to identify and capitalise on its many opportunities.

FRDC's contribution to national capacity

(more information on human capital development: pages 26, 62–67)

The FRDC contributed significantly to developing the capacities of people in the industry and the R&D community by supporting the equivalent of 322 full-time people involved directly in R&D projects through research institutions, government agencies and fishing industry businesses. In addition, 207 full-time equivalent staff were employed on FRDC projects through in-kind contributions of project partners.

R&D investment and leverage both increase

(more information on R&D investment: from page 69)

Total actual investment in projects under FRDC management in 2001–02 was $57.1 million (up from $51.0 million last year). Of this, the FRDC invested $20.5 million (up from $17.9 million last year). The value of leverage resulting from the FRDC investment was in the ratio of 1:1.8 (unchanged). In total, 768 projects were under management (an increase of 10%).

For every dollar that industry contributed to the FRDC during the past year, the FRDC invested almost four dollars in R&D that benefited the contributor.

FRDC keeps within budget for overheads

(more information on the FRDC's management effectiveness: from page 68)

The FRDC confined the costs of R&D planning, investment and management to its declared limit of 8 per cent of total FRDC budget.

FISHERIES
RESEARCH &
DEVELOPMENT
CORPORATION

10 September 2002

Senator the Hon. Judith Troeth
Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Senator,

On behalf of the directors of the Fisheries Research and Development Corporation, I have pleasure in presenting the Corporation's annual report for the year ended 30 June 2002.

The report is forwarded in accordance with section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act). It has been prepared in accordance with the *Primary Industries and Energy Research and Development Act 1989*, the CAC Act and the Commonwealth Authorities and Companies (Report of Operations) Orders 2002.

The report provides information so that an informed judgement of the Corporation's performance during the year ended 30 June 2002 can be made by you; the Minister for Agriculture, Fisheries and Forestry; the Minister for Forestry and Conservation; the Parliament; fishing industry levy payers and other financial contributors; and other interested parties.

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 sincerely,

Denis Byrne
Chairman

Cover photographs: a revolutionary decade for southern bluefin tuna aquaculture

Please refer to the inside back cover for a narrative of this cover theme.

Fisheries Research and Development Corporation Annual Report, 2001–02

An electronic version is at http://www.frdc.com.au/pub/anrep/index.htm

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FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

Annual Report 2001–02

The FRDC's mission is to increase economic and social benefits for the fishing industry and the people of Australia, through planned investment in research and development, in an ecologically sustainable framework.

David Sievers/Aspect

Contents

If you do not have time to read this report in detail, we suggest you select from the following sections:

Topics are listed under a wide variety of keywords in the alphabetical index starting on page 184.

FIGURES

TABLES

About this report

This report is available electronically from www.frdc.com.au/pub/anrep/index.htm

Requirements for the report

This report describes the extent to which the Fisheries Research and Development Corporation (FRDC) implemented its annual operational plan during the previous financial year. It is prepared in accordance with the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act), the *Commonwealth Authorities and Companies Act 1997* (CAC Act), the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) and other legislation and guidelines. The annual report is also intended to inform the FRDC's stakeholders — especially those in the commercial, recreational and traditional sectors of the fishing industry and in the research and development (R&D) community.

More details of the legislative requirements for the report are in **appendix A** on page 144.

Planning, operating and reporting framework

The annual report is one of four documents in the FRDC's planning, operating and reporting framework. The other documents are as follows:

- *The R&D plan*. This is the FRDC's strategic plan, prepared under the provisions of the PIERD Act with appropriate regard for ministerial directions, Commonwealth Government policy, and consultation with the fishing industry — including the FRDC's representative organisations.
- *The annual operational plan (AOP)*. This document gives effect to the R&D plan by seeking to achieve, in the best way possible, the planned outcomes of the R&D programs.
- *The portfolio budget statement*. This document, which is consistent with the AOP and is also prepared annually, is used for budget processes and parliamentary scrutiny.

The planning, operating and reporting processes involved, in the context of the FRDC's AS/NZS ISO 9001:2000 quality management system, are shown diagrammatically in **figure 1**, opposite.

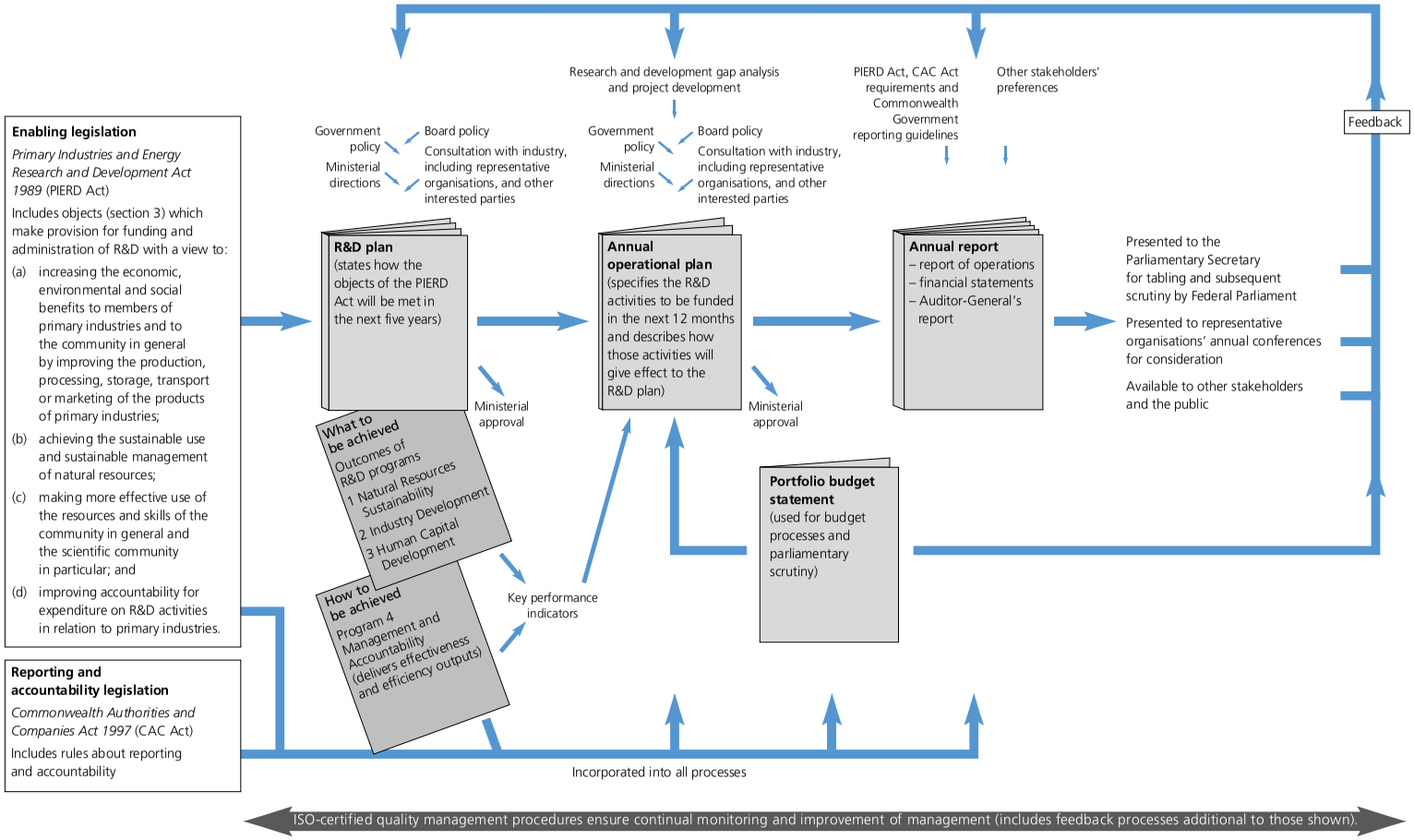
Finding aids

A **glossary** of key terms and abbreviations starts on page 173.

A **compliance index** (of items complying with the requirements of Commonwealth legislation and policies and the Joint Committee of Accounts) is on page 182. This index also shows topics stipulated by the CAC Act or PIERD Act for which there was nothing to report during the year.

An **alphabetical index** of key topics starts on page 184.

FIGURE 1: KEY PROCESSES IN THE FRDC'S PLANNING, OPERATING AND REPORTING FRAMEWORK



People who read this report

Through the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, this report is tabled before both houses of the Parliament of the Commonwealth of Australia.

The report is also presented to the FRDC's two representative organisations: the Australian Seafood Industry Council and Recfish Australia. Their responses are included in the measurement of the FRDC's performance.

Further, this report is intended to meet the information needs of the FRDC's stakeholders and other readers, including:

- fishers and aquaculturists who pay R&D levies or make some other form of contribution to R&D;
- other people in the fishing industry, including recreational fishers and Aboriginal and Torres Strait Islander fishers carrying out traditional fishing practices;
- Commonwealth, state, territory and local governments and their agencies — such as those involved in management of natural resources, primary industries and seafood production, indigenous affairs, tourism, regional development and sport and recreation;
- fisheries R&D funding entities;
- fisheries managers;
- researchers;
- educators;
- individuals and community groups with an interest in Australia's fisheries resources and the fishing industry;
- individuals and community groups with interests in economic, environmental and social matters relating to the fishing industry;
- industry and community interest groups overseas, especially in New Zealand;
- businesses and business organisations; and
- the news and information media.

Rounding of figures

Since figures presented in the body of the report have been rounded, totals may not always agree with component figures.

Further information related to this report

If you would like to obtain a copy of this report or previous reports, please contact the Corporation or visit the FRDC website: details are opposite the title page. For other material produced by the FRDC, please refer to page 12.

About the FRDC

The FRDC is a rural research and development corporation that is jointly funded by the Commonwealth Government and the fishing industry. It operates within the portfolio of the Commonwealth Minister for Agriculture, Fisheries and Forestry. Formed as a statutory authority on 2 July 1991 under the provisions of the PIERD Act, it is responsible to its stakeholders to:

- plan, invest in and manage fisheries R&D throughout Australia; and
- facilitate the dissemination, adoption and commercialisation of R&D results.

The FRDC has become widely recognised as the leading agency with this role.

Planned R&D outcomes

Definitions of outcomes and outputs, as used in the Commonwealth's outcome-output accountability framework, are in the glossary on page 178.

PROGRAM 1: NATURAL RESOURCES SUSTAINABILITY

The natural resources on which the commercial, recreational and traditional sectors of the fishing industry depend are used in an ecologically sustainable way.

PROGRAM 2: INDUSTRY DEVELOPMENT

The commercial sector of the Australian fishing industry is profitable and internationally competitive; the commercial, recreational and traditional sectors are socially resilient.

PROGRAM 3: HUMAN CAPITAL DEVELOPMENT

The knowledge and skills of people in and supporting the Australian fishing industry, and in the wider community, are developed and used so that Australians derive maximum economic, environmental and social benefits from fisheries research and development. Key elements of the FRDC's legislative foundation (the PIERD Act) are summarised in **appendix B** (page 147).

The FRDC operates under the provisions of the CAC Act, which applies high standards of accountability while providing for the independence required by the Corporation's focus on the needs of an industry.

The FRDC's objects, deriving from section 3 of the PIERD Act, are shown on page 147. They are incorporated in the FRDC's vision, mission and planned outcomes.

The functions of the FRDC, deriving from section 11 of the PIERD Act, are described on page 148.

The FRDC is governed by a Board of nine directors whose expertise, prescribed by the PIERD Act, is described on page 85. The Board is responsible to the Minister for Agriculture, Fisheries and Forestry; to the Parliamentary Secretary to the Minister; and to the Minister for Forestry and Conservation — and, through them, to Parliament.

Stakeholders in the FRDC are the fishing industry; the governments of the Commonwealth, the states and the territories; and the people of Australia. The FRDC does not undertake research itself; rather it identifies R&D needs — and the means of addressing them — through a planning process[1] and by contracting with research providers.

1 The processes by which the FRDC plans, invests in and manages R&D are described on pages 133 to 140 of the R&D plan.

Vision

The FRDC's vision is three-fold:

FOR THE INDUSTRY

An Australian fishing industry in which:

- the commercial, recreational and traditional sectors are forward-looking, innovative and socially resilient, and use fisheries natural resources in an ecologically sustainable way; and
- the commercial sector is profitable and internationally competitive.

FOR THE COMMUNITY

A community that is well-informed about, and supportive of, the fishing industry and the natural resources on which it depends.

FOR FISHERIES RESEARCH

An excellent fisheries research sector that is forward-looking, innovative and responsive in supporting the industry and the community.

Mission

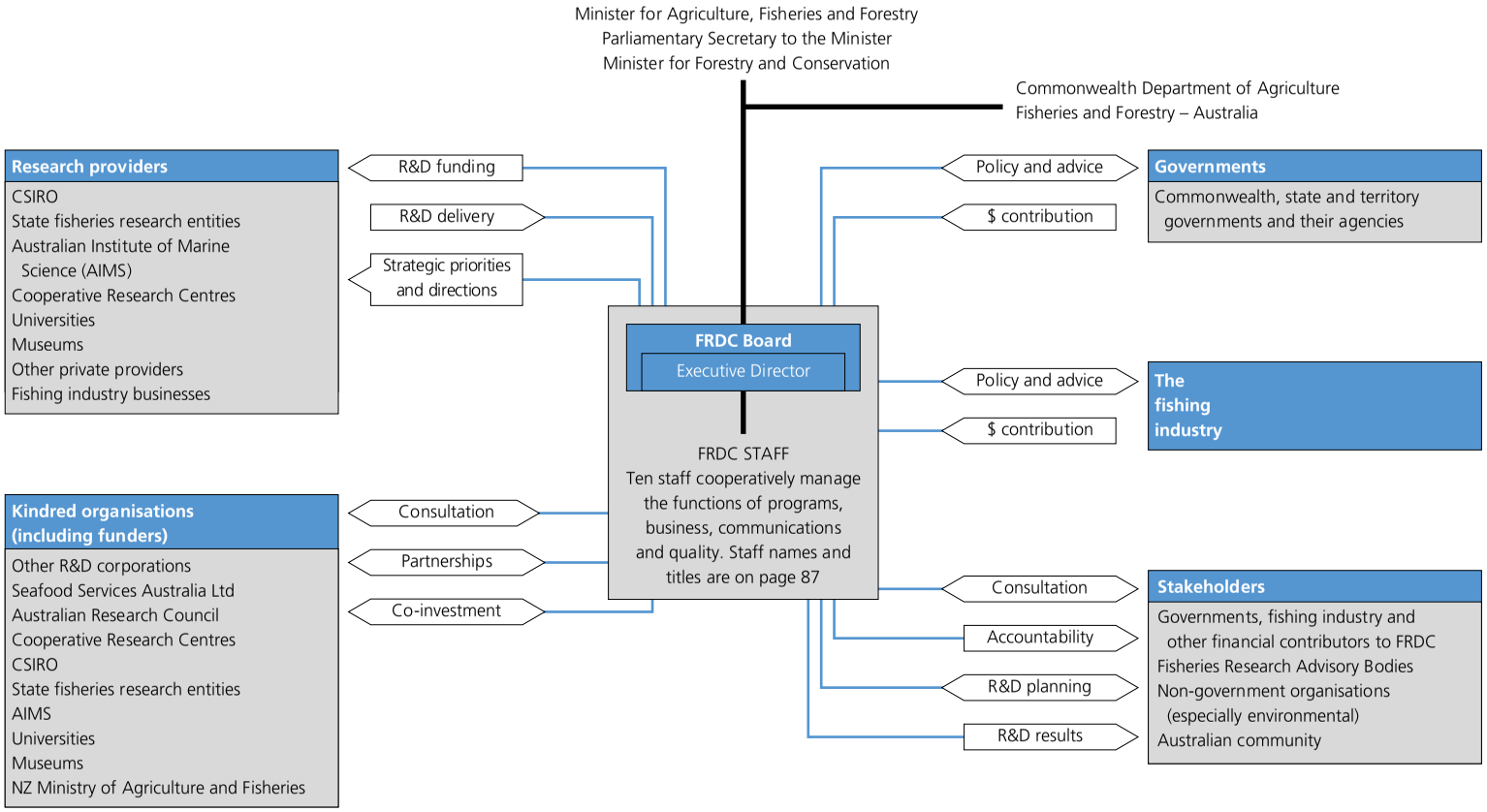
The FRDC's mission is to increase economic and social benefits for the fishing industry and the people of Australia, through planned investment in research and development, in an ecologically sustainable framework.

Ten staff, based in Canberra, manage the FRDC's activities. The Corporation is structured to deliver the best results for the least cost: currently, it is planned that program support costs do not exceed eight per cent of total expenditure.

To enhance the FRDC's accountability to its stakeholders, the Minister for Agriculture, Fisheries and Forestry has declared the Australian Seafood Industry Council and the Australian Recreational and Sport Fishing Industry Confederation (trading as Recfish Australia) to be representative organisations in accordance with section 7 of the PIERD Act. The FRDC formally reports to the representative organisations at their annual conferences and has regard to their expectations of the FRDC and to their R&D needs.

The FRDC's organisation and the context in which it operates are shown in **figure 2** overleaf.

FIGURE 2: THE FRDC'S ORGANISATION AND OPERATING CONTEXT



Note: 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).

The rural R&D corporations model on which the FRDC is based

- The rural R&D Corporations (RDCs) are not research grant agencies; the PIERD Act requires them to treat R&D as an investment in economic, environmental and social benefits to their respective industries and to the people of Australia.
- The RDCs are empowered to intervene anywhere in the innovation process — not just in traditional research.
- RDCs are required to focus their activities around strategic R&D plans and annual operational plans that must be approved at ministerial level.
- RDCs are fully accountable to their major stakeholders and to the wider community.
- Because of the tight focus on achieving outcomes, RDCs emphasise brokering active collaboration between researchers, and between researchers, resource managers and primary industry interests.
- RDCs apply significant resources to the challenging task of translating research outputs into practical outcomes.

Corporate governance

The FRDC has policies and processes in place for good corporate governance, including an ISO-certified quality management system. A comprehensive summary of corporate governance matters, including a description of how the policies and processes have been applied during the year, starts on page 83; the quality management system is outlined on page 97.

Quality System
Quality Endorsed Company
ISO 9001:2000 Lic 11389

The FRDC's revenue base

As stipulated in the PIERD Act, and as shown in **figure 3** (overleaf), the FRDC's primary revenue source is based on:

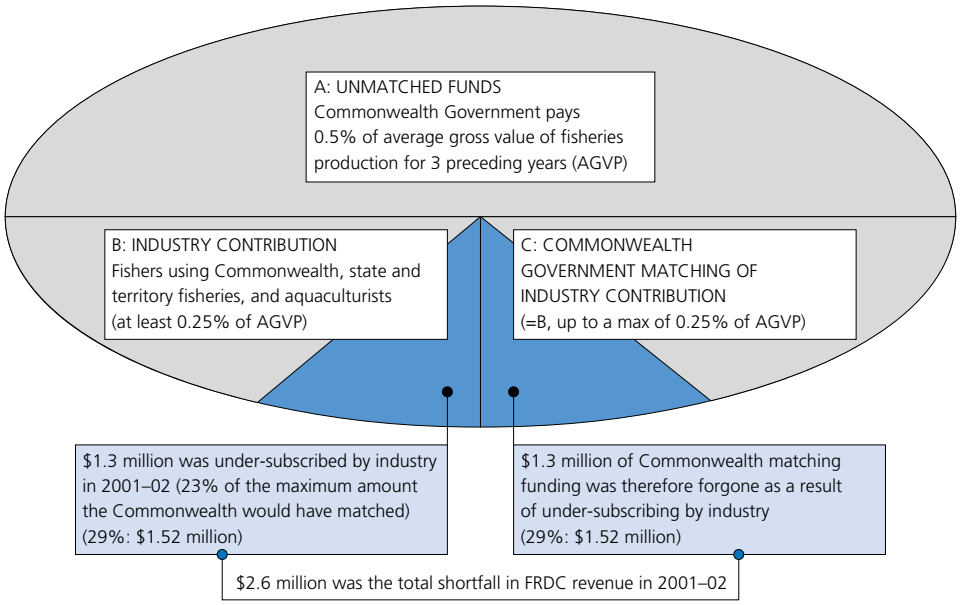
- the Commonwealth Government providing unmatched funds equivalent to 0.5 per cent of the average gross value of Australian fisheries production for the three preceding years (AGVP);
- state, territory and Commonwealth fishers and aquaculturists providing contributions of at least 0.25 per cent of AGVP; and
- the Commonwealth Government matching contributions by state, territory and Commonwealth fishers and aquaculturists 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 Commonwealth Government will provide a matching contribution.

The FRDC also derives income from sources such as investments, royalties, and sales of products, information and services.

Details of revenue are given in the financial statements starting at page 109.

FIGURE 3: PROPORTIONS OF THE FRDC'S REVENUE



Rationale for the FRDC's revenue base

The FRDC's revenue base reflects the high component of public good that is intrinsic to the operating environment of wild-catch fishing.[2] The Commonwealth Government's contribution of 0.5 per cent of AGVP is made on the grounds that the Commonwealth exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.

The commercial sector's contribution recognises the need for R&D that will be commercially oriented and will deliver results that will improve industry performance and profitability. In turn, the Commonwealth Government's matching of the industry levy contribution is in line with policy principles that:

- beneficiaries from research should pay roughly in proportion to the benefits received; and
- the greater the spill-over benefits, the greater the proportion the Commonwealth Government should contribute.

2 For an outline of the inextricable links between public good and private benefit in fisheries R&D, see page 40.

Expenditure

Competing pressures for public sector funds limit expenditure on R&D by Commonwealth, state and territory governments. This in turn increases demand on the FRDC for funding. The FRDC seeks to maximise the effectiveness of its R&D expenditure by:

- providing leadership in fisheries R&D;
- investing in high-priority R&D that has the potential to deliver the highest benefits;
- managing R&D programs effectively and efficiently; and
- making R&D results widely known, and facilitating their adoption and (if appropriate) commercialisation.

Accordingly, these factors constitute the framework for the FRDC's effectiveness and efficiency activities under its Management and Accountability Program (page 68).

These factors also require the FRDC to devote a significant proportion of funds to project development, technology transfer and commercialisation, and evaluation. Furthermore, although the FRDC will fund basic research, a high proportion of activity will inevitably be applied R&D — both short-term and long-term.[3]

The FRDC also complies with a ministerial direction, issued under section 143(1) of the PIERD Act, which stipulates that R&D spending is to be of direct relevance, within a five-year period, to the fishery, industry sector, or state / territory in which funds were collected.[4]

The targets for the FRDC's expenditure in 2001–02 were as follows:

- R&D Programs: minimum 85 per cent;
- communications: minimum 3 per cent; and
- programs support: maximum 8 per cent.

3 'Basic research' and 'applied research' are defined under the entry 'research' in the glossary (p. 179); 'research and development' follows.

4 The text of the ministerial direction is summarised on page 100.

Several books on FRDC-funded R&D projects published during the year were launched at Seafood Directions 2001. Details of the books are on pages 48, 55 and 64; all are available from the FRDC.

Further information

The following information is available from the FRDC:	Printed	On website
The R&D plan (*Investing in tomorrow's fish: the FRDC's research and development plan, 2000 to 2005*), 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.	✔	✔
This and the previous annual report.	✔	✔
R&D plans for Commonwealth, states, NT, regions and industry sectors.	✔	✔
R&D News (published in January, April, July and October, 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.	✔	✔ *(abridged)*
Information on completed projects (final reports and other related products).	✔ *(see note 1)*	✔
Non-technical summaries of all final reports of FRDC projects.		✔
Hyperlinks to other websites containing full final reports and fisheries R&D strategies, and to other important websites.		✔
R&D funding application details.		✔
Coming events of significance for the industry.		✔
Research databases.		✔ *(see note 1)*

Note 1: Information on completed projects (final reports and other related products) is 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; and
- for post-harvest projects, Seafood Services Australia, PO Box 403, Hamilton, Queensland 4007 (telephone 1300 130 321, e-mail ssa@seafoodservices.com.au, website www.seafoodservices.com.au).

Note 2: Australian research databases such as *Australian Rural Research in Progress* (ARRIP), the *Australian Bibliography of Agriculture* (ABOA) and the *Aquatic Science Fisheries Abstract* — to which the FRDC contributes — contain information on research in progress and completed. The Agricultural and Natural Resources Online (ANRO) website, which gives access to the ARRIP and ABOA databases, is accessible via the FRDC's website. Seafood Services Australia provides fee-for-service searches of these and overseas databases.

Details of other types of documents and information available on request and under the provisions of the *Freedom of Information Act 1982* are in **appendix C**, page 150.

The FRDC's website (www.frdc.com.au) provides easy access to information, including the items shown above.

The FRDC's business environment

A summary of Australia s fisheries resources, their users, Australian seafood production and trade, Australian seafood consumption and industry contacts is in the booklet *From Antarctica to the tropics: a snapshot of the Australian fishing industry 2001*, available from the FRDC.

A comprehensive description of the FRDC's business environment is included in the Corporation's R&D plan (*Investing in tomorrow's fish: the FRDC's research and development plan, 2000 to 2005*). The plan describes fisheries natural resources, the fishing industry today, and the outlook for the next 20 years. It also lays down, against the business environment, the FRDC's planned outcomes and priorities for the period 2000 to 2005, and strategies for achieving them. The way in which the FRDC plans, invests in and manages fisheries R&D is also described.

The following is based on selected parts of the business environment chapter of the R&D plan.

For more comprehensive information on fisheries natural resources, please refer to pages 29–46 of the FRDC's R&D plan.

Fisheries natural resources

Australia's exclusive economic zone, which extends 200 nautical miles from the baseline of our continent and our island territories, is the third-largest in the world, covering about 11 million square kilometres: one-and-a-half times the area of Australia's land mass. It contains a diverse range of aquatic species — about 4,500 known species of finfish (in addition to perhaps tens of thousands of invertebrate species) — most of which occur in relatively small volumes. About 800 marine and freshwater seafood species are caught and sold in Australia (under about 300 marketing names) for local and overseas consumption. Most known species are at or near full exploitation; several have been over-exploited.

Although Australian waters are particularly rich in invertebrate species (including Crustacea), the nutrients and plankton produced in Australian ocean waters do not support high-tonnage finfish catches such as those of New Zealand. Consequently, Australia's commercial catch ranks 52nd in the world, representing only 0.2 per cent of world tonnage.

One fishery — the South East Fishery — consistently has relatively high tonnages. However, it is very small by world standards. In 2000–01, it produced about 30,400 tonnes, including 7,500 tonnes from blue grenadier. By contrast, the New Zealand catch of the same species (called hoki) was about 245,000 tonnes.

The low production capabilities of Australia's wild fisheries give little opportunity to increase tonnages, yet local and international demand is set to grow substantially — particularly as larger overseas fisheries become over-harvested and supply declines. This situation underlies the strategic directions for Australia's fishing industry, especially the commercial sector.

The over-arching significance of ecologically sustainable development

The Australian community has become increasingly aware of the need to protect marine, estuary and river ecosystems, and to maintain biological diversity in ecosystems that support fisheries. There is growing awareness of the influences of the various uses of fisheries, and of the need for ecologically sustainable development (ESD) — in essence, development that aims to meet the needs of Australians today while conserving ecosystems for the benefit of future generations.[5] To do this, the environmental resources that form the basis of our economy need to be used in a way that maintains — and where possible improves — their range, diversity and quality. At the same time, those resources need to be used to develop an economy that constantly seeks to improve its efficiency and productivity. ESD is therefore not simply concerned with optimal resource management but with the full spectrum of factors involved in sustainable economic, environmental and social development.

ESD presents one of the greatest challenges to Australia's governments, industries, businesses and the community. In particular, an effective level of progress towards ESD requires a strong economy and a vigorous, profitable commercial sector. Businesses that are struggling for economic survival have limited ability to implement continual improvement of their environmental performance.

Setting sustainable levels of fishing has been central to fisheries management and science for a long time. The concept of ESD, however, is far broader than the traditional focus on yields derived from target species. This complexity poses difficulties for fisheries managers, partly because of the poor understanding of how fisheries ecosystems work and how they are affected by use or other disturbance or economic activity.

5 The definition of ecologically sustainable development nominated by the National Strategy for Ecologically Sustainable Development, 1992, is: Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased. ESD is therefore not simply concerned with optimal resource management but with the full spectrum of factors involved in sustainable environmental, economic and social development. A discussion of ESD and its implications is on pages 32 and 33 of the FRDC's R&D plan.

The fishing industry today

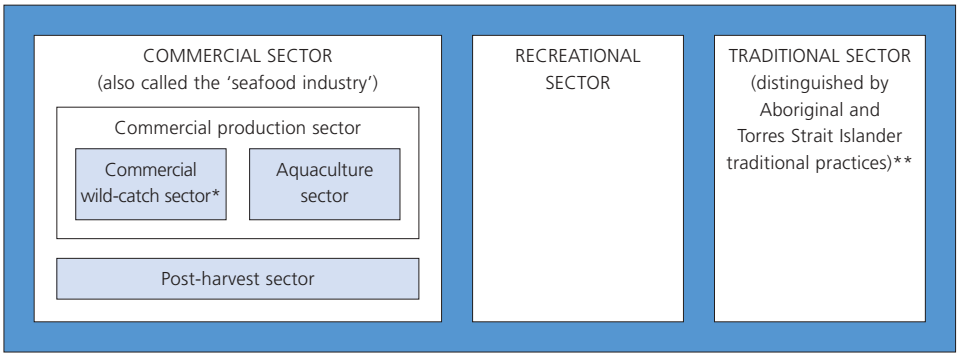
The three sectors of the fishing industry

The fishing industry includes any industry or activity conducted in or from Australia concerned with taking, culturing, processing, preserving, storing, transporting, marketing or selling fish or fish products.

As **figure 4** shows, there are three principal industry sectors:

- *The commercial sector* comprises enterprises and individuals associated with wild-catch or aquaculture resources and the various transformations of those resources into products for sale. It is also referred to as the "seafood industry", although non-food items such as pearls are included among its products.
- *The recreational sector* comprises enterprises and individuals associated — for the purpose of recreation, sport or sustenance — with fisheries resources from which products are derived that are not for sale.
- *The traditional sector* comprises enterprises and individuals associated with fisheries resources from which Aboriginal and Torres Strait Islander people derive products in accordance with their traditions.

FIGURE 4: COMPONENTS OF THE FISHING INDUSTRY



* The recreational and traditional sectors also use the wild-fish resource.

** In addition to fishing and shell-collecting in accordance with their traditions, Aboriginal and Torres Strait Islander people also pursue recreational fishing (that is, not using traditional practices), subsistence fishing (following traditional or recreational practices), and commercial fishing.

Fish, in the broadest sense (which is the only context in this publication), are living aquatic vertebrate and invertebrate organisms, including marine mammals and reptiles, and such organisms after they have been harvested.

Commercial sector

The commercial sector of the fishing industry comprises wild-catch, aquaculture, processing, storing, transporting, marketing and selling activities. The sector is a very large business that supports many people's livelihoods and lifestyles. Australian seafood is an integral component of our international image as a clean and environmentally responsible country with an enjoyable climate, innovative cuisine and cosmopolitan culture. Many rural and regional communities depend partly, substantially or even wholly for their economic viability on prosperous commercial fishing enterprises.

Recent commercial production

The commercial sector of the fishing industry in 2000–01 was Australia's fourth most valuable food-based primary industry — after beef, wheat and milk — contributing about 7 per cent of the gross value of Australian food production.

Australian fisheries production rose by about 1 per cent in 2000–01 to 230,000 tonnes. However, with higher prices (unit values) for some species, the gross value of Australian fisheries production rose by about 4 per cent to $2.48 billion ("landed value" — that is, before value-adding). ABARE's estimate for 2001–02 is $2.55 billion.

Australian fisheries production consists almost entirely of finfish, crustaceans and molluscs. The gross value of finfish production (both wild caught and aquaculture) rose by 11 per cent in 2000–01, mainly owing to higher prices for tuna. The gross value of production of crustaceans fell by 2 per cent, with lower production of rock lobster, principally in Western Australia, offsetting higher production of prawns. Boosted by higher prices for abalone, the gross value of production of molluscs rose by 8 per cent.

The distribution of the catch reflects the wide diversity of Australia's fisheries. By location, about half of the gross value of Australia's fisheries production in 2000–01 originated either in or from the waters off the south-eastern states (New South Wales, Victoria, Tasmania and South Australia). Western Australia accounted for about a quarter and Queensland and the Northern Territory for most of the remainder.

The $2.48 billion seafood industry is Australia's fourth most valuable food-based primary industry.

In 2000–01, the gross value of production in the state wild-catch fisheries fell by more than 1 per cent to $1.31 billion. However, it rose in the Commonwealth wild-catch fisheries by 17 per cent to $0.48 billion.

Long-term, the landed value of the commercial wild catch increased from $1.1 billion in 1989–1990 to $1.79 billion in 2000–01.

Aquaculture is one of Australia's fastest-growing primary industries. In real terms (that is, in 2000–01 dollars), the gross value of aquaculture production rose by 146 per cent in the past decade, compared with a rise of 46 per cent for the total value of fisheries production. Growth in 2000–01 was 9 per cent. Between 1989–90 and 2000–01 the farmgate value of aquaculture production increased on average by about 14 per cent each year, from $188 million to $746 million. It now equates to 30 per cent of the landed value of all commercial sector production, up from 15 per cent in 1989–90. The major sectors contributing to this growth are pearl and edible oysters, Atlantic salmon, prawns and southern bluefin tuna.

Like its wild-catch counterpart, aquaculture provides development and employment opportunities in rural Australia and contributes to export growth.

The push to sustainability and higher quality

Commercial wild-catch fishing activities take many forms. In rural and coastal communities they are a major source of employment and often provide robustness to communities whose economic prosperity would otherwise be in question.

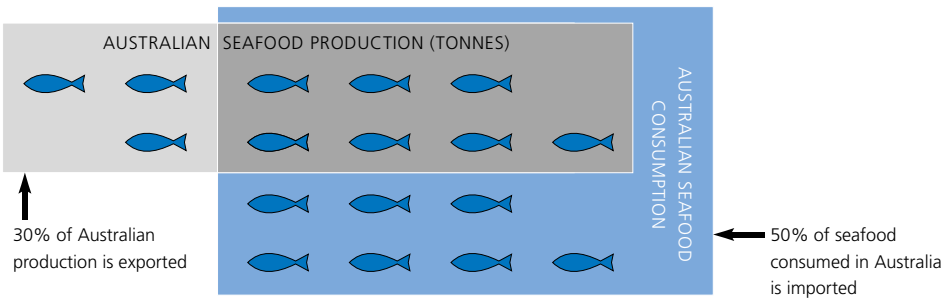
Increasingly, leading individuals and enterprises in the commercial wild-catch sector are harvesting sustainably and are improving quality and other value-adding through products and processing. They are marketing more efficiently by opening up new markets, developing niche products, and earning better returns on investment.

Continual emphasis on high quality of its seafood is the "driver" that will maintain Australia's favourable reputation in the long term.

The most successful enterprises in the commercial sector recognise that higher long-term incomes will be derived not from increasing tonnages but from increasing value from sustainable catches. Accordingly, they are improving packaging and product differentiation, adopting quality management systems, and focusing on the premium end of the market. Fishers are also adopting better practices, some of them underpinned by codes of practice, to protect the quality of fish during harvesting.

About 70 per cent of the total tonnage of national seafood production is eaten within Australia. However, since this non-export seafood production supplies only about half the seafood we eat, Australia is a net importer of seafood — especially from New Zealand, South Africa and South-east Asia. These products constitute a significant competitive factor for pricing and quality against Australian products.

More than 90 per cent of Australians eat seafood. Consumption is indicated by a 1999 Sydney survey, which showed total consumption of 15.3 kilograms per person per year. Increases in consumption since 1991 were 13 per cent total, 19 per cent out-of-home, and 8 per cent in-home. Increasing awareness of the health benefits of eating seafood, resulting from a number of recent research findings, is a strong factor in the increased demand for seafood.



Recreational sector

Recreational fishing is an important activity for about 3.4 million Australians who fish each year, as revealed in a major FRDC-funded survey completed during 2001–02 (project 1999/158). Although the rate of participation in fishing varies greatly among these people, the recreational sector of the fishing industry is nevertheless larger and more widely dispersed than in any other natural resource industry that supports a prominent commercial sector. Australians enjoy a wide range of recreational fisheries — inland, in estuaries, off beaches and in the seas. Recreational fishers harvest about 125 million fish, crustaceans and molluscs each year. For some species, the size of the recreational catch exceeds the commercial catch.

Other studies have shown that significant economic benefits from recreational fishing flow to many regional areas — including jobs in the tourism, tackle, boating and charter industries. Charter boats support game fishing, estuarine and coastal fishing, skin-diving and whale-watching activities, and there is a diverse boat-hire and service industry. These industries support others. For example, of the 3.8 million international tourists visiting in 1996, some 12 per cent (450,000) participated in diving activities, 3 per cent (115,000) participated in fishing activities, and 2 per cent (75,000) in whale-watching. A recent estimate of annual direct, indirect and capital expenditure on recreational fishing was $2.9 billion, comprising 20% direct (e.g. tackle, bait); 50% indirect (e.g. travel, accommodation); and 30% capital (e.g. boats).

For some species, the size of the recreational catch exceeds the commercial catch.

For most people, the major reason for recreational fishing is relaxation. Obtaining fish for food is a lesser, though important, consideration. Indeed, many recreational fishers place the benefit of experiencing fishing well above the benefit of making a catch.

In addition to their value as sources of food, fisheries resources are valued by the community in many other ways. For example, they have values deriving from people knowing that the environment and the diversity of species are maintained and that fisheries resources exist. The aquatic environment is increasingly being used by people — particularly tourists — who do not capture the resource but simply enjoy it. Similarly, many people place a very high value on being able to take their children fishing and knowing that the fish will be there for another generation. Many jobs supporting recreational fishing exist because of these values.

Competition for resource access between the recreational and commercial sectors has led elements of the one sector to lobby for greater access than the other sector. At peak body level there is a generally constructive approach to sharing fisheries resources and resolving common environmental issues. The recreational sector is advocating comprehensive collection of data on economic, environmental and social dimensions of fisheries on which to base decisions for the common good.

Traditional sector

Aboriginal and Torres Strait Islander people have developed a close, interdependent relationship with the land, water and living resources of Australia through traditional fishing practices over tens of thousands of years. That relationship includes customary rights and responsibilities of particular indigenous groups to particular areas of land, water and resources. Some of these customary rights and responsibilities are now recognised in Australian common law and through native title legislation.

Many Aboriginal and Torres Strait Islander people share traditional marine and freshwater foods among extended families. This practice helps to continue the customary relationship between indigenous people and their environments, and to strengthen their ties of kinship.

Traditional fishing is increasingly being addressed in fisheries management plans. Fisheries legislation provides varying recognition of native title fishing rights, in many cases without specifying what those rights may be.

In some Australian jurisdictions, Aboriginal and Torres Strait Islander fishers are exempt from fisheries regulations when they fish according to customary laws and traditions. These exemptions typically apply only to subsistence fishing. However, expensive commercial licences and strict recreational bag limits have made it difficult for some Aboriginal fishers to continue their traditional fishing.

Since the 1992 decision by the High Court of Australia in the Mabo case, which recognised the existence of native title in Australia, there has been increasing impetus for implementation of indigenous access to fisheries. A 1999 High Court decision confirmed that Aboriginal and Torres Strait Islander people may claim a right under native title to hunt living resources according to local customary law. This decision has implications for recognition of indigenous people's rights and interests in fisheries management.

Aboriginal and Torres Strait Islander families and individuals pursue subsistence hunting, fishing or gathering through traditional and recreational fishing practices. The contribution of subsistence activities to indigenous domestic economies varies between regions, and between families within regions. Whatever the economic contribution or methods used, these activities retain important cultural significance. In southern Australia, many Aboriginal people combine working in mainstream jobs and living in cities or towns with maintaining these subsistence activities. Research in southern coastal New South Wales has shown that up to 90 per cent of Aboriginal adults regularly collect fish and shellfish from the sea and sea-lakes of the region.

In addition to fishing using traditional and recreational methods, Aboriginal and Torres Strait Islander people also fish commercially. Some Aboriginal groups have developed their own aquaculture enterprises, sometimes as joint ventures with established companies.

The main issues confronting the industry today

As a result of its extensive consultation with stakeholders while preparing its most recent R&D plan, the FRDC has nominated three main issues confronting the industry today, as follows:

1. CONCERNING THE NATURAL RESOURCE BASE

It is necessary to increasingly pursue ecological sustainability so that the needs of the present may be met without compromising the ability of future generations to meet their own needs.

2. CONCERNING THE OPERATING ENVIRONMENT

It is necessary to create an operating environment that is conducive to all three sectors of the fishing industry actively participating in pursuing ecological sustainability — which will inevitably incorporate the following, among other things:

- for all three sectors: objectively based, secure access to fisheries natural resources; and
- for the commercial sector: market development, maximum seafood value, and financial returns that benefit every enterprise in the production chain.

3. CONCERNING THE CONTRIBUTIONS OF PEOPLE

It is necessary to make more effective use of people, including by:

- improving the capabilities of the people to whom the industry entrusts its future and improving communication between them; and
- developing the community's knowledge of, and involvement with, the industry and its products.

The challenges for Australia

The FRDC has comprehensively analysed the factors that are most likely to be important for the economic, environmental and social resources of the three main sectors of the fishing industry, and for the Australian community, during the next 20 years.[6] In turn, the FRDC has nominated nine key challenges for Australia. Underlying the first six is the fact that the future requires humans to obtain more fish — to satisfy the need for more seafood to eat and to satisfy needs arising from the values of recreational and traditional fishers.

The challenges are as follows:

- Within the context of increasingly pursuing ecological sustainability, greater supplies of fish must be obtained through a range of measures that include:
  - reaching sustainable levels of fisheries productivity;
  - increasing production through aquaculture;
  - discovering new fisheries and under-utilised fish species;
  - reducing bycatch and discarded fish;
  - reducing the quantity of fish protein fed to terrestrial and aquatic livestock so that it becomes available in the food chain to satisfy environmental and human needs; and
  - improving utilisation of processing wastes.
- Objectively based, secure access to fisheries natural resources must be achieved.
- The commercial sector must optimise market development, maximise seafood value, and secure financial returns that benefit every enterprise in the production chain.
- The knowledge and skills of people in and supporting the Australian fishing industry, and in the wider community, must be developed and used so that Australians derive maximum economic, environmental and social benefits from fisheries research and development.

6 The analysis is on pages 75–106 of the R&D plan.

Report of operations

The report of operations explicitly addresses section 9 of the CAC Act and includes material required by other legislation, particularly the PIERD Act and the EPBC Act.

Part 1: The directors' review of operations and future prospects

Part 2, which describes the FRDC's operational and financial results, starts on page 35.

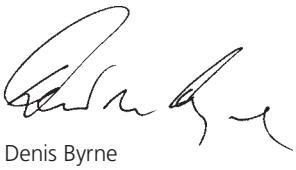
Part 3, describing corporate governance matters, starts on page 83.

Certificate concerning the report of operations

The directors of the FRDC are responsible, under section 9 of the CAC Act, for preparation of the following report of operations in accordance with the CAC Orders.

This report of operations is made in accordance with a resolution of the directors at their meeting of 13 August 2002.

The date of the report is 10 September 2002.



Denis Byrne
Chairman

The directors' review of operations and future prospects

Directors and staff during an industry visit in the Northern Territory. These visits, held in conjunction with regional board meetings, provide valuable opportunities to keep up to date across a rapidly changing industry.

The FRDC's tenth anniversary

2002 marks the tenth year of the FRDC's existence. Making comparisons of "then and now" has invariably reminded us of the huge advances achieved in the decade.

On such occasions, it is pleasing to see how much the FRDC has contributed to better outcomes for its stakeholders — through the R&D results themselves and through the way in which the FRDC plans, invests in and manages Australian fisheries R&D. The FRDC's position of leadership is also widely acknowledged, not least for the comprehensive strategic picture of the industry and its natural resources presented by the Corporation's R&D plan. The plan continues to be extensively consulted and quoted throughout the industry and in policy development.

"[The future of the wild-catch sector will depend heavily on the health of fisheries resources, and strong industry/government relationships are necessary for sound, science-based decision-making.] In this context, I must mention with considerable praise the FRDC and its current R&D plan for 2000–05. Such well-designed policy strategy documents, readily accessible and carefully presented, are a key tool in persuading government decision-makers to respond with systematic and rigorous regulation, soundly rooted in quality science and the empirical experience of industry."

— Sir Tipene O'Regan, architect of the 1990 and 1992 [New Zealand] Treaty fisheries settlements and founding chairman of both the Treaty of Waitangi Fisheries Commission and the Sealord Group, in his opening keynote address at the *Seafood Directions 2001* conference

Inaugural chairman Bill Widerberg, in his speech at the tenth anniversary celebrations, described how research priorities had been determined before the 1990s. Fisheries managers and researchers, pursuing their interests in improving their understanding of fish stocks, had set the priorities. However, enormous change followed the formation of the FRDC.

The first major change was a revenue formula that made more Commonwealth funding available for investing in R&D. The FRDC soon adopted a whole-of-chain approach to ensure that the benefits of R&D were delivered throughout the seafood supply chain. Bill also noted that the most significant achievement of the FRDC's early leadership of the fishing industry was to set up a network of Fisheries Research Advisory Bodies (FRABs), which pooled the expertise of a wide range of stakeholders to set R&D priorities.

Russell Reichelt, recently retired FRDC chairman, commented on issues of corporate governance in his address to the Corporation's tenth anniversary dinner. He pointed out that statutory authorities such as the FRDC are often confronted with the need to satisfy government and industry stakeholders in ways that may conflict, even to the point of having legal consequences. The directors consider that, so far, the FRDC has managed these tensions well and to the satisfaction of all stakeholders.

FRDC chairman Denis Byrne outlined key issues for the future in his address. He emphasised that the message from the largest investor in fisheries R&D — the Commonwealth Government — is that R&D corporations must increasingly focus on delivering good outcomes to the wider community, not just immediate stakeholders, and that communication of research results to all potential end-users is essential.

"The seafood industry owes the directors and staff of the FRDC a vote of thanks for your tremendous efforts. Congratulations on all your achievements during your first ten years!"

— Peter Doyle, noted Sydney restaurateur

People — a key factor in achieving better outcomes

In describing the FRDC's future directions, Denis Byrne also reflected on a key theme of the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Judith Troeth, in a presentation to the chairs of all R&D corporations. Emphasising the need to ensure that R&D investment leads to measurable outcomes, Senator Troeth pointed out the need for human capital development outcomes to be intrinsic to R&D.

In this regard, material human capital development outcomes are produced by the FRDC's Program 1 (Natural Resources Sustainability) and Program 2 (Industry Development) in addition to those delivered exclusively by Program 3 (Human Capital Development). Notwithstanding the substantial investment that the FRDC has made in recent years, the Board has decided to explore more opportunities to invest in the personal development of potential industry leaders.

In no area of fisheries R&D is the need for industry leaders as important as in projects related to ecologically sustainable development. To that end, the FRDC this year invested in an ESD project in which human capital development is particularly prominent: the Environmental Management Systems (EMS) Initiative. Under the initiative project officers are employed in each state to facilitate the development and documentation of environmental management systems within the commercial sector of the industry. In the process, they are helping to build on moves within the industry to change the culture in relation to ESD.

Improvement in FRDC performance

During 2001–02 the FRDC's performance in planning, investing in and managing R&D improved on that of previous years. Reporting of performance also continued to improve as the major changes reported last year were refined.[7]

Last year's annual report included, for the first time, a broad assessment of the FRDC's performance in the form of a "report card". Subsequently the Board decided to provide a pragmatic evaluation of its own performance, including statements of how it will address weaknesses and capitalise on its strengths.

The directors' broad assessment of the FRDC's performance for the past year is summarised in **table 1** (overleaf).

7 FRDC effectiveness and efficiency is reported under Program 4 (Management and Accountability), pages 68–81, against key performance indicators specified in the 2001–02 annual operational plan.

Further award for annual report

The directors are delighted that the FRDC's record of winning annual report awards since the 1998–99 report has continued. In May, Australasian Reporting Awards Inc. (ARA), which evaluates hundreds of annual reports from the public and private sectors in Australia and New Zealand, conferred a silver award for last year's report.

Additionally, the ARA short-listed the FRDC for a special award for excellence in corporate governance reporting, further continuing a trend for reviewers to rate the Corporation's achievements highly in this area.

Last year's annual report was also short-listed by the Institute of Public Administration Australia for their statutory authorities award, which the FRDC won in the previous year. This achievement placed the FRDC among the organisations that "consistently produce annual reports of such high quality that the judges have difficulty in separating them".

Receiving the FRDC's silver award from the Chairman of Australasian Reporting Awards, John Horder (left), are Michael Parolin (FRDC Communications Manager), centre, and Clive Huggan (partner, Pacific Project Management Pty Ltd, who has provided strategic planning and reporting services to the FRDC).

TABLE 1: THE DIRECTORS' BROAD ASSESSMENT OF THE FRDC'S PERFORMANCE, 2001–02

Key role	Weakness	Strength	Current status
Planning	▸ Stakeholder R&D plans often focus on outputs rather than outcomes and lack performance indicators for measuring achievement of outcomes ▸ R&D plans are often not well translated into projects ▸ Determination of R&D priorities is often compromised by competing needs of involved parties and driven by the capacity of research providers ▸ R&D providers are often left to develop priorities in the absence of end-user input	▸ Commonwealth Government has provided clear guidance for the way in which its contribution to the FRDC should be invested ▸ FRDC R&D plan is being recognised as a key national planning document and a valuable resource for the fishing industry ▸ R&D strategies are in place for most key fisheries and fisheries management jurisdictions	▸ FRDC initiatives are contributing to an appreciation of the need to plan for the long-term future ▸ FRDC is working well with partners to achieve a more outcome-focused planning regime for fisheries ▸ FRDC is the major national driver of the "whole-of-supply-chain" approach to fisheries R&D
Investing	▸ Voluntary levies result in too sharp a focus on investment in R&D (= inputs) rather than benefits (= outcomes) ▸ Voluntary nature of levies makes it difficult for FRDC to develop long-term investment strategies ▸ Shortfalls against the 0.25% levy diminish the funds available to fisheries R&D ▸ Aquaculture sector requires disproportionate funds in its development phase — and in many cases there is no mechanism for this sector to contribute to the FRDC ▸ About 40% of fisheries R&D is not managed by the FRDC or recorded on national databases, resulting in duplication and loss of efficiency	▸ Voluntary nature of levies ensures FRDC puts high priority on accountability and good governance ▸ FRDC is regarded as the leading agency for ensuring that Australia's investment in fisheries R&D is maximised ▸ FRDC is increasingly influencing the way in which other funding sources are applied to fisheries R&D ▸ FRDC Board is seen as independent and non-partisan ▸ FRDC Board has rigorous evaluation procedures	▸ FRDC leadership in fisheries R&D is widely recognised ▸ FRDC's management procedures and systems are effective, efficient, open and accountable ▸ FRDC's revenue base has risen, despite constraints and despite sectors with higher GVP contributing a higher percentage than smaller sectors
Managing	▸ Monitoring R&D progress depends mainly on milestone reporting, resulting in a lack of real-time information ▸ Conduct of R&D projects is often constrained by institutional work practices of research providers ▸ Good indicators or framework for measuring adoption of results are lacking ▸ Communication and extension is still often an afterthought ▸ Slippage in R&D results in poor timeliness of delivery of R&D	▸ FRDC has effective working relationships with research providers ▸ FRDC project management system, Fishbase, has developed as a key tool for managing R&D ▸ Quality certification results in continual improvement of project management	▸ Audits and recently introduced costed milestones are strengthening management of R&D, which has been handicapped by dependency on the management and accounting practices of research providers ▸ Communication, extension and intellectual property management improvements are increasing the effectiveness of R&D

Success in competition with so many other organisations endorses the continually improving management processes through which the FRDC pursues its planned outcomes. High assessments also add to stakeholders' confidence in the FRDC's governance.

Continuing evolution of quality management

A key element in the FRDC's continual improvement has been its dedication to the rigorous processes of total quality management. This year the ISO standard against which the Corporation is certified was upgraded to standard AS/NZS ISO 9001:2000.

Incorporation of Seafood Services Australia

Seafood Services Australia (SSA) — previously a series of joint-venture R&D projects — was incorporated as a company limited by guarantee on 25 October 2001. The company's mission is to be a catalyst for sustainable development of the Australian seafood industry. SSA intends to achieve its mission by working with stakeholders to provide services that help the industry to continually improve its practices and to add value throughout the seafood supply chain.

The company's members at present are the Australian Seafood Industry Council and the FRDC. Directors are Dr Russell Reichelt (Chairman), Peter Dundas-Smith, Russell Neal, Terry Moran, Roy Palmer, Richard Stevens and Ted Loveday (Managing Director).

Despite the industry's many success stories, market and institutional failure in the seafood supply chain continues to impede the industry's ability to identify and capitalise on many of its opportunities. Increasingly sophisticated global markets impel the industry to have prompt, efficient access to the best knowledge, processes and technology if it is to remain globally competitive. SSA's role, therefore, is to be proactive in providing an Australia-wide service for people who catch, farm, process, transport, wholesale, retail, export, import or cook seafood. The service includes:

- value-adding through seafood product and process development;
- product quality, food safety and consumer health;
- management systems and standards for quality and ESD;
- market development;
- seafood marketing names;
- seafood emergency management; and
- information and advice on other technical issues.

Activities include the development activities embodied in the FRDC's Industry Development Program with respect to the seafood industry (excluding aquaculture production).

The company makes maximum use of strategic linkages with other seafood industry service providers, sources of funding, customers and stakeholders. In doing so, it leverages resources and maximises their benefits throughout the industry.

The company has prepared a comprehensive business plan which prescribes its strategies and makes provision for increasingly commercial operation that will see the FRDC's contribution diminish as a percentage of total income.

"I have now read [Seafood Services Australia's] 'Guide to food safety risks in seafood' . . . This is one of the best pieces of literature I have read in a long time on conveying information to industry. [The FAO] would appreciate hearing from you on how [it] could incorporate your approach to its programme."

— Grfmur Valdimarsson, Director, Fisheries Industries Division, Food and Agriculture Organization of the United Nations

Involvement of Aboriginal and Torres Strait Islander fishers

The FRDC's current R&D plan recognises that Aboriginal and Torres Strait Islander people are engaged in fishing and shell-collecting under any or all of four main categories: in accordance with their traditions (the "traditional sector" of the fishing industry); in recreational fishing (that is, not using traditional practices); in subsistence fishing (following traditional or recreational practices); and in commercial fishing.

The FRDC has funded a number of projects that attribute benefit to the traditional fishing sector.

To date, discussion on traditional fishing has largely focused on indigenous rights to marine resources. However, the landscape is broadening. On 27 July 2001, the Minister for Agriculture, Fisheries and Forestry, the Hon. Warren Truss MP, wrote to the FRDC seeking support for the Government's advance towards indigenous reconciliation. In particular, the Minister encouraged the FRDC to ensure its programs were responsive to the needs of Aboriginal and Torres Strait Islander people and that the Corporation took into account how its activities might affect them. The FRDC has acted accordingly.

Aboriginal and Torres Strait Islander people have a great variety of fishing interests. The FRDC is working with the Aboriginal and Torres Strait Islander Commission (ATSIC) to develop a cost-effective consultative framework.

Discussions with ATSIC are currently broad, with two strategies being pursued at present. One is to have the expertise of an Aboriginal or Torres Strait Islander fisher on each FRAB, as is presently the case on the New South Wales FRAB. The other, longer-term strategy is to support the formation of a national organisation that the Minister will consider representative of indigenous/traditional fishers.

Influences on performance

Trends in R&D supply and demand

In last year's report, the Board discussed at some length the ways in which it has been meeting the challenges of significantly increasing demand for R&D while the supply of funding continues to be constrained. The Board's efforts to maximise the efficiency of R&D investment continued during the year as a very high priority.

Demand for R&D is being increased by greater recognition of the impacts of the recreational and traditional sectors of the industry (in addition to those of the commercial sector); new fisheries environmental legislation and seafood safety legislation; issues relating to the "total ecosystems" approach to fisheries management; and issues relating to resource sharing, aquaculture, seafood quality, marketing and people development.

The Board has developed strategies to expand the FRDC's revenue base and maximising investment in fisheries R&D, but for the past three years some high-priority R&D has not been funded because neither the FRDC nor its investing partners have had sufficient funds. Currently, the FRDC only has the capacity to fund 40 per cent of the R&D applications submitted by the FRABs; and this 40 per cent comprises applications that the FRABs consider to be of the highest priority after having evaluated about three times as many.

Although circumstances vary between jurisdictions and between years, a significant constraint on the supply side is under-achievement of industry contributions that would be matched dollar-for-dollar by the Commonwealth Government, which this year totalled $2.6 million forgone in fisheries R&D investment. Other sources of constraint are recently reduced project slippage resulting from better project management (now halved, to 15–20 per cent per annum); the expectation by big investors in the FRDC to expect an appropriate return; and uncertainties deriving from payment of many contributions at the end of financial year (after the Board has decided on new applications), often less than amounts advised at the start of the financial year.

As a result of the constraints, the FRDC has had to budget for investment in new projects of $7.5 million in 2002–03 (down $1 million on the previous year). Investment in new projects in 2003–04 is estimated to be of the order of $4 million to $5 million. The Corporation is working very closely with all FRABs to ensure that R&D is driven foremost by end-user needs and meets priorities assessed as the highest for meeting demand for fisheries sustainability and economic and social values. For example, when evaluating R&D applications this year the Board questioned the need for further effort in some research areas and asked whether or not previous research had made any difference to management actions or the grounding for proposed research. To this end the FRDC has written to fisheries managers and the industry asking why some previously funded research does not appear to have been adopted by end-users and seeking their greater involvement in defining R&D needs.

Currently, the FRDC only has the capacity to fund 40 per cent of the R&D applications submitted by the FRABs; and this 40 per cent comprises applications that the Fisheries Research Advisory Bodies consider to be of the highest priority after having evaluated about three times as many.

Strategies for maximising investment

The Board is seeking to increase both the FRDC's revenue and the Corporation's influence over other R&D funding programs (government and non-government), since about 40 per cent of Australian fisheries R&D is not managed by the FRDC or recorded on national databases. The Board's strategies comprise:

- providing increased incentives for fishers and aquaculturists to contribute to the FRDC above the limit to which the Commonwealth Government will provide matching contributions;
- providing increased incentives for other users of fisheries resources to contribute to the FRDC;
- expanding the definition of gross value of production to recognise the economic value of the natural resources used by the recreational and traditional sectors;
- providing a mix of arrangements to facilitate contribution, such as levies (compulsory and voluntary) underpinned by legislation or memoranda of understanding;
- influencing how other R&D funding entities invest in fisheries R&D through planning processes established by the FRDC; and
- assuming a more commercial approach to the sale of knowledge, processes and technology.

Recent initiatives undertaken to increase the FRDC's revenue include voluntary contributions towards Northern Prawn Fishery R&D under a three-way memorandum of understanding between the Northern Prawn Fishery Management Advisory Committee, the Australian Fisheries Management Authority and the FRDC.

Key role of the FRABs

A key to the FRDC's responsiveness to stakeholders' priorities for fisheries R&D is the Australia-wide network of Fisheries Research Advisory Bodies. Although the FRDC employs other processes to help it to set priorities — including managed subprograms and expert advisers — the FRABs are fundamental to the way in which the FRDC plans, invests in and manages fisheries R&D. This year, the FRDC's sixth national FRAB workshop, opened by Senator Troeth, was directed to ensuring that investment in targeted R&D will make a difference in fisheries sustainability, industry development and human capital development.

One task of the workshop was to investigate priority-setting processes and to assess the reliability of the FRABs' advice to the FRDC. Participants were asked to independently evaluate some of the applications that the FRDC Board had previously evaluated for the 2002–03 round, making use of additional information that had been available to the Board. Decisions by the FRAB members aligned almost perfectly with the FRDC directors' decisions. This was a most encouraging endorsement of the rigour of the process when undertaken by two separate expert groups using virtually the same information; and more so when set against the challenges caused by funding being inadequate to undertake all deserving R&D.

FRAB members' decisions on R&D priorities at the workshop aligned almost perfectly with the FRDC directors' decisions.

FRDC Board changes

The Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Judith Troeth, appointed Mr Denis Byrne as Chairman of the FRDC from 1 January 2002. Mr Byrne succeeds Dr Russell Reichelt, whose valuable service to the Corporation and the fishing industry was warmly commended by Senator Macdonald on the occasion of the FRDC's tenth anniversary.

Future prospects

The future performance of the FRDC will depend on how successful it will be in minimising the persistent shortfall in its revenue base. In the short to medium term, responses from some sectors of industry with respect to compulsory levies and memoranda of understanding continue to promise more industry contributions than would be matched by the Commonwealth.

If realised, these increased contributions, ironically, will pose an additional challenge to the FRDC. The Corporation will have to satisfy the needs of two distinct groups: those that see great benefits from R&D and that contribute accordingly; and those that contribute lesser amounts, either through lack of support for R&D (despite their high need) or through lack of appropriate collection mechanisms. The FRDC looks forward to such a challenge.

The underlying funding shortfall does, however, go beyond the $2.6 million forgone this year because industry has not contributed the maximum amount that the Commonwealth Government will match (figure 3 on page 10 refers). Even if that amount were contributed, demand for fisheries R&D would still be substantially higher. Obtaining funding through a wider range of sources is one of several measures (reported opposite) to meet that demand. The directors are strongly focused on this task.

The coming year

The strategic priorities set by industry at Seafood Directions 2001 (the commercial sector's biennial national conference) and the 3rd World Recreational Fishing Conference in 2002 have strongly influenced the Board's highest priorities for the coming year, namely:

- ecosystems-based management, including regard for non-commercial fishing catch as indicated in data from the recent survey of recreational and indigenous fishing;
- resource access and property rights; and
- community awareness and involvement.

A restructured FRDC communications program will give more emphasis to extension of R&D results, including the level of uptake by end-users.

In November, the FRDC was the principal sponsor of 'Seafood Directions 2001', the commercial sector's biennial conference. Eminent industry leader and conference keynote speaker Sir Tipene O'Regan (left) is with Dr Russell Reichelt, then Chairman FRDC (centre), and Mr Terry Moran, Chairman Australian Seafood Industry Council.

A team effort

The Board's sincere thanks go to the many people who during the year have provided advice, help and information in the cause of improving R&D throughout the various sectors of the fishing industry. The Corporation's ten staff members, working with dedication and professionalism, have given form to the Corporation's strategic directions by delivering excellent results. We particularly thank our Executive Director, Peter Dundas-Smith, for his leadership, initiative and skill in advancing the Australian fishing industry through R&D.

For their consistent support during the year we are also grateful to the Commonwealth Minister for Agriculture, Fisheries and Forestry (the Hon. Warren Truss, MP), the Parliamentary Secretary to the Minister (Senator the Hon. Judith Troeth) and the successive Ministers for Forestry and Conservation (the Hon. Wilson Tuckey, MP and Senator the Hon. Ian Macdonald). The willing assistance of staff of Agriculture, Fisheries and Forestry – Australia and of members of the FRABs has been invaluable. And finally, on behalf of all beneficiaries of the Corporation's R&D investments, we extend thanks to the governments of the Commonwealth, the states and the Northern Territory, and to the fishing industry, for their financial support of the Corporation's vital role.

Report of operations

Part 2: The FRDC's operational and financial results

Factors in delivering the R&D Programs

Planned outcomes — the focus of the R&D Programs

In keeping with the Commonwealth Government's budget framework, the FRDC's planning, operating and reporting framework is centred on delivering outputs that help to achieve clearly stated planned outcomes. Key elements[8] in the FRDC's programs are shown in **figure 5**.

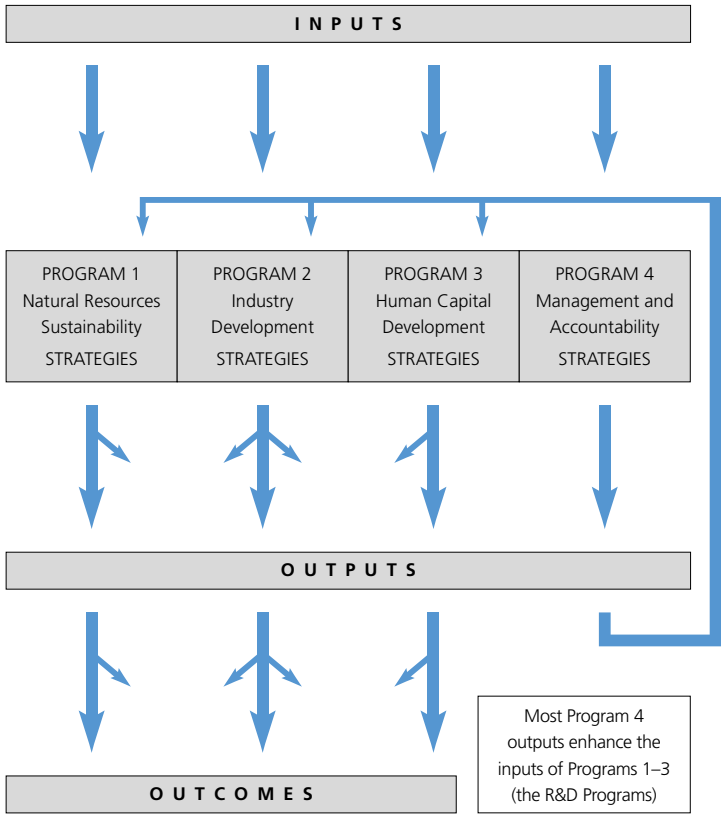
FIGURE 5: THE FRDC'S FOUR PROGRAMS: INPUTS, OUTPUTS AND OUTCOMES

Inputs are resources — in the form of people, expertise, materials, energy, facilities and funds — that the FRDC and its R&D partners use in activities to produce outputs

Strategies focus the FRDC's activities to produce the outputs required to achieve planned outcomes

Outputs are the goods and services (mainly knowledge, processes and technology) that the FRDC and its R&D partners produce for external organisations or individuals

Outcomes are the results, impacts or consequences of actions by the FRDC and its R&D partners on the fishing industry* and Australia's economic, environmental and social resources



* The fishing industry comprises commercial, recreational and traditional sectors, as described on page 16.

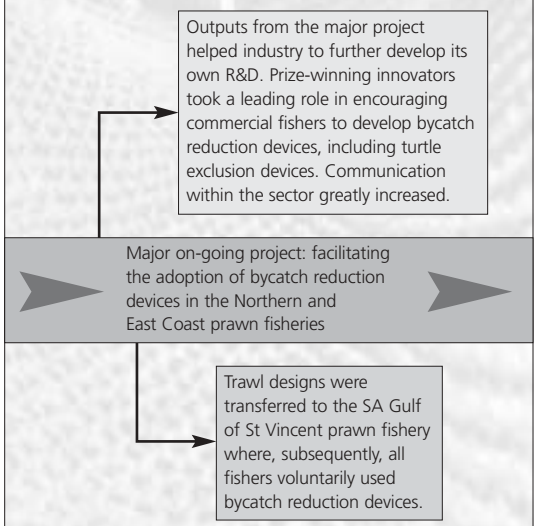
An example of inputs, outputs and outcomes resulting from FRDC-funded fisheries R&D is shown in **figure 6**.

8 Definitions in figure 5 have been adapted to the FRDC context from Department of Finance and Administration 1998, *Specifying outcomes and outputs*, pages 174–177, and take into account subsequent Web-based guidelines. They also take account of the letter of 11 January 1999 from the Parliamentary Secretary to R&D corporations that elaborated accountability arrangements for statutory authorities.

FIGURE 6: AN EXAMPLE OF INPUTS, OUTPUTS AND OUTCOMES — BYCATCH REDUCTION PROJECTS

In fisheries R&D, it takes time to produce results — especially when wild fisheries resources are involved. Further, many complex links exist between outcomes and the R&D inputs and outputs that achieve them.* Outcomes — which result when outputs produced by the FRDC and its R&D partners are implemented by the fishing industry and other end users — usually result from outputs of previous years. This is reflected in the examples on the right.

When there are several projects proceeding in a particular area of R&D, many project outputs become inputs to related projects. Such inter-relatedness has become more prevalent since the FRDC and its R&D partners have placed high priority on communicating and extending R&D results to potential beneficiaries, both before and after projects are completed. As an example, this diagram shows two activities that have benefited from outputs of bycatch reduction R&D while the main R&D project was still in progress:



* These terms are defined in figure 5.

By widening the application of project results in ways such as this, higher returns on R&D investment are being earned.

A major focus of prawn R&D since the 1980s has been to reduce the quantity of bycatch and to improve the quality of catch in prawn trawl fisheries.

The complexity and focus of bycatch reduction R&D has evolved as the findings of R&D projects have been compounded by effective communication and extension of results. For example, an initial focus on prawns has broadened: initially to other species and now to whole ecosystems.

Before the 1990s, costs to commercial fishers of meeting environmental requirements were minimal. Now the costs are higher, and they must be met by earning higher profits. Although higher community expectations for environmental accountability are being acknowledged by some commercial fishers, there is some tension between stakeholders about what is an acceptable balance between economic, environmental and social values of fishing.

Inputs (since 1988)

FRDC funding for six principal R&D projects (about $3 million) and elements of other R&D projects (e.g. ecosystems).

Investment by research providers and other funding entities (about $6 million).

Contributions from prawn operators, including in-kind.

Industry consultation and participation.

Outputs (since 1990)

KNOWLEDGE

Extension and communication outputs, e.g. *Bycatch reduction guide*, manuals, workshops, newsletters, videos, demonstrations, scientific papers, reports, news media coverage.

Increased knowledge to help resolve other challenges.

Focus widened beyond prawns.

PROCESSES

More effective use of bycatch reduction devices and turtle exclusion devices.

More effective ways of communicating between all stakeholders and for conducting R&D.

Quicker transfer of knowledge and uptake of technology.

TECHNOLOGY

Improved designs of bycatch reduction devices and turtle exclusion devices.

Outcomes (since 1994)

Progress in ecologically sustainable development through:

- voluntary adoption of bycatch reduction devices in most prawn fisheries,
- compulsory use of bycatch reduction devices (including turtle exclusion devices) in the Northern Prawn Fishery as a result of industry-initiated regulations,
- increased focus on bycatch in all applicable Australian fisheries, and
- protection of endangered and other untargeted species (bycatch of prawn fishers reduced by as much as 90%).

Increased profit for fishers through:

- reduced fuel consumption and higher quality of caught prawns, hence value;
- improved market access — for example, from US Government acceptance of NPF prawn catch; and
- improved occupational health and safety.

Increased human capacity through:

- greatly improved communication and cooperation within sectors of the fishing industry,
- significantly higher expertise in bycatch management and research, and
- increased involvement of industry and community stakeholders and understanding of bycatch issues.

One of the advantages of the outcomes-outputs system is that the FRDC's efforts are focused not on the goods and services produced by the Corporation and its R&D partners but on actual impacts of those goods and services in the economic, environmental and social contexts in which it operates. In essence, the FRDC's planned outcomes are things that will make a real difference to Australia's fisheries resources and fishing industry. In turn, good outcomes can only be achieved through good R&D outputs.

The FRDC's planned outcomes reflect the Corporation's strategic assessment of the economic, environmental and social factors challenging industry, governments, the community, research providers and R&D funding entities. The assessment also determines the FRDC's strategies and planned outputs. The planned outcomes are also consistent with the FRDC's vision and mission.

The FRDC's four programs are derived from the four legislative objects of the PIERD Act — section 3(a) to (d).[9]

The first three programs (the R&D programs), and their planned outcomes, are as follows:

Program 1: Natural Resources Sustainability

- The natural resources on which the commercial, recreational and traditional sectors of the fishing industry depend are used in an ecologically sustainable way.

Program 2: Industry Development

- The commercial sector of the Australian fishing industry is profitable and internationally competitive; the commercial, recreational and traditional sectors are socially resilient.[10]

Program 3: Human Capital Development

- The knowledge and skills of people in and supporting the Australian fishing industry, and in the wider community, are developed and used so that Australians derive maximum economic, environmental and social benefits from fisheries research and development.

The remaining program, which does not have a planned outcome (because its function is to enhance the inputs of the three R&D programs, as shown in figure 5 on page 36) is as follows:

Program 4: Management and Accountability

- This program is the vehicle for continually improving the effectiveness and efficiency of the ways in which the FRDC plans, invests in and manages fisheries R&D. It is also an important element in the FRDC's achievement of high standards of corporate governance.

The three R&D programs also address Commonwealth Government R&D priorities, the portfolio outcome of the Commonwealth Department of Agriculture, Fisheries and Forestry – Australia (AFFA) and the planned outcomes of the FRDC's representative organisations (the Australian Seafood Industry Council and Recfish Australia).

9 The legislative objects and corresponding programs are shown in figure 1 on page 3.

10 "Social resilience" relates to the social (including political) capacity of groups of people to effectively develop and represent their interests and to advocate their contributions to the Australian community. Having such a capacity is essential in our robust democratic society, especially if the group is likely to be affected by others who are better at representing their own self-interests. It is widely recognised that the social resilience of the three main sectors of the fishing industry is presently low.

Achieving outcomes through R&D outputs

The practical value of outcomes created by R&D is realised only when outputs are put to use. The FRDC therefore employs a highly rigorous approach to focusing R&D outputs on planned outcomes. Effectiveness in encouraging the transformation of R&D outputs into outcomes is a significant component of Program 4, Management and Accountability.

Despite the high degree of FRDC influence over outputs from R&D projects, the FRDC's investment in R&D is not, alone, sufficient to ensure that its planned outcomes are achieved. Accordingly, the FRDC is increasing the demands it makes on beneficiaries (such as industry) and end-users (such as fisheries managers) to ensure that before investing there is a commitment to use the potential outputs. Recently, new communication technologies and greater involvement of stakeholders have enabled quicker, more efficient adoption and commercialisation. End-users are frequently taking up appropriate R&D findings while a project is in progress, rather than after the final report is produced. These activities reflect the high priority that the FRDC places on effective communication and extension of R&D results to potential beneficiaries.

Notwithstanding this, measuring achievement of outcomes in any natural resource environment — and particularly in the wild fishery environment — is usually difficult and can be very expensive. In some cases, lack of historical information that can help to show changes over time is an additional impediment. Improved data management is, accordingly, a high priority for fisheries R&D.

Equally important is the need for key performance indicators to relate directly to factors of greatest significance (usually long-term significance) to the fishing industry and the natural resources on which it depends. Currently there are no recognised, reliable benchmarks against which key performance measures may be framed. The FRDC is seeking to reduce these impediments within the constraints of cost-effectiveness.

A distinguishing feature of fisheries R&D — public good and private benefit are inextricably linked

The FRDC's funding arrangements call for a balanced R&D portfolio relevant to the sources of funding and the objectives of each source.

However, that implies a distinction can be made between public good and private benefit. In practice, in fisheries research relating to the commercial wild-catch sector, public good and private benefit are inextricably linked, from catching to marketing. In the recreational and traditional sectors, any private benefit is likely to be derived only indirectly — mainly by enterprises that support the sectors' activities.

The large public good component in most fisheries R&D flows from the fact that the Commonwealth's stewardship role in relation to fisheries resources is exercised on behalf of the Australian community. The commercial sector of the fishing industry targets renewable, though limited, resources; and it shares the resources and its operating environment with other users to a greater degree than other primary industries. The proportion of public good flowing from fisheries research is high, and the private benefits derived are inseparable from the public good component. Compared with land-based resources, knowledge of fisheries resources is poor, and acquiring such knowledge is slow and expensive. In the interests of the community, these characteristics direct most fisheries R&D towards the public good.

Although the public good component is more obvious in the FRDC's Natural Resources Sustainability program, the Industry Development program also aims to achieve the public-good objective of relieving pressure (directly or indirectly) on wild fisheries resources. At the same time, the Industry Development program helps to meet a growing demand for seafood (for example, through aquaculture) and for lifestyle benefits through recreational fishing. It also satisfies cultural needs through traditional fishing of Aboriginal and Torres Strait Islander people. Other public good benefits, such as increased employment, also derive from this program.

Review, planning and conduct of activities

Annual review of strategic priorities

Each year, the FRDC reviews its strategic assessment of the business environment — including through consultation with the FRDC's representative organisations. The review may highlight actual or potential changes to the business environment that prompt the FRDC to adjust the balance — or to address gaps — in its R&D portfolio.

The 2002–03 annual operational plan and portfolio budget statement

The AOP aims to achieve, in the best way possible, the planned outcomes of the R&D programs.

The AOP for the forthcoming financial year, 2002–03, was prepared against the background of the R&D plan, and is consistent with it. The AOP is based on the FRDC's estimate that it will spend $21.5 million on new and continuing projects.

The Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry approved the 2002–03 AOP on 15 May 2002.

The FRDC contributed directly to AFFA's portfolio budget statement (PBS). Unlike the R&D plan and AOP, it is tabled in the Commonwealth Parliament. Thus, as with the annual report, it is an important element of parliamentary scrutiny.

The 2002–03 annual operational plan provides for $21.5 million to be spent on new and continuing projects

The annual R&D cycle

The PIERD Act and CAC Act determine the timing of most FRDC activities. An annual cycle (available from the FRDC's website and in each July edition of *R&D News*) is used for planning and funding of R&D. Further details of the funding process are available in the R&D plan.

R&D Program achievements, 2001–02

This section provides performance information on the FRDC's three R&D programs. For each R&D program there is a description of:

- the key strategic elements — that is, the legislative source, FRDC planned outcome, Government R&D priorities, and planned outcomes for the AFFA portfolio and representative organisations;

followed by the year's:

- principal inputs, and
- principal outcomes, together with the outputs that contributed to them and to closely related outcomes.

Following this description, under the heading 'R&D outcomes report', are examples of activities with significant outcomes.

The information shown under Program 4, Management and Accountability, describes the FRDC's efficiency and effectiveness. Since Program 4 activities are within the FRDC's direct control, their effectiveness is potentially high.

Implementation of 2001–02 annual operational plan

During the year, the FRDC implemented all projected activities of the 2001–02 AOP. In almost all of the activities, the FRDC achieved the levels of performance specified in the AOP.

Program 1: Natural Resources Sustainability

Strategic elements

FRDC planned outcome for this program:	The natural resources on which the commercial, recreational and traditional sectors of the fishing industry depend are used in an ecologically sustainable way.
Legislative source:	Object (b) of section 3 of the PIERD Act, which makes provision for the funding and administration of R&D with a view to achieving the sustainable use and sustainable management of natural resources.

This program is consistent with the following strategic elements of the Commonwealth Government, the Department of Agriculture, Fisheries and Forestry – Australia (AFFA), and industry.

Government R&D priority:	Sustainable management and use of our marine resource base through the integration of effective, scientifically based resource assessments and mitigation strategies into our fishing and aquaculture industries.
AFFA portfolio outcome:	Australian agricultural, fisheries, food and forestry industries that are based on the sustainable management of and access to natural resources, are more competitive, self-reliant and innovative, have increased access to markets, are protected from diseases and pests, and are underpinned by scientific advice and economic research.
ASIC outcome:	Ecologically sustainable fisheries, based on sound environmental and management practices.
Recfish Australia outcome:	Australian marine and freshwater resources and habitats are managed sustainably to produce abundant, diverse, high-quality fishing experiences for recreational and sport fishers.

Note: Reporting in this section fulfils, among other things, the requirements of section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Further information on the EPBC Act is on page 146.

Principal inputs

During 2001–02, $11.9 million was invested in R&D activities within this program, through 172 projects listed in **appendix D** (page 152).[11]

Principal outcomes and outputs

Fisheries in Australia can either be classified by management jurisdiction or by the nature of the fishing gear that they use. The former results in some 130 to 140 individual fisheries the later results in 10 gear types. Given that the research needs are common between fisheries using the same gear type it is more logical for a national R&D investor like FRDC to report by gear type. Below are summarised the main R&D issues facing these gear types, what investment has been funded to address them, and the main outputs.

11 The FRDC also oversaw R&D that was funded under the Federal Budget Initiative for Aquatic Animal Health. Details of projects are on page 172.

FINFISH TRAWLING / DANISH SEINING

Trawl fisheries continue to provide the majority of fresh fish for Australian consumption. Trawling is a low-cost fishing method that provides affordable seafood for all Australians. To ensure the public and policy makers continue to support this form of fishing it is essential that improvements continue in managing these fisheries and in fishers' use of the best available gear knowledge to minimise their effects on the ecosystem. Commercial fishers have accepted that to gain community acceptance it is essential to document their activities and to report against agreed criteria — for example in complying with a fisheries management plan. By its nature, this type of fishing has potentially high environmental risk that requires appropriate investment by all parties to ensure ecological sustainability.

The main issues being addressed relate to:

- the impact the gear has on the environment and the ecosystem effects,
- the non-selective nature of the gear resulting in bycatch,
- how to balance the take of target species in a multi-species fishery, and
- how to maximise the value of the catch.

Harvest strategy models developed by Punt, Smith et al. (CSIRO) have provided a tool to model maximum sustainable yield for multi-species fisheries. This methodology is being developed for trawling in the areas adjacent to the Great Barrier Reef through research by the Cooperative Research Centre for the Great Barrier Reef (Mapstone et al.). An industry-initiated project to reduce bycatch (1998–2004) within the SEF has trialled various methods to reduce unwanted catch. By ensuring that industry is part of the project and by including SeaNet (the environmental fisheries extension service funded by the Natural Heritage Trust), this project has been instrumental in delivering good adoption of alternative gear for reducing bycatch. By mapping habitat in the South East Fishery (project 2000/153 "Integrating fishing industry knowledge of fishing grounds with scientific data on seabed habitats for informed spatial management and ESD evaluation in the SEF"), a better understanding of the communities that make up the bottom habitat is being developed. This information, together with a knowledge on how these communities respond to trawling (that is, how they recover), can be used to spatially manage trawling effort to reduce ecosystem effects. A new project, 2002/029, "Identifying and understanding critical habitats of major fish species in the South East Fishery", in partnership with CSIRO and the National Oceans Office, will build on this understanding and provide new tools to mitigate trawling on an ecosystems basis.

PRAWN / SCALLOP TRAWLING

Australian prawn and scallop fisheries make a significant contribution to fisheries exports, with their export value exceeding $344 million in 2000–01. Prawns and scallops are highly prized by Australian consumers and have been a key part of the food culture by which Australia is promoted overseas. "Prawns for Christmas" is now becoming an icon meal.

The main issues being addressed relate to:

- the impact the gear has on the environment and the ecosystem effects;
- the non-selective nature of the gear resulting in bycatch;
- reducing the catch of species of high conservation value, including turtles, sharks and sygnathids (seahorses and seadragons); and
- improving knowledge of the life history of the target species and their spatial and temporal movement.

Significant advances have been made in prawn and scallop trawling to reduce bycatch and turtle capture. Adoption of turtle exclusion devices (TEDs) is essential if prawn fisheries want to retain access to export markets, such as the USA, that require such devices. Most Australian prawn fisheries have adopted TEDs, either voluntarily or as a result of legislation. Robust indicators and performance measures for these fisheries to be used to assess management methods are currently being developed in several fisheries (e.g. 1999/120 "Reference point management and the role of catch-per-unit effort in prawn and scallop fisheries"). Two projects to develop independent survey techniques for the Queensland East Coast Trawl Fishery have now been adopted as a long term tool in managing these fisheries (1997/146 "Developing indicators of recruitment and effective spawner stock levels in north Queensland east coast prawn stocks" and 1997/145 "Developing indicators of recruitment and effective spawner stock levels in eastern king prawns").

A previous project undertaken in the Northern Prawn Fishery resulted in the development a risk assessment method for bycatch (1996/257 "Effects-of-trawling subprogram: ecological sustainability of bycatch and biodiversity in prawn trawl fisheries", CSIRO). This methodology is now being used in all Commonwealth fisheries in a partnership between AFMA and CSIRO. The FRDC has invested this year in two new projects to develop methods to monitor bycatch within prawn trawl fisheries. These projects are taking different approaches to account for spatial and temporal differences in some trawl fishery operations.

SCALLOP DREDGING

Scallop fisheries experience high yearly variations in catch, which means they can experience booms and busts. Management and fishing are geared to this variability.

The main issues being addressed relate to:

- improved inter-annual catch rates,
- the impact the gear has on the environment and the ecosystem effects, and
- the non-selective nature of the gear resulting in bycatch.

The FRDC has invested resources in developing technology to enhance scallop fisheries (project 2002/048). The move to spatially manage scallop stock is developing a ranching-type fishery where the bottom is spelled to allow stock to re-build. This re-stocking in the wild is a means of reducing the variability in catch and improving long-term profitability. (This project relates to scallop trawling, but will have relevance to scallop dredging.)

PURSE SEINING

The main issues being addressed relate to improved knowledge of the biomass of the target species and avoiding bycatch.

A recovery in the South Australian pilchard fishery has enabled its total allowable catch to be increased to 19,000 tonnes. The FRDC's investment in methods to increase the certainty of this assessment has been significant. The development of southern bluefin tuna aquaculture, which is dependent on wild fish that are purse seined, has seen a significant increase in the value of this fishery.

NET HAULING

The main issues being addressed relate to:

- the impact the gear has on the environment and the ecosystem effects, and
- the non-selective nature of the gear resulting in bycatch.

Projects in NSW and Victoria have been developing alternative gear to reduce unwanted catch. Further, a project on hauling by Victoria has shown that this method has minimal impact on the environment (1997/210 "Effects of haul seining in Victorian bays and inlets"). Results from both projects have shown that survival of caught species is high and that the incidence of meshing of several species can be mitigated by using various netting materials in the "wings" of the net.

MESHING

The main issues being addressed relate to:

- the impact the gear has on the environment and the ecosystem effects, and
- the non-selective nature of the gear resulting in bycatch.

A project undertaken by DPI Queensland and the Australian Institute of Marine Science has shown that net fishing in Queensland estuaries has no effect on the biodiversity. The project showed that netting did reduce the abundance of the target species as expected, but this did not have any effect on community composition (1997/206 "Effects of net fishing: addressing biodiversity and bycatch issues in Queensland inshore waters").

LINE FISHING

The main issues being addressed relate to:

- the impact the gear has on the environment and the ecosystem effects,
- the non-selective nature of the gear resulting in bycatch, and
- improved knowledge of the status of fish stocks.

A national strategy for the survival of released line-caught fish, principally focusing on the recreational sector, has been developed during the last 12 months. The main output is to ensure that released fish have the maximum chance of surviving. The rapid increase in catch-and-release fishing has meant that recreational fishers are keen to implement handling techniques that ensure that released fish survive and grow to be re-caught at a later date. This trend is happening in recreational fisheries world-wide.

Incidental capture of birds in commercial long lines has improved with the introduction of techniques to avoid bird capture and new management measures to avoid areas where there are birds of high conservation value, such as albatross.

A little fishery in SA, the line/jigging fishery for cuttlefish, has provided important information on reproductive behaviour. These fish have an annual spawning aggregation which is important for future recruitment. Improved knowledge of this behaviour has been used to alter management arrangements to ensure long-term sustainability (1998/151 "Fisheries biology of the cuttlefish (*Sepia apama Gray*) in South Australian waters").

TRAPPING

The main issue being addressed relates to improved knowledge of the status of fish stocks.

FRDC's investment in the Kimberley shelf trap fishery (1997/136, "Stock assessment of the outer-shelf species in the Kimberley region of tropical Western Australia") has improved knowledge of exploitation rates and the responses of fish stocks.

POTTING

The main issues being addressed relate to:

- the status of fish stocks,
- the impact the gear has on the environment and the ecosystem effects, and
- improved profitability.

FRDC has invested considerable resources in Australia's highest value fishery. This has contributed to Australia's rock lobster fisheries being assessed as being the most sustainable in the world. A project to reduce octopus predation of rock lobsters in pots has obtained significant industry support in designing new pots (1998/150, "Development and assessment of methods to reduce the predation of pot-caught southern rock lobster (*Jasus edwardsii*) by maori octopus (*Octopus maorum*)"). A serendipitous discovery of the effect of increased salinity on rock lobster leg loss should lead to improved survival and growth of released rock lobsters (2001/255, "Rock Lobster Post Harvest Subprogram: quantifying and controlling hyper- and hyposaline-induced post-harvest leg autotomy in the western rock lobster").

A series of projects has been completed on blue swimmer crab fisheries nationally, providing important information on catch rates by sectors, the structure of the stocks and important biological parameters.

HAND GATHERING

The main issues being addressed relate to:

- the status of fish stocks and the ecosystem effects,
- compliance, and
- improved profitability.

Abalone fisheries have just had their best year, with significant increases in profitability. Research continues into improving understanding of stocks and how they are exploited. A national project examining illegal take of abalone has shown that current compliance recording methods are unable to be used to determine the level of illegal take (2000/112, "Assessment of illegal catches of Australian abalone: II. Development of desk-based survey methods"). To address this problem, the Australian Fisheries Management Forum is recommending that nationally consistent data collecting methods be developed.

"A national recreational fishing survey was conducted during the year. The project was a collaborative effort of Commonwealth and state fisheries agencies. The objective of the survey was to collect nationally consistent and comparable fishery statistics for the non-commercial components of Australian fisheries. The survey found that about 3.4 million Australians (19% of the population) fished during the year. Recreational fishers harvested about 125 million fish, crustaceans and molluscs. Flathead, whiting and bream were the prominent angling species. Recreational fishers spent more than $1.3 billion on their pastime. Anglers expressed relatively high levels of satisfaction in relation to the management of their sport."

— Gary Henry, Project Leader

Other Program 1 outputs

Indigenous subsistence fishers have traditionally harvested black jewfish (*Protonibea diacanthus*) that aggregate each year off far northern Cape York Peninsula. A three-year FRDC project (1998/135, 'Fishery biology and management of black jewfish aggregations near the Injinoo community, far northern Cape York') found that recent increases in effort targeting this species were cause for concern. In response, the Injinoo Land Trust, in cooperation with the Injinoo Community Council, self-imposed a two-year ban on fishing to allow stocks to reach a mature size to improve their reproductive capacity. In the process they forfeited their statutory exemption from existing catch restrictions. This initiative — the only known modern instance of indigenous communities combining to initiate a long-term ban on harvesting — has now developed into a regional agreement. Further, the elected chairmen of the communities have asked for legislative backing for a species-specific ban. Charter boat and other commercial operators have voluntarily followed the communities' lead.

The FRDC-funded ESD Reporting Framework *How-to Guide* for wild-catch fisheries has provided a national approach to triple bottom line reporting for Australia's fisheries. WA Fisheries has shown the way by using this approach in their continually improving annual report on the status of their fisheries. The framework is consistent with trends world-wide to implement triple bottom line reporting (of economic, social and economic factors) for natural resource management. The FRDC's ESD Reporting and Assessment Subprogram, which has been developing the framework, has also adopted a standard set of definitions for ESD in the interests of clear communication and understanding. To complement this investment, FRDC has approved the development of an ESD Assessment Guide. The outputs from these investments and the development of tools for Environmental Management Systems places the fishing industry at the forefront of ESD implementation for primary industries.

Reporting on the status of fisheries stocks is still low, with only four out of eight jurisdictions publishing status reports. Further, these reports do not address the breadth of measures required either by the framework or by provisions of the EPBC Act.

A southern bluefin tuna aquaculture company, the Stehr Group, has become the first Australian fishing company to achieve ISO 14001 quality certification.

A comprehensive audit of Australia's estuaries has been undertaken for the first time as part of the National Land and Water Audit. It has shown that of the 971 estuaries in Australia, 28% are currently moderately or severely modified. A further 22% are slightly modified and the remaining 50% are classified as near pristine. The study also found that rehabilitation works within estuaries have increased by 46% during the last decade.

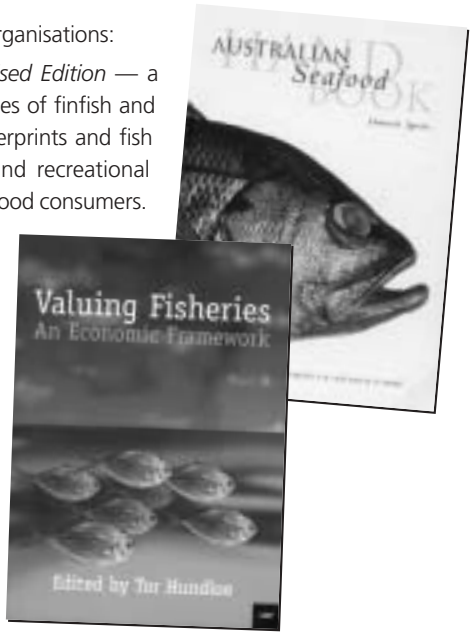
The report of project 1999/163 "A coordinated commercial fishing industry approach to the use of marine protected areas" has been the FRDC's largest-selling final report for the past 12 months. The authors, Bob Kearney, Pascale Baelde and Daryl McPhee, have been extending the results of the project in many forums.

Strong industry demand resulted in the reprint of the practical guide, *Bycatch Solutions*, which aims to reduce unwanted bycatch in non-trawl fisheries. Many of the solutions contained in the handbook are proven techniques developed by fishermen.

Development of an acceptable ESD reporting framework for all sectors is a world first. The UN Food and Agriculture Organization has complimented Australia on this initiative.

The FRDC also published, in partnership with other organisations:

- (With CSIRO) *Australian Seafood Handbook: Revised Edition* — a book with colour photographs of about 350 species of finfish and shellfish and oil composition profiles, protein fingerprints and fish fillets: an important reference for professional and recreational fishers, fishmongers, processors, biologists and seafood consumers.
- (With the University of Queensland) *Valuing Fisheries: an Economic Framework* — a simple, practical guide to the correct economic methods for valuing fisheries, thus helping to improve decision-making about fisheries resource-sharing. (This responds to all sectors identifying the absence of an objective framework for valuing fisheries as a bottleneck to developing access policy and resource sharing arrangements.)



Summary of final reports received for Program 1

Program 1 strategies (as on pages 120, 121 of R&D plan)	No. of projects 2001–02	FRDC investment 2001–02	No. of projects last year	FRDC investment last year
Fish biology	14	$3,016,558	16	$2,699,000
Interactions between fish and their ecosystems	1	$462,214	5	$1,045,000
Effects of fishing activities on fish and their ecosystems	5	$1,416,771	4	$1,897,000
Effects of non-fishing activities, pests and pollution on fish and their ecosystems	4	$1,076,822	3	$1,112,000
Health of fish and their ecosystems	2	$101,794	1	$46,000
Rehabilitation and enhancement of fisheries and their ecosystems	—	—	2	$257,000
Legislative, institutional, compliance and policy arrangements and their impacts	—	—	—	—
Access to fisheries resources	—	—	4	$815,000
Stock assessment	9	$3,001,199	8	$2,760,000
Fisheries and ecosystems management	3	$402,560	2	$759,000
Total	**38**	**$9,477,918**	**45**	**$11,391,000**
Change	–15.5%	–16.8%		

Achievement of AOP targets

Achievements against the key performance indicators and measures specified for the program's planned outcome in the 2001–02 AOP are summarised as follows:

Key performance indicator	Performance measure	Achievement
Sustainable fish stocks	Improvement in status as reported in the annual fisheries status reports produced by government agencies	Fish stock sustainability was stated to have improved in the fisheries for which reliable information was reported.
Healthy environment that sustains all aquatic life	Improvement in status as reported in the annual fisheries status reports produced by government agencies	Health of the aquatic environment was stated to have improved in the fisheries for which reliable information was reported.

SUMMARY OF PERFORMANCE

Quantitative measures of natural resources sustainability in wild fisheries are difficult to prescribe and report against. Notwithstanding this, the FRDC is confident, on an aggregated basis, that:

*Most aspects of the AOP performance measures were met **

* There was a shortfall in final reports received: whereas 53 final reports for R&D projects were forecast in the AOP, the number received was 38. The estimate did not pay sufficient regard to slippage which frequently occurs during projects, nor to the time needed to prepare final reports and other outputs after the projects end.

R&D outcomes report — Program 1

From bycatch to ecosystems management

A combination of well-planned research and committed people has increased the ecological sustainability of turtle and fish populations in northern Australian prawn trawl fisheries.

In a three-year FRDC-funded project (1996/254), commercial trawl fishers of northern Australia worked with the Department of Primary Industries Queensland, the Australian Maritime College and CSIRO Marine Research to test sea turtle exclusion devices (TEDs) and fish bycatch reduction devices (BRDs) from overseas and Australia. Commercial fishers then worked with the researchers to modify the gear to operate efficiently in their fisheries.

The project enabled trawl fishers to make well-informed decisions about which TED or BRD design would suit their trawling operations — and they are continuing to modify designs to suit their own needs. Regulations now require TEDs and BRDs to be used in the trawl fisheries of northern Australia.

This project thrived on close, active partnerships between the industry and the research providers, comprising the enthusiastic and talented Principal Investigator, Julie Robins, and her project colleagues Jason McGilvray, Matthew Campbell, Steve Eayrs, Garry Day, Brian Taylor and David Brewer.

"The whole process was a very strong team effort."

Forging close partnerships between the researchers and the industry people was very important if the devices were to be adopted to the greatest advantage. Early on, it was difficult to get some fishers to see the need to exclude bycatch and to provide a knowledge base from which to improve designs of the TEDs and BRDs. Julie Robins admits "The fishing industry is like any other sector of society — there are sinners and there are saints, and most people are somewhere in between these extremes. All fishers want to be able to continue fishing for a living, but most dislike interference by government agencies. Fortunately, some fishers were willing to share their knowledge, experience and fishing vessels with us so the fishing industry could accept TEDs and BRDs — then use and develop them. These fishers could foresee that reducing bycatch in trawl fisheries was a necessary step towards sustainable trawling in Australia. Several key fishers, fishing industry leaders, the Queensland Seafood Industry Association and the Northern Prawn Fishery Management Advisory Committee played an enormous role in spreading this positive attitude. Their emphasis on the need for TEDs and BRDs was strongly supported by the Australian Fisheries Management Authority and the then Queensland Fisheries Management Authority. The whole project was a very strong team effort."

In addition to gaining new knowledge and technical skills, many fishers have gained new understandings of sustainability of their operations because of Julie's enthusiasm for extending the results of her team's work.

Although the project has been completed, the ecological and economic impacts of TEDs and BRDs are continuing to be documented so that the outcomes of the new practices can be quantified in detail.

Julie Robins is now working on another collaborative FRDC-funded project, 2001/022, which seeks to understand the freshwater needs of estuaries for sustainable fisheries production (prawns and estuarine fish such as barramundi) and to assess the impacts of land-based water use on fisheries production. The planned outcome is more sustainable development of water resources.

For the FRDC, it is very gratifying to see researchers progressively developing their skills so that they move from more limited research topics to ever more strategic topics centred on whole ecosystems. Julie started working 12 years ago as a fisheries biologist studying sea turtle bycatch and bycatch reduction devices. Through her enthusiastic collaboration and her professionalism, she has gained a huge body of insights and knowledge that has enabled her to interact extensively with trawl fishers in northern Australia, other researchers in Australia and gear technologists in the USA.

Julie is currently distilling her experience by undertaking PhD studies of a comprehensive approach for sustainably managing sea turtle bycatch.

Photo John Kirkwood

Photo John Kirkwood

Commitment and hard work by the research team led by Julie Robins has helped to increase the sustainability of turtle and fish populations in northern Australian prawn trawl fisheries. The team worked closely with commercial fishers to test and modify turtle exclusion devices and bycatch reduction devices that would best suit northern Australian prawn trawling. Fisherman Bobby Dallas, seen here with Julie, was one of the fishers involved in trialling turtle exclusion devices in Moreton Bay.

Program 2: Industry Development

Strategic elements

FRDC planned outcome for this program:	The commercial sector of the Australian fishing industry is profitable and internationally competitive; the commercial, recreational and traditional sectors are socially resilient.
Legislative source:	Object (a) of section 3 of the PIERD Act, which makes provision for the funding and administration of R&D with a view to increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries.

This program is consistent with the following strategic elements of the Commonwealth Government, AFFA and industry.

Government R&D priorities:	**Whole-of-industry approach**: A whole-of-industry approach to production, processing and marketing to ensure an effective supply chain approach that maximises our competitive advantages.
	Bio-technology: Development of bio-technology to support our aquaculture industries, along with sensitive handling to accommodate consumers' concerns, to supplement and replace wild-catch fisheries where appropriate.
	Increases in trade and market access: A need for data and associated market analysis to allow for informed debate and to support Australia's negotiating position in international forums.
	Clean and green: Maintenance and enhancement of Australia's "clean, green" image.
	Food safety: Addressing food safety concerns of consumers.
AFFA portfolio outcome:	Australian agricultural, fisheries, food and forestry industries that are based on the sustainable management of and access to natural resources, are more competitive, self-reliant and innovative, have increased access to markets, are protected from diseases and pests, and are underpinned by scientific advice and economic research.
ASIC outcome:	Financial viability of commercial fisheries and associated communities, based on industry stability and growth in both domestic and export markets that is consistent with economic, environmental and social policy goals for Australia.
Recfish Australia outcome:	The recreational sector of the fishing industry develops in ways that maximise economic, environmental and social benefits to recreational and sport fishers, associated businesses and the Australian community.

Note: Reporting in this section fulfils, among other things, the requirements of section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Further information on the EPBC Act is on page 146.

Principal inputs

During 2001–02, $7.2 million was invested in R&D activities within this program, through 122 projects listed in **appendix D** (page 152).

Investment in activities under this Program depends on evidence of market, institutional, technical, policy or political failure, and/or likely "public good" benefits.

Such investment helps to achieve the "public good" imperative of relieving pressure (directly or indirectly) on wild fisheries resources. At the same time, it helps to meet a growing demand for seafood (e.g. through aquaculture) and for lifestyle benefits through recreational fishing. It also satisfies the cultural needs of Aboriginal and Torres Strait Islands people through traditional fishing.

Principal outcomes and outputs — aquaculture development

Some 92 per cent of Australia's aquaculture is produced by five key sectors. The FRDC has stated that its investment strategy for aquaculture will principally support these sectors since they contribute to the FRDC. Further, the FRDC has committed resources to ensuring that developing sectors provide future strength to the industry.

Below are summarised the main R&D issues facing the five sectors; the investment to address them; and the main outputs.

PEARLS

An environmental risk and impact assessment of the pearling industry has utilised the newly published ESD Reporting Framework *How-to Guide*. The assessment has provided a series of recommendations on how the pearl sector can improve its environmental performance and reporting (2001/099 "Environmental risk and impact assessment of the pearling industry").

A recent project evaluating technology to reduce biofouling has had limited success because of problems with applying the coating; nevertheless the pearl sector has committed itself to address this problem.

SOUTHERN BLUEFIN TUNA

In September the new Cooperative Research Centre for Sustainable Aquaculture of Finfish (Aquafin CRC) commenced. This new initiative provides significant new funds to target the high priority R&D issues identified by industry and regulators for principally SBT and Atlantic salmon farming.

The main issues facing the SBT sector have been developing alternative feed sources, biosecurity and improving environmental performance and documentation. The Stehr group of companies (the first fish farmers in Australia to achieve ISO 14001 certification for both their grow-out and hatchery operations) has continued its manufactured feed development in partnership with Skretting Australia. The FRDC, through the SBT Aquaculture Subprogram, has contributed significantly to this development.

ATLANTIC SALMON

The last 12 months has been very difficult for the salmon farming industry. Increased production, competition with cheaper imports and ongoing problems with amoebic gill disease (AGD) are issues being addressed by the industry. The new Aquafin CRC, in which the FRDC has invested, has a focus on developing solutions to AGD and improving environmental management. It is estimated that the disease costs the industry more than $15 million per annum.

EDIBLE OYSTERS

FRDC's investment in the selective breeding of Pacific oysters has been spun off into a new company owned by industry. Australian Seafood Industry Ltd is a partnership between Tasmanian and South Australian Pacific oyster growers that will be used as a vehicle to manage the selective breeding program by industry to ensure that growers optimise their benefit from stock improvement.

PRAWNS

For the past 18 months the Australian Prawn Farmers' Association (APFA) has been developing with CSIRO, AIMS and DPIQ a program (2002/209) for the domestication of the black tiger prawn. The first stage of this program was funded by FRDC this year. The project aims to develop specific pathogen free (SPF) stock that will form the basis of the domestication program. The development of this initiative is seen as critical to provide Australia a competitive advantage.

Other aquaculture development outputs

During the year the FRDC contributed to the development of both the National Aquaculture Industry Action Agenda and the Prime Minister's Science, Engineering and Innovation Council Aquaculture Paper. These two initiatives will ensure a planned approach to developing this industry which has the single fastest employment growth in rural Australia.

An industry-initiated project to develop a quality management system for abalone farming has been widely adopted.

The FRDC published, jointly with NSW Fisheries, a national R&D strategy for inland saline aquaculture. Through NSW Fisheries, the plan is being extended to assess the need for future investment by key agencies, including the Murray-Darling Basin Commission.

During the year, two significant steps were taken to commercially exploit the knowledge and technology being developed by the Rock Lobster Enhancement and Aquaculture Subprogram. One involved issuing R&D licences for grow-out of puerulus in Tasmania; the other was a company's commitment to developing propagation technology of tropical rock lobster.

Principal outcomes and outputs — other than aquaculture development

A major advance in the way in which the seafood industry is supported by FRDC investment occurred when Seafood Services Australia (SSA) was incorporated as a company limited by guarantee on 25 October 2001, with the FRDC being one of its members.

The company's mission, scope and directorship are described on page 29.

The company's business programs are focused on:

- supply chain development,
- improving industry's performance,
- commercialisation and profitability, and
- capacity building.

During the seven months in which it was operating during the year, SSA implemented the many changes involved in becoming a self-governing corporate entity rather than a series of joint-venture R&D projects. Among its many outputs were:

- funding R&D through a Seafood Industry Development Fund;
- providing technical information and advice;
- helping to limit a ciguatera outbreak through the SSA-developed National Seafood Emergency Plan;
- further developing standard fish names;
- distributing a new CD-ROM on seafood safety;
- strengthening its strategic alliances with other entities;
- developing the SSA Network (which advises and implements many industry development activities); and
- taking part in many industry and government meetings in the interests of the seafood industry.

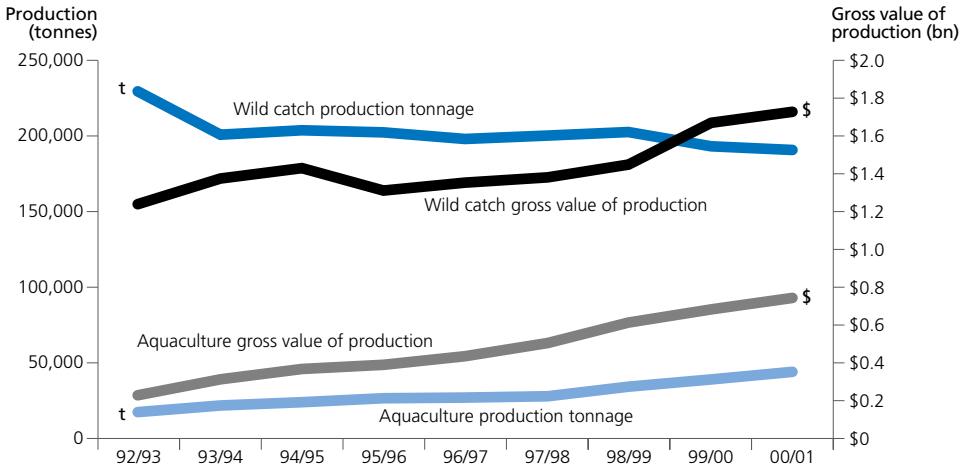
SSA addresses the majority of the FRDC's industry development strategies other than aquaculture production activities.

An FRDC funded project, 2000/245, conducted a comprehensive food safety risk assessment for the seafood industry. During the year, two significant outputs relating to seafood safety were developed under the guidance of Seafood Services Australia Ltd: *A Guide to Hazards and their Control in the Seafood Industry* (a rigorous HACCP validation process to enhance safety) and *Risk and Seafood Safety — How to Estimate and Manage it*.

The FRDC also published, in partnership with other organisations:

- (With DPI Queensland) *Asian Events and Culture — A Guide For Australian Seafood Exporters* — a guide to the cultural events and holidays of Asia and the impacts of these events on seafood consumption; country profiles describe Asian seafood markets, culture and business etiquette.
- (With DPI Queensland) *Under-utilised Seafood to Asia — A Guide for Australian Seafood Exporters* — an examination of the market potential for selected under-utilised Australian seafood species in China, Hong Kong, Japan, South Korea, Singapore, Taiwan and Thailand.
- (With Ruello & Associates) Following high demand for the first edition of *Retail sale and consumption of seafood*, the FRDC published a second edition. The book provides businesses that process and market seafood with the latest information on consumption of their products and identifies consumer needs for the industry; the new edition also gives information on consumers' preferences for sourcing their seafood.
- (With Bowerman Enterprises Pty Ltd and Shawn Somerset) *What's so healthy about seafood?* — a guide for seafood marketers outlining the health benefits of eating seafood and what can, and cannot, be said when promoting the benefits.
- (With CSIRO) *Seafood, the Good Food volume II: Oil Profiles for Further Australian Seafoods, and Influencing Factors* — an expansion of volume I, examining factors that may influence the good oils that are present in seafood; describes how seafood is prepared for consumption and the oil content and composition of an additional 79 seafood species.
- (With ABARE) *Australian Fisheries Statistics 2001* — a definitive publication containing statistics on Australian commercial wild-catch and aquaculture fisheries production, exports and imports.

State of the commercial sector



VALUE OF PRODUCTION

Figures issued by the Australian Bureau of Agricultural and Resource Economics for the gross value of production (GVP) of seafood during the past three years are as follows:[12]

	GVP 1998–99 ($'000)	GVP 1999–00 ($'000)	GVP 2000–01 ($'000)	Change during last year	Ave yrly change in 3yrs since 1997–98
Wild catch	$1,499,650	$1,689,771	$1,734,173	+2.6%	+8.1%
Aquaculture	$606,053	$687,150	$746,202	+8.6%	+14.0%
Total	**$2,105,703**	**$2,376,921**	**$2,480,375**	**+4.4%**	**+9.7%**

Note: Figures for 2000–01 are estimates.

VALUE OF EXPORTS

Figures issued by the Australian Bureau of Agricultural and Resource Economics for Australian seafood exports during the past three years are as follows:

1998–99 ($'000)	1999–00 ($'000)	2000–01 ($'000)	Change during last year	Ave yrly change in 3yrs since 1997–98
$1,511,408	$1,987,937	$2,168,661	+9.1%	+14.0%

Note: Figures for 2000–01 are estimates.

The main causes of the rise in value of exports during 2000–01 were the lower value of Australia's dollar against some currencies and the increase of tuna exports to $332 million.

12 Where figures for previous years differ from those in previous annual reports, they result from ABARE's refinement of initial estimates.

PRODUCTION

The total tonnage of Australian fisheries production (wild catch plus aquaculture) has remained virtually static during the last five years:

	1996–97	1997–98	1998–99	1999–00	2000–01
Wild-catch	196,553	199,349	209,779	193,509	191,401
Aquaculture	26,637	26,998	34,143	39,830	43,602
Total	**223,190**	**226,347**	**243,922**	**233,339**	**235,003**

Note: Figures for 2000–01 are estimates.

Together, the figures for seafood value and tonnage above and opposite show a highly desirable situation for the commercial sector:

- Increased value is being derived from static tonnage of wild-catch production — largely by focusing on quality and marketing.
- Aquaculture tonnage and value continues to grow strongly, in part because of investment in R&D, although for the first time in five years aquaculture did not record double digit growth rate, with the rate for the past year being 8.6%. Aquaculture was 30% of the total value of fisheries production and was 18.5% of total fisheries production by volume.

FRDC Executive Director, Mr Peter Dundas-Smith (left) and Dr Ian Knuckey, the project's Principal Investigator, were at the launch of the project by the Minister for Agriculture, Fisheries and Forestry, the Hon. Warren Truss, MP.

The E-boat project, based on a partnership between the FRDC, AFFA's Farm Innovation Program, AFMA and the South East Trawl Fishing Industry Association, (2001/012) is an example of the innovation that is taking the seafood industry from strength to strength. Centred on an on-board electronic data collection and transmission system, E-boat is developing an integrated network of electronic tools (software and hardware) that delivers many benefits in management and fisheries data collection.

EMPLOYMENT

It is important to have accurate information on employment in the harvesting, processing and other post-harvest sectors of the commercial sector of the industry, and appropriate information for the recreational and traditional sectors. Unfortunately, such data continues to be elusive, although new data on the aquaculture sector (elaborated below) became available during the year.

Employment statistics produced by the Australian Bureau of Statistics (ABS) do not cover the industry in sufficient detail to be useful, and do not compare well against data collected in connection with boats, fishing licences and other forms of fishing regulation. For example, it is known that tuna aquaculture directly employs about 750 people in Port Lincoln, whereas the ABS reports only 310 for all aquaculture in SA. The ABS figure of 22,400 people directly employed during 1998 in "wild-catch, aquaculture and processing" is therefore viewed with some caution. The limited information provided by the ABS is not regularly updated, and was not updated in the past year. Alternative sources of data on direct employment in commercial wild-catch production and processing are presently unavailable.

During the year, the Aquaculture Industry Action Agenda stated that the aquaculture sector employs more than 7000 people directly and more than 20,000 people indirectly, and that during the last four years employment in aquaculture has grown by 260%, making it the sixth-fastest-growing occupation in Australia and the fastest-growing occupation within primary industries.

It has previously been estimated that employment in the commercial sector beyond production and processing — in the compliance, transportation, storage, wholesaling and retailing sectors — may well be as high as 80,000.

Until accurate information is available, the FRDC's broad estimate of commercial sector employment (wild-catch, aquaculture and all post-harvest processes) is between 100,000 and 120,000.

The FRDC-funded national survey of recreational and indigenous fishing showed that about 3.4 million Australians participate in fishing. The employment generated in support of that activity is not known.

Summary of final reports received for Program 2

Program 2 strategies (as on pages 123–125 of R&D plan)	No. of projects 2001–02	FRDC investment 2001–02	No. of projects last year	FRDC investment last year
Aquaculture development	17	$2,642,685	8	$1,039,000
Economic and social values of the industry and its impacts	1	$97,242	—	—
Fishing technology	2	$135,513	2	$257,000
Legislative, institutional, compliance and policy arrangements and their impacts	—	—	—	—
Market development	—	—	1	$98,000
Health and safety associated with fishing activities	—	—	—	—
Quality, food safety and consumer health	3	$774,193	3	$855,000
Value-adding	5	$133,463	9	$385,000
Total	**28**	**$3,783,096**	**23**	**$2,635,000**
Change	**+21.7%**	**+43.6%**		

Achievement of AOP targets

Achievements against the key performance indicators and measures specified for the program's planned outcome in the 2001–02 AOP are summarised as follows:

Key performance indicator	Performance measure	Achievement
Satisfactory economic performance	Improvement in performance with respect to the total production and export values of the commercial wild catch and aquaculture sectors, and the factors that contribute to those values	All such values increased
Satisfactory social performance	Improvement in performance with respect to employment deriving from the industry, and other social factors such as values placed on recreational and traditional fishing	It is highly likely that employment increased. Values placed on recreational and traditional fishing have been measured in a national survey but trends are not yet known.

SUMMARY OF PERFORMANCE

Most aspects of the AOP performance measures were met

A high priority for the FRDC is to invest in the personal development of potential industry leaders — part of the drive to continually improve the capabilities of people who are members of the industry or who work in support of it. People on the challenging Australian Rural Leadership Program (shown here during adventure activities in the Kimberleys) are among the more senior members of primary industries.

They extend into the industry the knowledge, skills and contacts derived from this valuable program.

R&D outcomes report — Program 2

Great R&D achievements through strong partnerships

The FRDC has invested in freshwater crayfish aquaculture R&D projects in Western Australia for the past eight years. Their planned outcome has been to improve profitability through understanding the husbandry and production factors that influence freshwater crayfish aquaculture.

The first project (1994/075) responded to farmers' concerns that within about two years of first trapping yabbies the average weight of harvested animals had dropped from 60–90 grams to below market size (30 grams). Genetics, husbandry and feeding were therefore intensively investigated. The findings now enable farmers to regularly produce yabbies in the 70–120 gram range.

Research results were made available to farmers as soon as possible through annual FRDC research seminars supplemented by research "roadshows" in rural areas and by attending industry field days. The techniques to grow bigger yabbies have been included in a yabby code of practice adopted by the industry.

A further project (1997/319) concentrated on feeding and management practices to enhance yabby production from farm dams — the highest priority of industry. Responding to high demand for extension, the research team set up an internet e-group that not only allowed them to work with farmers in remote regions but saved travelling expenses. A "farmer-friendly" version of the research, a small book *Yabby Farming — frequently asked questions* was also published.

Marron farmers then sought to similarly improve the performance of their crustacea using genetic and pond management strategies. This FRDC project (2000/215) is progressing well and follows the same philosophy of close industry-researcher cooperation developed in the yabby project. The mutual enthusiasm is shown by farmers volunteering to help build the research facility and by more than 50 per cent of WA's licensed marron farmers attending the first annual FRDC Marron Project research seminar and open day.

The technical achievements of these projects have been excellent, but any analysis would be incomplete if it did not acknowledge the huge personal investment of time, energy and skill by the project teams or the extent to which individual skills have been enhanced by the challenges of their tasks.

The projects' principal investigator, Dr Craig Lawrence, has been the leader in which the FRDC and the WA aquaculture sector have placed much trust. Craig and his colleagues are passionate about the industry they serve — but their passion is pragmatic and firmly based in reality. Craig has mixed high-quality science with an exceptional ability to communicate. He and his colleagues developed an intensive, hard-working style of teamwork that has endured since their first project.

"They tell me their problems and I try to come up with 'real world' practical scientific solutions."

Craig attributes his emphasis on personal leadership and communication to two important people who inspired his early career: Dr John Platt, a vet, and Dr Jeremy Langdon, the first fish pathologist in WA. He says "John and Jeremy taught me about scientific standards, altruism and ethics — lessons I try to put into practice today. Jeremy also suggested that if I really wanted to work in aquaculture I had to get to a top aquaculture university overseas". Soon, Craig was awarded a scholarship to study at the renowned Scottish aquaculture institution, the University of Stirling.

Back in Australia after travelling to study aquaculture sites around the world, Craig was greatly influenced by the other great western freshwater crustacean expert, Dr Noel Morrissy, who became his mentor at the WA Department of Fisheries.

Just as he appreciates the inspiration and knowledge imparted by these people, Craig appreciates the commitment of the FRDC in backing his research ideas: "Realistically, would you back a young, unknown scientist who had some strange idea that we could use the same approach in aquaculture as we have used to domesticate animals in agriculture, while improving feeding and management at the same time? Well, the farmers and FRDC did, which is why I see our relationship more as a partnership than a more formal scientists-and-industry arrangement. They tell me their problems and I try to come up with 'real world', practical scientific solutions. Our yabby research has raised farm incomes during a period of rural decline and has produced employment opportunities and income that has paid school fees, Christmas presents etc. It's great to be part of that."

Craig and his team exemplify the way in which the skills of the people who support the fishing industry have been developing during the past decade. Through their increasing capabilities, they are achieving great things for the industry — and as much through relationships that ensure R&D results are taken up by end-users as by the high-quality science they carry out.

Noel Morrissy

Louise Tidmarsh

Dr Craig Lawrence, whose leadership has allowed his research team to deliver outstanding improvements in productivity to the Western Australian yabby and marron aquaculture sectors. Very close working relationships with industry members have maximised project efficiency, extension of results and a clear focus on profitability.

Program 3: Human Capital Development

Strategic elements

FRDC planned outcome for this program:	The knowledge and skills of people in and supporting the Australian fishing industry, and in the wider community, are developed and used so that Australians derive maximum economic, environmental and social benefits from fisheries research and development.
Legislative source:	Object (c) of section 3 of the PIERD Act, which makes provision for the funding and administration of R&D with a view to making more effective use of the resources and skills of the community in general and the scientific community in particular.

This program is consistent with the following strategic elements of the Commonwealth Government, AFFA and industry.

Government R&D priorities:	**Improving our human resources**: Cultivating creativity and innovation among our human resources.
	Whole-of-industry approach: A whole-of-industry approach to production, processing and marketing to ensure an effective supply chain approach that maximises our competitive advantages.
AFFA portfolio outcome:	Australian agricultural, fisheries, food and forestry industries that are based on the sustainable management of and access to natural resources, are more competitive, self-reliant and innovative, have increased access to markets, are protected from diseases and pests, and are underpinned by scientific advice and economic research.
ASIC outcome:	Strong industry development, based on industry education and training as a catalyst for change and an investment in the future.
Recfish Australia outcome:	The skills of people in the recreational sector of the fishing industry are developed and used to achieve sustainable fishing practices, to enable fishers and their organisations to participate effectively in sustainable fisheries management, and to derive maximum economic, environmental and social benefits for the Australian community.

Note: Reporting in this section fulfils, among other things, the requirements of section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Further information on the EPBC Act is on page 146.

Principal inputs

During 2001–02, $0.96 million was invested in R&D activities within this program, through 25 projects listed in **appendix D** (page 152).

Principal outcomes and outputs

Projects funded under Program 3 primarily address the FRDC's planned outcome for human capital development. However, this outcome is also addressed, as a secondary but very important element, by projects within Programs 1 and 2.

HUMAN CAPITAL TO SUPPORT THE FISHING INDUSTRY

The R&D plan (at page 129) describes the focus of performance information for Program 3, the first of which is improvement of people. This relates to continual improvement in the capabilities of people who are members of the industry or who work in support of it — shown by indicators of leadership, performance and innovation.

The FRDC contributed significantly to developing the capacities of people in the industry and the R&D community by supporting the equivalent of 322 full-time people involved directly in R&D projects. In addition, 207 full-time equivalent staff were employed on FRDC projects through in-kind contributions of project partners. The FRDC has also continued to involve end-users directly in research projects, increasing their ability to undertake research and to maximise their utilisation of R&D results.

For new projects funded from 1 July 2002, staffing details are as follows:

Source	PhD / Master students	Honours students	Other staff	Total
FRDC funds	5	—	90	95
In-kind contribution	3.5	10	32.5	46
Total both sources	**8.5**	**10**	**122.5**	**141**

The skills and experience of the pool of leaders working within and supporting the fishing industry further increased during the year, including through the following development programs:

- the Australian Rural Leadership Program — 2
- the National Seafood Industry Advanced Leadership Program — 12
- the AFFA Science Awards for Young People — 1.

Both FRDC-funded participants in the Australian Rural Leadership Program (Mr John Harrison and Mr Ted Loveday) have senior leadership positions in, respectively, the recreational and commercial sectors of the fishing industry. They are very well placed to extend into the industry the knowledge, skills and contacts derived from the program.

The FRDC-funded National Seafood Industry Advanced Leadership Program is a "pilot" course from which seafood industry candidates for the higher-level Australian Rural Leadership Program may be selected.

COMMUNITY AWARENESS AND INVOLVEMENT

Community awareness and involvement relates to how the community supports the industry and the natural resources on which it depends and makes use of the industry's products — reflected in community awareness of fisheries natural resources and their sustainability; community involvement in fisheries and their management; and seafood consumption.

The difference that community awareness and involvement can make to achievement of outcomes was illustrated this year at forums held as part of projects investigating physical barriers to recruitment of fish and invertebrates. Farmers said that the research was changing their attitudes to improving fisheries and water quality, whereas in the mid-1990s conflict and lack of understanding had prevailed. Some landholders had offered flood-gated systems on their land for inclusion in the projects as a demonstration of commitment. In a heavily modified drainage system that one farmer had allowed to be manipulated, fish such as juvenile tailor were recruiting in large numbers.

The FRDC contributed to involving the community through:

- providing funds for a wide range of industry and non-government organisations to attend port visits and steering committee meetings during the Commonwealth fisheries policy review;
- providing funds for stakeholders (including recreational fishers, environment group members, ATSIC members, aquaculturists and commercial fishers) to participate in deciding on policies for reporting in keeping with ESD principles; and
- funding a national community survey to measure the extent of recreational fishing and related economic and social values.

Other Program 3 outputs

Outputs contributing to human capital development outcomes included:

- Brad Moore, who as an Honours student of Bob Lester worked on the parasites part of project 1998/159 "Stock structure of northern and western Australian Spanish mackerel", completed his thesis and received a First Class degree. This project has now produced two first-class and one second-class honours degrees.
- A review of the skills required of people who are members of fisheries Management Advisory Committees.
- Rock lobster and abalone forums, which gave opportunities to discuss future human capital development in these sectors.

The FRDC also published, with other organisations:

- (With the Women's Industry Network Seafood Community and ASIC) *Community Communication Guide* — a guide for individuals and groups who want to improve the industry's community relations, profile and future security on how to develop a community communication plan that addresses community perceptions and attitudes about the seafood industry.
- (With ASIC and Recfish) *From Antarctica to the tropics: a snapshot of the Australian fishing industry 2001* — a summary of Australia's fisheries resources, their users, Australian seafood production and trade, Australian seafood consumption and industry contacts.

At the launch of a community communication guide to help industry members to raise community perceptions (project 2001/310) are Judith Ham, Principal Investigator and Bob Pennington, President, South Australian Fishing Industry Council.

Congratulations to everyone at the FRDC on ten years of wonderful achievements and for the help extended to our fledgling organisation and to all other industry people and projects. Many would not have been able to get their projects off the ground without your inspiration and help.

— Gloria Jones, South Australian Women's Industry Network.

Summary of final reports received for Program 3

Program 3 strategies (as on page 129 of R&D plan)	No. of projects 2001–02	FRDC investment 2001–02	No. of projects last year	FRDC investment last year
Leadership development	4	$246,242	1	$321,000
Vocational development	2	$272,179	6	$893,000
Consumer education	1	$394,764	—	—
Community education	1	$83,628	1	$52,000
Community involvement	—	—	—	—
Total	**8**	**$1,022,765**	**8**	**$1,267,000**
Change	—	–19%		

Achievement of AOP targets

Achievements against the key performance indicators and measures specified for the program's planned outcome in the 2001–02 AOP are summarised as follows:

Key performance indicator	Performance measure	Achievement
People capability	Improvement in leadership and vocational capability	Programs developing leadership and vocational capability are increasing; more people are making themselves available for leadership roles
Community involvement	Increase in community awareness of fisheries natural resources and their sustainability; community involvement in fisheries and their management; and seafood consumption	Anecdotally, community awareness and involvement is growing: increasingly, community stakeholders are being represented on fisheries-related advisory committees

No new data on seafood consumption became available during the year

SUMMARY OF PERFORMANCE

Most AOP performance measures were met

R&D outcomes report

People development is the key to industry progress

Development of people, including through vocational training and leadership programs and succession planning, is a factor crucial to fishing industry progress. Illustrating the FRDC's role in stimulating human capital are these comments from people who have benefited from FRDC-funded personal development.

John Harrison: President Recfish Australia; Executive Officer of the Amateur Fishermen's Association of the Northern Territory

"If it were not for the FRDC, my current roles within the recreational fishing industry would be far more difficult. Their support of my development through involvement in various committees, workshops etc. has helped me to better understand the fishing industry as a whole. The FRDC recently sponsored me to undertake the Australian Rural Leadership Course, which has enabled me to expand my knowledge and understanding across a broad range of issues facing rural and regional Australia. It's vital that the investment by FRDC in their human capital program in the next few years is accelerated even further, particularly in the recreational fishing sector."

Jenny Shaw: Women's Industry Network Seafood Community director, WA; senior policy officer, Fish and Fish Habitat Protection, WA Department of Fisheries

"FRDC investment has boosted my professional development and is helping me to give much stronger support to the industry. Being on the Australian Rural Leadership Program gave me incredible opportunities to develop both personally and professionally. The FRDC's support of the Women's Industry Network Seafood Community is raising the profile of the many women who have been under-represented in decision-making, allowing them to influence the industry's future. And last but not least, the FRDC's R&D project for design and implementation of bycatch reduction devices in WA's prawn trawl fisheries — in which I'm involved — is greatly benefiting fishers, researchers and the community."

June Gill: RIRDC SA Rural Woman of the Year 2002; inaugural WINSC president

"Research has identified a need for the seafood industry to change its image from 'a bunch of blokes in boats' and to develop a more inclusive community base. I'm thrilled at the way the FRDC helped to broaden the Women's Industry Network Seafood Community nationally, enabling me and other women to make a much stronger contribution to fisheries stakeholders and ultimately to the community. The FRDC's vision for human capital development has also raised the awareness of women's roles in the industry. By sponsoring skills training, it is reducing the barriers which prevent women from making changes to their current roles.

The FRDC should be congratulated for investing in opportunities for people to be a part of the research and development that benefits the fishing industry so much."

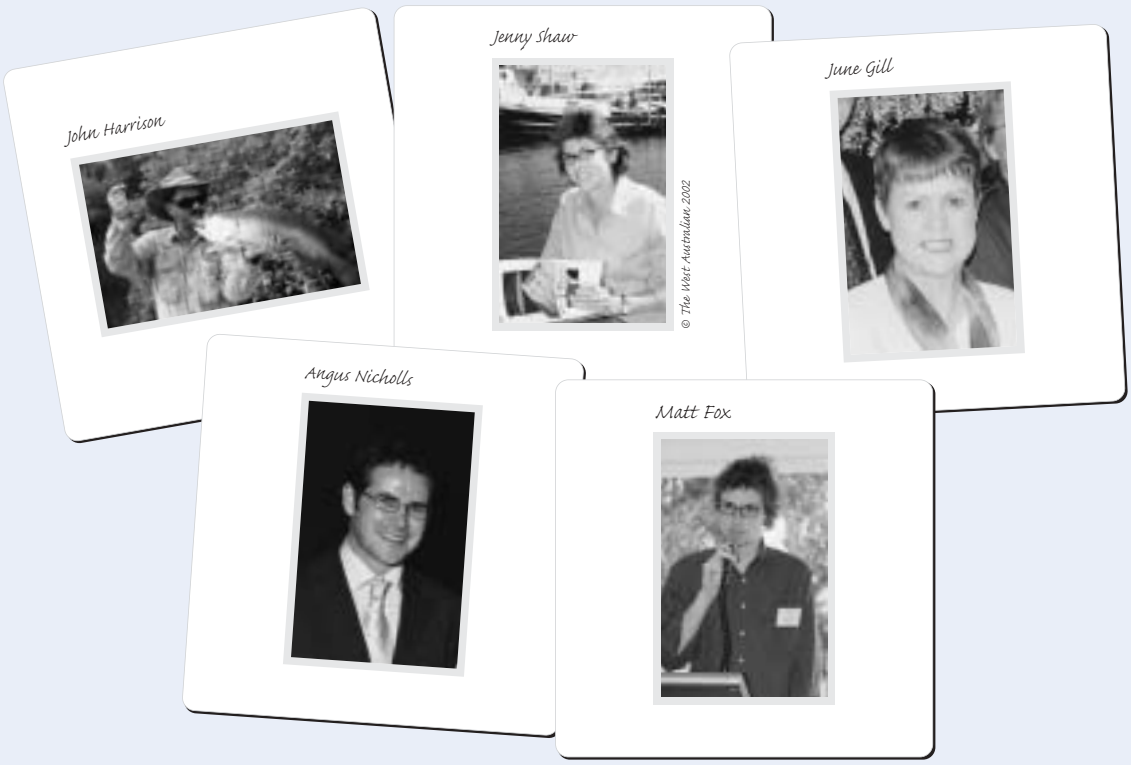
Angus Nicholls: adviser to Senator the Hon. Ian Macdonald, Federal Minister responsible for fisheries

"I come from a fishing family, having first been to sea as a four-year-old with my late father, Will Nicholls. Fishing has taught me a great deal about myself, primary industry, science, fisheries management, and now government. I've worked with many industry leaders, fisheries managers and scientists who have been extremely generous with their knowledge of the wild-catch and aquaculture sectors.

"In 2001 I joined people from a diverse range of backgrounds and sectors of the seafood industry on the National Seafood Industry Advanced Leadership Program, thanks to the FRDC. It was an enjoyable course — and above all it gave me an idea of the level of preparation and professionalism required to achieve in one's chosen field. I'm pleased to see the FRDC has recognised the need to develop human capital, and I'm sure that the current investments will have positive long-term effects."

Matt Fox: biologist working towards environmental improvement in fields including fisheries, waste management and coastal and biodiversity conservation

"FRDC sponsorship gave me the opportunity to further my development abroad as part of the 2001 AFFA Science Awards for Young People. During my travels I met dozens of individuals and organisations contributing to environmental improvement in their respective fisheries. The theme common to all successful initiatives I saw was not a technological one. Every time industry had successfully overcome a hurdle, there was a strong, organised community behind the decision-making process and a high degree of cooperation with the research or management body, often resulting in a cooperative management approach. The FRDC plays a very important role here in bringing people together, resolving conflicting viewpoints and disseminating information. Its approach to cooperative research has led to higher acceptance of final results by the industry."



Program 4: Management and Accountability

Strategic elements

FRDC planned outcomes supported by this program:	Under the Management and Accountability Program, the FRDC continually improves the activities through which it: ▸ plans, invests in and manages fisheries R&D throughout Australia; and ▸ facilitates the dissemination, adoption and commercialisation of R&D results. The FRDC's ISO-certified quality management system encompasses all these activities. Most Program 4 outputs do not lead directly to R&D outcomes but enhance the inputs of Programs 1–3 (the three R&D programs), as shown in figure 5 on page 36.
Legislative source:	Object (d) of section 3 of the PIERD Act, which makes provision for the funding and administration of R&D with a view to improving accountability for expenditure on R&D activities in relation to primary industries.

Principal inputs

During 2001–02, $2.6 million was invested in activities within this program.

Principal outcomes and outputs

Planned outputs for this program are continually improving management and accountability activities. Each year, information on explicit planned outputs is provided in the AOP.

Outputs achieved by the Management and Accountability program during the year were as follows, under headings of strategies specified in the R&D plan and, below those headings, against key performance indicators nominated in the AOP.

FISHERIES R&D LEADERSHIP

Strategy 1: To provide leadership in fisheries R&D.

The FRDC funded eight R&D projects during 2000–01 as a consequence of the Corporation's national leadership role:

- 2002/223 "National atlas of fishing activities and coastal communities"
- 2002/086 "ESD Reporting and Assessment Subprogram: development of Assessment Tools for the National ESD Framework — initial scoping exercise"
- 2002/233 "Seafood Services Australia Ltd: adding value throughout the seafood supply chain"
- 2002/303 "The establishment of a training resource and information service to underpin the successful adoption of EMS by the Australian seafood industry"
- 2002/304 "Seafood Directions 2003 — third biennial national seafood industry conference"
- National leadership — 2002/300, the Australian Rural Leadership Program, and 2000/301, the National Seafood Industry Advanced Leadership Program.
- 2002/231 "Occupational health and safety national extension strategy".

SUPPORT FROM STAKEHOLDERS

Table 2 shows the level of industry support of the FRDC as indicated by financial contributions during the year. Contributions are by jurisdiction, and within jurisdictions when special arrangements have been put in place in the form of memoranda of understanding or (in the case of prawn aquaculture) a compulsory levy.

TABLE 2: INDUSTRY CONTRIBUTIONS AND MAXIMUM MATCHABLE CONTRIBUTIONS BY THE COMMONWEALTH, 2001–02

	Maximum matchable contribution [see note 1]	Actual industry contribution	%
Commonwealth NPF	319,398	419,445	131%
Commonwealth other	760,602	657,402	86%
Commonwealth total	1,080,000	1,076,847	100%
NSW prawn aquaculture [note 2]	15,500	0	0%
NSW other	297,250	275,260	93%
New South Wales total	312,750	275,260	88%
NT prawn aquaculture [note 2]	[note 3]	0	0%
NT other	209,000	80,000 [note 4]	38%
Northern Territory total	209,000	80,000	38%
Qld prawn aquaculture [note 2]	94,000	44,107	47%
Qld other	523,750	525,000	100%
Queensland total	617,750	569,107	92%
SA tuna	527,078	315,089	60%
SA other	479,172	451,514	94%
South Australia total	1,006,250	766,603	76%
Tasmania salmon aquaculture	209,750	296,500	141%
Tasmania other	462,250	381,000	82%
Tasmania total	672,000	677,500	101%
Victoria total	250,250	217,711	87%
Western Australia total	1,705,500	866,977	51%
Total	5,853,500	4,530,005	77%

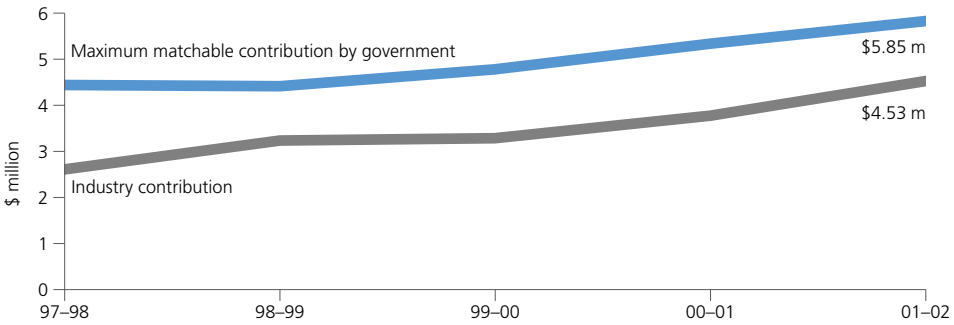
Notes:

1. 'Maximum matchable contribution' is the maximum amount to which the Commonwealth Government will match industry contributions in accordance with the criteria detailed on page 9.
2. Contributions refer only to Australian Prawn Farmers' Association levies and do not include moneys paid via government licences.
3. Production figures for prawn aquaculture are not available to the FRDC. Therefore, it is not possible to calculate the maximum matchable contribution.
4. The $80,000 was from the wild-catch sector, which contributed $112% of the maximum matchable contribution.

The $4.5 million industry contribution that was matched by the Commonwealth Government was 20% more than last year's contribution. This amount was only 77% of the maximum that was matchable by the Commonwealth Government,[13] and 2% above the 75% nominated in the AOP. The reasons — as in previous years — were that the gross value of production has increased from year to year and that, unlike other industry-based R&D Corporations, the FRDC lacks levy collection mechanisms for all fisheries other than Commonwealth fisheries and prawn aquaculture.

As a proportion of total FRDC revenue, industry contributions were 20%, the same as last year.

The following graph shows improvement in contributions over time:



The first compulsory levy mechanism was established during the year: a prawn farming levy, to be managed by the AFFA Levies Revenue Service, will invest funds in the FRDC to benefit prawn farming.

The FRDC has jointly developed a range of contribution mechanisms that are more suited to the individual preferences of various industry sectors. The development of memoranda of understanding for the southern bluefin tuna, Atlantic salmon and Northern Prawn Fishery has significantly increased R&D contributions from these sectors. Importantly, the sectors have confidence that their investments will result in benefit.

AOP performance measure was met

13 The 77% is an average resulting from payment of the full 0.25% of the average GVP by the Commonwealth and Tasmania and less than 0.25% by the remaining states and NT, as shown in Table 2. In some under-contributing states, however, there are fisheries that contribute 0.25% or more.

INFLUENCE OVER THE DEVELOPMENT OF STRATEGIC PLANS FOR FISHERIES R&D AT COMMONWEALTH, STATE, REGIONAL, FISHERY AND SPECIES LEVELS

Due largely to efforts by the FRDC — and particularly as a result of its FRAB workshops — the Commonwealth, all states, the Northern Territory and some regions and industry sectors, have R&D strategies in place.

A page has been included on the FRDC website listing strategic plans at state, region and industry sector levels, with hyperlinks to strategy documents and/or their managers.

The FRDC participated actively in the review of Commonwealth fisheries being undertaken by AFFA, especially in the section that examines fisheries R&D.

The FRDC has contributed views on aquaculture R&D as part of the National Aquaculture Agenda being managed by AFFA.

The FRDC plays a leading role in R&D priority-setting workshops, including two-yearly national FRAB workshops.

The results of FRDC-commissioned reviews of matters such as fisheries habitats, seagrass, fisheries sustainability indicators and wild-caught abalone continue to direct priorities for R&D. Similarly, the R&D plans developed under FRDC subprograms continue to direct priorities for these specific portfolios.

AOP performance measure was met

EFFECTIVENESS OF THE FRAB NETWORK AND OTHER FRDC-SUPPORTED STRUCTURES WITH RESPECT TO THEIR PARTICIPATION IN, AND CONTRIBUTION TO, THE FRDC'S PROCESSES FOR PLANNING, INVESTING IN AND MANAGING R&D

The FRDC continued to support the Commonwealth, state and Northern Territory FRABs by meeting a significant proportion of their operational costs up to a maximum of $20,000 per FRAB per year.

The FRDC contributed to the revision of four FRAB R&D plans (SA, Qld, Vic and NT).

In April 2002, the FRDC convened the sixth national FRAB workshop, which aimed to identify "best practice" in FRAB activities.

The Executive Director or one of the programs management staff participated in most FRAB meetings except those of the Northern Territory FRAB.

FRABs were consulted on all applications attributing benefit to their related fisheries or industry sectors before the applications were evaluated by the FRDC Board.

The proportion of applications received through the FRABs was 87% (142 of 163 applications), 7% above the AOP target of 80% and within 2% of last year's figure of 89%. Early involvement of FRABs in the development of national projects has achieved this result.

AOP performance measure was met

All applications submitted through the FRABs were consistent with fisheries R&D strategies.

AOP performance measure was met

The approval rate for applications received through the FRABs was 37%, which was 23% below the AOP target of 60%. The under-achievement, resulting from the high number of applications (163) that were received by the FRDC, reflects the fact that demand for funding is growing at a rate that exceeds the FRDC's capacity to invest.

The approval rate for applications that were not submitted through the FRABs was 38% (8 of 21 applications), significantly less than last year's achievement of 89%. These applications were submitted through alternative modes such as the Federal Budget Initiative for Aquatic Animal Health and FRDC subprograms.

AOP performance measure was not met

INFLUENCE OVER THE R&D EXPENDITURE OF OTHER FUNDING ENTITIES

Total actual investment in projects under FRDC management in 2001–02 was $57.1 million (up from $51.0 million last year). Of this, the FRDC invested $20.5 million (up from $17.9 million last year). The difference between these two amounts, $36.6 million, was the value of leverage resulting from the FRDC investment. The ratio of FRDC investment to leverage was 1: 1.8, unchanged from last year. In total, 768 projects were under management (an increase of 10%).

Other investors in projects under FRDC management included:

- research providers such as CSIRO, state fisheries research institutes, CRCs and universities;
- the fishing industry and industry partners, in the form of cash and in-kind contributions such as fishers' time and vessel usage, and proceeds from the sale of fish caught during projects; and
- other funding agencies such as other rural R&D corporations, the National Land and Water Resources Audit, the Australian Centre for International Agricultural Research and the Australian Research Council, the Australian Fisheries Management Authority and AFFA's Fisheries Resources Research Fund.

The FRDC is consulting with managers of other Commonwealth Government R&D programs to help evaluate projects targeting those programs and increase the FRDC's knowledge of R&D that is funded outside the FRDC's portfolio — currently 40% of Australia's R&D related to fisheries. Example of such programs, in which the FRDC now plays a part in project evaluation, are AFFA's Farm Innovation Program and AFFA's Fisheries Resources Research Fund.

The FRDC is a partner in the new Cooperative Research Centre for Sustainable Finfish Aquaculture, which has $16.5m in new Commonwealth funds and a total expenditure, including in-kind, of $71 million, of which the FRDC has contributed $6.2 million. The FRDC has a position on the Board and the FRDC subprograms for SBT Aquaculture and Atlantic Salmon are the key management advisory mechanisms reporting to the Board.

The FRDC has co-funded two projects with the National Oceans Office and has continued its historical funding relationship with AFMA, including co-investing in several AFMA research fund projects.

The FRDC, in partnership with AFFA, has been contracted to manage the funds for the Federal Budget Initiative for Aquatic Animal Health, amounting to $3 million over three years.

The FRDC is funding R&D projects jointly with other R&D corporations.

AOP performance measures were met

STRATEGIC INVESTMENT

Strategy 2: To invest in high-priority R&D that has the potential to deliver the highest benefits.

INVESTMENT IN HIGH-PRIORITY R&D AS IDENTIFIED BY STAKEHOLDERS THROUGH FRABS, MANAGED SUBPROGRAMS AND OTHER MECHANISMS

The FRDC has delivered high benefits to seafood industry development in recent years through separate R&D projects that have now become the focus of the newly incorporated company, Seafood Services Australia Limited. Further details are on pages 29, 54 and 55.

The number of high-priority applications received through the FRABs was 59; the number approved was 49, amounting to an approval rate of 83%.[14]

AOP performance measure was met

14 Two applications were deferred pending the outcomes of a conference; if approved, theses figures will be 51 and 59 = 86%.

INVESTMENT IN R&D PROGRAM STRATEGIES

Spending on each of the three R&D programs during the year was as follows:

R&D Program	Target (% of R&D outlay)	Spent (%)	Spent ($)
1: Natural Resources Sustainability	60%	59%	11,881,539
2: Industry Development	35%	36%	7,187,582
3: Human Capital Development	5%	5%	963,644
Sub-total	→	→	20,032,767
Commonwealth-funded aquatic animal health activities			421,719
Total	→	→	20,454,486

For further information, see 'Project expenditure by program', starting on page 152.

AOP performance measure was met

IMPACTS OF PROJECTS

Questionnaires were sent to 17 beneficiaries during the year, covering 8 completed projects. Beneficiaries included fisheries management agencies, fishing industry representative organisations, fishers, processors, aquaculturists and aquaculture managers.

AOP performance measure was met

RETURN ON INVESTMENT FOR NOMINATED HIGH-COST PROJECTS

As part of the FRDC's rolling program, benefit-cost analyses were conducted on five projects as nominated in the AOP. The results are summarised on the following two pages.

The FRDC is continuing to review the way in which future benefit-cost analyses will be undertaken to broaden their methods and reduce their cost.

AOP performance measure was met

Recently completed benefit-cost analyses

Benefit-cost analyses were conducted on five completed FRDC projects relating to the improved management of prawn farm effluent, commercial development of marine oils, resolution of taxonomic problems and production of a species identification guide in the South East Fishery, and a fishery-independent survey of the South East Fishery trawling grounds.

In most cases the analyses were more qualitative than quantitative, since it was not possible to place a value on the benefits attributable to the project.

Summaries of the five analyses follow.

1995/162 'Prawn farm effluent: composition, origin and treatment'

The peak industry body — the Australian Prawn Farmers' Association — considers that completion of the project and the effective extension services provided by the research staff has changed industry attitudes on the use of treatment ponds. Before the study, treatment ponds were virtually non-existent and effluent from farms was discharged directly into the receiving water supply. Now the aquaculture sector recognises the need for on-farm effluent management. Consequently, the use of appropriately designed treatment ponds forms part of the industry-developed environmental code of practice approved by the Queensland Minister for Environment in September 2001.

The change in attitude brought about by the project — and the subsequent inclusion of treatment ponds in applications for new farm developments — has reduced the time needed to assess new licence applications in some regulatory agencies. If such a time saving were to accelerate the overall approval process, an additional $17,200 in economic benefits would be generated in the form of profit and employment for every hectare of pond that is brought into production a year earlier than would have occurred otherwise. However, given the number of local, state and Commonwealth agencies involved in approving a prawn farming application and the variety of factors that determine the time required to approve an application, it is not possible to estimate the extent to which these potential benefits can be directly attributed to the project.

Completion of the project enables the environmental impacts of prawn farming to be quantitatively compared with the impacts of alternative uses of that land, such as cane farming. These comparative analyses enable government planning agencies to move towards developing land management plans for complete river catchment areas, opening the door to improved land-use planning and decision-making.

1991/077 'Orange roughy and other marine oils: characterisation and commercial applications'
1994/115 'Marine oils from Australian fish: characterisation and value-added products'

The economic benefits attributable to these two projects are defined by the extent to which the information generated during the projects hastened the successful commercialisation of products and/or techniques that otherwise would not have been developed.

The commercial development of the Australian marine oils industry has been slow. Few companies are involved, several of which are yet to prove their commercial viability. Given the uncertainty of predicting future profitability of those companies most influenced by the projects, no attempt was made to quantify potential future benefits.

The projects provided valuable technical extension services to the marine oils industry and the fishing industry more generally — 54 individual reports were prepared for 10 industry clients in the three years 1994–97.

The projects generated a number of non-quantifiable benefits such as increased demand — hence higher prices to fishers — for shark livers and a greater understanding of the oil characterisation of different Australian fish species. The projects were also a precursor to a subsequent FRDC project identifying the nutritional value of individual Australian seafood species.

1994/152 'Resolution of taxonomic problems and preparation of a user friendly guide to whole fish and fillets for the quota species of the South East Fishery'

Demand for the identification guide for South East Fishery (SEF) quota species has been strong, and about 1000 copies are in circulation. Anecdotal reports indicate the guide is being used in a variety of ways — as a teaching resource, as a technical reference book by scientific observers, as a general reference book by people involved in the fishery, and as an aid to marketing.

The two techniques developed to identify fillets of SEF species are not being used — fisheries compliance officers deal mostly with whole fish and have had little need to verify the identify of fillets, and there is little regulatory monitoring at present to ensure that fillets are correctly labelled. Nonetheless, value remains in having the techniques available should the current situation change.

Completion of the project has led to an improvement in SEF fisheries data. However, the marginal value of improving the quality of SEF data, and in the subsequent strengthening of stock assessments for individual SEF species, is not readily quantifiable. The same applies to valuing the taxonomic information obtained during the project.

Despite these limitations, commonsense rather than benefit-cost analysis appears sufficient justification to support the production of a definitive species identification guide to assist fishers, compliance officers and scientific observers to distinguish between the different quota and non-quota species.

The strong demand for the species guide, the universally positive perceptions of the guide from individuals contacted during the course of this analysis, and the diverse ways in which the guide is being used, signify the usefulness of the identification guide and the value of the project.

1996/139 'Changes after twenty years in relative abundance and size composition of commercial fishes caught during fishery independent surveys on south-east fishery trawl grounds'

This project involved the replication of a previous research survey undertaken on the NSW upper-slope trawl fishing grounds in 1976/77. The repeat survey (project 1996/97) used the same vessel and fishing gear and trawled the same grounds at the same time of the year as in the initial survey. The objective of the project was to determine differences in catch rates between the two surveys and provide an indication of changes in relative abundance of the various South East Fishery (SEF) species over that 20-year period along the eastern boundary of the fishery (Sydney to Eden), providing an independent snapshot of this area. The analysis concluded that there was no evidence that the project outputs had been used by managers to adjust catch levels.

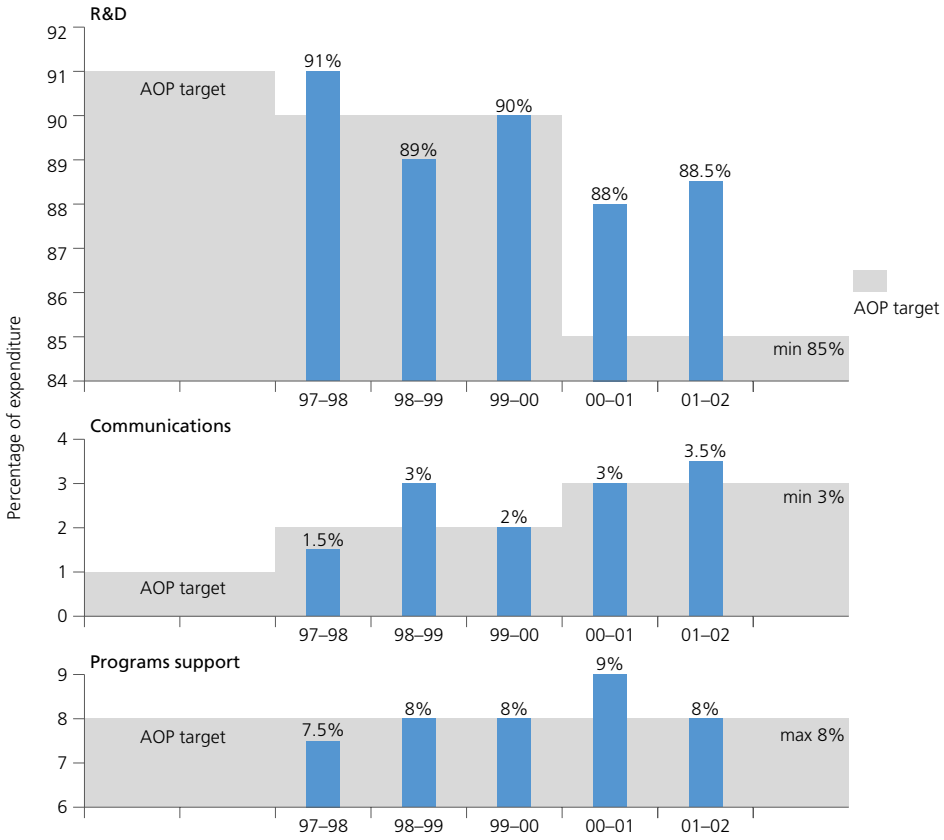
There is growing awareness among SEF stakeholders of the potential benefits of some form of fishery-independent survey in the SEF. This project demonstrates that if potential benefits are to be realised, key stakeholder groups must be engaged effectively when the survey design is being developed and when survey results are being considered. The project results and methodology will be considered in a current FRDC project to examine independent surveys utilising SETF vessels (project 2002/072, 'Assessing the feasibility of an industry-based fishery-independent survey of the South East Fishery'). The project results were also incorporated into an assessment of deepwater dogfish resources and considered in management and modelling scenarios for the fishery.

EFFECTIVE, EFFICIENT MANAGEMENT

Strategy 3: To develop and maintain effective, efficient, open and accountable management procedures and systems.

MAXIMUM FRDC EXPENDITURE ON R&D PROGRAMS

The proportions spent on each of the three expenditure classifications were:



Note: Communications expenditure includes extension activities undertaken by the Secretariat. Programs support expenditure includes all other activities undertaken by the FRDC, including all salaries and operating expenses of the Secretariat and the Board.

The FRDC received $266,213 of revenue from interest, sales and cash paid direct to the FRDC by other parties, including commercial collaborators in projects.

AOP performance measures were met

RESULTS OF EXTERNAL FINANCIAL AND QUALITY AUDITS

The August 2002 audit report by the Australian National Audit Office confirmed that the FRDC's 2001–02 financial statements gave a true and fair view of the financial position of the FRDC.

All programs management and administrative procedures have been documented. They were audited in October 2001 by an external quality auditor, Quality Assurance Services Pty Ltd.

Previously, the FRDC's quality management system was certified to AS/NZS ISO 9002:1994. During the year, the FRDC achieved certification to a newer standard, AS/NZS ISO 9001:2000.

The Australian National Audit Office conducted an on-site audit of the FRDC's aquatic animal health activities.

The Australian National Audit Office commented favourably on the integration of financial and project management on the FRDC's project management information system, *Fishbase*.

R&D corporation executive directors, program managers, business managers and communications managers met throughout the year to examine how efficiencies could be achieved by corporations individually or collectively.

The FRDC collaborated with all other R&D corporations in a project to identify best practice in the corporations' program reporting.

AOP performance measures were met

ACCOUNTABILITY TO INDUSTRY, GOVERNMENTS AND OTHER STAKEHOLDERS

The 2000–01 annual report was presented to the Minister on time for tabling in the Commonwealth Parliament.

The FRDC's two representative organisations (the Australian Seafood Industry Council and Recfish Australia) accepted the FRDC's 2000–01 annual report at their respective annual meetings.

The FRDC meets its obligations to be accountable to its stakeholders through many mediums. For example, key elements of this annual report are repeated in each January edition of *R&D News*. Prominent among them is the following table showing the return on industry investment in R&D through the FRDC. Accountability in this respect accords with the Minister's direction for spending industry contributions (page 100).

TABLE 3: CONTRIBUTIONS AND R&D INVESTMENT BY JURISDICTION; RETURNS ON CONTRIBUTIONS

Fisheries managed by:	Period	Maximum matchable contribution (0.25%) [see note 1]	Actual industry contribution ($) (Amount A)	Distribution of FRDC R&D investments ($) (Amount B) [see note 2]	Return on contribution (B : A)
C'wealth	2001–02:	1,080,000	1,076,847	2,810,955	2.6 : 1
	5-yr running total:	4,516,345	4,196,056	13,692,238	3.3 : 1
NSW	2001–02:	312,750	275,260	1,848,444	6.7 : 1
	5-yr running total:	1,532,250	1,145,136	9,278,810	8.1 : 1
NT	2001–02:	209,000	80,000	860,493	10.8 : 1
	5-yr running total:	918,000	290,400	3,115,394	10.7 : 1
Qld	2001–02:	617,750	525,000	2,755,130	5.2 : 1
	5-yr running total:	3,129,500	2,305,000	13,840,029	6.0 : 1
SA	2001–02:	1,006,250	766,602	3,470,259	4.5 : 1
	5-yr running total:	3,375,000	2,627,556	11,688,896	4.4 : 1
Tas	2001–02:	672,000	677,500	2,557,625	3.8 : 1
	5-yr running total:	2,766,750	1,660,050	8,235,034	5.0 : 1
Vic	2001–02:	252,250	217,711	1,538,242	7.1 : 1
	5-yr running total:	1,106,000	1,058,309	6,273,680	5.9 : 1
WA	2001–02:	1,705,500	866,977	4,233,091	4.9 : 1
	5-yr running total:	7,455,250	4,052,027	15,939,781	3.9 : 1

Notes:

1. 'Maximum matchable contribution' is the maximum amount to which the Commonwealth Government will match industry contributions in accordance with the criteria detailed on page 9.
2. Distribution of FRDC R&D investments is based on the estimated flow of R&D benefits to the respective fisheries.

For every dollar that industry contributed to the FRDC during the past year, the FRDC invested almost four dollars in R&D that benefited the contributor.

AOP performance measures were met

REGARD FOR THE VIEWS AND PRIORITIES OF STAKEHOLDERS AND RESEARCH PROVIDERS IN THE DEVELOPMENT OF R&D PROGRAMS, POLICIES AND PROCEDURES

The 2000 edition of the R&D plan and the 2001–02 annual operational plan incorporated the R&D priorities of the Commonwealth Government, AFFA and the FRDC's two representative organisations. In disseminating the 2000 edition of the R&D plan, the FRDC consulted many of its stakeholders to seek more effective utilisation of fisheries R&D outputs.

Relevance to Commonwealth, state and NT strategies remains a significant criterion for evaluation of R&D applications.

The Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry approved the FRDC's annual operational plan.

AOP performance measures were met

EXTERNAL ENTITIES' COMPLIANCE WITH PROGRAMS MANAGEMENT PROCEDURES

Three applications out of 163 were received later than the required submission date, 1 December 2001. Significantly, with many applications the FRDC had played a role in their development as a result of being involved in related strategic planning.

The proportion of applications that complied with the FRDC's R&D application procedure was 95%, equal to the target. The FRDC application process has become an influential standard for other funding sources including AFFA's Fisheries Resources Research Fund and the AFMA Research Fund.

More than 95 per cent of R&D applications were lodged via the FRDC's electronic application process, FRDC WebApp.

FRDC staff examined the financial management systems of 8 research institutions; 21 projects were audited. All met FRDC requirements.

AOP performance measures were met

COMMUNICATION AND EXTENSION OF RESULTS

Strategy 4: To make R&D results widely known, and to facilitate their adoption and commercialisation.

DISSEMINATION OF R&D RESULTS AND THEIR AVAILABILITY

During the year, 74 final reports were received from FRDC-funded projects: 38, 28 and 8 respectively for Programs 1–3.

The FRDC instigated a newsletter, *Researcher Update*, to communicate more effectively with researchers.

Post-project evaluations and benefit-cost analyses have been used to review activities and ensure that investment is targeted on applications in areas that return positive benefits to the industry.

Most research providers are widely distributing final reports to beneficiaries in accordance with FRDC policy.

Knowledge generation from fisheries R&D was high, but knowledge translation continues to lag. The FRDC continues to develop new methods to ensure that investments are outcome-focused. Staff have given talks nationally on the need for research providers and stakeholders to develop planned outcomes and to emphasise adoption pathways. When evaluating applications, the Board carefully examines proposed adoption methods.

Databases, if they are comprehensive, up to date and accessible, are extremely valuable in ensuring that R&D results are extended and duplication of R&D is minimised. Applicants for FRDC funding are making extensive use of three databases on completed and in-progress R&D, which are accessible via the FRDC website. Grouped together as the Australian Natural Resources Online (ANRO) databases, they are: *Australian Rural Research in Progress*, the *Australian Bibliography of Agriculture*, and the *Aquatic Science Fisheries Abstract*. To help to ensure that the databases continue to be accurate and accessible, the FRDC is contributing to development of ANRO and the Executive Director is a member of the ANRO committee.

The FRDC also makes its project management database software, Fishbase, available to other organisations.

The FRDC website is now one of FRDC's key communication tools, providing a variety of users with comprehensive information on how the FRDC plans, invests in and manages fisheries R&D. Information on the funding cycle and application process is now more accessible to potential applicants. A catalogue of publications resulting from FRDC-funded projects is available, and the website is hyper-linked to related websites developed by FRABs. Information on completed projects and new products is updated regularly so that stakeholders have access to the latest results from R&D investment. Non-technical summaries of all R&D projects are also on the website.

Four editions of *R&D News* were published during 2001–02. An average circulation of 33,000 was achieved for each edition by distributing the magazine as an insert to industry magazines; at trade events, conferences and workshops; and by direct mailing. Details of the FRDC's planned outcomes and R&D priorities, and other information on the FRDC's programs management and R&D application procedures, were published. Articles were also published on the relationship between voluntary funding and the activities of the FRDC. This included information on the return on investment that stakeholders received and the benefits this investment had on whole-of-chain industry development.

Four issues of 'R&D News', each of 33,000 copies, were distributed, mainly through industry magazines.

The FRDC was recognised in a variety of publications: industry magazines, state and national newspapers, state seafood industry council magazines and newsletters, scientific publications and press releases. Coverage included a centrepiece article in *The Financial Review* on abalone aquaculture and the role the FRDC Abalone Aquaculture Subprogram plays in developing this industry.

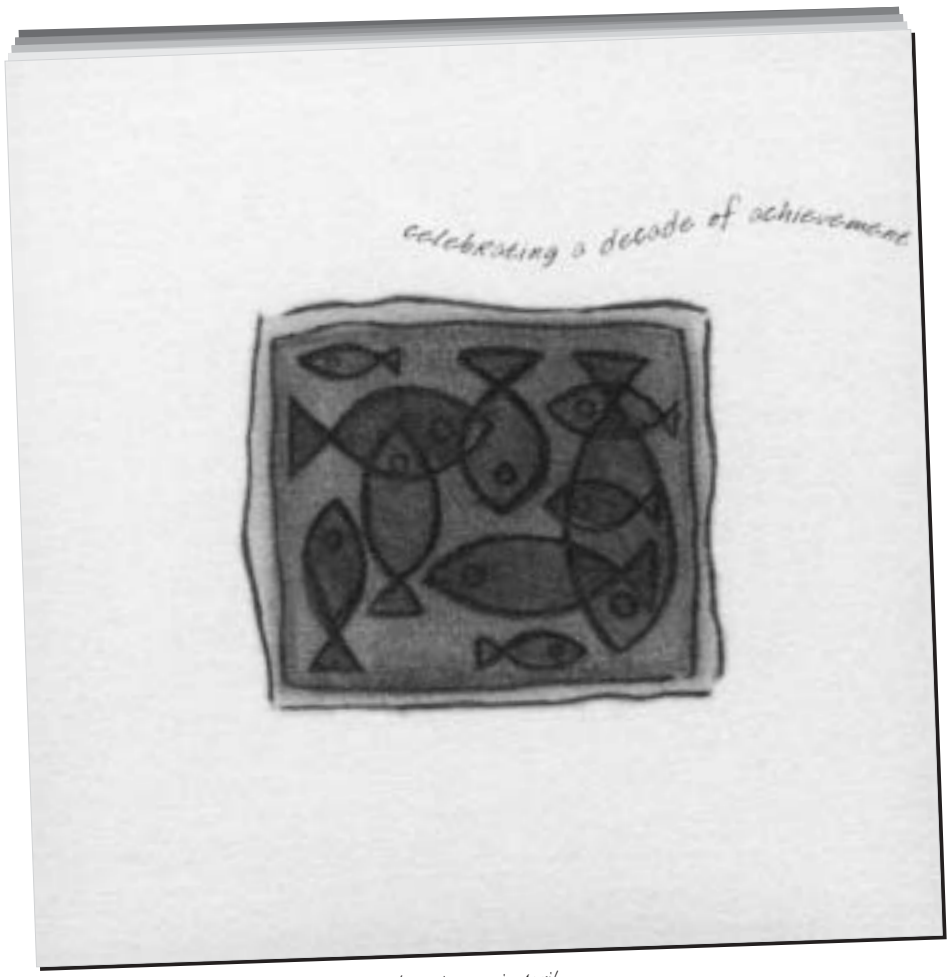
AOP performance measures were met

INFLUENCE OVER THE ADOPTION OF R&D RESULTS BY STAKEHOLDERS, ESPECIALLY POTENTIAL BENEFICIARIES

The FRDC added two new subprograms to its portfolio: ESD Reporting and Assessment, and Aquatic Animal Health. [Managed subprograms provide a higher level of project management that includes strong emphasis on adoption of R&D results. Further details are on pages 139–140 of the R&D plan.]

The FRDC adopted a new policy and procedures for extension of the results of R&D and for intellectual property management. Each new project is now categorised according to its likely communication, extension or commercialisation requirements. To ensure that projects adopt appropriate communication and extension activities, applications must include a communication and extension plan.

AOP performance measures were met



A fold-out brochure, launched for the FRDC's tenth anniversary in April, described the Corporation's principal achievements during the decade.

Report of operations

Part 3: Corporate governance

This final part of the report of operations covers:

The FRDC's commitment to good corporate governance

"Governance" refers to processes by which organisations are directed and controlled — also encompassing 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.[15]

The Board and staff are committed to ensuring good corporate governance of the FRDC. In doing so, the focus is on structures, processes, controls and behaviour, as follows.

Structures

The FRDC's vision, mission, planned outcomes, outputs and related strategies originate in the objects contained in section 3 of the PIERD Act, described on page 147.

The FRDC's organisation is shown in **figure 2** on page 8. Ten staff cooperatively manage the functions of programs, business, communications, and quality. Staff names and titles are shown on page 102.

The FRDC has no fully owned subsidiaries. Its major activities and facilities are located in Canberra.

A number of structures reinforce effective and ethical performance by the FRDC in addition to a fundamental operating philosophy of openness and accountability to stakeholders. At a legislated level, a key structure comprises the FRDC's two representative organisations — the Australian Seafood Industry Council and the Australian Recreational and Sport Fishing Industry Confederation, trading as Recfish Australia. The FRDC reports annually to both organisations and continually interacts with them. At a non-legislated level, the network of Fisheries Research Advisory Bodies (covering the fisheries of the Commonwealth, each state and the Northern Territory), which external to the FRDC although financially supported by the Corporation, are an invaluable source of advice and assistance for achieving effective, efficient R&D investment. Other sources of advice are steering committees at project and subprogram level, conferences, workshops and meetings.

15 Adapted from Australian National Audit Office 1997, *Applying Principles and Practice of Corporate Governance in Budget Funded Agencies*, [online] http://www.anao.gov.au

The Board of Directors

The Board comprises nine directors who are appointed, in accordance with sections 17 and 77 of the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act), as follows:

- The Chair and the Government Director are selected and appointed by the Parliamentary Secretary.
- The Executive Director is appointed by the Board on terms and conditions determined by the Board.
- The other six directors are appointed by the Parliamentary Secretary on the nomination of a selection committee. The Minister appoints the selection committee based on nominations from the FRDC's representative organisations.

Directors are selected on the basis of their expertise in one or more of the following fields:

- commodity production,
- commodity processing,
- marketing,
- conservation of natural resources,
- management of natural resources,
- science,
- technology and technology transfer,
- environmental and ecological matters,
- economics,
- administration of research and development,
- finance,
- business management,
- sociology, and
- government policy and public administration.

Directors are appointed for a term not exceeding three years, except for the Government Director, who holds office at the Minister's pleasure, and the Executive Director, who holds office at the Board's pleasure. All directors except the Executive Director are appointed on a part-time basis.

A finance and audit committee and a remuneration committee, and other committees of the Board as deemed necessary from time to time, act on the Board's behalf. Appropriate committees are also established to ensure that projects are properly guided and that industry and government funds are wisely spent.

The Board ensures that FRDC staff are provided with strong leadership, and that their qualifications, skills and experience are enhanced with formal, and on-the-job, training.

Details of the directors who held office during the year are shown on the following pages. Dr Russell Reichelt was Chairman until 31 December 2001; he was succeeded by Mr Denis Byrne on 1 January 2002. Mr Peter Dundas-Smith is the only executive director.

MR DENIS BYRNE:

Chairman (non-executive) from 1 January 2002

Chairman of the FRDC since his appointment to the Board on 1 January 2002.
Chairman of the Remuneration Committee from 1 January 2002.

Denis Byrne is a commercial lawyer and consultant with wide corporate, infrastructure and resources experience. Formerly Managing Partner of Freehill Hollingdale & Page, he has been President of the Queensland Law Society and the Law Council of Australia. He has lectured extensively on corporate governance.

Denis has been a member of the Takeovers Panel since 1997 and was recently appointed to the New Zealand Takeovers Panel: these panels adjudicate on disputes in takeovers of publicly listed companies. He chairs the Queensland Gas Appeals Tribunal, Downlands College Foundation and Starlight Children's Foundation in Queensland. He is a director of Total Care Technologies Pty Ltd and Birkdale Nursery Holdings Pty Ltd.

Denis served on the Prime Minister's Rail Projects Taskforce and on the Wool Working Party, which was involved in determining the level of wool tax payable by wool producers. He chaired industry committees to devise a single entity to deliver horticulture R&D and marketing services. In early 2001 he became a director of the resulting company, Horticulture Australia Ltd.

DR RUSSELL REICHELT:

Chairman (non-executive) until 31 December 2001

Chairman of the Corporation since his appointment to the Board in 1995 until 31 December 2001.
Chairman of the Remuneration Committee until 31 December 2001.

Russell Reichelt has a background in marine scientific research, R&D management and providing interpretations of scientific results for industry and policy makers — especially in fisheries management. He is the Chief Executive of the CRC Reef Research Centre. Previously he has been CEO (Director) of the Australian Institute of Marine Science, and before that he was head of the Fisheries Resources Branch within the Bureau of Resource Sciences in the Commonwealth Department of Primary Industries and Energy.

Russell became chairman of the board of directors of Seafood Services Australia Ltd on 25 October 2001.

Russell has a PhD from the University of Queensland, where he now holds an adjunct professorship. He is also an adjunct professor of James Cook University, chairman of the National Oceans Advisory Group and a member of the State of Environment Committee for Australia. He has a Diploma of Company Directorship, and is a Fellow of the Australian Institute of Company Directors.

MR SANDY WOOD-MEREDITH:
Deputy Chairman (non-executive)

Appointed to the Board in 1997.

A commercial fisherman for 30 years, Sandy Wood-Meredith has fished in most states and has extensive knowledge of fishing operations, quality assurance, and local and overseas seafood marketing. He is Managing Director of Wood Fisheries Pty Ltd and a director of De Brett Holdings Pty Ltd.

Sandy is an Honorary Ambassador for Trade for the Maroochy Shire. He has been honoured as an "export hero" by the Australian Institute of Export. He is also a graduate of the Australian Rural Leadership Program.

MR SIMON BENNISON:
director (non-executive)

Appointed to the Board in 1997.
Chairman of the Finance and Audit Committee.

Simon Bennison's extensive experience in the aquaculture industry has been gained, in part, as a producer for 19 years. He has been the Executive Director of the Aquaculture Council of Western Australia for the past ten years, has represented the aquaculture industry on the National Aquaculture Council since its inception, and was a director of the Western Australian Fishing Industry Council for eight years.

Simon is the chairman of the Yabby Producers Association of WA and a member or executive officer of several other producer associations. He is a member of the Australian Shellfish Quality Assurance Committee, the Fish Health Management Committee and the National Aquaculture Development Committee. He is a former chairman of the WA Fishing Industry Training Advisory Board. He has been involved in many projects relating to industry and market development.

A science graduate of Curtin University, Simon maintains a strong interest in the development and management of aquaculture industries and their environment in Australia. He also has ten years' experience in the mining industry in environmental management.

MR IAN CARTWRIGHT:
director (non-executive)

Appointed to the Board in 2001.

Ian Cartwright has had a lifetime association with the fishing industry: initially in inshore fishing and, after coming ashore, through a career in fisheries education and management.

Formerly, Ian was Director of the Faculty of Fisheries and Marine Environment at the Australian Maritime College and most recently held the post of Deputy Director of the Forum Fisheries Agency in Honiara, Solomon Islands. Currently he is a fisheries consultant working within Australia and the Asia-Pacific region. He is also chairman or member of several fishery advisory groups. He has an honours degree in fisheries science and a master's degree in economics.

DR DIANA DAY:
director (non-executive)

Appointed to the Board in 1995.
Member of the Finance and Audit Committee.

Diana Day is a research and management specialist in land and water resource systems, with expertise in natural resources security and environmental futures. She is a director of the Sugar Research and Development Corporation and has held directorships of the Land and Water Resources Research and Development Corporation and the Grape and Wine Research and Development Corporation. She is a member of the council of the Australian Maritime College. Former appointments include senior research fellow in Environmental Management with the University of Newcastle, and senior policy strategist with the NSW Department of Land and Water Conservation.

Diana has led many cross-sectoral and multi-disciplinary research and executive management programs in university, private sector and government spheres. She has wide experience of developing community and stakeholder consultation and extension programs in the primary industries sector, and has been involved in developing industry and government research and strategy plans.

Diana holds a Doctorate of Philosophy in catchment and river geomorphology, hydrology and water quality, an honours degree in geography and a Diploma in Education. She is a Fellow of the Australian Institute of Company Directors and is a member of the Environment Institute of Australia and the International Water Resources Association.

MR DAVID NEWTON:
director (non-executive)

Appointed to the Board in 2001.
Member of the Remuneration Committee.

David Newton is a company director and bio-technology consultant with a background in chemicals and human, plant and animal health. He is a principal of Melbourne BioBusiness and a director of Boron Molecular Pty Ltd, Stem Cell Sciences Limited, Stem Cells KK [Japan], and Nuplex Industries Limited. He is a member of the Advisory Board of the Monash University Research Institute of Reproduction and Development, a member of the Advisory Board of the Animal Gene Resource Centre, and a member of the French-Australian Industrial Research Committee.

David was formerly Chief Executive Officer of the Rhône-Poulenc Group in Australia, Commercial Director of Coopers Animal Health, UK, and General Manager of ICI Australia's Biologicals Businesses. He has also undertaken a consultancy on salmon cultivation in Victoria. He brings to the FRDC senior management experience at board and management level, an understanding of bio-technology and its implications, project selection and management skills, and experience in community consultation.

MR BILL SAWYNOK:
director (non-executive)

Appointed to the Board in 1997.
Member of the Remuneration Committee.

Bill Sawynok has wide experience in recreational fisheries spanning 30 years. For the last six years he has been manager of InfoFish Services, which provides an information service on recreational fishing. Before that, he was a senior regional manager in what is now the Queensland Department of Natural Resources and Mines, dealing with a range of natural resources management issues. He has a background in surveying, mapping and geographic information systems.

Bill is a director of the Cooperative Research Centre for the Great Barrier Reef World Heritage Area, a director of the Australian National Sportfishing Association and a member of several organisations related to the recreational sector of the fishing industry. Through the Australian National Sportfishing Association he established Austag, a program for recreational fish tagging and catch-and-effort data collection that now operates in all states.

Bill is involved in recreational fishing, and he maintains an active role in catchment management and natural resources research in the Fitzroy Basin in Queensland.

DR DEREK STAPLES:
Government Director (non-executive)

Appointed to the Board in 1999.

Derek's background is in marine biology. Before joining the Bureau of Rural Sciences (BRS), he worked as a research scientist with CSIRO, focusing on research to support the management of Australia's Northern Prawn Fishery and the sustainable development of prawn aquaculture. Currently he is the Deputy Executive Director of BRS and has a part-time position as the Chief Scientist of the Australian Fisheries Management Authority. His major interests lie in the fields of resource assessment, evaluation of natural resource management performance and marine/land-use planning. A current interest is understanding and measuring progress towards achieving sustainable development of natural resource industries.

As well as working for CSIRO and BRS, Derek has worked as a consultant in several Asian countries and has represented Australia in a range of regional fisheries management bodies and advisory groups.

Derek has a Doctorate of Philosophy from the University of Canterbury, New Zealand, and a post-doctoral diploma from the Tokyo University of Fisheries, Japan.

MR PETER DUNDAS-SMITH:
Executive Director

The Corporation's inaugural Executive Director, appointed in 1992.

Immediately before his appointment, Peter Dundas-Smith was a senior manager with Telecom Australia and, before that, an RAAF Wing Commander. In these roles he had wide experience of large-scale project management, logistics and human resources management, and strategic planning. He has held several tourism posts in the ACT and NSW, and has been Vice President of the Australian Fisheries Academy. He has extensive knowledge of the operations and interests of the commercial and non-commercial components of the fishing industry, and of the research sector. He is a director of the Cooperative Research Centre for Sustainable Aquaculture of Finfish and of Seafood Services Australia Ltd, and serves on a number of industry-related advisory bodies.

Peter is a graduate of the Advanced Command and Staff Course of the RAAF Staff College, holds a Graduate Diploma in Management Studies and a Diploma of Company Directorship, and is a Fellow of the Australian Institute of Company Directors.

Board meetings and visits

During 2001–02 the Board held five meetings as follows:

Date	Location and main activities
13–14 August 2001	Port Stephens.
	Evaluated R&D applications; considered 2000–01 annual report, including the 30 June 2001 financial statements; reviewed the FRDC communications strategy 2001–02.
	Visited Port Stephens Research Centre, oyster farms, offshore snapper cages, an onshore barramundi farm and an experimental pearl farm.
	Met with industry and government representatives and researchers; discussed industry issues and R&D opportunities.
26–30 November 2001	Brisbane.
	Evaluated R&D applications.
	Participated in the *Seafood Directions 2001* conference.
	Attended a number of meetings held in association with the *Seafood Directions 2001* conference such as the ESD Reference Working Group, the Marine Stewardship Council and the Seafood Services Australia Network.
4–6 March 2002	Canberra.
	Preliminary evaluation of 2001–02 R&D applications; considered 2001–02 draft annual operational plan.
	The Chairman attended a meeting of chairs of R&D corporations.
15–18 April 2002	Canberra.
	Further evaluated 2001–02 R&D applications; finalised 2002–03 annual operational plan and FRDC component of AFFA's portfolio budget statement.
	Attended celebrations of FRDC's decade of achievement and the sixth national FRAB workshop.
20–25 May 2002	Darwin.
	Evaluated R&D applications; considered draft 2001–02 annual report; reviewed the Executive Director's remuneration.
	Participated in the 3rd World Recreational Fishing Conference.
	Met with industry and government representatives and researchers, discussed industry issues and R&D opportunities.
	Visited the NT Fisheries Aquaculture Centre and a crocodile farm.

Directors' attendance at the Board meetings was as follows:

Dr Russell Reichelt	2*	Dr Diana Day	5
Mr Denis Byrne	3*	Mr David Newton	5
Mr Sandy Wood-Meredith	4	Mr Bill Sawynok	5
Mr Simon Bennison	5	Dr Derek Staples	5
Mr Ian Cartwright	5	Mr Peter Dundas-Smith	5

* [Maximum attendance that was possible during the director's tenure]

The Chairman approved all absences from Board meetings in accordance with section 71 (2) of the PIERD Act.

The Board's Finance and Audit Committee held two meetings as follows:

13 August 2001	Examined the 30 June 2001 financial statements; reviewed the draft 2000–01 annual report for legislative compliance; made appropriate recommendations to the Board.
3 March 2002	Met with Acumen Alliance (internal auditors) and ANAO (external auditors); reviewed the Internal Audit Plan 2001–02; reviewed ANAO's audit strategy; examined the 31 December 2001 and 31 January 2002 financial statements; reviewed the 2002–03 budget for incorporation in the AOP; reviewed the FRDC risk management policy, which incorporates the risk management plan and fraud control framework; made appropriate recommendations to the Board.

Attendance at these meetings was as follows:

Mr Simon Bennison (committee chairman)	2
Dr Diana Day (committee member)	2
Mr John Wilson (Business Development Manager)	2

The Finance and Audit Committee's operation is consistent with the Australian National Audit Office *Better Practice Guide*, July 1997.

The Board's Remuneration Committee held two meetings as follows:

3 March 2002	Examined the proposed remuneration budget for the 2002–03 AOP; made appropriate recommendations to the Board.
21 May 2002	Reviewed the Executive Director's performance in 2001–02; set performance goals for 2002–03; made appropriate recommendations to the Board.

Attendance at these meetings was as follows:

Mr Denis Byrne (committee chairman)	2
Mr David Newton (committee member)	2
Mr Bill Sawynok (committee member)	2

Representative organisations and other stakeholders

The FRDC's stakeholders are the fishing industry; the governments of the Commonwealth, the states and the territories; and the people of Australia.

To facilitate the FRDC's accountability to its stakeholders, the Minister has declared the Australian Seafood Industry Council and the Australian Recreational and Sport Fishing Industry Confederation (trading as Recfish Australia) to be representative organisations for the purposes of section 7 of the PIERD Act.

The FRDC reports to the representative organisations at their annual conferences in keeping with section 29 of the PIERD Act. Reporting covers the Corporation's activities for the previous 12 months and activities planned for the next financial year.

The FRDC reported to ASIC at the Council's annual general meeting on 25 September 2001. In response, ASIC acclaimed several recent FRDC initiatives, including ESD initiatives, extension of R&D results through SeaNet, and incorporation of Seafood Services Australia Ltd. ASIC also emphasised the importance of human capital development in building further on the achievements of recent years.

The FRDC reported to the Australian Recreational and Sport Fishing Industry Confederation (Recfish Australia) at the Confederation's annual conference on 24 November 2001. Recfish thanked the FRDC for its continuing support and especially for enabling Recfish participation in FRDC processes designed to optimise R&D benefits where fisheries resources are shared by the recreational, commercial and traditional fishing sectors. As Commonwealth Government policy develops with respect to recognising recreational fishing rights and responsibilities in Commonwealth fisheries management, Recfish considered that its involvement in the FRDC's R&D planning processes was of increasing importance.

Under section 15 (2) of the PIERD Act and the *Guidelines on Funding of Consultation Costs by Primary Industries 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 2001–02 the FRDC incurred $1,788.22 in such expenses; planned expenditure during 2002–03 is $5,000.

The *Guidelines* also specify that when a representative organisation conducts a project or consultancy, details are to be included in the annual report. Two projects came under that category during the year, as follows:

- $82,830.00 was paid to ASIC as the FRDC's contribution to project 2001/315. This project, managed by Seafood Training Australia (ASIC's training and education arm and the seafood industry's training advisory body), identified the competencies required of industry participants on fisheries management advisory committees with a view to incorporating the competencies into the Seafood Industry Training Package.
- $11,793 was paid to Macarthur Agribusiness Consulting as the FRDC's contribution to a review of the structure and operations of ASIC. The review proposed ways in which ASIC may become more responsive to the future needs of the Australian seafood industry.

Fisheries Research Advisory Bodies set research priorities for the Commonwealth, states and the Northern Territory, and communicate those priorities to funding agencies. Every year, a national FRAB workshop is held to evaluate collective performance in priority-setting and to improve future assessments.

Fisheries Research Advisory Bodies

The FRDC supports a network of FRABs covering the fisheries of the Commonwealth, each state and the Northern Territory.

The FRABs have an extremely important role in maximising the efficiency of the FRDC's planning and funding process. Their role is to:

- develop strategic plans for R&D that take into account other strategic plans, and subsequently maintain strategic directions and be responsive to changing circumstances;
- set R&D priorities to maximise investment, avoid duplication and achieve the greatest potential return;
- invite R&D applications to address those priorities;
- encourage collaboration between researchers, and between researchers, fisheries managers and fishing industry interests;
- identify appropriate funding sources (including the FRDC);
- advise the FRDC on the priority and appropriateness of applications attributing benefit to their related fisheries or industry sectors; and
- assist the FRDC with communication and extension of R&D results.

The FRDC meets some of the costs of operating the FRABs. However, the FRDC is not the sole beneficiary of their outputs: other beneficiaries include fisheries management agencies, other research funding agencies, research providers and industry. Some FRABs are responsible for advising the respective state or Northern Territory ministers on fisheries R&D matters.

The FRABs represent all sectors of the fishing industry, fisheries managers and researchers; most also include environmental and other community interests. Their Chairs at 30 June 2002 were as follows.

Chairs of FRABs at 30 June 2002

Commonwealth	Mr Rob Lewis: a director of the Australian Fisheries Management Authority; Executive Director, South Australian Research and Development Institute.
New South Wales	Professor Derek Anderson: Professor Emeritus, the Universities of Sydney and New South Wales; Chair of the Centre for Plant Biodiversity Research.
Northern Territory	Mr Richard Sellars: Director of Fisheries, Department of Primary Industry and Fisheries, Northern Territory.
Queensland	Dr Peter Young: fisheries consultant; formerly Chief of CSIRO Division of Fisheries and a director of the Australian Fisheries Management Authority.
South Australia	Mr Richard Stevens: a former FRDC director and former Managing Director of the Australian Fisheries Management Authority.
Victoria	Dr Garth Newman: former Director, Marine and Freshwater Resources Institute of Victoria.
Western Australia	Mr John Newby: commercial fisherman and company director.
Tasmania	Mr Tony Ibbott: management consultant.

Processes

The FRDC ensures that all core processes dealing with planning, investing in and managing R&D are documented in procedures and workguides, and that documentation meets the requirements of the FRDC's quality policy (on page 97) and Standard AS/NZS ISO 9001:2000.

The FRDC's finances are audited internally twice a year and externally (by the Australian National Audit Office) once a year. Quality management processes are audited internally and externally, in both cases once a year.

All new directors and staff undergo comprehensive induction training, which includes a briefing on the requirements of the CAC Act. This Act, which significantly influences the conduct of the FRDC's affairs, is the basis for much of the corporate governance that is addressed in this annual report. All directors also received appropriate updates of a book, published by the Australian Institute of Company Directors, on the duties and responsibilities of directors. The Executive Director and two senior staff have completed the Diploma Course of the Australian Institute of Company Directors.

In keeping with the Board's commitment to good corporate governance each director, after participating in the evaluation of new R&D project applications, certifies that the process used was consistent with the FRDC's quality management procedures and that he/she agrees with the evaluation results.

Controls

Risk management

The FRDC incorporates risk management in all activities in accordance with its risk management policy, which is integrated into the FRDC's quality management system and internal audit program. The policy seeks to protect the FRDC's public and commercial positions and the FRDC's employees, information and property. A risk register identifies each risk, describes its probability, likely severity and mitigation strategy, and records the status of the mitigation strategy.

The risk management policy also incorporates a fraud control framework in accordance with the *Fraud Control Policy of the Commonwealth — Best Practice Guide for Fraud Control* that seeks to minimise the likelihood and impact of fraud. The policy is a standing item at each Board meeting and is updated annually by the Board's Finance and Audit Committee to ensure that it remains relevant to the FRDC's business.

Project audits, an important part of the fraud control framework, ensure that research providers have appropriate systems and controls in place for managing FRDC projects.

No incidence of fraud was detected during 2001–02.

Directors' interests

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

As directors are appointed on the basis of their expertise in accordance with section 131 of the PIERD Act, they do not represent any particular organisation or interest group. Therefore, the Board recognises that a director's connection with any particular organisation or interest group does not necessarily imply a conflict of interests, including a material personal interest. The Board also recognises that it may wish to avail itself of directors' individual skills and to make use of their expertise.

A director who considers that he/she has a direct pecuniary, indirect pecuniary, or non-pecuniary interest in a matter to be discussed by the Board must disclose the existence and nature of the interest before the discussion takes place. The following table describes subsequent action:

Participation by director with conflict of interests

Interest category	Discussion and decision on nature of interest	Discussion of matter	Decision on matter
Direct pecuniary	Absent	Absent	Absent
Indirect pecuniary	Absent	May be invited back to provide input based on the director's related expertise and to answer related questions	Absent
Non-pecuniary	Participate unless the Board (without participation by the director concerned) considers that the director should not participate, or unless the director chooses not to participate.		

The Government Director is subject to the same conflict-of-interests requirements as other Board members, but may also face a potential conflict of interests in circumstances unique to the position. The Government Director will inform the Board of any such possible conflict of interests and leave the meeting while the Board determines the status of the potential conflict. Although the Government Director may choose to be absent from a particular discussion, it is unlikely that the Board would require him/her to be absent from a discussion.

The Government Director, in relation to any matter, may:

- request that her/his concerns are recorded in the minutes of the meeting,
- request that a formal vote be taken on the issue,
- ask the Chairperson to inform the Minister of the Board's intended action, or
- inform the Chairperson that she/he intends to inform the Minister of the Board's decision.

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.

The FRDC encourages FRABs, and other committees that provide the Corporation with advice, to adopt this policy.

Commitment to quality

The FRDC aims to meet or exceed the expectations of stakeholders and other people and organisations with whom it does business. To do so, the FRDC has adopted Total Quality Management (TQM) as its operating philosophy. TQM impels an energetic, continuing focus on the needs of the people the FRDC serves.

The FRDC integrates into all its activities a "quality approach", ensuring that all work is performed according to a systematic process in a corporate environment conducive to continual improvement. The process is determined by the quality requirements of AS/NZS ISO 9001:2000, to which the FRDC is certified.

The FRDC's quality policy recognises that excellent performance by staff is essential to fulfilment of the Corporation's mission, and consequently that the highest level of staff satisfaction, health and safety must be maintained. The policy obliges the FRDC to train all staff in the principles and requirements of TQM. It also presupposes that all staff and directors are dedicated to the philosophy of continual improvement at the corporate and individual level.

In addition to providing a basis for continuous improvement, the FRDC's quality management procedures provide important controls for corporate governance.

The FRDC's quality management system also encompasses the features of a service charter.

Indemnities and insurance premiums for officers

The FRDC evaluates risk within a comprehensive risk management framework. When appropriate, insurance policies are taken out to mitigate insurable risk.

The FRDC is required by the Commonwealth Government's self-insurance provisions to use Comcover for its insurance needs. Comcover's confidentiality requirements prohibit the release of information on the nature and limits of liabilities covered and the amount of contribution paid.

The rural R&D corporations work cooperatively to ensure that Comcover's policies are competitive, in terms of coverage and risk, with those of private insurers.

Liabilities to staff

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

Selection of suppliers

When selecting suppliers of goods and services, the FRDC seeks to achieve value for money and to deal fairly and impartially.

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.

When possible, preference is given to goods and services supplied from Australian or New Zealand sources. All contracts for R&D are currently with Australian or New Zealand research providers.

The following processes normally apply to FRDC procurement:

More than $100,000	Open tender.
$30,000 to $100,000	Selective tender, with at least three written quotations.
Less than $30,000	Competitive tender is not required.

These processes may be varied when:

- a specific proprietary item must be obtained to retain warranty services or to ensure technical integrity;
- urgency precludes the quotation or tender process;
- a prospective supplier appears to be the sole available source of the goods or services, or the prospective supplier's goods or services are considered to be superior to those of any likely alternative supplier;
- the cost of selecting alternative suppliers would negate the benefits to be derived from a competitive process;
- goods or services are available under a Government panel contract; and/or
- the FRDC has previously registered the interest of prospective suppliers.

In the open tender process, the FRDC sends suppliers a request for tender after:

- deploying appropriate advertising;
- preparing documentation that specifies the requirement, tender conditions, contract conditions and other administrative information; and
- determining criteria for evaluation of tenders.

Consistent with the FRDC's conflict-of-interests policy (page 96) and section 21 of the CAC Act, if a procurement directly or indirectly involves an FRDC director or staff member or an immediate member of their family, the director or staff member is excluded from decision-making relating to the procurement.

Consultancy services

During the year, the FRDC engaged two 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:	Fisheries Economics Research and Management Specialists
Nature and purpose of consultancy:	Benefit-cost analysis of five completed FRDC projects
Cost:	$28,996.05
Name of consultant:	Blake Dawson Waldron Lawyers
Nature and purpose of consultancy:	Advice on legislative requirements and project agreements
Cost:	$33,257.73

None of the consultancies was publicly advertised. The reasons for engaging the consultancy services, consistent with the FRDC's supplier selection policy, were: the need for independence in carrying out the services; unavailability among FRDC staff of the skills and time required to perform the task; and availability of consultants known to have the requisite skills where the value of the project did not justify the expense or delay associated with seeking tenders.

Behaviour

The Board requires the Executive Director to extend its commitment to good corporate governance — by example and by direction — to all functions of the FRDC.

The FRDC has a code of conduct to which all directors and staff are required to adhere. The code complies with division 4 of the CAC Act. New directors and staff are briefed comprehensively on the code during induction training.

Enabling legislation and responsible ministers

The FRDC was formed as a statutory corporation on 2 July 1991 under the provisions of the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act).

The FRDC's objects are derived from section 3 of the PIERD Act. The main elements of the objects are incorporated in the FRDC's planned outcomes, vision and mission (pages 6 and 7). More detailed information about the FRDC's legislative foundation is in **appendix B** on page 147.

The Ministers responsible for the FRDC are the Minister for Agriculture, Fisheries and Forestry, the Parliamentary Secretary to the Minister, and the Minister for Forestry and Conservation.

Throughout the year the Minister for Agriculture, Fisheries and Forestry was the Hon. Warren Truss, MP and the Parliamentary Secretary to the Minister was Senator the Hon. Judith Troeth. The Minister for Forestry and Conservation until November was the Hon. Wilson Tuckey, MP and from December was Senator the Hon. Ian Macdonald. All three Ministers exercise ministerial powers in their own right.

Exercise of ministerial powers

Ministerial powers under the enabling legislation are described on page 149.

During 2001–02, exercise of ministerial powers was as follows:

- approving the 2002–03 annual operational plan;
- causing a coordination meeting to be held of all R&D Corporations; and
- appointing a new FRDC chairman.

All ministerial directions and notifications of Government general policies and administrative matters have been incorporated into the FRDC's policies and procedures.

Ministerial direction

The following ministerial direction made under the provisions of s. 143(1) of the PIERD Act in a previous year had continuing effect:

Date	Subject
11 May 1995	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.

[The full text of the direction is reproduced on page 144 of the R&D plan.]

Notifications of Government general policies and administrative matters

The following notifications of Government general policies and administrative matters in previous years had continuing effect:

Date	Subject
30 July 2001	Need to exercise the highest standards of corporate governance; findings of the NSW Parliament's Public Accounts Committee concerning the collapse of the NSW Grains Board.
27 July 2001	Encouragement to adopt the principles of the COAG framework to advance indigenous reconciliation.
11 May 2001	Re-affirmation of the Government priorities for investment in R&D.[16]
11 January 1999	Accountability arrangements for statutory authorities.
6 July 1998	Guidelines for payment of representative organisations' costs in consulting with the FRDC.

No new notifications were effected by the Parliamentary Secretary or the Minister for Agriculture, Fisheries and Forestry during the year.

Policy and administration

Minimisation of administration

To increase its production of outputs in the face of greatly increasing demand for fisheries R&D, the FRDC continually strives for improvement. 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 its continual improvement, the FRDC strives to maximise the proportion of funds expended on R&D programs by minimising the cost of administration.

16 These priorities are shown on pages 42, 52 and 62.

The FRDC staff: back row from left, Programs Manager, Patrick Hone; Projects Manager — Research, Crispian Ashby; Communications Manager, Michael Parolin. Centre row; Executive Director, Peter Dundas-Smith; Projects Manager — Finance, Annette Lyons; Business Development Manager, John Wilson. Front row; Communications Coordinator, Kylie Paulsen; Office Manager, Deborah Bowden; Office Administrator, Kristina Jarnjevic; Projects Manager — Research, Jane Harris.

Staff

At 30 June 2002, the FRDC had ten full-time staff members.

All staff are employed under terms and conditions determined by the FRDC. No staff member is employed under the *Public Service Act 1999*.

Changes during the year resulted from the resignation of the Projects Manager — Research, the Office Manager and Office Administrator, and the subsequent recruitment of new staff members.

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 Resource Consulting Pty Ltd, which includes the value of each staff position in the market. 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.

Measurement occurs through a performance, planning and evaluation (PPE) process that involves staff and the Executive Director[17] in reaching agreement on performance criteria against which the staff member will be evaluated. The performance component of remuneration variations and individual development needs are also identified. PPE agreements constitute individual performance agreements. Since they are based fundamentally on the FRDC's key performance indicators described in the R&D Plan, the performance measures forecast in the AOP and the performance achievements reported in the annual report, there is a direct link between individual performance and that of the FRDC as a whole.

Staff development

The FRDC is committed to integrated staff training and development. Individual needs are assessed and support is provided for agreed training.

During 2001–02, one staff member continued studies towards a PhD, one continued fisheries management studies at Master level, one continued studies of fishing gear selectivity at Master level, one continued studies for a Bachelor of Business degree and one studied for an Advanced Diploma in Accounting. Staff undertook job-related training, attended conferences relevant to FRDC activities and the fishing industry, and worked with researchers and industry people on various aspects of project management.

Staff members are also encouraged to maintain professional affiliations. Accordingly, they have memberships of the Australian Institute of Company Directors, the Australian Society of Certified Practising Accountants, the Australian Society of Fish Biologists, the Public Relations Institute of Australia, the Institute of Public Administration Australia, the Australian Institute of Management, the Data Management Association, the Quality Society Australasia and the Women's Industry Network — Seafood Community.

Equal employment opportunity

The FRDC has a policy of equal employment opportunity. Merit-based principles are applied in recruitment and promotion to ensure that discrimination does not occur. Of the FRDC's staff of ten, five are female and one has a non-English speaking background.

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 (page 97) and the attendant emphasis on continual improvement.

17 In the case of the Executive Director, the other party is the Chairman.

Occupational health and safety

Consistent with its commitment to quality, the FRDC is committed to providing its staff with a safe and healthy environment. Staff deal with occupational health and safety matters as they arise. Additionally, the working environment is reviewed periodically by occupational health and safety consultants: this year, each staff member's immediate working environment was assessed and improved.

In May, a director suffered an injury in his hotel accommodation during the period in which a Board meeting was held in Darwin. No work-related injuries occurred on FRDC premises during 2001–02.

Disabilities

The Commonwealth Disability Strategy is a framework to help Commonwealth agencies to improve access to programs, services and facilities by people with disabilities. The FRDC implements the Commonwealth Disability Strategy on two levels: as a provider of services resulting from R&D and as an employer. During the year the FRDC implemented the Strategy to the extent appropriate to the functions and size of the Corporation.

The FRDC provides information and other services as a result of R&D it has funded. In doing so, care is taken to ensure that the graphic design of its publications and the presentation of its word-processed papers have good legibility. Additionally, PDF versions of the publications (such as this annual report) on the FRDC website can be readily magnified. The FRDC also ensures that conference and workshop participants are asked to nominate facilities they desire to minimise hearing, visual and mobility disability, and consults with them to provide facilities.

The FRDC's premises have been designed for easy, safe access by people with special orientation, mobility and hearing requirements.

The FRDC also provides guidance to its employees on appropriate ways of minimising inconvenience and facilitating two-way communication involving people with a range of disabilities.

The FRDC's recruitment and staff development practices seek to eliminate disadvantage that may be contributed by disabilities. Consultation with people with a disability and, when required, with appropriate specialist organisations is a key feature of the FRDC's policies and practice, recognising that the effect of a disability differs widely between individuals and that often a little thought makes a big difference.

Freedom of information

During 2001–02, the FRDC did not received any inquiry pursuant to the *Freedom of Information Act 1982*.

A statement in accordance with the *Freedom of Information Act 1982*, giving information about the FRDC and about making a Freedom of Information request, is in **appendix C** (page 150).

Auditor-General's report

Australian National Audit Office

INDEPENDENT AUDIT REPORT

To the Minister for Agriculture, Fisheries and Forestry

Scope

I have audited the financial statements of the Fisheries Research and Development Corporation for the year ended 30 June 2002. The financial statements comprise:

- Statement by Directors;
- Statements of Financial Performance, Financial Position and Cash Flows;
- Schedules of Commitments and Contingencies; and
- Notes to and forming part of the Financial Statements.

The Directors of the Corporation are responsible for the preparation and presentation of the financial statements and the information they contain. I have conducted an independent audit of the financial statements in order to express an opinion on them to you.

The audit has been conducted in accordance with Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statements are free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial statements are presented fairly in accordance with Accounting Standards and other mandatory professional reporting requirements in Australia and statutory requirements so as to present a view which is consistent with my understanding of the Corporation's financial position, its financial performance and its cash flows.

The audit opinion expressed in this report has been formed on the above basis.

GPO Box 707 CANBERRA ACT 2601
Centenary House 19 National Circuit
BARTON ACT
Phone (02) 6203 7300 Fax (02) 6203 7777

Audit Opinion

In my opinion the financial statements:

(i) have been prepared in accordance with Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*; and

(ii) give a true and fair view, in accordance with applicable Accounting Standards and other mandatory professional reporting requirements in Australia and the Finance Minister's Orders, of the financial position of the Fisheries Research and Development Corporation as at 30 June 2002, and its financial performance and cash flows for the year then ended.

Australian National Audit Office

David McKean
Executive Director

Delegate of the Auditor General

Canberra

15 August 2002

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

Financial statements

as at 30 June 2002

Statement by directors

In our opinion, the attached financial statements of the Fisheries Research and Development Corporation for the year ended 30 June 2002 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*.

Denis Mark Byrne
Chairman

13 August 2002

Peter Dundas-Smith
Executive Director

13 August 2002

Statement of financial performance

FOR THE YEAR ENDED 30 JUNE 2002

	Notes	30 June 2002 $	30 June 2001 $
Revenues from ordinary activities			
Revenues from Government	5A	**15,836,642**	14,286,209
Contributions	5B	**6,763,675**	4,244,060
Sale of publications and final reports		**65,399**	79,258
Interest	5C	**200,814**	270,817
Other	5D	**0**	14,082
Total revenues from ordinary activities		**22,866,530**	18,894,426
Expenses from ordinary activities (excluding borrowing costs expenses)			
Employees	6A	**1,196,009**	953,677
Suppliers	6B	**567,611**	887,939
Depreciation and amortisation	6C	**59,912**	23,462
Net loss from sale of assets	6D	**9,241**	0
Projects expenditure	7	**20,454,487**	17,858,511
Other	9	**801,961**	622,715
Total expenses from ordinary activities (excluding borrowing costs expenses)		**23,089,221**	20,346,304
Borrowing costs expense	8	**532**	384
Net operating deficit from ordinary activities		**(223,223)**	(1,452,262)
Net deficit		**(223,223)**	(1,452,262)
Net deficit attributable to the Commonwealth		**(223,223)**	(1,452,262)
Net credit (debit) to asset revaluation reserve		**3,477**	0
Total revenues, expenses and valuation adjustments attributable to the Commonwealth and recognised directly in equity		**3,477**	0
Total changes in equity other than those resulting from transactions with owners as owners		**(219,746)**	(1,452,262)

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

Statement of financial position

AS AT 30 JUNE 2002

	Notes	30 June 2002 $	30 June 2001 $
Assets			
Financial assets			
Cash	10A	**157,283**	258,356
Receivables	10B	**1,066,938**	657,612
Total financial assets		**1,224,221**	915,968
Non-financial assets			
Infrastructure, plant and equipment	11A,C	**208,960**	79,315
Intangibles	11B,C	**242,758**	0
Other	11D	**6,026**	15,823
Total non-financial assets		**457,744**	95,138
Total assets		**1,681,965**	1,011,106
Liabilities			
Provisions			
Employees	12A	**239,671**	161,611
Total provisions		**239,671**	161,611
Payables			
Suppliers	13A	**54,709**	92,385
Projects	13B	**237,911**	389,089
Unearned revenue	13C	**1,001,399**	0
Total payables		**1,294,019**	481,474
Total liabilities		**1,533,690**	643,085
Net assets		**148,275**	368,021
Equity			
Parent entity interest			
Reserves	14	**13,127**	9,650
Accumulated surpluses	14	**135,148**	358,371
Total parent entity interest		**148,275**	368,021
Total equity		**148,275**	368,021
Current liabilities		**1,425,645**	581,229
Non-current liabilities		**108,045**	61,856
Current assets		**1,230,247**	931,791
Non-current assets		**451,718**	79,315

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

Statement of cashflows

FOR THE YEAR ENDED 30 JUNE 2002

	Notes	30 June 2002 $	30 June 2001 $
Operating activities			
Cash received			
Appropriations		**23,864,036**	18,604,494
Sales of goods and services — non Government		**71,939**	87,184
Interest		**200,814**	270,817
GST received from ATO		**1,784,719**	1,267,336
Other		**0**	15,490
Total cash received		**25,921,508**	20,245,321
Cash used			
Employees		**1,117,949**	1,016,809
Suppliers		**647,111**	926,701
Projects expenditure		**22,948,316**	18,671,736
Borrowing costs		**532**	384
Other		**870,594**	690,606
Total cash used		**25,584,502**	21,306,236
Net cash from / (used by) operating activities	15A	**337,006**	(1,060,915)
Investing activities			
Cash received			
Proceeds from sale of infrastructure, plant and equipment		**3,183**	0
Total cash received		**3,183**	0
Cash used			
Purchase of infrastructure, plant and equipment		**185,849**	58,838
Purchase of intangibles		**255,413**	0
Total cash used		**441,262**	58,838
Net cash (used by) investing activities		**(438,079)**	(58,838)
Net increase / (decrease) in cash held		**(101,073)**	(1,119,753)
Cash at the beginning of the reporting period		**258,356**	1,378,109
Cash at the end of the reporting period	15B	**157,283**	258,356

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

Schedule of commitments

AS AT 30 JUNE 2002

	Notes	30 June 2002 $	30 June 2001 $
By type			
Other commitments			
Operating leases [1]		**260,591**	335,520
Other commitments [2]		**55,046,184**	45,311,611
Total other commitments		**55,306,775**	45,647,131
Commitments receivable		**5,027,889**	4,149,739
Net commitments		**50,278,886**	41,497,392
By maturity			
All net commitments			
One year or less		**22,834,386**	19,117,041
From one to five years		**27,342,504**	21,847,864
Over five years		**101,996**	532,487
Net commitments		**50,278,886**	41,497,392
Operating lease commitments			
One year or less		**86,228**	85,879
From one to five years		**174,363**	249,641
Over five years		**0**	0
Net operating lease commitments		**260,591**	335,520

NB: All commitments are GST inclusive where relevant.

(1) Operating leases are effectively non-cancellable and comprise:

- lease for office accommodation on premises at 25 Geils Court Deakin, and
- lease for telephone system.

The terms and conditions for the lease renewal of office accommodation for the next four years have been agreed with the landlord.

(2) Other commitments comprise the future funding of approved projects that is contingent on achievement of agreed milestones over the life of the projects. (Project agreements are exchanged prior to release of the first payment on a project.) Projects for which an amount was payable but that were unpaid at the end of the period have been brought to account as project creditors.

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

Schedule of contingencies

AS AT 30 JUNE 2002

At 30 June 2002, the FRDC had no contingent gains or losses.

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

Notes to and forming part of the financial statements

FOR THE YEAR ENDED 30 JUNE 2002

Note 1: Summary of significant accounting policies

1.1 — Basis of accounting

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

The statements have been prepared in accordance with:

- Finance Minister's Orders (being *the Commonwealth Authorities and Companies (Financial Statements 2001–2002) Orders*);
- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board;
- Other authoritative pronouncements of the Board; and
- Consensus Views of the Urgent Issues Group.

The statements have been prepared having regard to:

- the Explanatory Notes to Schedule 1 issued by the Department of Finance and Administration, and
- Finance Briefs issued by the Department of Finance and Administration.

The Statements of Financial Performance and Financial Position have been prepared on an accrual basis and are in accordance with the historical cost convention, except for certain assets which, as noted, are at valuation. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position of the Fisheries Research and Development Corporation (FRDC).

Assets and liabilities are recognised in the FRDC Statement of Financial Position when and only when it is probable that future economic benefits will flow and the amounts of the assets or liabilities can be reliably measured. Assets and liabilities arising under agreements equally proportionately unperformed are not recognised unless required by an Accounting Standard. Liabilities and assets that are unrecognised are reported in the Schedule of Commitments and the Schedule of Contingencies.

Revenues and expenses are recognised in the FRDC Statement of Financial Performance when and only when the flow or consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 — Changes in accounting policy

The accounting policies used in the preparation of these financial statements are consistent with those used in 2000–01, except in respect of capitalised software.

1.3 — Reporting by outcomes

A comparison of Budget and Actual figures by outcome specified in the Appropriation Acts relevant to the FRDC is presented in **Note 2**. Any intra-government costs included in the figure "net cost to Budget outcomes" are eliminated in calculating the actual budget outcome for the Commonwealth Government overall. For the first time, an Output Group has been identified for each outcome.

1.4 — Revenue

The revenues described in this Note are revenues relating to core operating activities of the FRDC.

Revenue from the sale of goods is recognised when the sales invoice is raised.

Interest revenue is recognised on a proportional basis taking into account the interest rates applicable to the financial assets.

Revenue from disposal of non-current assets is recognised when control of the asset has passed to the buyer.

Refunds from research organisations are taken into account when received.

Resources received free of charge

Services received free of charge are recognised as revenue when and only when a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised at their fair value when the asset qualifies for recognition.

1.5 — Employee entitlements

(a) Remuneration

The FRDC recognises remuneration as the total cost of employment. It includes salaries (including leave), and superannuation (including employer contributions). Remuneration of non–executive directors is as 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 Resource Consulting Pty Ltd, which includes the value of each staff position in the market. The amount is also influenced by individual performance measured against individual performance agreements; by overall FRDC performance; and by the size of the program support component within the total FRDC budget, from which salaries are paid.

(b) Leave

The liability for employee entitlements 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 of the FRDC is estimated to be less than the annual entitlement for sick leave.

The liability for annual leave reflects the value of total annual leave entitlements of all employees at 30 June 2002 and is recognised at its nominal amount. Staff are entitled to 20 days' annual leave per year.

Long service leave is accrued for all staff, from their commencement date, at the rate of 9 days per year of service with the entitlement becoming due after completion of 10 years' service. All leave provision calculations are based on remuneration packages as at 30 June 2002. Remuneration receivable includes accrued annual and long service leave entitlements. See **Notes 12** Provisions, **16** Remuneration of directors and **18** Remuneration of officers.

In determining the present value of the liability, attrition rates and remuneration increases have been taken into account. The non-current portion of the liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of probability that all employees at 30 June 2002 would remain in the employ of the FRDC until eligible for full entitlement.

(c) Separation and redundancy

Provision is made for separation and redundancy payments in circumstances where the FRDC has formally identified positions as excess to requirements and a reliable estimate of the amount of the payments can be determined.

(d) Superannuation

The FRDC is an approved Authority under the *Superannuation Act 1976* and the *Superannuation Act 1990*.

FRDC staff are contributors to either the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or other elected schemes as appropriate. Employer contributions amounting to $110,645 (2001: $88,231) in relation to these schemes have been expensed in these financial statements.

No liability for superannuation benefits is recognised at 30 June 2002 as the employer contributions fully extinguish the accruing liability which is assumed by the Commonwealth.

Employer Superannuation Productivity Benefit contributions totalled $10,297 (2001: $11,086).

1.6 — Leases

A distinction is made between finance leases which in effect transfer from the lessor to the lessee substantially all the risks and benefits incidental to ownership of leased non-current assets and operating leases under which the lessor in effect retains substantially all such risks and benefits.

Operating lease payments are expensed on a basis, which is representative of the pattern of benefits derived from the leased assets. The FRDC is not currently involved in any finance leases.

1.7 — Projects

The FRDC recognises project liabilities as follows.

Most project agreements require the research provider 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 or the eligibility criteria have been satisfied by the research provider. Where project money is paid in advance of performance or eligibility, a prepayment is recognised.

1.8 — Borrowing costs

All borrowing costs are expensed as incurred.

1.9 — Cash

Cash means notes and coins held and any deposits held at call with a bank or financial institution.

For the purposes of the Statement of Cash Flows, cash is net of any outstanding bank overdrafts.

In accordance with section 42 of the *Primary Industries and Energy Research and Development Act 1989* (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.

1.10 — Financial instruments

Accounting policies for financial instruments are stated at **Note 21**.

1.11 — 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 in exchange and liabilities undertaken.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and revenues at their fair value at the date of acquisition, except where they are acquired as part of a transfer of functions from another Government entity, in which case they are recognised as contributed equity at the carrying amount on the books of the transferor.

1.12 — Infrastructure, plant, equipment and computer software

Asset recognition threshold

Purchases of infrastructure, plant and equipment and computer software are recognised initially at cost of acquisition in the Statement of Financial Position, 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 which are significant in total).

Computer software

For the first time, and as required by the Finance Minister's Financial Reporting Requirements 2001–02, the FRDC has capitalised computer software at the cost of development or acquisition from 1 July 2001.

Computer software is carried at cost less any accumulated amortisation. The capitalised costs of development or acquisition is amortised on a straight-line basis over a useful life of ten years.

Revaluations

In 2001–02 all infrastructure, plant and equipment were revalued as at 30 June 2002 by the Australian Valuation Office.

Infrastructure, plant and equipment are measured at their depreciated replacement cost. Where assets are held which would not be replaced or are surplus to requirements, measurement is at net realisable value. At 30 June 2002, FRDC had no assets in this situation.

All valuations are independent.

Recoverable amount test

Schedule 1 requires the application of the recoverable amount test to the FRDC's non-current assets in accordance with AAS 10 *Recoverable Amount of Non-Current Assets*. The carrying amount of each item of non-current assets has been reviewed to determine whether they are in excess of their recoverable amounts. In assessing recoverable amounts, the relevant cash flows have been discounted to their present value.

Depreciation and amortisation

Depreciable infrastucture, plant and equipment assets are written off to their estimated residual value over their estimated useful economic lives using, in all cases, the straight line method of depreciation.

Depreciation/amortisation rates (useful lives) and the methods used are reviewed at each balance date and necessary adjustments are recognised in the current, or current and future periods, as appropriate. Residual values are re-estimated for a change in price only when an asset is revalued.

Depreciation and amortisation rates applying to each class of depreciable asset are based on the following useful lives:

	2001–02	2000–01
Infrastructure, plant and equipment	3–5 years	3–5 years
Computer software	10 years	n/a

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed at **Note 6C**.

1.13 — Taxation

FRDC is subject to taxation (other than income tax) under the laws of the Commonwealth as per section 46(1) of the PIERD Act.

1.14 — Comparative figures

Comparative figures have been adjusted to conform to changes in presentation in these financial statements where required.

1.15 — Insurance

The FRDC has insured for risks through the Government's insurable risk managed fund, Comcover. Workers compensation is insured through Comcare Australia.

Note 2: Reporting by outcomes

The FRDC operates primarily in a single industry and geographic segment, namely the Australian fishing industry. It is a national organisation responsible to its stakeholders for:

- planning, investing in and managing fisheries R&D programs, and
- facilitating the dissemination, adoption and commercialisation of the results of fisheries R&D.

The FRDC is structured to meet three outcomes:

Outcome 1 The natural resources on which the commercial, recreational and traditional sectors of the fishing industry depend are used in an ecologically sustainable way.

Outcome 2 The commercial sector of the Australian fishing industry is profitable and internationally competitive; the commercial, recreational and traditional sectors are socially resilient.

Outcome 3 The knowledge and skills of people in and supporting the Australian fishing industry, and in the wider community, are developed and used so that Australians derive maximum economic, environmental and social benefits from fisheries R&D.

One Output Group is identified for each Outcome.

Output 1 Knowledge, processes and technology that contribute to the use, in an ecologically sustainable manner, of the natural resources on which the fishing industry depends.

Output 2 Knowledge, processes and technology that contribute to making the:

- commercial sector of the Australian fishing industry profitable and internationally competitive; and
- commercial, recreational and traditional sectors socially resilient.

Output 3 Knowledge, processes and technology that contribute to developing the knowledge and skills of people in, and supporting, the Australian fishing industry, and in the wider community, so that Australians derive maximum economic, environmental and social benefits from fisheries R&D.

	Output Group 1		Output Group 2		Output Group 3		Total	
	2002 $000	2001 $000	2002 $000	2001 $000	2002 $000	2001 $000	2002 $000	2001 $000
Operating revenues								
Revenues from Government	**9,502**	8,572	**5,543**	5,000	**792**	714	**15,837**	14,286
Contributions	**4,058**	2,546	**2,367**	1,485	**339**	213	**6,764**	4,244
Sale of goods and services	**39**	48	**23**	28	**3**	3	**65**	79
Other non taxation revenues	**120**	171	**70**	100	**11**	14	**201**	285
Total operating revenues	**13,719**	11,337	**8,003**	6,613	**1,145**	944	**22,867**	18,894
Operating expenses								
Employees	**718**	572	**419**	334	**59**	48	**1,196**	954
Suppliers	**341**	533	**199**	311	**28**	44	**568**	888
Depreciation and amortisation	**36**	14	**21**	8	**3**	1	**60**	23
Projects expenditure	**12,273**	10,715	**7,159**	6,250	**1,023**	893	**20,455**	17,858
Other	**486**	374	**284**	218	**40**	31	**810**	623
Total operating expenses	**13,854**	12,208	**8,082**	7,121	**1,153**	1,017	**23,089**	20,346
Total assets deployed as at 30 June 2002	**1,009**	607	**589**	354	**84**	51	**1,682**	1,012
Total net assets deployed as at 30 June 2002	**89**	221	**52**	129	**7**	18	**148**	368

Note 3: Economic dependency

The FRDC was established on 2 July 1991 under the PIERD Act, and is responsible to the Minister for Agriculture, Fisheries and Forestry.

The FRDC is dependent on appropriations from the Commonwealth for its continued existence and ability to carry out its normal activities.

Note 4: Events occurring after reporting date

There are no events occurring after reporting date to report.

Note 5: Operating revenues

5A — Revenues from government

	30 June 2002 $	30 June 2001 $
Revenues from government		
0.5% of AGVP *	**11,435,000**	10,505,000
matching of industry revenue	**4,401,642**	3,781,209
Total revenues from government	**15,836,642**	14,286,209

* AGVP is the average gross value of fisheries production for the three preceding financial years.

The Commonwealth Government's contribution of 0.5 per cent of AGVP is made on the grounds that the Commonwealth exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.

The matching of the industry contribution (up to 0.25 per cent of AGVP) by the Commonwealth Government is in line with policy principles that:

- beneficiaries from research should pay roughly in proportion to the benefits received; and
- the greater the spill-over benefits, the greater the proportion the Commonwealth Government should contribute.**

** As described on page 13 of the FRDC's R&D Plan 2000–2005.

5B — Contributions revenue

	30 June 2002 $	30 June 2001 $
Fisheries managed by:		
Australian Prawn Farmers Association	**44,107**	0
Commonwealth	**1,076,847**	877,409
New South Wales	**275,260**	239,027
Northern Territory	**80,000**	66,400
Queensland	**525,000**	530,000
South Australia	**766,603**	576,607
Tasmania	**677,500**	410,000
Victoria	**217,711**	211,716
Western Australia	**866,977**	870,050
Sub-total	**4,530,005**	3,781,209
Projects		
Project funds received from other parties	**2,215,270**	202,641
Project refunds of prior years' expenditure	**18,400**	260,210
Sub-total	**2,233,670**	462,851
Total contributions revenue	**6,763,675**	4,244,060

Industry's contribution to the FRDC recognises the need for R&D that will be commercially oriented and that will deliver results that will improve industry performance and profitability.

5C — Interest

	30 June 2002 $	30 June 2001 $
Deposits	**200,814**	270,817
Total interest	**200,814**	270,817

5D — Other operating revenues

	30 June 2002 $	30 June 2001 $
Other — miscellaneous	**0**	14,082
Total revenue from other sources	**0**	14,082

Note 6: Operating expenses

6A — Employee expenses

	30 June 2002 $	30 June 2001 $
Remuneration (for services provided)		
Board	**161,896**	170,724
Secretariat	**980,101**	773,374
Total remuneration	**1,141,997**	944,098
Other employee expenses — recruitment costs	**54,012**	9,579
Total employee costs	**1,196,009**	953,677

The basis for employee remuneration is detailed at **Note 1.5(a)**.

FRDC staff contribute to either the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or other elected schemes as appropriate, which provide retirement, death and disability benefits to employees.

Contributions to the schemes are at rates calculated to cover existing and emerging obligations. Current contribution rates are 25.5% of salary for CSS members and 15.5% of salary for PSS members.

The FRDC also pays an employer productivity superannuation contribution of 2% for its employees in accordance with the *Superannuation (Productivity Benefit) Act 1988*.

6B — Supplier expenses

	30 June 2002 $	30 June 2001 $
Board		
Travel	**76,759**	105,355
Other	**14,285**	92,714
Secretariat		
Audit fees	**9,000**	9,000
External service providers	**169,288**	359,090
Furniture and fittings expensed 8 August 2000	**0**	42,222
Insurance	**23,822**	17,123
Office supplies	**38,693**	50,498
Property	**98,399**	82,609
Telecommunications	**36,020**	39,501
Training	**15,030**	10,927
Travel	**25,836**	36,869
Other	**60,479**	42,031
Total suppliers expenses	**567,611**	887,939

6C — Depreciation and amortisation

	30 June 2002 $	30 June 2001 $
Secretariat		
Amortisation of intangibles	**12,655**	0
Depreciation of infrastructure, plant and equipment	**47,257**	23,462
Total depreciation and amortisation	**59,912**	23,462

6D — Net loss from sale of assets

	30 June 2002 $	30 June 2001 $
Infrastructure, plant and equipment	**0**	0
Proceeds from sale	**3,183**	0
Net book value at sale	**(12,424)**	0
Net loss on disposal of infrastructure, plant and equipment	**(9,241)**	0

Note 7: Project expenditure

	30 June 2002 $	30 June 2001 $
Projects (1)		
Natural Resources Sustainability	**11,881,540**	10,907,321
Industry Development	**7,187,583**	6,063,755
Human Capital Development	**963,645**	852,515
Aquatic animal health activities funded by the Commonwealth Government initiative 'Building a national approach to animal and plant health'	**421,719**	34,920
Total project expenditure	**20,454,487**	17,858,511

(1) Project expenditure is consistent with the expenditure classification of "Grants" according to Schedule 1 of the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*.

Note 8: Borrowing cost expenses

	30 June 2002 $	30 June 2001 $
Secretariat		
Interest on overdraft facilities	**532**	384
Total interest expense	**532**	384

Note 9: Operating expense — other

	30 June 2002 $	30 June 2001 $
Communications		
Annual Report	**56,607**	56,754
ANRO	**25,410**	4,760
Fisheries Research Advisory Bodies	**192,703**	85,173
FRDC initiated project extension	**223,479**	65,280
Other	**117,631**	41,538
R&D News	**157,089**	167,083
R&D Plan	**3,500**	162,326
Representative organisations consultation [1]	**13,582**	1,273
Website	**11,960**	38,528
Total other expenditure	**801,961**	622,715

(1) Representative organisations consultation relates to expenses incurred by the FRDC in accordance with section 15(a) of the PIERD Act.

Note 10: Financial assets

10A — Cash

	30 June 2002 $	30 June 2001 $
Cash on hand	**300**	300
Cash at bank	**156,983**	258,056
Total cash	**157,283**	258,356
Balance of cash as at 30 June shown in the Statement of Cash Flows	**157,283**	258,356

All cash is recognised as a current asset.

10B — Receivables

	30 June 2002 $	30 June 2001 $
GST receivable	145,875	197,740
Other receivables	921,063	459,872
Total receivables	**1,066,938**	657,612

There are no receivables (gross) which are overdue. Our terms are 90 days.

All receivables are current assets.

Note 11: Non-financial assets

11A — Infrastructure, plant and equipment

	30 June 2002 $	30 June 2001 $
Infrastructure, plant and equipment — at 30 June 2002 valuation	292,095	0
Accumulated depreciation	(83,135)	0
	208,960	0
Infrastructure, plant and equipment — at cost	0	58,838
Accumulated depreciation	0	(7,080)
	0	51,758
Infrastructure, plant and equipment — at 1 July 2000 valuation	0	72,431
Accumulated depreciation	0	(44,874)
	0	27,557
Total infrastructure, plant and equipment	**208,960**	79,315

11B — Intangibles

For the first time, and as required by the Finance Minister's Financial Reporting Requirements 2001–02, the FRDC has capitalised software at the cost of development or acquisition from 1 July 2001. In accordance with 13.1.11 of the Finance Minister's Reporting Requirements 2001–02 software has been classified as an intangible asset.

	30 June 2002 $	30 June 2001 $
Computer software	255,413	0
Accumulated amortisation	(12,655)	0
Total intangibles	**242,758**	0

11C — Analysis of infrastructure, plant and equipment and Intangibles

	Infrastructure, plant and equipment $	Intangibles $	Total $
Gross value at 1 July 2001	**131,270**	0	**131,270**
Additions — purchase of assets	**185,848**	255,413	**441,261**
Write off	**0**	0	**0**
Revaluations: write-ups / (write-downs)	**(5,223)**	0	**(5,223)**
Disposals	**(19,800)**	0	**(19,800)**
Gross value at 30 June 2002	**292,095**	255,413	**547,508**
Accumulated depreciation at 1 July 2001	**51,955**	0	**51,955**
Adjustment for disposals — at valuation	**(7,377)**	0	**(7,377)**
Depreciation / Amortisation charge for the year	**47,257**	12,655	**59,912**
Adjustment for write offs	**0**	0	**0**
Revaluations: write-ups / (write-downs)	**(8,700)**	0	**(8,700)**
Accumulated depreciation at 30 June 2002	**83,135**	12,655	**95,790**
Net book value at 30 June 2002	**208,960**	242,758	**451,718**
Net book value at 1 July 2001	**79,315**	0	**79,315**

In accordance with the Corporation's accounting policy (refer **Note 1.11**), items under the infrastructure, plant and equipment heading were revalued at their deprival value, effective 30 June 2002, by Australian Valuations Office.

11D — Other non-financial assets

	30 June 2002 $	30 June 2001 $
Prepayments	**6,026**	15,723
Aerial taxi deposit	**0**	100
Total other non-financial assets	**6,026**	15,823

Note 12: Provisions

12A — Employee provisions

	30 June 2002 $	30 June 2001 $
Salary and superannuation accrual	1,387	0
Annual leave	106,553	96,415
Long service leave	131,731	65,196
Total employee entitlement liability	**239,671**	161,611
Employee provisions are categorised as follows:		
Current	131,626	99,754
Non-current	108,045	61,857
	239,671	161,611

Note 13: Payables

13A — Supplier payables

	30 June 2002 $	30 June 2001 $
Trade creditors	27,822	54,993
FBT Payable	2,795	0
PAYG payable	24,092	37,392
Total supplier payables	**54,709**	92,385

All supplier payables are current liabilities.

13B — Project creditors

	30 June 2002 $	30 June 2001 $
Project creditors	237,911	389,089
Total project creditors	**237,911**	389,089

Project creditors 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 were unpaid at the end of the period. Settlement is usually made within 90 days.

13C — Unearned revenue

	30 June 2002 $	30 June 2001 $
Revenue received in advance	1,001,399	0
Total unearned revenue	**1,001,399**	0

All unearned revenue is recognised as a current liability.

Moneys paid by AFFA against the Aquatic Animal Health contract are initially shown as revenue received in advance in the Statement of Financial Position. As project payments are made for milestone achievement, moneys are journalled from 'Unearned revenue' to 'Project income received from other parties'.

Note 14: Equity

Item	Accumulated results		Asset revaluation reserve		Total equity	
	2002 $	2001 $	2002 $	2001 $	2002 $	2001 $
Opening balance at 01 July	**358,371**	1,810,633	**9,650**	9,650	**368,021**	1,820,283
Operating results	**(223,223)**	(1,452,262)			**(223,223)**	(1,452,262)
Net revaluation increment / (decrement)			**3,477**	0	**3,477**	0
Closing balance at 30 June	**135,148**	358,371	**13,127**	9,650	**148,275**	368,021
Less: outside equity interests	**0**	0	**0**	0	**0**	0
Total equity attributable to the Commonwealth	**135,148**	358,371	**13,127**	9,650	**148,275**	368,021

Note 15: Cash flow reconciliation

15A — Reconciliation of operating (deficit) to net cash provided by operating activities

	30 June 2002 $	30 June 2001 $
Operating (deficit)	(223,223)	(1,452,262)
Depreciation	59,912	23,462
Assets expensed 8 August 2000	0	42,222
(Gain) / loss on disposal of assets	9,241	0
Changes in net assets and liabilities:		
(Increase) / decrease in receivables and other financial assets	(399,528)	62,931
Increase / (decrease) in payables — supplier	(37,677)	(13,093)
Increase / (decrease) in other financial liabilities	1,001,399	(13,141)
Increase / (decrease) in provisions	78,060	(72,711)
Increase / (decrease) in payables — projects	(151,178)	361,677
Net cash provided by operating activities	337,006	(1,060,915)

15B — Reconciliation of cash at the end of the reporting period as shown in the Statement of Cash Flows to the related items in the Statement of Financial Position

	30 June 2002 $	30 June 2001 $
Reconciliation of cash		
Cash at bank and on hand	157,283	258,356
Cash at bank (overdraft)	0	0
	157,283	258,356

Note 16: Remuneration of directors

	30 June 2002 $	30 June 2001 $
Remuneration received or due and receivable by directors of FRDC	362,350	314,436

The basis for directors' remuneration is detailed at **Note 1.5(a)**.

The Government Director, Dr Staples, received no remuneration.

Mr Bennison took leave without pay from his organisation to attend Board meetings, and was remunerated by the FRDC.

The number of directors of the FRDC included in these figures are shown below in the relevant remuneration bands:

Annual remuneration bands — directors	2001–02 No. of directors	2000–01 No. of directors
0 – 9,999	1	5
10,000 – 19,999	2	4
20,000 – 29,999	6	0
30,000 – 39,999	0	1
160,000 – 169,999	0	1
190,000 – 199,999	1	0
	10	11

Note 17: Related party disclosures

The Directors of the FRDC during the year were:

Mr S. Bennison	Director
Mr D. Byrne	Chairman from 1 January 2002
Mr I. Cartwright	Director
Dr D. Day	Director
Mr P. Dundas-Smith	Executive Director
Mr D. Newton	Director
Dr R. Reichelt	Chairman 1 July 2001 to 31 December 2001
Mr W. Sawynok	Director
Dr D. Staples	Government Director
Mr A. Wood-Meredith	Deputy Chairman

The aggregate amount of remuneration of directors is disclosed in **Note 16**.

Transactions with director related parties

Director	Organisation and position held	Nature of interest	Expenditure $
Mr S. Bennison	Western Australian Fishing Industry Council *Director*	Research projects or work undertaken by the organisation	32,883
	Aquaculture Council of WA *Executive Director*	Research projects or work undertaken by the organisation	2,800
Mr I. Cartwright	Australian Fisheries Management Authority Scallop MAC *Chairman*	Research projects or work undertaken by the organisation	30,000
Dr D. Day	Australian Maritime College Council *Member*	Research projects or work undertaken by the organisation	81,776
	Women's Industry Network Seafood Community *Member*	Research projects or work undertaken by the organisation	125
Mr P. Dundas-Smith	University of Sydney — Advisory Committee of the Centre for Ecological Impacts of Coastal Cities *Member*	Research projects or work undertaken by the organisation	207,129
	CRC for Sustainable Aquaculture of Finfish *Director*	Research projects or work undertaken by the organisation	20,681
	Seafood Services Australia *Director*	Research projects or work undertaken by the organisation	701,642
Dr R. Reichelt to 31 December 2001	James Cook University (School of Marine Biology) *Adjunct Professor*	Research projects undertaken by the Institute, universities, society and CRCs	16,688
	University of Queensland Department of Zoology and Entomology *Adjunct Professor*	Research projects undertaken by the Institute, universities, society and CRCs	343
	CRC Reef Research Centre *Adjunct Professor*	Research projects undertaken by the Institute, universities, society and CRCs	106,553

Director	Organisation and position held	Nature of interest	Expenditure $
Mr W. Sawynok	CRC Reef Research Centre *Director*	Research projects undertaken by the Institute, universities, society and CRCs	150,036
	InfoFish *Fisheries Consultant*	Research projects or work undertaken by the organisation	25,448
Dr D. Staples	Bureau of Rural Sciences *Deputy Executive Director*	Research projects or work undertaken by the organisation	217,424
	Australian Fisheries Management Authority *Chief Scientist*	Research projects or work undertaken by the organisation	30,000
	Agriculture Fisheries and Forestry – Australia Bureau of Rural Sciences *Deputy Executive Director*	Research projects or work undertaken by the organisation	350,527
Mr A. Wood-Meredith	Queensland Seafood Industry Association *Member*	Research projects or work undertaken by the organisation	144,418
	CSIRO Marine Sector Advisory Committee *Member*	Research projects or work undertaken by the organisation	2,398,078

Note 18: Remuneration of officers

The officer remuneration includes all officers with the exception of the Executive Director, who:

- were concerned with, or took part in, the management of the economic entity during 2001–02; and
- as at 30 June 2002, received, or were due to receive, total remuneration of $100,000 or more.

The officers meeting these criteria were the Business Development Manager and the Programs Manager. Details in relation to the Executive Director have been incorporated in **Note 16**.

	30 June 2002 $	30 June 2001 $
The aggregate amount of total remuneration of officers shown is:	346,439	262,343

The basis for officers' remuneration is detailed at **Note 1.5(a)**.

The number of officers of the FRDC included in these figures are shown below in the relevant remuneration bands:

Annual remuneration bands — officers	2001–02 No. of officers	2000–01 No. of officers
120,000 – 129,999	0	1
130,000 – 139,999	0	1
160,000 – 169,999	1	0
170,000 – 179,999	1	0
	2	2

Note 19: Remuneration of auditors

	30 June 2002 $	30 June 2001 $
Remuneration to the Auditor-General for auditing the financial statements for the reporting period	9,000	9,000

No other services were provided by the Auditor-General during the reporting period.

Note 20: Average staffing levels

	2001–02	2000–01
Average staffing levels during the year were:	10	9

Note 21: Financial instruments

21A — Terms, conditions and accounting policies

Financial instrument	Note	Accounting policies and methods (including recognition criteria and measurement basis)	Nature of underlying instrument (including significant terms and conditions affecting the amount, timing and certainty of cash flows)
Financial assets		Financial assets are recognised when control over future economic benefits is established and the amount of the benefit can be reliably measured.	
Deposits at call	10A	Deposits are recognised at their nominal amounts. Interest is credited as it accrues.	Temporarily surplus funds are placed on deposit at call with the Corporation's banker. Interest is earned on the daily balance at the prevailing daily rate of money on call and is paid at the month end.
Receivables for goods and services	10B	Receivables are recognised at the nominal amounts due, less any provision for bad and doubtful debts. Provisions are made when collection of the debt is judged to be less rather than more likely.	Credit terms are net 90 days.
Financial liabilities		Financial liabilities are recognised when a present obligation to another party is entered into and the amount of the liability can be reliably measured.	
Trade creditors	13A	Creditors and accruals are recognised at their nominal amounts being the amount at which the liabilities will settle. Liabilities are recognised to the extent that goods and services have been received (and irrespective of having been invoiced).	Settlement is normally made 90 days after receipt of an invoice.

21B — Interest rate risk

Financial instrument	Note	Floating interest rate		Fixed interest rate			Non-interest bearing		Total		Weighted average effective interest rate	
		2001–02	2000–01	1 year or less	1 to 5 years	> 5 years	2001–02	2000–01	2001–02	2000–01	2001–02	2000–01
Financial assets (recognised)												
Cash at bank	10A	**156,983**	258,056						**156,983**	258,056	**n/a**	n/a
Cash on hand	10A						**300**	300	**300**	300	**n/a**	n/a
Receivables for goods and services	10B						**921,063**	657,612	**921,063**	657,612	**n/a**	n/a
Total		**156,983**	258,056	**0**	**0**	**0**	**921,363**	657,912	**1,078,346**	915,968		
Total assets									**1,681,965**	1,011,106		
Financial liabilities (recognised)												
Trade creditors	13A						**27,822**	92,385	**27,822**	92,385	**n/a**	n/a
Project creditors	13B						**237,911**	389,089	**237,911**	389,089	**n/a**	n/a
Creditors — other	13C						**1,001,399**	0	**1,001,399**	0		
Total		**0**	0	**0**	**0**	**0**	**1,267,132**	481,474	**1,267,132**	481,474		
Total liabilities									**1,533,690**	643,085		

Note 21: Financial instruments (cont.)

21C — Net fair values of financial assets and liabilities

		2001–02		2000–01	
	Notes	Total carrying amount	Aggregate net fair value	Total carrying amount	Aggregate net fair value
Financial assets					
Cash at bank	10A	156,983	156,983	258,056	258,056
Cash on hand	10A	300	300	300	300
Receivables for goods and services	10B	921,063	921,063	657,612	657,612
		1,078,346	**1,078,346**	**915,968**	**915,968**
Financial liabilities					
Trade creditors	13A	27,822	27,822	92,385	92,385
Project creditors	13B	237,911	237,911	389,089	389,089
Other creditors	13C	1,001,399	1,001,399	0	0
		1,267,132	**1,267,132**	**481,474**	**481,474**

Financial assets

The net values of cash and non-interest-bearing monetary assets approximate their carrying amounts.

Financial liabilities

The net fair value for creditors are approximated by their carrying amounts.

21D — Credit risk exposure

The FRDC's maximum exposures to credit risk at reporting date in relation to each class of recognised financial assets is the carrying amount of those assets as indicated in the Statement of Financial Position.

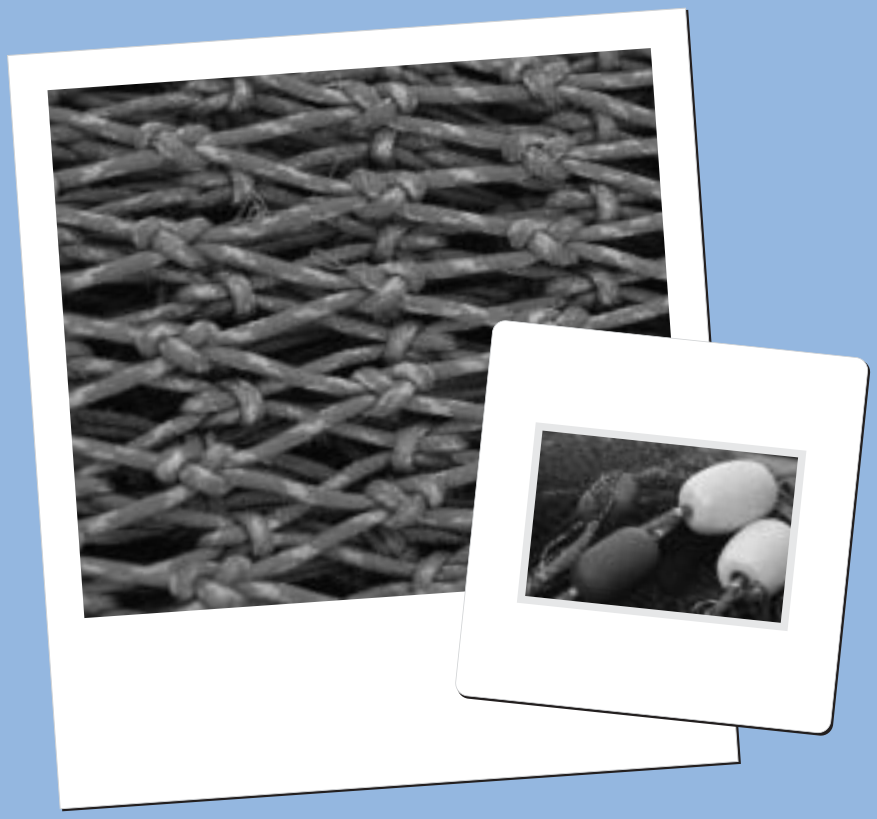
The FRDC has no significant exposure to any concentration of credit risk.

All figures for credit risk referred to do not take into account the value of any collateral or other security.

Note 22: Other related parties

FRDC is one of only two members of Seafood Services Australia Limited (SSA), a company limited by guarantee. While FRDC has significant influence over SSA, FRDC has no ownership interest in SSA that would require the application of AAS14 "Accounting for Investments in Associates". The constitution of SSA prohibits the distribution of any assets and income to its members, except as bona fide compensation for services rendered or expenses incurred on behalf of SSA. On the winding up of SSA, any amounts remaining after the satisfaction of all debts and liabilities must be transferred to any corporation with similar objectives to SSA, which is not carried on for the profit or gain of its individual members.

During the year, FRDC paid a total of $701,642 to SSA by way of grant funding. As at 30 June 2002 SSA had total assets of $502,772; total liabilities of $486,765; and for the year then ended made a surplus from ordinary activities of $16,007.



Appendices

Appendix A: Principal legislative requirements for reporting

This annual report complies with many requirements of Commonwealth legislation. This appendix outlines the principal reporting requirements of the foremost legislation and some of their consequences for the FRDC. 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) to include, among other things:[18]

- 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.

In turn, section 28 of the PIERD Act requires the Corporation's directors to provide particulars, among other things, of:[19]

- R&D activities wholly or partly coordinated or funded, and associated spending;
- the extent to which operations achieved the objectives of the R&D plan and implemented the annual operational plan; and
- the extent to which the Corporation has contributed to the attainment of the objects of the Act.

18 The sub-paragraphs are an edited version of clauses 8 to 17 of the CAC Orders.

19 The sub-paragraphs are an edited version of portions of section 28 of the PIERD Act.

PIERD Act requirements

The PIERD Act also specifies matters that must be reported by the FRDC. In particular, section 28 states:

(1) The directors must include in each report on an R&D Corporation prepared under section 9 of the Commonwealth Authorities and Companies Act 1997:

(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 B**.

EPBC Act requirements

Section 516A of the EPBC Act requires the FRDC to report on ecologically sustainable development 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 opposite, 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 mission, and are the basis for the planned outcomes of the three 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 Commonwealth Government is seeking*. Reporting of the three R&D programs (starting respectively on pages 42, 52 and 62) addresses this requirement.
- *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 contracting 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 via this annual report and in more detail in final reports for projects. Before R&D projects start, the FRDC assesses their environmental impacts and ensures that appropriate approvals are obtained.
  - *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 Program 4 — the Management and Accountability Program.

A compliance index (on pages 182–183) shows the page numbers in this report on which information nominated by legislation and Commonwealth policies is reported.

Appendix B: The Corporation's legislative foundation and the exercise of ministerial powers

Enabling legislation

The FRDC was established on 2 July 1991 under the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act).

The FRDC Board is responsible to the Minister for Agriculture, Fisheries and Forestry and to the Parliamentary Secretary to the Minister — and, through them, to Parliament.

The objects, functions and statutory powers of R&D corporations are specified in the PIERD Act, the text of which is available from the Internet via the FRDC website.

The FRDC's statements of its objects, functions and statutory powers (shown below) mirror the wording of the PIERD Act but are specific to the FRDC and its business environment. Additionally, in the interests of clarity the statements of the FRDC's functions and statutory powers are shorter and simpler than the wording of the Act, which is generalised to all R&D corporations.

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 R&D 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 R&D.

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, evaluate and report on fisheries R&D activities that are funded to the Parliament; the Minister for Agriculture, Fisheries and Forestry; the Parliamentary Secretary to the Minister; the Minister for Conservation 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 devises 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 following description of ministerial powers has been drawn from several sections of the PIERD Act and has been condensed from the original in the interests of clarity. The text of the Act is available from the Internet via the FRDC website.

Ministerial powers

Ministerial powers (which may be exercised by the Minister for Agriculture, Fisheries and Forestry or the Parliamentary Secretary to the Minister) under the enabling legislation relate to:

- directing the FRDC in writing as to the performance of its functions and the exercise of its powers;
- approving the R&D plan and the annual operational plan;
- requesting and approving variation to the R&D 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 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 and Government Director;
- appointing directors, other than the Chairperson, Government Director 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 Commonwealth 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 co-ordination 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.

Additional powers relating to adherence to government policy and to corporate governance and reporting are available to the Minister, the Parliamentary Secretary and the Finance Minister under the *Commonwealth Authorities and Companies Act 1997*.

Exercise of ministerial powers during 2001–02 is described on page 100.

Appendix C: Freedom of information statement

The *Freedom of Information Act 1982* (FOI Act) requires each Commonwealth Government agency to publish a statement setting out its role, structure and functions, the documents available for public inspection, and access to such documents. Section 8 of the FOI Act requires each agency to publish information on the way it is organised, its powers, decisions made and arrangements for public involvement in its work.

The following statement, in conjunction with information contained this annual report, is intended to meet the requirements of section 8 of the FOI Act.

A leaflet about the FOI Act is available from the Commonwealth Attorney-General's Department (www.ag.gov.au/foi/foi%5Fact/welcome.html).

Role, structure and functions

The FRDC's role, structure and functions are described respectively on pages 6, 8 and 148 of this annual report. Further information is on pages 8–16 of the FRDC's R&D plan. Both these publications are freely available to the public.

The legislation under which the FRDC is established is the *Primary Industries and Energy Research and Development Act 1989*; further information is in appendix A (page 144) and appendix B (page 147).

Documents available for inspection

The following documents are available for inspection at the FRDC office:

R&D plan (the FRDC's strategic plan)	File, publication and Internet website*
Operational procedures	Files, unpublished document
Annual operational plan	File, unpublished document
Project details	Database, files
Project agreements	Files
Final project reports	Publications and Internet website links**
Non-technical summaries of final project reports	Publications and Internet website*
R&D funding applications	Files
Annual report	File, publications and Internet website*
R&D News	File, publications and Internet website*
Administration	Files, unpublished document
Mailing lists	Database

* The FRDC's website address is www.frdc.com.au

** Non-technical summaries of all final reports of FRDC projects are available on the FRDC website. Hyperlinks are also available to other websites containing full final reports.

Copies of publications and reports are available on request, generally free of charge except for final project reports and related products. Some other information may be subject to assessment of access for such matters as commercial confidentiality or personal privacy.

Information currently available from the FRDC in paper publications and in electronic form is listed on page 12.

Access to documents

To seek access to FRDC documents, please contact the FRDC's Business Development Manager: address, telephone, fax and e-mail details are shown opposite the title page of this report. It may not be necessary to request the information under the FOI Act — the FRDC may simply provide it to you on request. At all times, however, you have the option of applying under the FOI Act.

Unless you are seeking access to personal information about yourself, you will need to pay the standard FOI application fee of $30.00 when making your application. Additional processing charges may also 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 mail (photocopies) to an address specified in your request, or
- at the Information Access Office (established by the Attorney-General) nearest your place of residence.

Organisation, powers, and decisions made

The FRDC's organisation is shown in figure 2 on page 8. The FRDC's powers are summarised in appendix B (page 148). The principal decisions made by the FRDC Board during 2001–02 are summarised in the directors' review of operations and future prospects starting on page 25. A ministerial direction is summarised on page 100, and notifications from the Commonwealth Government are summarised on page 101.

Arrangements for public involvement

The FRDC's relationship with its stakeholders is described on page 93 under the heading 'Representative organisations and other stakeholders'. Other aspects of public involvement are discussed in the directors' review of operations and future prospects (from page 25) and in R&D Program achievements (from page 41).

You are welcome to state your views on current policies, procedures and/or activities of the FRDC to the Executive Director; the Chairman of the FRDC Board; the Minister for Agriculture, Fisheries and Forestry; the Parliamentary Secretary; the Minister for Forestry and Conservation; and to any parliamentary committee that may concern itself with matters relating to the FRDC.

Appendix D: Project expenditure by program

Summary of project expenditure

All major investing and financing activities occurred within the context of the FRDC's three R&D Programs and management and accountability activities.

Expenditure on the three R&D Programs and on activities separately funded by the Commonwealth Government was as follows:

	2001–02 expenditure ($m)
Program 1: Natural Resources Sustainability	11.88
Program 2: Industry Development	7.19
Program 3: Human Capital Development	0.96
Aquatic animal health activities funded by the Commonwealth Government initiative 'Building a national approach to animal and plant health'	0.42
Total	**20.45**

Because the FRDC does not itself undertake R&D, all project expenditure is discretionary.

The organisation shown against each project is the organisation primarily responsible for undertaking the R&D. However, project expenditure may also include payments made to other parties related to the project, and cash contributions to projects from other sources paid through the FRDC. Details of each project are available from the FRDC. A minus sign appearing before a figure in the fourth column denotes a refund from a research provider.

Natural Resources Sustainability projects

Project ID	Project title	Organisation name	$
1994/022	Determining the origin of recruits to the east coast yellowfin tuna fishery and delineating the structure of yellowfin stocks in the western Pacific	CSIRO Marine Research	(2,819)
1997/105	Growth, mortality, movements and nursery habitats of red-legged banana prawns (*Penaeus indicus*) in the Joseph Bonaparte Gulf	CSIRO Marine Research	27,309
1997/108	Definition of effective spawning stocks of commercial tiger prawns in the NPF and king prawns in the eastern king prawn fishery: behaviour of post-larval prawns	CSIRO Marine Research	29,805
1997/110	Age validation from tagged school and gummy sharks injected with oxytetracycline	Natural Resources and Environment, Victoria	7,694
1997/115	Modelling the population dynamics of high priority SEF species	CSIRO Marine Research	34,739
1997/118	Stock structure of Australian populations of orange roughy using microsatellite analyses	La Trobe University	5,350
1997/126	Assessment of length and age composition of commercial kingfish landings	NSW Fisheries	10,842
1997/133	Fisheries biology and habitat ecology of the southern sea garfish (*Hyporhamphus melanochir*) in southern Australia	SA Research and Development Institute	20,748
1997/137	Collection of biological data required for management of the blue swimmer crab fishery in the central and lower west coasts of Australia	Murdoch University	12,725
1997/139	Mesoscale oceanographic data analysis and data assimilative modelling with application to Western Australian fisheries	CSIRO Marine Research	39,170
1997/145	Developing indicators of recruitment and effective spawner stock levels in eastern king prawns	Department of Primary Industries, Queensland	27,919
1997/206	Effects of net fishing: addressing biodiversity and bycatch issues in Queensland inshore waters	Department of Primary Industries, Queensland	40,834
1997/207	Development of discard-reducing gears and practices in the estuarine prawn and fish haul fisheries of NSW	NSW Fisheries	40,160
1997/212	Impact of prawn farm effluent on coastal waterways	Australian Institute of Marine Science	28,912
1998/103	Synthesis of existing data on the early life history of southern Australian finfish	CSIRO Marine Research	32,009
1998/105	Development of an artificial neural network for automated age estimation	Natural Resources and Environment, Victoria	34,294
1998/108	Catch analysis and productivity of the deep-water dogfish resource in southern Australia	CSIRO Marine Research	12,101
1998/109	Risk analysis and sustainability indicators for prawn stocks in the Northern Prawn Fishery	CSIRO Marine Research	55,020
1998/116	Fisheries biology and spatial modelling of the blue swimmer crab (*Portunus pelagicus*)	SA Research and Development Institute	707

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
1998/118	Genetic (microsatellite) determination of stock structure of the blue swimmer crab in Australia	Murdoch University	11,119
1998/121	Collection of fisheries data required for management of the blue swimmer crab fishery in the central and lower west coasts of Australia	Department of Fisheries Western Australia	53,292
1998/131	Stock structure and regional variation in population dynamics of the red throat emperor and other target species of the Queensland Tropical Reef Line Fishery	James Cook University	20,686
1998/133	Stock size of bêche-de-mer, and recruitment patterns and gene flow in the black teatfish on the Great Barrier Reef	Australian Institute of Marine Science	121,662
1998/135	Fishery biology and management of black jewfish aggregations near the Injinoo community, far northern Cape York	Balkanu Cape York Development Corporation	17,807
1998/138	Mesh selectivity in the NSW demersal trap fishery	NSW Fisheries	39,913
1998/139	Coastal stocks of fish: from which estuaries are most adults derived?	University of Sydney	38,259
1998/156	Optimising the efficiency of enforcement in commercial fisheries	Department of Fisheries Western Australia	40,346
1998/159	Stock structure of northern and western Australian Spanish mackerel	NT Department of Business, Industries and Resource Development	32,046
1998/201	*Bycatch Solutions*: a handbook for fishers in non-trawl fisheries	Ocean Watch Australia Ltd	2,729
1998/202	Monitoring the catch of turtles in the Northern Prawn Fishery	Bureau of Rural Sciences	7,403
1998/203	Feeding ecology of seabirds nesting at the Abrolhos Islands, Western Australia	Department of Fisheries Western Australia	12,835
1998/204	Effects of Trawling Subprogram: maximising yield and reducing discards in the South East Trawl Fishery through gear development and evaluation	Natural Resources and Environment, Victoria	137,423
1998/205	Construction and evaluation of an underwater setting device to prevent accidental capture of seabirds on tuna longliners	Tasmanian Parks and Wildlife Service	45,796
1998/208	Habitat modification and its influence on prawn and crab fisheries	SA Research and Development Institute	80,615
1998/210	Port Curtis mud crab shell disease: nature, distribution and management	Central Queensland University	12,486
1998/212	Determination of the disease status of Western Australian commercial prawn stocks	Department of Fisheries Western Australia	20,613
1998/215	Coastal floodplain management in eastern Australia: barriers to fish and invertebrate recruitment in acid sulphate soil catchments	NSW Fisheries	158,633
1998/221	Impoundment stocking strategies for eastern and northern Australia	Department of Primary Industries, Queensland	151,379

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
1998/225	Effects-of-trawling subprogram: prawn fishery bycatch and discards — fates and consequences for a marine ecosystem	SA Research and Development Institute	36,403
1999/100	Spatial and seasonal stock dynamics of northern tiger prawns using fine-scale commercial catch-and-effort data	University of Tasmania	11,170
1999/102	Population modelling and harvest strategy evaluation for school and gummy shark	CSIRO Marine Research	53,760
1999/104	An integrated analysis of the growth rates of southern bluefin tuna for use in estimating the catch-at-age matrix in the stock assessment	CSIRO Marine Research	38,416
1999/106	Size at first maturity and recruitment into egg production of southern bluefin tuna	CSIRO Marine Research	29,029
1999/107	Development of an operating model for evaluation of harvest strategies for the Eastern Tuna and Billfish Fishery	CSIRO Marine Research	58,230
1999/109	Migration and habitat preferences of bigeye tuna (*Thunnus obesus*) on the east coast of Australia: using archival and conventional tags to determine key uncertainties in the species' stock structure, movement dynamics and CPUE trends	CSIRO Marine Research	25,067
1999/112	Arrow squid in southern Australian waters: supplying management needs through biological investigations	University of Tasmania	68,155
1999/113	The application of industry acoustic techniques to the surveying of NSW redfish stocks: a feasibility study	Biospherics Pty Ltd	11,195
1999/116	Development of a spatially-structured model for stock assessment and TAC decision analysis for Australian abalone fisheries	Natural Resources and Environment, Victoria	167,862
1999/119	Sustainable tiger prawn (*Penaeus monodon*) populations for broodstock supply	Department of Primary Industries, Queensland	143,406
1999/120	Reference point management and the role of catch-per-unit effort in prawn and scallop fisheries	Department of Primary Industries, Queensland	93,423
1999/122	Biology, management and genetic stock structure of mangrove jack (*Lutjanus argentimaculus*) in Australia	Department of Primary Industries, Queensland	82,416
1999/123	Age validation in tailor (*Pomatomus saltatrix*)	Department of Primary Industries, Queensland	68,741
1999/124	Trawl bycatch of syngnathids in Queensland: catch rates, distribution and population biology of seadragons (*Solegnathus pipehorses*)	Griffith University	26,725
1999/125	Tropical Resource Assessment Program: Phase II, model application and validation	Department of Primary Industries, Queensland	55,234
1999/128	Research to develop and manage the sea urchin fisheries of NSW and eastern Victoria	NSW Fisheries	88,360

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
1999/134	Migratory dynamics and recruitment of snapper (*Pagrus auratus*) in Victorian waters	Natural Resources and Environment, Victoria	148,282
1999/138	Jellyfish fishery development and assessment	Natural Resources and Environment, Victoria	79,166
1999/142	Modelling prawn movement and spatial dynamics in the Spencer Gulf and West Coast Prawn Fisheries	University of Adelaide	93,750
1999/145	Stock assessment models with graphical user interfaces for key South Australian marine finfish stocks	SA Research and Development Institute	36,901
1999/147	Greening Australia's Fisheries: a national strategy for application of environmental management systems in the Australian fishing industry	Southern Fishermen's Association Inc.	70,097
1999/151	Stock assessment of Spanish mackerel (*Scomberomorus commerson*) in Western Australia	Department of Fisheries Western Australia	122,418
1999/152	The age, growth, reproductive biology and stock assessment of grass emperor (*Lethrinus laticaudis*) in Shark Bay, WA	Department of Fisheries Western Australia	102,497
1999/153	Development of a rigorous sampling methodology for a long-term annual index of recruitment for finfish species from southwestern WA	Department of Fisheries Western Australia	156,332
1999/154	Determining biological characteristics of the champagne crab (*Hypothalassia armata*) for management purposes	Murdoch University	30,144
1999/155	Modelling Western Australian fisheries with techniques of time series analysis: examining data from a different perspective	Department of Fisheries Western Australia	84,572
1999/158	Implementation of the National Recreational and Indigenous Fishing Survey	AFFA	249,089
1999/162	Evaluating the effectiveness of marine protected areas as a fisheries management tool	University of Tasmania	62,484
1999/163	A coordinated commercial fishing industry approach to the use of marine protected areas	University of Canberra	82,401
1999/164	Application of molecular genetics to the Australian abalone fisheries: forensic protocols for species identification and blacklip stock structure	University of Tasmania	79,273
1999/217	Stable isotope tracing of the contribution of seagrass production to subtropical fisheries species occurring outside seagrass areas	Griffith University	13,362
1999/222	Developing techniques for enhancing prawn fisheries, with a focus on brown tiger prawns (*Penaeus esculentus*) in Exmouth Gulf	CSIRO Marine Research	82,596
1999/229	A quantitative assessment of the environmental impacts of mussel aquaculture on seagrasses	International Risk Consultants	18,247
1999/230	Inventory and assessment of Australian estuaries	CSIRO Land and Water	98

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2000/100	Age and growth of bigeye tuna (*Thunnus obesus*) from the eastern and western AFZ	CSIRO Marine Research	70,456
2000/101	Development of harvest strategies for selected SEF species	CSIRO Marine Research	93,180
2000/102	Spawning and reproductive biology of blue grenadier in south-eastern Australia and the winter spawning aggregation off western Tasmania	Natural Resources and Environment, Victoria	15,030
2000/105	Preparation of a field guide to sharks and rays caught in Australian fisheries	CSIRO Marine Research	18,836
2000/108	Population structure of the Patagonian toothfish (*Dissostichus eleginoides*) in Australian waters	CSIRO Marine Research	17,805
2000/109	Stock assessment and management strategy evaluation for sub-Antarctic fisheries	CSIRO Marine Research	41,641
2000/112	Assessment of illegal catches of Australian abalone, Phase 2: development of desk-based survey methods	Natural Resources and Environment, Victoria	54,828
2000/120	Population dynamics and assessment of sand and rock flathead in Victorian waters	Natural Resources and Environment, Victoria	54,774
2000/121	Population dynamics and reproductive ecology of the southern calamari in Tasmania	University of Tasmania	75,183
2000/125	Implementation of an age-structured stock assessment model for pilchards (*Sardinops sagax*) in South Australia	SA Research and Development Institute	98,156
2000/127	Predicting and assessing recruitment variation: a critical factor for the management of the mother-of-pearl (*Pinctada maxima*) fishery in WA	Department of Fisheries Western Australia	68,893
2000/132	Characterisation of the inshore fish assemblages of the Pilbara and Kimberley coasts	Department of Fisheries Western Australia	141,453
2000/134	Biology and stock assessment of the thickskin (sandbar) shark (*Carcharhinus plumbeus*) in WA and further refinement of the dusky shark (*Carcharhinus obscurus*) stock assessment	Department of Fisheries Western Australia	98,633
2000/135	Regrowth of pilchard (*Sardinops sagax*) stocks off southern WA following the mass mortality event of 1998–99	Department of Fisheries Western Australia	99,183
2000/137	Determination of the biological parameters required for managing the fisheries of four tuskfish species and western yellowfin bream	Murdoch University	80,150
2000/138	Minimising the cost of future stock monitoring and assessing the potential for increased yields from the oceanic snapper (*Pagrus auratus*) stock off Shark Bay	Department of Fisheries Western Australia	22,448
2000/139	Quantification of changes in recreational catch and effort on inner Shark Bay snapper species following implementation of responsive management measures	Department of Fisheries Western Australia	20,912

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2000/142	Methods for monitoring abundance and habitat for northern Australian mud crab (*Scylla serrata*)	NT Department of Business, Industries and Resource Development	267,875
2000/145	National application of sustainability indicators for Australian fisheries	Department of Fisheries Western Australia	87,097
2000/146	Developing environmental management standards for the Australian seafood industry	Ocean Watch Australia Ltd	78,275
2000/147	ESD and fisheries: what, why, how and when? A stakeholders' workshop	Seafood Industry Victoria Inc.	6,927
2000/149	AAHL Fish Diseases Laboratory bacteriology workshop	CSIRO Livestock Industries	17,108
2000/151	Control of *Perkinsus* disease in abalone	University of Queensland	60,855
2000/153	Integrating fishing industry knowledge of fishing grounds with scientific data on seabed habitats for informed spatial management and ESD evaluation in the SEF	CSIRO Marine Research	51,229
2000/157	Development of a fisheries habitat suitability model utilising a geographic information system	Natural Resources and Environment, Victoria	92,822
2000/159	The importance to commercial and recreational fish species of the various habitats found in the near-shore marine waters and estuaries of south-western Australia	Murdoch University	118,144
2000/160	Developing surrogates for ecosystems, assessing the impacts of trawling, and modelling the performance of spatial closures on the Northern Prawn Fishery	CSIRO Marine Research	110,865
2000/163	Toxicity and sub-lethal effects of persistent pesticides on juvenile prawns and a common inter-tidal seagrass species	University of Adelaide	47,690
2000/164	Atlantic Salmon Aquaculture Subprogram: development of novel methods for the assessment of sediment condition and determination of management protocols for sustainable finfish cage aquaculture operations	University of Tasmania	76,613
2000/166	Towards an assessment of natural and human-use impacts on the marine environment of the Abrolhos Islands, Phase 1: data consolidation and scoping	Department of Fisheries Western Australia	71,949
2000/170	Effects of Trawling Subprogram: bycatch weight, composition and preliminary estimates of the impact of bycatch reduction devices in Queensland's trawl fishery	Department of Primary Industries, Queensland	246,596
2000/172	Bycatch assessment of the estuarine commercial gill net fishery in NSW	NSW Fisheries	59,855
2000/173	Effects of Trawling Subprogram: assessment and improvement of BRDs and TEDs in the NPF — a cooperative approach by fishers, scientists, fisheries technologists, economists and conservationists	CSIRO Marine Research	408,603

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2000/176	Assessment and management of potential impacts of prawn trawling on estuarine assemblages	University of Sydney	100,542
2000/179	Habitat restoration and management: a trial of an investment-based approach	WBM Oceanics Australia	65,730
2000/180	Restocking of the Blackwood River Estuary with black bream (*Acanthopagrus butcheri*)	Challenger TAFE	115,248
2000/182	Eradicating European carp from Tasmania and implications for national European carp eradication	Inland Fisheries Services	44,085
2000/185	Rock Lobster Enhancement and Aquaculture Subprogram: evaluating the release and survival of juvenile rock lobsters released for enhancement purposes	University of Tasmania	31,429
2000/186	Assessment of the impacts of hydro-electric dams on eel stocks in Tasmania and an evaluation and assessment of mitigation strategies	University of Tasmania	35,682
2000/187	Direct sensing of the size and abundance of target and non-target fauna in Australian fisheries: a national workshop	University of Western Australia	23,696
2000/189	Effects of Trawling Subprogram: implementation and assessment of bycatch reduction devices in the Shark Bay and Exmouth Gulf trawl fisheries	Department of Fisheries Western Australia	85,097
2000/190	Development of a business plan for enhancement of saucer scallops in sub-tropical waters	Department of Primary Industries, Queensland	40,694
2000/192	The Third International Billfish Symposium	Ozacom	5,093
2000/194	Maximising survival of released under-sized west coast reef fish	Department of Fisheries Western Australia	199,074
2000/197	Commonwealth fisheries policy review	AFFA	9,260
2001/002	A new approach to assessment in the NPF: spatial models in a management strategy environment that includes uncertainty	CSIRO Marine Research	120,468
2001/004	Stock structure and spatial dynamics of the warehous: a pilot study	Natural Resources and Environment, Victoria	79,712
2001/005	Stock assessment for south east and southern shark fishery	CSIRO Marine Research	126,926
2001/006	Effects of Trawling Subprogram: promoting industry uptake of gear modifications to reduce bycatch in the South East and Great Australian Bight trawl fisheries	Natural Resources and Environment, Victoria	117,290
2001/007	Shark and other chondrichthyan byproduct and bycatch estimation in the SEF Trawl and non-trawl sectors	Natural Resources and Environment, Victoria	42,513
2001/008	Assessment of seal fishery interactions in the South East Trawl Fishery and development of fishing practices and seal exclusion devices in the winter blue grenadier fishery to mitigate seal bycatch by SETF trawlers	Bureau of Rural Sciences	171,775

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2001/012	The E-boat: implementation of an on-board electronic data collection and transmission system — a working model from the South East Trawl Fishery	South East Trawl Fishing Industry Association	20,026
2001/014	Age and growth of broadbill swordfish (*Xiphias gladius*) from Australian waters	CSIRO Marine Research	87,185
2001/018	Development of a genetic method to estimate effective spawner numbers in tiger prawn fisheries	Department of Primary Industries, Queensland	122,500
2001/019	Exploitation dynamics and biological characteristics of east coast Spanish mackerel harvested by the recreational and commercial sectors	CRC Reef Research	75,088
2001/020	Modelling multi-species targeting of fishing effort in the Queensland Coral Reef Finfish Fishery	CRC Reef Research	73,826
2001/022	Environmental flows for subtropical estuaries: understanding the freshwater needs of estuaries for sustainable fisheries production and assessing the impacts of water regulation	CRC for Coastal Zone Estuary and Waterway Management	167,460
2001/023	Spatial arrangement of estuarine and coastal habitats and the implications for fisheries production and diversity	University of Queensland	83,879
2001/027	Life history, reproductive biology, habitat use and fishery status of eastern sea garfish (*Hyporhamphus australis*) and river garfish (*H. regularis ardelio*) in NSW waters	University of Wollongong	75,188
2001/031	Reducing the discarding of small prawns in NSW's commercial and recreational prawn fisheries	NSW Fisheries	148,118
2001/033	Enhancement of the NSW blacklip abalone fishery using hatchery-produced seed	NSW Fisheries	82,543
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	Natural Resources and Environment, Victoria	179,137
2001/042	Development of the tools for long-term management of the giant crab resource: data collection methodology, stock assessment and harvest strategy evaluation	University of Tasmania	31,823
2001/044	Establishment of the long-spined sea urchin (*Centrostephanus rosgersii*) in Tasmania: a first assessment of the threat to abalone and rock lobster fisheries	University of Tasmania	49,987
2001/055	Biological and fisheries data for managing deep sea crabs in Western Australia	Murdoch University	91,938
2001/060	Characterising the fish habitats in the Recherche Archipelago, Western Australia	University of Western Australia	183,021

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2001/061	Identifying nursery areas used by inner bay and oceanic snapper stocks in the Shark Bay region, in relation to the effect of prawn trawling on inner bay snapper stocks	Department of Fisheries Western Australia	53,998
2001/064	Aboriginal fishing strategy	Department of Fisheries Western Australia	53,124
2001/065	Socio-economic valuation of allocation options between recreational and commercial sectors	Economic Research Associates Pty Ltd	137,370
2001/067	Quantification of changes in recreational catch and effort on blue swimmer crabs in Cockburn Sound and Geographe Bay	Department of Fisheries Western Australia	78,399
2001/068	Development of stock allocation and assessment techniques in WA blue swimmer crab fisheries	Department of Fisheries Western Australia	164,468
2001/069	Compliance program evaluation and optimisation in commercial and recreational Western Australian fisheries	Department of Fisheries Western Australia	67,928
2001/070	Can production in the southern rock lobster fishery be improved? Linking juvenile growth, survival and density dependence to sustainable yield	Natural Resources and Environment, Victoria	94,227
2001/072	Development of options for improving the planning and managing of abalone wild catch R&D	Abalone Industry Association of SA Inc.	22,586
2001/074	Linking fishery-dependent and fishery-independent assessments of abalone fisheries	University of Tasmania	107,302
2001/076	Assessing survey methods for greenlip abalone in South Australia	SA Research and Development Institute	54,093
2001/077	Northern Australian sharks and rays: the sustainability of target and bycatch fisheries, Phase 1	Department of Primary Industries, Queensland	160,162
2001/082	ESD Reporting and Assessment subprogram: strategic planning, project management and adoption	Department of Fisheries Western Australia	59,583
2001/093	Aquatic Animal Health Subprogram: strategic planning, project management and adoption	AFFA	78,391
2001/094	Rock Lobster Enhancement and Aquaculture Subprogram: health assurance for southern rock lobsters	University of Tasmania	15,526
2001/097	Atlantic Salmon Aquaculture Subprogram: system-wide environmental issues for sustainable salmonid aquaculture	CSIRO Marine Research	189,155
2001/098	Effects of Trawling Subprogram: evaluation of "hoppers" for reduction of bycatch mortality in the Queensland East Coast Prawn Trawl fishery	Department of Primary Industries, Queensland	12,189
2001/099	Environmental risk and impact assessment of the pearling industry	Pearl Producers Association	76,217

NATURAL RESOURCES SUSTAINABILITY PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2001/100	National strategy for the survival of line-caught fish: planning, project management and communications	Australian National Sportfishing Association	1,457
2001/101	National strategy for the survival of line-caught fish: a review of research and fishery information	SA Research and Development Institute	77,185
2001/102	Southern Bluefin Tuna Aquaculture Subprogram: tuna environment — development of novel methodologies for cost-effective assessment of the environmental impact of aquaculture	SA Research and Development Institute	109,854
2001/103	Southern Bluefin Tuna Aquaculture Subprogram: tuna environment subproject — evaluation of waste composition and waste mitigation	SA Research and Development Institute	238,802
2001/104	Southern Bluefin Tuna Aquaculture Subprogram: tuna environment — development of regional environmental sustainability	SA Research and Development Institute	105,054
2001/105	Marine Freshwater Research special issue: a complex quota-managed fishery — science and management in Australia's South East Fishery	Natural Resources and Environment, Victoria	16,364
2002/005	Arresting the decline of the commercial and recreational fisheries for mulloway (*Argyrosomus japonicus*)	NSW Fisheries	41,066
2002/028	Trophic dynamics of the eastern shelf and slope of the South East Fishery: impacts of and on the fishery	CSIRO Marine Research	40,287
2002/059	Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries	NSW Fisheries	250
2002/064	Northern Australian sharks and rays: sustainability of target and bycatch species, Phase 2	CSIRO Marine Research	745
2002/083	Towards an industry-based abalone fishery monitoring program — Secretariat file	Seafood Industry Victoria Inc.	250
2002/085	Development of risk assessment procedures in national fisheries compliance programs	Department of Fisheries Western Australia	12,302
2002/090	Implementation of an environmental management system for Victoria's bay and inlet fisheries	Seafood Industry Victoria Inc.	16,000
2002/096	Review of previous research on northern mackerel and assessment of current and future research needs for these fisheries	SA Research and Development Institute	4,790
2002/097	Development of national habitat classification framework	National Oceans Office	438
Total Natural Resources Sustainability projects			**$11,881,540**

Industry Development projects

Project ID	Project title	Organisation name	$
1992/152.80	Genetic diversity in Tasmanian Atlantic salmon	Salmon Enterprises of Tasmania	5,272
1993/128.80	Ex-post BCA of projects 1993/128, 1995/060, 1997/214, 1992/152, 1995/080 and 1996/347	FRDC	5,272
1994/110	Development of a "prices paid" monitoring system	ABARE	8,859
1994/136	*Handbook of Australian Seafood* — a guide to whole fish and fillets	CSIRO Marine Research	368
1995/060.80	Diagnosis and identification of *Aeromonas salmonicida* and detection of latent infections in carrier fish	CSIRO Livestock Industries	5,272
1995/080.80	DNA microsatellite variation in Atlantic salmon	CSIRO Marine Research	5,272
1996/285	Identification of environmental factors, with particular reference to acid sulphate soil run-off causing production losses in Sydney rock oysters	University of New South Wales	11,505
1996/340	Enhanced usage of contemporary scientific findings on health benefits of seafood to promote fresh seafood consumption	Dr Shawn Somerset	463
1996/345	Rock Lobster Post-Harvest Subprogram: physiological studies of stress and morbidity during post-harvest handling and storage of western rock lobster (*Panulirus cygnus*)	Department of Primary Industries, Queensland	21,013
1996/347.80	Identification of a Y-chromosome marker in Atlantic salmon (extension to FRDC project 1995/80)	CSIRO Marine Research	5,272
1996/357	Selective breeding for disease resistance and fast growth in Sydney rock oysters	NSW Fisheries	16,482
1997/222	Development of continuous prawn cell lines for virus isolation and cultivation	CSIRO Livestock Industries	108,441
1997/312	Assessment of eastern Australian glass eel stocks and associated eel aquaculture	Natural Resources and Environment, Victoria	15,690
1997/316	Development of immuno-assays to measure markers of growth and stress in farmed fish	CRC for Tissue Growth and Repair	21,162
1997/321	Selective breeding of Pacific oysters	University of Tasmania	68,464
1997/323	Abalone Aquaculture Subprogram: environmental requirements of abalone	University of Tasmania	19,089
1997/329	Evaluation of novel polyunsaturated-fatty-acid-producing micro-heterotrophs for incorporation into aquaculture feeds	University of Tasmania	48,906
1997/333	The pearl oyster (*Pinctada maxima*): a histological atlas of normal and diseased tissues	NT Department of Business, Industries and Resource Development	13,500
1997/341	Enhancement of shipboard survivorship of coral trout destined for the live fish market	James Cook University	44,256
1997/342	Hooking into Asian seafood markets: commercial development of selected under-utilised Australian fisheries resources for Asian markets	Department of Primary Industries, Queensland	17

INDUSTRY DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
1997/344	Pearl oyster genetics	Australian Institute of Marine Science	28,099
1997/364	Southern Bluefin Tuna Aquaculture Subprogram Project 4: effect of husbandry and handling techniques on the post-harvest quality of farmed southern bluefin tuna	Department of Primary Industries, Queensland	20,284
1997/400	Maintenance and operation of the National Seafood Centre	Department of Primary Industries, Queensland	(28,297)
1998/166	Estimation of gross value of fisheries production	ABARE	16,348
1998/209	Detection and abundance of *Paramoeba* species in the environment	CSIRO Marine Research	45,887
1998/301	Rock Lobster Enhancement and Aquaculture Subprogram Project 1: facilitation, administration and promotion	Barneveld Nutrition Pty Ltd	2,131
1998/302	Rock Lobster Enhancement and Aquaculture Subprogram Project 2: towards establishing techniques for large-scale harvesting of pueruli and obtaining a better understanding of mortality rates	Department of Fisheries Western Australia	16,294
1998/303	Rock Lobster Enhancement and Aquaculture Subprogram Project 3: feed development for rock lobster aquaculture	CSIRO Marine Research	22,496
1998/306	Abalone Aquaculture Subprogram: early life history of abalone (*Haliotis rubra*, *H. laevigata*): settlement, survival and early growth	Deakin University	12,922
1998/311	Application of extracellular enzyme techniques to studying the role of bacteria in the ecology of prawn ponds and diseases of *P. monodon* and *P. japonicus*	University of Western Sydney, Macarthur	42,532
1998/319	Oyster depuration: a re-assessment of depuration conditions and the role of bacterial and viral indicators in determining depuration effectiveness	University of New South Wales	39,743
1998/322	Aquaculture Diet Development Subprogram: feed development for Atlantic salmon (*Salmo salar*)	University of Tasmania	16,913
1998/328	Health problems of the Western Australian dhufish (*Glaucosoma hebraicum*)	Murdoch University	25,460
1998/333	Husbandry of the blue swimmer crab in aquaculture	Ocean Gold Investments Pty Ltd	12,500
1998/335	Development of a national plan for inland saline aquaculture	NSW Fisheries	29,398
1998/338	The prevention of occupationally related infections in western rock lobster fishermen	Western Australian Fishing Industry Council	25,828
1998/343	9th International Conference on Harmful Algal Blooms, 7–11 February 2000, Hobart	University of Tasmania	10,000

INDUSTRY DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
1998/354	Electronic cooking end-point determination and the effectiveness of alternative cooking methods for Crustacea	Department of Primary Industries, Queensland	2,543
1998/357	Update of the Australian prawn farming industry R&D plan	Australian Prawn Farmers Association	1,550
1998/420	Value-adding silver warehou: basic handling and sensory analyses studies	Southland Fish Supplies Pty Ltd	3,750
1999/201	Atlantic Salmon Aquaculture Subprogram: development of selective enrichment culture-polymerase chain reaction for detection of bacterial pathogens in covertly infected farmed salmonid fish	University of Tasmania	29,313
1999/305	Abalone Aquaculture Subprogram: identification of insulin-like peptides from abalone	Flinders University	16,056
1999/307	Optimal stocking density for Sydney and Pacific oyster cultivation	University of Sydney	26,110
1999/320	Factors required for the successful aquaculture of black bream in inland water bodies: extension to project 1997/309	Murdoch University	36,210
1999/323	Aquaculture Diet Development Subprogram: rapid development of diets for Australian snapper	NSW Fisheries	66,376
1999/328	Development of intensive commercial aquaculture production technology for Murray cod	Natural Resources and Environment, Victoria	68,415
1999/331	Nutritional value of Australian seafood, Phase 2: factors affecting oil composition of edible species	CSIRO Marine Research	32,444
1999/347	Hooking into Asian seafood markets	Department of Primary Industries, Queensland	98,785
1999/351	Australian prawn industry quality standard: development of a third-party-audited seafood industry quality standard for prawn vessels and processors incorporating food safety standards	Australian Prawn Promotion Association	52,600
1999/357	Establishment of Seafood Services Australia, stage 1: seafood quality management and seafood safety (SeaQual Australia)	Seafood Services Australia Limited	430,231
1999/358	Evaluating effective quality monitoring methods for the Australian seafood industry	Department of Primary Industries, Queensland	73,080
1999/369	A pilot investigation of northern shark liver oils: characterisation and value-adding	CSIRO Marine Research	8,888
1999/376	Southern Bluefin Tuna Aquaculture Subprogram: development of a strategic plan for the propagation of southern bluefin tuna	AFFA	6,466
1999/378	A workshop to address the cooperative development of the Australian mussel farming industry	Aquaculture Council of Western Australia Inc.	2,800

INDUSTRY DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
1999/421	Development of an automated oyster grader	Stainless Engineering and Design Pty Ltd	10,250
1999/422	Developing methods for live export of western king prawns	SA Research and Development Institute	10,047
1999/425	Lobster steaming	Fremantle Fishermen's Co-operative Society Ltd	12,000
2000/200	Abalone Aquaculture Subprogram: facilitation, administration and promotion	Abalone Aquaculture Consultancy Pty Ltd	79,390
2000/203	Abalone Aquaculture Subprogram: adaptation of nutritional technologies developed for greenlip abalone for the production of suitable manufactured feeds for blacklip abalone	SA Research and Development Institute	60,056
2000/206	Sustainable genetic improvement of Pacific oysters in Tasmania and South Australia	CSIRO Marine Research	205,601
2000/210	Development of commercial production systems for mud crab (*Scylla serrata*) aquaculture in Australia: hatchery and nursery	NT Department of Business, Industries and Resource Development	126,252
2000/211	Rock Lobster Enhancement and Aquaculture Subprogram: investigation of tail fan damage in live-held adult rock lobsters	University of Adelaide	18,073
2000/212	Rock Lobster Enhancement and Aquaculture Subprogram: nutrition of juvenile and adult lobsters to optimise survival and growth	CSIRO Marine Research	94,162
2000/214	Rock Lobster Enhancement and Aquaculture Subprogram: advancing the hatchery propagation of rock lobsters	University of Tasmania	50,613
2000/215	Improved performance of marron using genetic and pond-management strategies	Department of Fisheries Western Australia	134,475
2000/219	Southern Bluefin Tuna Aquaculture Subprogram: management, service delivery, infrastructure and technical support	SA Research and Development Institute	5,335
2000/223	Atlantic Salmon Aquaculture Subprogram: facilitation, administration and promotion	University of Tasmania	5,724
2000/224	Atlantic Salmon Aquaculture Subprogram: molecular genetic tools for the Tasmanian Atlantic salmon industry — development and application	CSIRO Marine Research	126,155
2000/231	New targets for aquaculture: stage 1	Australian Institute of Marine Science	161,225
2000/234	National commercial fishing industry response to changes to the USL code	Western Australian Fishing Industry Council	47,882
2000/240	Operation of Seafood Services Australia: technical information and advice	Department of Primary Industries, Queensland	4,049
2000/242	South East Fishery Industry Development Subprogram: facilitation, administration and promotion	Natural Resources and Environment, Victoria	15,962

INDUSTRY DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2000/247	Southern Bluefin Tuna Aquaculture Subprogram: using contemporary grading technologies to maximise product quality of farmed tuna — husbandry and seasonal effects on muscle development, fat content and flesh colour	Flinders University	53,885
2000/250	Rock Lobster Post Harvest Subprogram: facilitation, administration and promotion	Curtin University of Technology	100,695
2000/251	Rock Lobster Post Harvest Subprogram: development of a method for alleviating leg loss during post-harvest handling of rock lobsters	University of Western Australia	111,381
2000/254	Evaluation of anti-fouling products developed for the Australian pearl industry	James Cook University	51,187
2000/255	Chemo-attraction and the development of an artificial bait for the western rock lobster (*Panulirus cygnus*)	University of Western Australia	55,992
2000/256	Development of manufactured attractants as a means to harvest prawns specifically	Australian Institute of Marine Science	152,460
2000/257	Analytical techniques for assessment of water quality, contamination and quality assurance in farmed Pacific oysters in SA	Flinders University	71,322
2000/263	Rock Lobster Enhancement and Aquaculture Subprogram: reducing rock lobster larval rearing time through hormonal manipulation	Australian Institute of Marine Science	29,212
2000/266	Atlantic Salmon Aquaculture Subprogram: effective treatments for the control of amoebic gill disease	University of Tasmania	21,598
2000/267	Development of a health management strategy for the silver perch aquaculture industry	NSW Fisheries	50,017
2000/400	Operation of Seafood Services Australia: product and process development	Department of Primary Industries, Queensland	204,128
2000/401	A code of practice for on-board handling of shark from the Western Australian demersal gillnet and demersal longline fishery	Western Australian Fishing Industry Council	22,500
2000/480	Preliminary study on the development of value-added products from an under-utilised shellfish resource	Australian Maritime College	5,000
2001/200	Southern Bluefin Tuna Aquaculture Subprogram: tuna cell line development and its application to tuna aquaculture health surveillance	CSIRO Livestock Industries	93,314
2001/201	SBT Aquaculture Subprogram: commercialisation trials for a manufactured tuna feed	Australian Tuna Fisheries	90,381
2001/205	Atlantic Salmon Aquaculture Subprogram: treatment and pathophysiology of amoebic gill disease	University of Tasmania	147,265
2001/206	Improving growth and survival of cultured marine fish larvae: striped trumpeter (*Latris lineata*) — a test case for Tasmania	University of Tasmania	304,376

INDUSTRY DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2001/208	Increasing the profitability of snapper farming by improving hatchery practices and diets	NSW Fisheries	150,363
2001/211	Rock Lobster Enhancement and Aquaculture Subprogram: strategic planning, project management and adoption	Barneveld Nutrition Pty Ltd	104,822
2001/213	Review of hatchery production technology for Sydney rock oysters	University of New South Wales	36,016
2001/214	Aquatic Health Subprogram: development of a disease zoning policy for marteiliosis to support sustainable production, health certification and trade in the Sydney rock oyster	Queensland Museum	59,978
2001/220	Aquaculture Diet Development Subprogram: development of marine fish larval diets to replace *Artemia*	Department of Fisheries Western Australia	187,098
2001/225	Development of sponge (*Spongia* spp.) farming as a viable commercial enterprise for remote Aboriginal communities	Northern Territory University	7,000
2001/227	Australian fisheries statistics	ABARE	51,683
2001/235	Rock Lobster Post Harvest Subprogram: striking a balance between melanosis and weight recoveries in western rock lobster (*Panulirus cygnus*)	Curtin University of Technology	27,668
2001/238	South East Fishery Industry Development Subprogram: strategic planning, project management and adoption	Natural Resources and Environment, Victoria	29,787
2001/244	Atlantic Salmon Aquaculture Subprogram: host-pathogen interactions in amoebic gill disease	University of Tasmania	174,108
2001/245	Atlantic Salmon Aquaculture Subprogram: model development for epidemiology of amoebic gill disease	University of Tasmania	64,410
2001/246	Atlantic Salmon Aquaculture Subprogram: control of precocious sexual maturation in Atlantic salmon	University of Tasmania	104,251
2001/248	Southern Bluefin Tuna Aquaculture Subprogram: maximising the control of quality in farmed SBT	Flinders University	350,330
2001/249	Southern Bluefin Tuna Aquaculture Subprogram: development and commercial evaluation of manufactured diets	SA Research and Development Institute	190,200
2001/250	Southern Bluefin Tuna Aquaculture Subprogram: strategic planning, project management and adoption	SA Research and Development Institute	141,542
2001/251	Aquaculture Nutrition Subprogram: strategic planning, project management and adoption	Barneveld Nutrition Pty Ltd	78,400
2001/252	Southern Bluefin Tuna Aquaculture Subprogram: infrastructure management, service delivery and technical support	SA Research and Development Institute	304,929

INDUSTRY DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2001/253	Southern Bluefin Tuna Aquaculture Subprogram: risk assessment of factors influencing the health of farmed southern bluefin tuna	University of Tasmania	15,382
2001/254	Abalone Aquaculture Subprogram: selective breeding of farmed abalone to enhance growth rates	SA Research and Development Institute	62,817
2001/256	Development and establishment of a national system for minor uses of products for the protection of livestock in aquaculture	Crop Protections Approvals Ltd	40,300
2001/257	Australian aquaculture: practical solutions to the triple bottom line — national workshop	Natural Resources and Environment, Victoria	42,378
2001/258	Investigations into the Toxicology of Pectenotoxin 2 seco acid and 7-epi Pectenotoxin 2 seco acid to aid in a health risk assessment for the consumption of shellfish contaminated with these diarrhetic shellfish toxins	University of Queensland	9,708
2001/402	Developing a case-ready retail and bulk catering pack for seafood using MAP technology	Kailis Bros Pty Ltd	20,000
2002/200	Abalone Aquaculture Subprogram: preventing summer mortality of abalone in aquaculture systems by understanding interactions between nutrition and water temperature	SA Research and Development Institute	20,868
2002/233	Seafood Services Australia Ltd: adding value throughout the seafood supply chain	Seafood Services Australia Limited	419,233
2002/237	Rock Lobster Post Harvest Subprogram: a code of practice for handling rock lobster	Western Australian Fishing Industry Council	22,875
2002/242	A health promotion program incorporating fish for withdrawal of anti-hypertensive drugs in overweight hypertensives	University of Western Australia	20,727
Total Industry Development projects			**$7,187,583**

Human Capital Development projects

Project ID	Project title	Organisation name	$
1998/165	Framework for valuing fisheries resource use	University of Queensland	883
1998/348	Quantitative Training Unit for Fisheries, Phase 2	University of Sydney	42,218
1998/351	Development and production of the second edition of the *Australian Seafood Catering Manual*	Department of Primary Industries, Queensland	109,051
1999/353	Australian Rural Leadership Program	Australian Rural Leadership Foundation	75,000
1999/354	QFISH Foresight Project: a strategic planning and futuring project designed to create a strong coordinated commitment by all stakeholders to an agreed vision of the fisheries of the future	Department of Primary Industries, Queensland	19,389
2000/303	Seafood Directions 2001: second biennial national seafood industry conference	Queensland Seafood Industry Association	28,206
2000/304	A workshop to investigate the development of training and accreditation procedures for provision of scientific data by the fishing industry	CSIRO Marine Research	5,035
2000/307	Development and delivery of a model for a national seafood industry advanced leadership program	Australian Fisheries Academy	45,482
2000/308	Developing Australian fisheries management training	Australian Maritime College	71,549
2000/311	Development of research methodology and quantitative skills for integrated fisheries management in WA	Murdoch University	134,104
2000/313	Recfish Australia R&D plan	Recfish Australia	9,904
2001/300	South Australia's Strategic Plan for Fisheries and Aquaculture Research	South Australian Fishing Industry Council	18,000
2001/302	Regional Experiences for Global Solutions: the 3rd World Recreational Fishing Conference, Darwin	Amateur Fishermen's Association of the NT	112,230
2001/304	2nd National Rock Lobster Industry Conference, Melbourne, September 2001	South Australian Rock Lobster Advisory Council	16,650
2001/305	Inaugural National Abalone Convention	Abalone Industry Association of SA Inc.	14,062
2001/306	ASFB workshop: towards sustainability for data limited multi-sector fisheries	Department of Fisheries Western Australia	10,000
2001/309	Community perceptions of fishing: implications for industry image, marketing and sustainability	Bureau of Rural Sciences	37,844
2001/310	Developing a community communication plan and communication resources for the seafood industry	Judith Ham Consulting	49,660
2001/311	The Workboot Series: Fishing — the story of the fishing industry in Australia	Kondinin Group	12,409
2001/314	A review of current research needs of the south east trawl fishery	AMC Search Ltd	22,000

HUMAN CAPITAL DEVELOPMENT PROJECTS, CONTINUED

Project ID	Project title	Organisation name	$
2001/315	Incorporating MAC competencies into the seafood industry training package	Australian Seafood Industry Council	83,875
2001/316	A new strategic R&D plan for Queensland fisheries: a "living document" approach to implementation of priorities	Department of Primary Industries, Queensland	18,000
2002/303	Establishment of a training resource and information service to underpin the successful adoption of EMS by the Australian seafood industry	Seafood Services Australia Limited	28,004
2002/313	Rock lobster R&D plan	South Australian Rock Lobster Advisory Council	42
2002/315	An international conference on governance of deep-seas fisheries	NZ Ministry of Fisheries	42
Total Human Capital Development projects			**$963,645**

Commonwealth-funded Aquatic Animal Health projects

Project ID	Project title	Organisation name	$
2000/601	AQUAPLAN resources and funding consultancy	Econsearch Pty Ltd	78,833
2001/620	Aquatic Animal Health Subprogram: development of improved procedures for the identification of aquatic birnaviruses	CSIRO Livestock Industries	61,279
2001/621	Aquatic Animal Health Subprogram: molecular diagnostic tests to detect epizootic ulcerative syndrome (*Aphanomyces invadens*), and crayfish plague (*Aphanomyces astaci*)	Murdoch University	66,125
2001/624	Aquatic Animal Health Subprogram: development of diagnostic procedures for the detection and identification of *Piscirickettsia salmonis*	CSIRO Livestock Industries	62,677
2001/625	Aquatic Animal Health Subprogram: development of diagnostic capability for priority aquatic animal diseases of national significance: spawner-isolated mortality virus	James Cook University	30,054
2001/626	Aquatic Animal Health Subprogram: development of diagnostics tests for the detection of nodavirus	Department of Primary Industries, Queensland	41,728
2001/628	Aquatic Animal Health Subprogram: vibrios of aquatic animals: development of a national standard diagnostic technology	University of Tasmania	45,317
2001/630	Aquatic Animal Health Subprogram: validation of DNA-based (PCR) diagnostic tests suitable for use in surveillance programs for marteiliosis of rock oysters in Australia	Queensland Museum	12,951
2001/660	Aquatic Animal Health Subprogram: enhancement of emergency disease management capability in the Department of Primary Industries Queensland and the redclaw crayfish (*Cherax quadricarinatus*) industry	AFFA	11,755
2002/600	Aquatic Animal Health Subprogram: facilitating the establishment of the Aquatic Animal Health Consultative Committee as the primary industry-government interface for aquatic animal health issues in Australia	AFFA	5,000
2002/643	Aquatic Animal Health Subprogram: viral encephalopathy and retinopathy, a disease strategy manual	IDEXX/VPS	6,000
Total Commonwealth-funded Aquatic Animal Health activities			$421,719
TOTAL R&D EXPENDITURE			**$20,454,487**

Glossary

2001–02	The financial year 2001–02, namely 1 July 2001 to 30 June 2002.
ABARE	The Australian Bureau of Agricultural and Resource Economics.
AFFA	See *Agriculture, Fisheries and Forestry – Australia*.
AFMA	See *Australian Fisheries Management Authority*.
AFMF	The Australian Fisheries Management Forum.
ANAO	The Australian National Audit Office.
Agriculture, Fisheries and Forestry – Australia	The general usage name for the Commonwealth's Department of Agriculture, Fisheries and Forestry. Among other things, the department manages the Ministers' portfolio responsibilities for the rural R&D corporations.
AGVP	See *average GVP*.
annual operational plan	The document that gives effect to the R&D plan by describing how, and to what extent, the FRDC intends to achieve its planned outcomes in the coming financial year.
AOP	See *annual operational plan*.
aquaculture	Farming of fish or aquatic plants.
Aquaplan	A plan under which AFFA is implementing the Commonwealth Government's initiative 'Building a national approach to animal and plant health'. The plan is also guiding the FRDC's Aquatic Animal Health Subprogram.
ARSFIC	See *Australian Recreational and Sport Fishing Industry Confederation*.
ASIC	See *Australian Seafood Industry Council*.
Australian Fisheries Management Authority	The Commonwealth statutory authority responsible for the management of fisheries under Commonwealth jurisdiction.
Australian Recreational and Sport Fishing Industry Confederation	The peak body representing the recreational sector of the industry (trading as Recfish Australia). See also *Australian Seafood Industry Council*.
Australian Seafood Industry Council	The peak body representing the commercial sector of the industry. See also *Australian Recreational and Sport Fishing Industry Confederation*.
average GVP	Average gross value of production. The basis for the primary revenue contribution to the FRDC is the average gross value of fisheries production for the three preceding years, as described on page 9.
BCA	Benefit-cost analysis.
benchmark	Point of reference against which change may be measured.
biodiversity	See *ecologically sustainable development*.
CAC Act	The *Commonwealth Authorities and Companies Act 1997*, which specifies some of the Commonwealth Government's reporting and corporate governance requirements.
CAC Orders	*Commonwealth Authorities and Companies (Report of Operations) Orders 2002* (orders made by the Finance Minister concerning the Report of Operations, in furtherance of the provisions of the CAC Act).

co-management	A more inclusive approach to fisheries management that takes into account not only the views of government agencies responsible for fisheries but also those responsible for the environment, industry development, science, and regional and urban planning; and industry, community and special-interest groups.
commercial sector of the industry	See *fishing industry*.
corporate governance	The management process concerned with structures and processes for decision-making, and with controls and behaviour within organisations that support effective accountability for performance outcomes
Corporation, the	The Fisheries Research and Development Corporation.
CRC	Centre for Research Cooperation.
Crustacea or Crustaceans	Arthropod animals, characterised by a hard, close-fitting shell that is shed periodically. Includes prawns, crabs, lobsters, shrimps, bugs and freshwater crayfish.
CSIRO	The Commonwealth Scientific and Industrial Research Organisation.
DPIQ	The Department of Primary Industries, Queensland.
during the year	During the financial year, i.e. 1 July 2001 to 30 June 2002.
ecologically sustainable development	Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained and the total quality of life — now and in the future — can be increased. [Definition of the National Strategy for ESD, 1992]
ecosystem	A community of organisms interacting with each other, and the environment in which they live.
EEZ	See *exclusive economic zone*.
effectiveness	In the context of the CAC Act, the extent to which a Commonwealth authority has achieved the objectives or discharged the functions, as the case requires, set out in its enabling legislation.
efficiency	In the context of the CAC Act, the extent to which a Commonwealth authority has maximised the outputs produced from a given level and quality of inputs or minimised the inputs used to produce a given level and quality of outputs.
EPBC Act	The *Environment Protection and Biodiversity Conservation Act 1999*, which promotes ecologically sustainable development and seeks to conserve biological diversity through an effective, efficient national approach to environmental management at all levels of government.
ESD	See *ecologically sustainable development*.

exclusive economic zone	The area between the lines 12 nautical miles and 200 nautical miles seaward of the territorial sea baselines (see *baseline* …). A lesser distance is declared where the distance between the baselines of Australia and another country is less than 400 nautical miles. Australia's exclusive economic zone was declared in 1994 under the *Maritime Legislation Amendment Act* (Commonwealth) in accordance with provisions of the *United Nations Convention on the Law of the Sea 1982*, the main international instrument that regulates marine fisheries. The declaration conferred on Australia sovereign rights to explore and exploit, and the responsibility to conserve and manage, the living and non-living resources of the zone.
extension	The communication of knowledge, processes and/or technology to the fishing industry, other stakeholders and the community.
final report	A report describing the inputs, outputs and expected outcomes of a completed R&D project.
financial year	1 July 2001 to 30 June 2002.
fish	In the broadest sense (which is the only context in this report), living aquatic vertebrate and invertebrate organisms, including marine mammals and reptiles, and such organisms after they have been harvested.
fish products	All products derived from fish after the fish have been harvested for sale or consumption.
fisheries managers	Persons appointed by government agencies to manage Commonwealth, state or Northern Territory fisheries.
fishery	A class of activities by way of fishing, including activities identified by reference to all or any of: ▸ a species or type of fish; ▸ a description of fish by reference to sex or any other characteristic; ▸ an area of water or seabed; ▸ a method of fishing; ▸ a class of boats; ▸ a class of persons; and/or ▸ a purpose of activities, as determined by the relevant management authority.
fishing by Aboriginal and Torres Strait Islander people	Includes fishing and shell-collecting by Aboriginal and Torres Strait Islander people in accordance with their traditions (see *traditional sector* under *fishing industry* entry); their recreational fishing (that is, not using traditional practices); subsistence fishing (following traditional or recreational practices); and commercial fishing.

fishing industry	Includes any industry or activity conducted in or from Australia concerned with: taking, culturing, processing, preserving, storing, transporting, marketing or selling fish or fish products. There are three principal fishing industry sectors: ▸ *The commercial sector* comprises enterprises and individuals associated with wild-catch or aquaculture resources and the various transformations of those resources into products for sale. It is also referred to as the "seafood industry", although non-food items such as pearls are included among its products. ▸ *The recreational sector* comprises enterprises and individuals associated — for the purpose of recreation, sport or sustenance — with fisheries resources from which products are derived that are not for sale. ▸ *The traditional sector* comprises enterprises and individuals associated with fisheries resources from which Aboriginal and Torres Strait Islander people derive products in accordance with their traditions.
FRAB	Fisheries Research Advisory Body. The roles of the FRABs are described on page 94.
FRDC	The Fisheries Research and Development Corporation.
funding entities	Government agencies or private organisations that fund R&D.
GVP	Gross value of production. See also *average GVP*.
harvest	To catch or gather wild or aquacultured natural resources.
hyperlink	A means of going quickly from one Internet website to another: for example, from the FRDC website to another site containing full final reports.
indigenous fishing	See *fishing by Aboriginal and Torres Strait Islander people*.
industry, fishing	See *fishing industry*.
input	Resources — in the form of people, expertise, materials, energy, facilities and funds — that the FRDC and its R&D partners use in activities to produce outputs.
ISO	International Organization for Standardization, against whose quality management standard the FRDC is certified. See *quality management*.
key performance indicator	A specification for measuring performance. Example: benefit-cost ratios for nominated projects.
landed value	The value of a product at the wharf or aquaculture tank, before value-adding. When referring only to aquaculture, the equivalent term of "farmgate value" is usually used.
managed subprogram	A mode of program management that the FRDC instigates when it becomes evident that a planned R&D outcome could be achieved more successfully if a number of related projects were managed more intensively by employing higher levels of coordination, integration, communication and extension than for individual projects. Normally a managed subprogram pursues one or more strategies within an FRDC R&D program. Further details are on page 98 of the FRDC's R&D plan. An example is the Rock Lobster Enhancement and Aquaculture Subprogram.

Minister, the	The Commonwealth Minister for Agriculture, Fisheries and Forestry. The term may include the Parliamentary Secretary to the Minister and the Minister for Forestry and Conservation, who also exercise ministerial powers.
ministerial powers	Powers exercised under the provisions of legislation, especially the PIERD Act, by the Minister, Parliamentary Secretary or Minister for Forestry and Conservation.
NHT	Natural Heritage Trust.
outcome	The results, impacts or consequences of actions by the FRDC and its R&D partners on the fishing industry* and Australia's economic, environmental and social resources. Planned outcomes are the results or impacts that the FRDC wishes to achieve. Actual outcomes are the results or impacts in fact achieved. * [The fishing industry comprises commercial, recreational and traditional sectors, as defined on page 16.]
output	The goods and services (mainly knowledge, processes and technology) that the FRDC and its R&D partners produce for external organisations or individuals.
Parliamentary Secretary, the	The Parliamentary Secretary to the Commonwealth Minister for Agriculture, Fisheries and Forestry, who exercises ministerial powers in relation to rural R&D corporations. See also *Minister*.
performance indicator	See *key performance indicator*.
performance measure	Information on actual performance against a specified key performance indicator — for example, "a benefit-cost ratio of 7:1."
PIERD Act	The *Primary Industries and Energy Research and Development Act 1989*, under which the FRDC is established.
quality management	Management of all activities through a systematic and determined focus on continual improvement, above minimum levels of performance set by a formal quality management standard. The standard against which the FRDC is certified is AS/NZS ISO 9001:2000. Other quality management standards suitable for the seafood industry are promoted by Seafood Services Australia.
R&D	See *research and development*.
R&D plan	Short title for the FRDC's strategic plan, *Investing in tomorrow's fish: the FRDC's research and development plan, 2000 to 2005*. The R&D plan is prepared under the provisions of the PIERD Act (among other things) and has appropriate regard for ministerial directions, Commonwealth Government policy, and extensive consultation with the fishing industry — including the FRDC's representative organisations. The R&D plan is designed to be the principal source of information about the FRDC's policies, programs and operations. It describes the FRDC; defines its business environment and key factors for the next 20 years; lays down, against the business environment, the Corporation's planned outcomes and strategic priorities for funding of research and development; and outlines the strategies that the FRDC intends to adopt to achieve those outcomes. It is approved by the Minister for Agriculture, Fisheries and Forestry or the Parliamentary Secretary to the Minister, and is reviewed annually. See also *annual operational plan*.

Recfish Australia	See *Australian Recreational and Sport Fishing Industry Confederation*.
recreational sector of the industry	See *fishing industry*.
representative organisations	See *Australian Seafood Industry Council* and *Australian Recreational and Sport Fishing Industry Confederation*.
research	*Basic research* is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view. *Applied research* also refers to original investigation undertaken to acquire new knowledge. It is, however, directed towards a specific practical aim or objective. Applied research is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving some specific and predetermined objectives.
research and development	In relation to the fishing industry: systematic experimentation and analysis in any field of science, technology or economics (including the study of the social or environmental consequences of the adoption of new technology) carried out to: ▸ acquire knowledge that may be of use in obtaining or furthering an objective of the fishing industry, including knowledge that may be of use for the purpose of improving any aspect of the production, processing, storage, transport or marketing of goods that are the produce, or that are derived from the produce, of the fishing industry; or ▸ apply such knowledge for the purpose of attaining or furthering such an objective; or ▸ create new or improved materials, products, devices, processes or services for the purpose of attaining or furthering such an objective.
research providers, researchers	Individuals or organisations undertaking R&D activities.
seafood	Products derived from aquatic natural resources, including fish and fish products, for human consumption.
seafood industry	The commercial sector of the fishing industry: see *fishing industry*.
Seafood Services Australia Ltd	A company limited by guarantee, with the FRDC and ASIC as its members, which aims to be proactive in providing an Australia-wide service for people who catch, farm, process, transport, wholesale, retail, export, import or cook seafood. The service includes: ▸ value-adding through seafood product and process development; ▸ product quality, food safety and consumer health; ▸ management systems and standards for quality and ESD; ▸ market development; ▸ seafood marketing names; ▸ seafood emergency management; and ▸ information and advice on other technical issues. The company's mission is to be a catalyst for sustainable development of the Australian seafood industry.

SeaQual Australia	An activity of Seafood Services Australia Ltd that provides guidance on management systems and standards for quality (including food safety) and sustainability. The names "SeaQual" and "SeaQual Australia" and the associated logo are licensed by Seafood Services Australia to kindred organisations. See *Seafood Services Australia*.
social resilience	Relates to the social (including political) capacity of groups of people to effectively develop and represent their interests and to advocate their contributions to the Australian community. Having such a capacity is essential in our robust democratic society, especially if the group is likely to be affected by others who are better at representing their own self-interests. It is widely recognised that the social resilience of the three main sectors of the fishing industry is presently low.
SSA	See *Seafood Services Australia Ltd*.
stakeholders	People, organisations or groups with an interest or stake in a line of business. The FRDC's stakeholders are the fishing industry (see definition); the governments of the Commonwealth, the states and the territories; and the people of Australia.
supplier	A person or organisation engaged by the FRDC to provide goods or services that affect the FRDC's delivery of its outputs. Includes consultants, who are as described in the May 1999 issue of the Department of Prime Minister and Cabinet *Requirements for departmental annual reports*. The FRDC's supplier selection policy is described on page 98.
sustainable	A characteristic of a process or a state that can be maintained indefinitely.
traditional sector of the industry	See *fishing industry* and (for context) *fishing by Aboriginal and Torres Strait Islander people*. Sometimes referred to as "customary" in other countries.
value-adding	Any activity that results in products, processes and services becoming more valuable, competitive, effective and/or efficient, thus increasing financial returns or achieving other desired outcomes. Value-adding elements can include products, processes, packaging, equipment, quality, knowledge gaps and aspects of marketing. Although increased profits are the goal, sometimes new products and processes need to be adopted to enable a business to remain economically viable without increasing economic performance.
year, the	The financial year.

Indexes

Compliance index

This index shows the numbers for pages on which information is provided in response to legislation and Commonwealth policies, including the following:

- the FRDC's enabling legislation (the *Primary Industries and Energy Research and Development Act 1989*);
- the *Commonwealth Authorities and Companies Act 1997* and its supporting Commonwealth Authorities and Companies (Report of Operations) Orders 2002;
- the *Environment Protection and Biodiversity Conservation Act 1999*;
- other legislation, such as the *Freedom of Information Act 1982*, the *Occupational Health and Safety (Commonwealth Employment) Act 1991*, the *Disability Discrimination Act 1992* and the *Commonwealth Electoral Act 1918*;
- ministerial notifications of Commonwealth Government policy;
- the document *Requirements for annual reports*;
- other Commonwealth Government guidelines; and
- 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.

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.

Alphabetical index

A revolution in aquaculture — coinciding with the FRDC's first decade

Aquaculture is one of Australia's fastest-growing primary industries. Between 1989–90 and 2000–01 the farmgate value of aquaculture production increased on average by 11.3 per cent each year, from $188 million to $746 million. It now equates to 30 per cent of the landed value of all Australian commercial sector production.

Of the leading aquaculture sectors — pearl, edible oysters, Atlantic salmon, prawns and southern bluefin tuna — the most dramatic change in the last decade has been seen with southern bluefin tuna. It has achieved an average growth per year of 36 per cent since 1992–93.

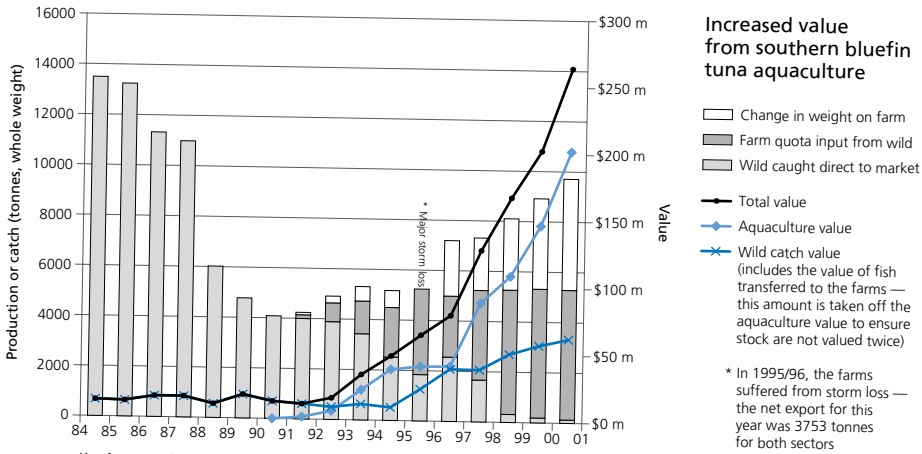
Until the 1980s, high tonnages were caught and the species was regarded generally as suitable only for the low-value canned fish market. But in 1988–89, new catch quotas cut the allowable catch to 5265 tonnes, about 40% of actual catches in the years immediately before then.

During the past decade, wild-catch tonnage of the species has been constrained within the quota. Almost all the catch now goes to sea-based farms after capture. By adding value through tuna farming, operators have dramatically increased the value of this catch — from $1.8 million in 1991–92 to $264 million in 2000–01.

A key element of the sector's success has been its focus on the high-value Japanese sashimi market and a systematic improvement in knowledge of the species, husbandry processes, technology and marketing. This has been achieved by innovative, well-led companies that are strongly focused on sustainable development and on partnerships within the industry and with customers and research providers. About half the production is by processes certified against the ISO 14000 quality management standard.

The southern bluefin tuna aquaculture sector phenomenon is mirrored, albeit less spectacularly, in the Australian wild-catch sector as a whole. To increase financial returns without increasing tonnages has been a goal that the wild-catch sector has been pursuing and, in overall sector terms, has achieved for the past five years (see pages 56, 57). Many factors, including FRDC research and development investments, have contributed to this highly desirable journey towards ecologically sustainable development of the entire fishing industry.

The graph shows the change in the value and tonnage of southern bluefin tuna production since 1984.



Key features of this graph are:

- dramatic increases in value through improved product quality since 1992 (lighter blue line from aquaculture and black line total);
- wild catch not exceeding a 5265-tonne catch quota since 1989;
- progressive increase in weight gained during aquaculture husbandry; and
- virtual disappearance of direct supply of wild catch to the market.

Photo provided by the Stehr Group

Boats catch live southern bluefin tuna weighing 15 to 30 kg in southern waters — mainly the Great Australian Bight — using purse seine nets.

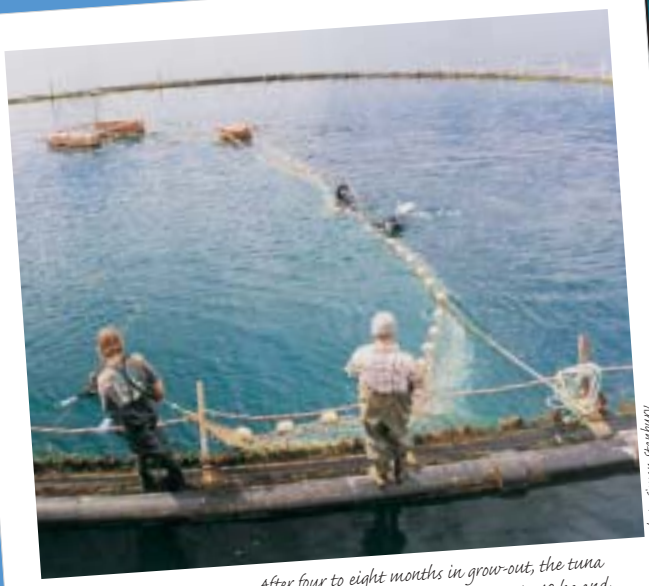
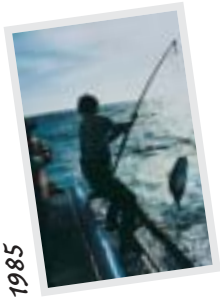


Photo Simon Stanbury

After four to eight months in grow-out, the tuna reach a marketable size of about 30 to 40 kg and are typically worth about $1000 each.

This photograph shows tuna in a grow-out pontoon being crowded (towards the left) for harvesting, using a movable net suspended from the yellow floats.



1985

SARDI photo

Photo Simon Stanbury

Divers catch each fish by hand (minimising stress on the fish and ensuring premium product quality) before passing it to operators on the farm vessel.

Tuna aquaculture has changed the employment profile from a highly seasonal workforce to more diversified occupations for which there is demand throughout the year. By directly employing about 750 people, the southern bluefin tuna sector has brought increased economic and social stability to the Port Lincoln region.

The Fisheries Research and Development Corporation
is a statutory authority of the Commonwealth Government's
Department of Agriculture, Fisheries and Forestry – Australia

Simon Fewtrey

Joseph Puglisi Jnr

David Sievers/Aspect

The FRDC's first decade has coincided with a revolution in aquaculture, most dramatically with southern bluefin tuna. Details inside this cover.