Australian Government

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

ANNUAL REPORT

2002–03

to the

PARLIAMENT OF AUSTRALIA, THE AUSTRALIAN FISHING INDUSTRY AND OTHER FRDC STAKEHOLDERS

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

ABOUT THE FRDC

The Fisheries Research and Development Corporation (FRDC) is a statutory authority of the Australian Government. 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 Australian agency with this role.

Stakeholders in the FRDC are the fishing industry; the federal, state and territory governments; and the people of Australia.

The Corporation does not itself conduct R&D but instead engages research providers through project agreements.

THE FRDC'S VISIONS

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.

THE FRDC'S MISSION

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.

ABOUT THIS REPORT

This report describes the extent to which the Corporation implemented its approved annual operational plan during the previous financial year. It meets the requirements for reporting legislated by the Australian Government and informs the FRDC's other stakeholders — especially those in the commercial, recreational and traditional sectors of the fishing industry and in the research and development community.

Australian Government

Fisheries Research and Development Corporation

1 September 2003

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

Dear Minister,

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 2003. 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, the *Environment Protection and Biodiversity Conservation Act 1999*, the Commonwealth Authorities and Companies (Report of Operations) Orders 2002, and other Commonwealth legislation and guidelines.

The information in the report will enable you to make an informed judgement of the Corporation's performance during the year ended 30 June 2003 — and likewise the Minister for Agriculture, Fisheries and Forestry; the Minister for Fisheries, Forestry and Conservation; and the Parliament.

The report is also intended to inform the FRDC's other stakeholders — especially fishing industry levy payers and other financial contributors; other people in the commercial, recreational and traditional sectors of the fishing industry; and members of the research and development community.

Information is also provided on a significant matter that occurred between 1 July 2003 and the date on which the report was approved for printing, namely the appointment of nominated directors, as described on page 20.

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

Yours faithfully,

Denis Byrne
Chairman

Postal address: PO Box 222, Deakin West ACT 2600 Australia
Office location: Fisheries Research House, 25 Geils Court, Deakin ACT
Telephone: 02 6285 0400 Web: http//www.frdc.com.au
Facsimile: 02 6285 4421 E-mail: frdc@frdc.com.au
Australian Business Number: 74 311 094 913

Quality System
Quality Endorsed Company

Cover photograph

Fish worlds is a painting by Tiffanie Brown recently commissioned by the FRDC to illustrate the complex factors involved in fisheries ecosystems — that is, not only aquatic organisms themselves but the wider environments in which they live. The context for the painting is described on the inside back cover.

Fisheries Research and Development Corporation Annual Report, 2002–03

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

Published by: Fisheries Research and Development Corporation

Postal address: PO Box 222, Deakin West ACT 2600

Office: Fisheries Research House, 25 Geils Court, Deakin, Australian Capital Territory

Telephone: 02 6285 0400; from overseas + 61 2 6285 0400

Facsimile: 02 6285 4421; from overseas + 61 2 6285 4421

E-mail: frdc@frdc.com.au

Internet: http://www.frdc.com.au

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ANNUAL REPORT

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

2002–03

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

- For an outline of the **FRDC and its investments**, read pages 2 to 8.
- For an **overview of operations** during the past year, read 'The directors' review of operations and future prospects' (page 11).
- For an **overview of the fishing industry and fisheries natural resources**, see pages 22–32.

More detailed coverage is in these sections:

- The key **strategic imperatives** that drive the FRDC's activities are shown on page 38.
- Details of **outcomes** achieved by recent and current projects are in the R&D programs reporting starting on page 50 (the Natural Resources Sustainability Program), page 62 (Industry Development Program) and page 74 (Human Capital Development Program).
- The **basis for performance reporting** is described under 'Principal reporting requirements' on page 43.
- Financial **contributions by industry and governments** are listed on pages 6, 95 and 100.
- Coverage of **corporate governance** information is in the chapter starting on page 102.
- The **financial statements** start on page 135.
- Lists of **current R&D projects** are in appendix F, 'Project expenditure by program', starting on page 189.

Topics are listed under a wide variety of keywords in the alphabetical index starting on page 230.

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THE YEAR AT A GLANCE

THE FRDC AND ITS CONTEXT

The Fisheries Research and Development Corporation (FRDC) is **jointly funded** by the Australian Government and the fishing industry. The Corporation is acknowledged as being highly effective in working for the good of Australia's fisheries **natural resources** and the **fishing industry**.

THE RURAL R&D CORPORATIONS MODEL ON WHICH THE FRDC IS BASED

- The rural R&D Corporations (RDCs) take a leading national role in planning, investing in and managing R&D for their respective industries.
- RDCs are not research "grant" agencies. Their enabling legislation requires them to treat R&D as an investment in economic, environmental and social benefits to their industries and to the people of Australia.
- Rather than focusing mainly on generating new knowledge for its own sake, RDCs strive to deliver high rates of return on R&D investment by influencing the full range of interactions along the innovation chain.
- Striving for high returns on investment also leads RDCs to apply significant resources to translating research outputs into practical outcomes.
- RDCs are required to conduct their activities in accordance with strategic R&D plans and annual operational plans that take account of the R&D needs of end-users and other stakeholders. The plans are approved at ministerial level.
- Although RDCs fund basic research, a high proportion of activity is applied R&D — both short-term and long-term.
- RDCs are accountable to their major stakeholders and to the wider community.

The fishing industry differs markedly from other Australian primary industries. Commercially, there are two main sectors: wild-catch (largely "hunting" of fish in the wild) and aquaculture (fish farming). Non-commercially, there are two sectors, recreational and traditional, which share much of the fisheries resource with the wild-catch sector. Fish are a renewable natural resource, owned by the community, but they are limited and vulnerable.

About the fishing industry: page 24. Challenges for Australia: page 31. Challenges for the FRDC: page 32. Strategic directions for R&D investment: page 16.




The FRDC and its partners are striving to **use fisheries ecosystems in a sustainable way** to benefit future generations. About 58 per cent of the FRDC's R&D investment in 2002–03 was directed to that end.

The Natural Resources Sustainability Program: page 49.

Ecologically sustainable development (ESD) presents one of the greatest challenges to Australia's governments, industries, businesses and the community. Continual progress towards ESD needs a strong economy and a vigorous, profitable commercial sector, since businesses struggling for survival cannot significantly improve their environmental performance.

Discussion of ESD: page 23 (more: pages 29–46 of the FRDC's R&D plan).

A big change of direction is taking place as the Australian seafood industry responds to the results of fisheries R&D, the expectations of the marketplace and, in relation to the environment, the expectations of the Australian community. Australian companies have been adopting **environmental management systems**, pursuing **quality management** and continually improving processes throughout the whole seafood supply chain. Consequently, for the past five years, **as wild-catch tonnage has declined slightly, earnings have increased** by about 40 per cent. In the same period, the **aquaculture sector almost doubled its earnings**, accounting for about 30 per cent of total gross value of production. The combined gross value of production for 2002–03 is estimated to be $2.35 billion. Exports currently exceed $2 billion a year. These achievements make the seafood industry **Australia's fourth most valuable food-based primary industry** and seafood the fourth most valuable food export commodity.

Commercial production: pages 25, 69.

Recreational fishing, by about 3.4 million Australians, is also a major economic activity — in a major FRDC-funded survey, direct expenditure on recreational fishing was estimated to be $1.8 billion a year.

The FRDC's Industry Development Program (about 38 per cent of its 2002–03 investment) helps the seafood industry to become **more profitable and internationally competitive**. Another 4 per cent was directed to **improving the capabilities of people** in, and supporting, the industry.

The Industry Development Program: page 61. The Human Capital Development Program: page 73.

The FRDC R&D programs benefit the commercial, recreational and traditional sectors of the fishing industry and Australia's economic, environmental and social resources. The programs accord with the **priorities of the FRDC's key stakeholders** — the Australian Government and the Corporation's representative organisations.

Diagram of priorities: page 38. Representative organisations: page 113. Stakeholders: inside front cover.

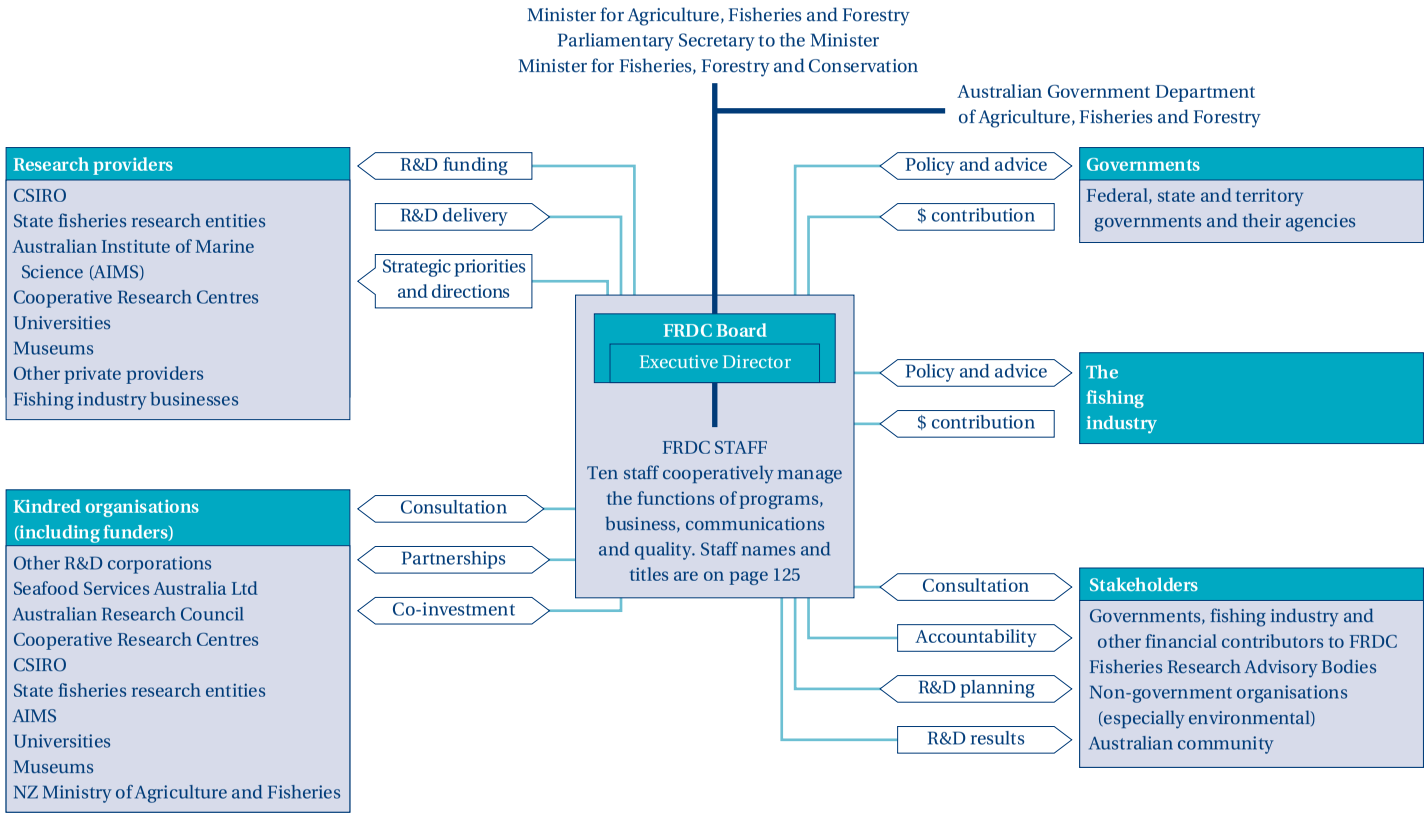
R&D funded by the FRDC not only improves natural resources and development of the fishing industry. It also **raises awareness** of fisheries natural resources and their sustainability; **involves communities** in fisheries and their management; increases awareness of the health benefits of seafood; and measures seafood consumption.

During 2002–03 the **FRDC's performance** in planning, investing in and managing R&D **improved** on that of previous years. Reporting of performance also improved. Program support costs were again kept to 8 per cent of total FRDC expenditure. For more than a decade, the FRDC has invested in highly relevant, quality R&D at minimum cost. This record underpins the Corporation's strong reputation as a key partner in the advancement of the fishing industry and the natural resources on which the industry depends.

Details of FRDC performance: overview page 9; summary (table): page 14. Management and Accountability Program: page 83.

The FRDC's organisation and the context in which it operates are shown in **figure 1**, opposite.

FIGURE 1: 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).

THIS YEAR …

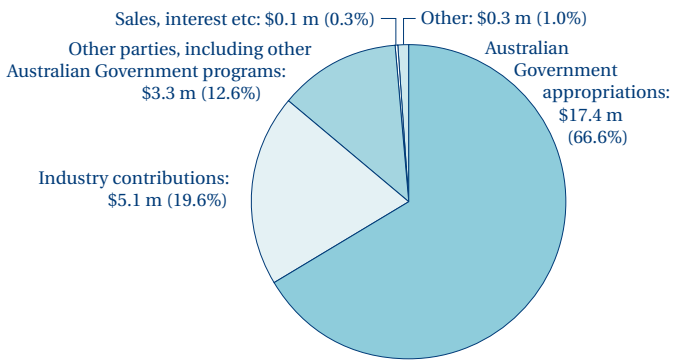
Note: Values are rounded; more detailed figures are shown later in the report.

OVER-ALL INVESTMENT IN R&D MANAGED BY THE FRDC

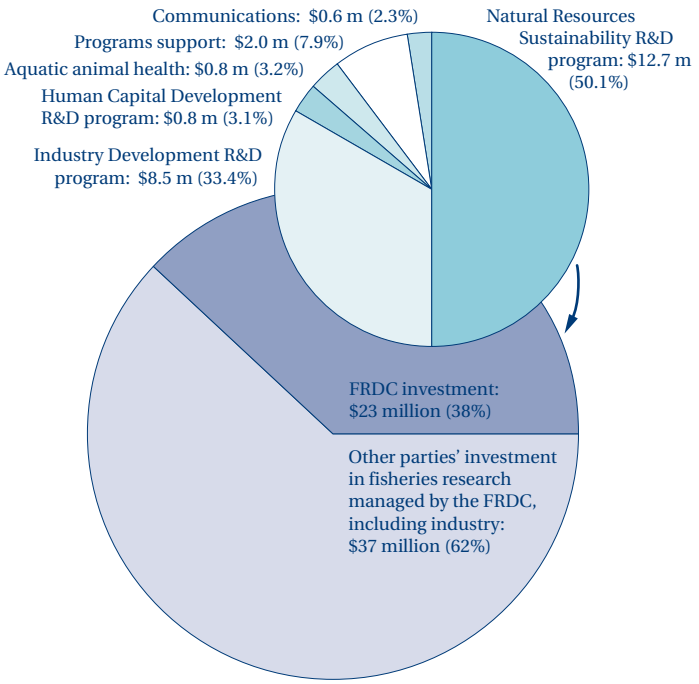
Total actual investment in fisheries research and development projects under FRDC management in 2002–03 was $60 million (up from $57 million).

INCOME, EXPENDITURE AND LEVERAGE OF INVESTMENT, 2002–03

INCOME
Total: $26.1 million



EXPENDITURE
Total: $25.4 million



LEVERAGE:
Total: $60 million

Leverage was 1.63 times the FRDC investment

The FRDC investment was made possible by Australian Government contributions (in excess of $20 million) to the FRDC through appropriations, the Federal Budget Initiative "Building a National Approach to Animal and Plant Health" and the Cooperative Research Centre for Sustainable Aquaculture of Finfish; and through industry contributions (in excess of $5 million).

The industry contribution rose from 77% to 84% of the amount that is matched by the Australian Government, reflecting increased recognition by industry of the benefits flowing from fisheries R&D.

ACHIEVEMENTS THROUGH THIS INVESTMENT

	2002–03	2001–02	% change
Expenditure			
– on all R&D projects	$22.8 m	$21.2 m	+7.5%
– on R&D Program 1 (Natural Resources Sustainability)	$12.7 m	$11.9 m	+6.7%
– on R&D Program 2 (Industry Development)	$8.5 m	$7.2 m	+18.1%
– on R&D Program 3 (Human Capital Development)	$0.8 m	$1.0 m	–20.0%
– on Federal Budget Initiative-funded aquatic animal health	$0.8 m	$0.4 m	+100.0%
– on R&D of benefit to the commercial sector	$18.8 m (353 projects)	$18.0 m (324 projects)	+4.4%
– on R&D of benefit to the recreational sector	$2.6 m (151 projects)	$2.9 m (132 projects)	–10.3%
– on R&D of benefit to the traditional sector	$0.3 m (39 projects)	$0.3 m (45 projects)	—
Benefits			
Return on R&D investment by the fishing industry for every dollar contributed to the FRDC	$4.45	$4.53	–1.8%
Investment levered from other sources for every dollar invested by the FRDC	$1.63	$1.69	–3.0%
Return on R&D investment for projects subject to benefit–cost analysis	See pp. 86–92	See pp. 74–75 last year	Comparison not valid
The wild-catch sector caught and earned about the same (NB: fisheries statistics are for 2000–01 and 2001–02)	(2001–02) $1.75 bn for 194,000 tonnes	(2000–01) $1.78 bn for 193,000 tonnes	$: –1.9% t: +0.5%
The aquaculture sector produced and earned more (NB: fisheries statistics are for 2000–01 and 2001–02)	(2001–02) $733 m for 44,300 tonnes	(2000–01) $708 m for 41,000 tonnes	$: +3.5% t: +7.9%

	2002–03	2001–02	% change
Other indicators			
Number of applications evaluated	142	218	There are too many variables to make year-to-year comparison valid
Number of approved new projects	82	108	
Total number of active projects under management	485	456	
Number of final reports completed	82	77	
Median value of active R&D projects	$206,577	$249,591	
Number of new PhD students funded	3	5	
Number of people (full-time equivalent) employed by FRDC funds and number in-kind	322, plus 220 in-kind	322, plus 207 in-kind	

In its collaboration with fisheries managers and the fishing industry, the FRDC has continued to exercise strong leadership through many avenues. Significant during 2002–03 was the Corporation's investment in:

- developing and implementing environmental management systems in Victoria, Queensland, New South Wales and South Australia;
- investigating survival of fish released in Australia's tropical, subtropical and temperate recreational line fisheries, and communicating current best practices;
- advancing hatchery propagation of tropical and southern rock lobsters under the FRDC's Rock Lobster Enhancement and Aquaculture Subprogram;
- developing a handbook for fishers on the use of hoppers in Australian prawn trawl fisheries;
- developing a quality index for Australian seafoods to improve people's confidence when buying seafood; and
- establishing a national biennial aquaculture conference.

Directors' review of operations and future prospects: **page 11**.

R&D program reporting:

- factors in delivering the R&D, **page 39**;
- natural resource sustainability, **page 50**;
- industry development, **page 62**;
- people development, **page 74**.

Management and accountability reporting, **page 84**.

Corporate governance, **page 102**.

REPORT OF FISHERIES RESEARCH AND OPERATIONS DEVELOPMENT CORPORATION

PART 1

The DIRECTORS' REVIEW OF OPERATIONS AND FUTURE PROSPECTS

Part 2, which describes the FRDC's operational and financial results, starts on page 37.

Part 3, describing corporate governance matters, starts on page 101.

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 12 August 2003.

The date of the report is 1 September 2003.

Denis Byrne
Chairman

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.

THE DIRECTORS' REVIEW OF OPERATIONS AND FUTURE PROSPECTS

The FRDC Board. From left, Sandy Wood-Meredith, Simon Bennison, Diana Day, David Newton, Bill Sawynok, Ian Cartwright, Glenn Hurry, Denis Byrne, Peter Dundas-Smith.

THE FRDC'S TOP MANAGEMENT PRIORITY — IDENTIFYING AND MEASURING R&D OUTCOMES

In the last 12 months, the Board and staff have worked hard to further develop processes to identify and measure R&D outcomes — that is, what happens when the results of R&D are implemented. This has involved close collaboration with research providers and the end-users of research — chiefly fisheries managers (who are the majority of end-users for the 60 per cent of the FRDC's R&D budget that is invested in the Natural Resources Sustainability Program) and the fishing industry.

To this end, the Board met in February with the Australian Fisheries Management Forum, comprising directors of Australia's fisheries management agencies, to emphasis the need to identify and measure R&D outcomes and to seek their help in doing so. The Board is also encouraging a more inclusive approach to planning of R&D and subsequent investment.

The FRDC is not alone in this endeavour. All R&D corporations realise they have an obligation to their stakeholders — and in particular the Australian Government (which in the FRDC's case is the major investor) — to be able to report effectively on achievement of outcomes. Senator Judith Troeth, Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry,

emphasised this priority in a recent address to a meeting of the chairs of rural R&D corporations: "Many research organisations measure performance on the basis of the number of patents, or level of commercialisation, as an indicator of performance. However, demonstrating that research is actually being adopted by … rural end users is fundamental to the rural R&D corporation model." She added that the R&D corporations had to provide hard evidence of success and the value delivered to the nation through the funding partnership between government and industry.

The FRDC is acutely aware of its obligation to its stakeholders to report effectively on achievement of R&D outcomes. Identifying and measuring outcomes — despite the many impediments in wild fisheries environments — is the FRDC's top management priority

Emphasis on identifying and measuring outcomes has been implemented throughout many aspects of FRDC operations during the year. The Corporation has been giving clear messages that R&D outputs are of no direct value until they are put to use in ways that have beneficial consequences for the fishing industry and Australia's economic, environmental and social resources.[1] This has been the theme of a series of articles in the Corporation's magazine, *R&D News*, which is distributed to 30,000 readers. Each R&D investment applicant is required to provide a comprehensive communication and extension plan. Increasingly, final reports are available online from the FRDC website. Further, a staff member has been allocated to work with end-users to increase the Corporation's knowledge of levels of adoption of R&D results and to measure the contribution that FRDC investment has made to outcomes.

1 The FRDC acknowledges, however, that outputs in themselves are beneficial to future research and the development of future research providers.

The increasing push for adoption of R&D results, particularly by fisheries managers, remains a priority of the fishing industry's two peak bodies — the Australian Seafood Industry Council and Recfish Australia — to which the FRDC is formally accountable; and similarly for other beneficiaries and stakeholders with whom the Corporation works very closely.

Although not the mode through which most fisheries R&D outcomes are achieved, commercialisation can be a highly effective mode for implementing industry development outputs. Commercialisation efforts are increasing through three newly established companies:

- Seafood Services Australia Ltd, in which the FRDC has an interest, which was established in the previous financial year to be a catalyst for sustainable development of the seafood industry (more information is on page 67);
- Australian Seafood Co-products Pty Ltd, which is seeking to commercially utilise the many thousands of tonnes of fish waste thrown away each year by the processing and retail sectors of Australia's seafood industry, which are a great cost to industry and of growing environmental concern; and

- Australian Seafood Industries Pty Ltd, which is commercialising a selective breeding program to increase the product quality and efficiency of the Pacific oyster farming sector.

All three companies are well on their way to demonstrating in practical ways that valuable environmental and social benefits can be derived from profitable businesses, making ecologically sustainable development an achievable concept.

NEW AUSTRALIAN GOVERNMENT RESEARCH PRIORITIES

Australia's first national research priorities were announced by the Prime Minister in December 2002, dealing with an environmentally sustainable Australia; promoting and maintaining good health; frontier technologies for building and transforming Australian industries; and safeguarding Australia. In March 2003, Senator Troeth, our Parliamentary Secretary, issued updated Australian Government priorities for rural R&D in the light of the new national research priorities.[2]

2 The national research priorities and the updated priorities for rural R&D are shown in figure 3 on page 38. Details of how the FRDC is addressing the national research priorities are on page 44 and the text of the updated priorities for rural R&D is reproduced in appendix E (page 181).

The FRDC has responded quickly to both sets of new priorities; they are now fully incorporated into the Corporation's processes for planning, investing in and managing fisheries R&D.[3] They fit well within the Corporation's existing planning and reporting framework — mainly because they are consistent with the R&D programs, which correspond directly to the economic, environmental and social themes of the three objects of the R&D corporations' enabling legislation. Reporting against the many criteria now in existence has become complex for a small organisation, but the Board and staff are fully committed to the process.

3 An overview is on page 38.

IMPROVEMENT IN FRDC PERFORMANCE

During 2002–03 the FRDC's performance in planning, investing in and managing R&D improved on that of previous years. Reporting of performance was also continually improved.

Effectiveness and efficiency reporting: Program 4, page 83.

The directors' broad assessment of the FRDC's performance for the past year is summarised in **table 1**, overleaf. Changes since last year are subtle, reflecting the fact that now the FRDC's weaknesses and strengths in planning, investing and managing R&D have been rigorously examined they are subject to continual improvement rather than radical change.

TABLE 1: THE DIRECTORS' BROAD ASSESSMENT OF THE FRDC'S PERFORMANCE, 2002–03

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	• Australian 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 contributions to the FRDC result in too sharp a focus on investment in R&D (= inputs) rather than benefits (= outcomes) • Voluntary nature of contributions makes it difficult for FRDC to develop long-term investment strategies • 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 • The AGVP on which the FRDC's revenue is based does not take into account the value of recreational fishing • About 40% of fisheries R&D is not managed by the FRDC or recorded on national databases, potentially resulting in duplication and loss of strategic insights	• Voluntary nature of contributions 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'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 by FRDC and 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

As part of the Corporation's practice of continual improvement, the Board has been very active in seeking ways to further enhance its performance. An evaluation of Board performance by the Chairman early in the year revealed no governance defects. It led, in turn, to an independent evaluation of each Board meeting being made by each director.

A further activity in this vein was a Board strategic planning workshop, leading to a strategic work plan which the directors will use to identify gaps in its portfolio in the light of the challenges and strategies established in the R&D plan and of issues that emerge. A comprehensive compliance register and a risk management framework were also developed.

INFLUENCES ON PERFORMANCE

In line with the discussion on trends in R&D supply and demand in last year's annual report, the directors have continued to improve the efficiency of R&D investment. Inevitably, constraints on the contributions by industry limit the R&D resources that can be applied to the most pressing challenges facing the industry and the natural resources on which it depends. Efforts by FRDC staff and stakeholders to increase the industry's contributions have continued to bear fruit, with three instances this year of contributions in excess of the amount that the Australian Government will match.[4] It is particularly pleasing to see this year's increase in total industry contributions that are matched by the Government — from 77 per cent of the maximum matchable amount to 84 per cent.

4 For details of Australian Government's matching of contributions by industry, see page 171.

This year, the fishing industry's contributions to the FRDC's R&D activities rose from 77% to 84% of the maximum amount that is matched by the Australian Government

To ensure that the incoming Board will inherit a sound financial base during 2003–04, the Board has made a concerted effort not to over-invest in R&D. In making its financial decisions the Board has taken note of the way in which projects tend to take longer than originally budgeted; hence the FRDC needs to ensure that its future predictions of investment capacity take into account expenditure in later years.

The significant drop in export income precipitated by the outbreak of severe acute respiratory syndrome in key export markets will affect the industry's average gross value of production (AGVP) on which R&D funding is based, albeit the effect will be delayed by the fact that the AGVP is based on three years' production.

The Board has continued to meet the challenges of this increasing demand for R&D while the supply of funding continues to be constrained. Many of the FRDC's stakeholders are now helping to address these challenges.

There are two ways of addressing the gap between supply and demand for fisheries R&D:

- to increase the available funds, and
- to focus on high-priority R&D.

The Fisheries Research Advisory Bodies ("FRABs" — which among other things apply priorities to R&D), together with leaders of Subprograms and other key people, have worked with the FRDC on both of these tasks. Some FRABs have recently obtained higher industry contributions to the FRDC.

The increasing effectiveness of the FRABs is reflected in the most recent round of prioritising, which has been the most successful yet in focusing on high-priority R&D. Currently, the Corporation only has the capacity to fund about half of the R&D applications submitted by the FRABs, and this half comprises applications that the FRABs consider to be of the highest priority after having evaluated about three times as many. As R&D applications become better oriented to agreed priorities (as a consequence of the FRDC involving end-users increasingly in R&D planning), the higher the success rate is expected to be. The optimum level of approval is probably 50–60 per cent, which leaves room for the Board to maintain full discretion with the Corporation's investment.

Improved processing of R&D applications by the Fisheries Research Advisory Bodies allowed the FRDC to focus more investment on issues of high priority

As a result of its strategic planning work, this year the Board has been in a better position to provide direction to the FRABs on issues that the Board has suggested they address. The Board also gave the FRABs more information about the levels of R&D investment by the FRDC that individual jurisdictions could expect in 2003–04. This was well received.

STRATEGIC DIRECTIONS FOR R&D INVESTMENT

Again with the support of the FRABs and other stakeholders, the Board has identified and developed activities for investment in the coming year. It has paid particular attention to key elements of the nine challenges concerning the fishing industry and fisheries natural resources identified in the R&D plan,[5] and to issues recently identified by the Australian Fisheries Management Forum. The investment activities are as follows:

5 The challenges are listed on page 31 of this report.

- Develop alternative fisheries management structures and methods that:
  - provide for ecosystems-based fisheries management;
  - are based on the precautionary principle[6] and appropriate risk management strategies;

6 Defined in the glossary (page 219).

  - provide for maximisation of economic and social returns from fisheries through robust resource allocation methods;
  - provide for effective management of recreational fishing;
  - recognise the varying levels of need for government involvement in fisheries management (i.e., as reflected by large self-managed fisheries, full-cost-recovered fisheries, small fisheries, data-rich fisheries and data-poor fisheries);
  - recognise varying levels of property rights; and
  - are cost effective.

- Develop ways of increasing the quality and numbers of new industry leaders to accept increased responsibility for fisheries management and industry development.
- Assess Australia's potential to address its likely 80,000-tonne seafood deficit in 2020 through high-volume, low-value aquaculture and improved use of wild-catch resources.

FUTURE PROSPECTS

The future prospects for the fishing industry, for the natural resources on which it depends and for the FRDC are described under the headings 'The challenges for Australia' and 'The challenges for the FRDC' on pages 31 and 32.

The major challenge for the FRDC continues to be the need to increase its revenue base on a broad front, recognising the breadth of needs and the size of the sectors of the fishing industry. This will involve a mix of levies, memoranda of understanding and specific management agreements.

REVIEW OF AUSTRALIA'S SCIENCE AND INNOVATION SYSTEM

The Australian Government has embarked on an exercise to develop an overview of Australia's science and innovation system. The detailed picture of Australia's research effort that is expected to result will enable governments, research institutions and industry to make better decisions about allocation of resources.

The directors were pleased to note that as a part of this exercise a case study is being conducted on the characteristics of the rural R&D corporation model (see page 2) in recognition of its effectiveness in transforming R&D outputs to practical outcomes. The FRDC has taken part in the study.

FURTHER AWARDS FOR ANNUAL REPORTING

Annual report competitions have provided very useful feedback and benchmarking to the FRDC in recent years, especially on corporate governance. That process has continued with this year's report, which incorporates many detailed improvements and has undergone major changes to its structure and program reporting.

The directors are again delighted that the FRDC's record of winning annual report awards since the 1998–99 report has continued. Success in competition with so many other organisations endorses the Corporation's continually improving management processes and adds to stakeholders' confidence in the Corporation's governance.

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 bronze award for last year's FRDC annual report. Additionally, for the second year running the ARA placed the FRDC on a short-list of three 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 judged highly by the Institute of Public Administration Australia, receiving a Highly Commended award as one of the five reports placed in the "gold award grouping" for agencies reporting under the CAC Act. It was considered "a very good report that covers some complex operational activities in language that is comprehensible to the lay reader … and [includes] very good performance reporting". The judges noted "the continuing appearance of the same group of organisations considered for the top prize-winning categories" and that "picking a 'winner' is becoming almost an arbitrary choice in a tightly held small field".

Michael Parolin, FRDC Communications Manager (left), receives the FRDC's award for last year's annual report at the Institute of Public Administration Australia.

Feedback from annual reporting competitions is invaluable as the FRDC continually improves its corporate governance, planning and reporting

The judges of online annual reports made special mention of the FRDC annual report (at www.frdc.com.au/pub/anrep/index.htm) for "a particularly pleasing users' guide".

The directors have previously observed that increasingly complex annual reporting requirements have impinged quite heavily on the FRDC's resources. It was therefore interesting to note the remark by the judges — after observing that bodies in the CAC Act category have staff numbers ranging from 10 to 35,000 — that "some of the smaller organisations, which presumably are not able to devote substantial resources to the task, have produced reports that more than match in quality and content those produced by much larger bodies".

DIRECTORS' PROFESSIONAL DEVELOPMENT

During the year, three more directors completed the Diploma Course of the Australian Institute of Company Directors. Directors' development was enhanced by opportunities to participate in meetings of Fisheries Research Advisory Bodies in their states and in meetings of project-related steering committees. Visits and discussions held in conjunction with Board meetings gave stakeholders opportunities to meet with directors and gave directors opportunities to expand their knowledge of current industry practice and thinking, as did weekly reports from the Executive Director and fortnightly mail-outs of information. All these development activities helped to reinforce the contributions that directors make to FRDC decision-making, not least the decisions they make on specific investments at project level.

The directors not only work to implement best practice in corporate governance; they also make decisions on specific investments at project level. Their development activities are therefore focused on directorship and current industry practice and thinking.

NEW DIRECTORS APPOINTED

The Minister for Fisheries, Forestry and Conservation, Senator the Hon. Ian Macdonald, appointed Mr Glenn Hurry as Government Director from 13 September 2002. Mr Hurry succeeds Dr Derek Staples, whose valuable contribution to the FRDC Board was underpinned by his longstanding experience in fisheries science.

As a result of a selection committee nominating six persons to the Minister for Fisheries, Forestry and Conservation for appointment as FRDC directors, the Minister approved their appointment with effect from 1 September 2003. Two — Mr Simon Bennison and Mr Ian Cartwright — are currently serving directors. The four new directors are Mr John Harrison, Professor Tor Hundloe AM, Dr Nick Rayns and Mr Stuart Richey. The report of the selection committee is at appendix A (page 168). The Board wishes the new directors well and hopes that they find their roles equally challenging and rewarding during the next three years.

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, which was appropriately recognised this year by the award of the Centenary Medal.

For their consistent support during the year we are also grateful to the Australian Government Minister for Agriculture, Fisheries and Forestry (the Hon. Warren Truss, MP); the Parliamentary Secretary to the Minister (Senator the Hon. Judith Troeth); the Minister for Fisheries, Forestry and Conservation (Senator the Hon. Ian Macdonald); and their respective advisers. The willing assistance of staff of the Department of Agriculture, Fisheries and Forestry 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 federal, state and Northern Territory governments, and to the fishing industry, for their financial support of the Corporation's vital role.

Annette Lyons (Projects Manager — Finance, and FRDC Quality Manager) is well-known throughout the fishing industry and R&D community for her efficiency and great sense of humour. Her dedication during ten years of service with the FRDC was formally acknowledged by FRDC Chairman Denis Byrne (right), former Chairman Russell Reichelt (centre) and Executive Director Peter Dundas-Smith.

THE FRDC'S FISHERIES RESEARCH AND BUSINESS DEVELOPMENT CORPORATION · ENVIRONMENT ·

This section covers:

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 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.

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 2003*, available from the FRDC.

AUSTRALIA'S 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 350 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.

Nutrients and plankton in Australian ocean waters do not support high-tonnage catches of finfish as in other nations' waters

One fishery — the South East Fishery — consistently has relatively high tonnages. However, it is very small by world standards. In 2001–02, it produced about 29,400 tonnes. Included in that catch was 9,200 tonnes of blue grenadier. By contrast, the New Zealand catch of the same species (called hoki) was about 196,000 tonnes.

The low production capabilities of Australia's wild fisheries give little opportunity to increase tonnages, yet local and international demand for seafood is set to grow substantially. 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.[7] To do this, the environmental resources that form the basis of our economy need to be used in a way that maintains — and where appropriate restores — 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.

7 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

Ecologically sustainable development is a vital concept that spans the economic, environmental and social dimensions of our existence

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 activity.

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

THE FISHING INDUSTRY TODAY

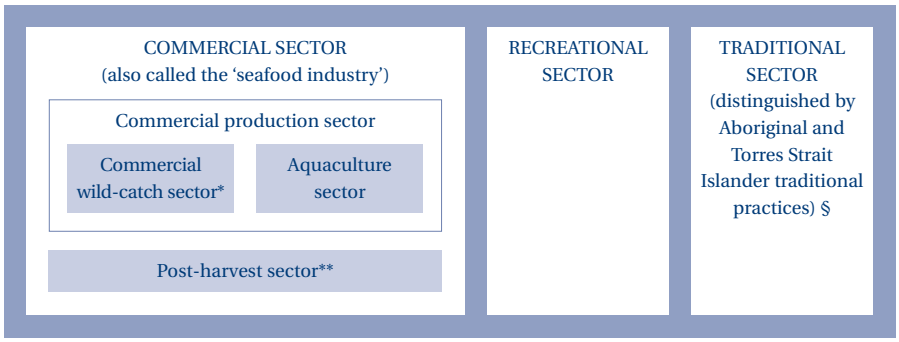
THE THREE SECTORS OF THE FISHING INDUSTRY

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 2** 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 2: COMPONENTS OF THE FISHING INDUSTRY



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

** Includes importers of seafood harvested overseas.

§ 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

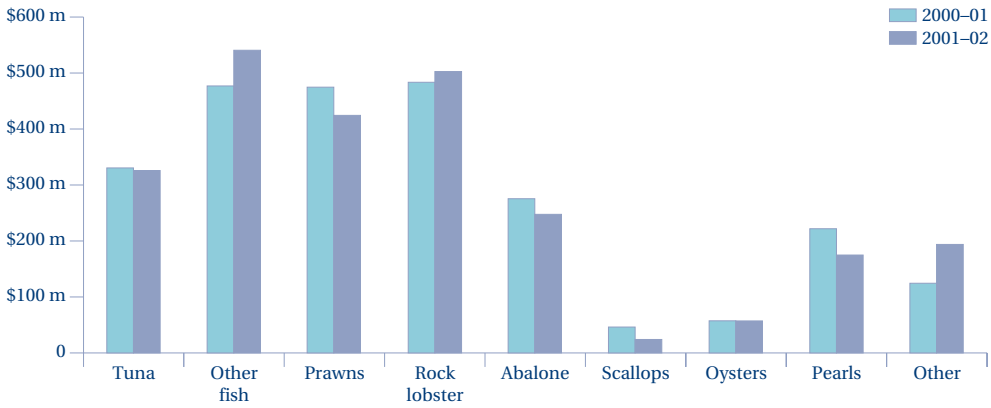
The commercial sector of the fishing industry comprises wild-catch, aquaculture, processing, storing, transporting, marketing and selling activities. The sector is a very large business that supports many people's livelihoods and lifestyles. Australian seafood is an integral component of our international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

Recent commercial production

The commercial sector of the fishing industry in 2001–02 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 2 per cent in 2001–02 to 233,000 tonnes. However, with falling prices (unit values) for many species, the gross value of Australian fisheries production fell by 0.8 per cent to $2.41 billion ("landed value" — that is, before value-adding). ABARE's estimate for 2002–03 is $2.23 billion.

The $2.41 billion seafood industry is Australia's fourth most valuable food-based primary industry



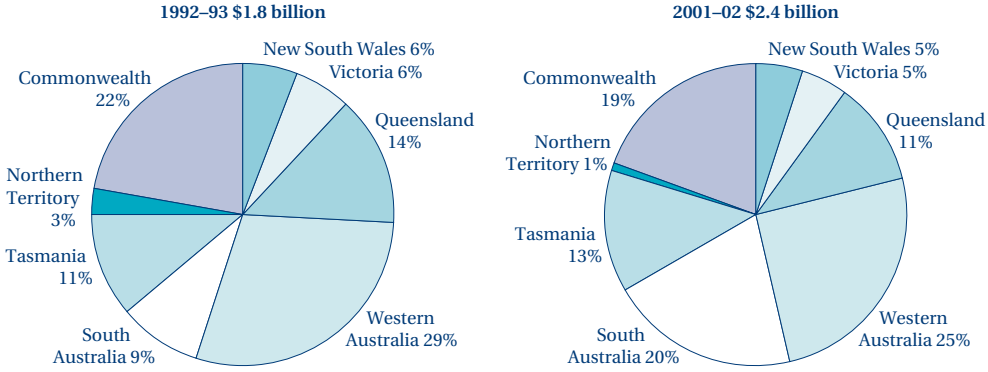
— Source: *Australian Fisheries Statistics* 2001–02

The gross value of Australian finfish production (both wild caught and aquaculture) rose by 6 per cent in 2001–02 to $862 million. The gross value of production of crustaceans fell by 1.2 per cent. Wild-caught harvests of all crustacean species, except rock lobster, fell. Mollusc production fell 4.8 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 2001–02 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.

In 2001–02, the gross value of production in the state wild-catch fisheries fell by 2.8 per cent or $36.8 million to $1.27 billion. However, it rose in the Commonwealth wild-catch fisheries by 1.0 per cent or $3.9 million to nearly $481 million.

Changes in the landed value of the commercial wild catch during the past decade are as follows.



— Source: *Australian Fisheries Statistics* 2001–02

SIGNIFICANCE OF THE SARS OUTBREAK

The outbreak of severe acute respiratory syndrome (SARS) in early 2003 highlighted the vulnerability of some significant sectors of the seafood industry. The main source of vulnerability is lack of diversity in current export markets. As shown in the diagram on page 28, some 30 per cent of Australia's seafood production is exported, mainly to premium markets in South-east Asia. The fresh rock lobster market, for example, is highly dependent on airlines for freight. Cancellation of 80 per cent of flights to Japan, Hong Kong, Taiwan and China and consumers' avoidance of restaurants and large public events in those countries for four months precipitated a huge drop in the market for rock lobsters. Another market — seafood exports from Cairns — reported a weekly earnings drop of $1.5 million in mid-April, eight weeks after the outbreak.

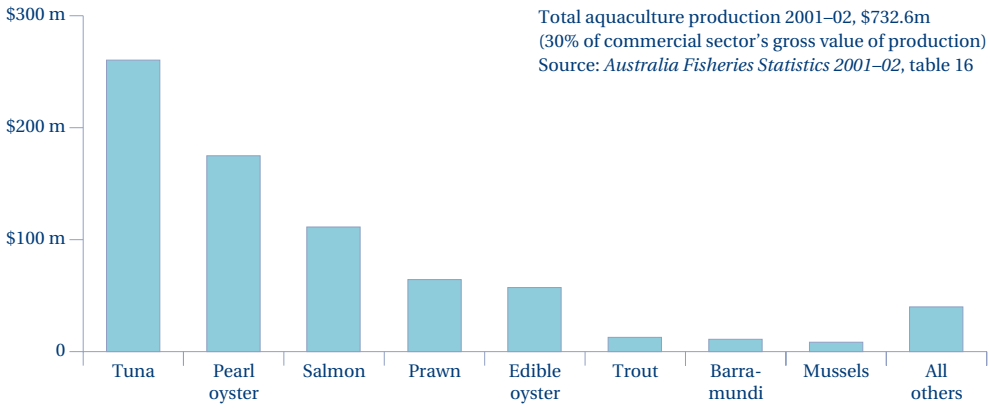
Aquaculture is one of Australia's fastest-growing primary industries. The sector is aiming at the premium end of the market because high production costs militate against high-tonnage, low-value production. Since 1991–92, the real value of aquaculture production has almost trebled from $256 million (in 2001-02 dollars) to $733 million in 2001–02. This represents an annual rate of growth of nearly 14 per cent in nominal terms and 11 per cent in real terms. Australia's wild caught fisheries gross value of production grew at a far lesser rate than this. As a result, aquaculture's share of Australia's total fisheries gross value of production increased from 15 per cent in 1991–92 to 30 per cent in 2001–02. The sector has predicted a gross value of production in 2010 of $2.5 billion.

The major sectors contributing to this growth are the southern bluefin tuna, pearl oyster, Atlantic salmon, prawn, edible oyster, trout, barramundi and mussel sectors. Together, these eight species account for 95.6 per cent of the total gross value of aquaculture production. The seven species other than pearl oysters account for 97 per cent of the weight of Australian farmed seafood.

Australian domestic demand for seafood in 2020 is expected to be 80,000 tonnes more than current consumption. Aquaculture is capable of meeting a substantial portion of this demand, albeit that production of the top seven edible species would have to be trebled to completely eliminate the deficit. The Corporation's concentration on the top seven edible species derives from their crucial role in meeting this target and, together with pearl oysters, on the "$2.5 billion by 2010" industry target, although the Corporation may invest in other aquaculture species with commercial potential.[8]

8 Changes to the FRDC's aquaculture investment policy are outlined on page 63.

More information on the commercial wild-catch and aquaculture sectors' production, exports and employment is on pages 69–71.



Total aquaculture production 2001–02, $732.6m
(30% of commercial sector's gross value of production)
Source: *Australia Fisheries Statistics 2001–02*, table 16

The top eight aquaculture species, which account for 95.6% of the gross value of aquaculture production. These species — together with other species having high commercial potential — are the main target for FRDC investment in aquaculture.

More information on production is in *Australian Fisheries Statistics*, published by the Australian Bureau of Agricultural and Resource Economics; available as a free download from http://abareonlineshop.com/product.asp?prodid=12527

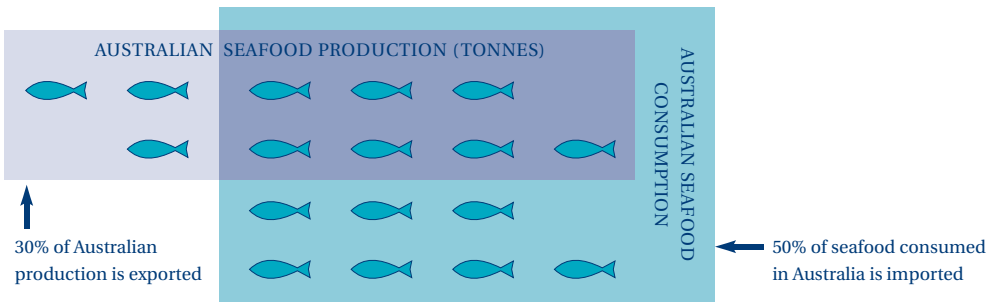
The push to sustainability and higher quality

Commercial wild-catch fishing and aquaculture 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. They contribute strongly to export growth.

Increasingly, leading enterprises in the commercial wild-catch sector are adopting environmental and quality management systems and are focusing strongly on seafood quality. 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 handling, packaging and product differentiation and are focusing on the premium end of the market. They are marketing more efficiently by opening up new markets and developing niche products. These improvements have generally produced better returns on investment and higher environmental and social sustainability.

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

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 National Recreational and Indigenous Fishing 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.

The National Recreational and Indigenous Fishing Survey showed significant economic benefits from recreational fishing. Recreational fishers were estimated to spend $1.8 billion per year on fishing-related items. Survey participants reported more than 45 different expenditure categories, of which boats and trailers ($940 million) was the highest, followed by travel associated with fishing ($395 million) and fishing gear ($182 million).

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.

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. 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.

Traditional fishing is increasingly being addressed
in fisheries management plans

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. A 2001 High Court decision confirmed that native title rights to areas of sea and marine resources continue to exist where Aboriginal and Torres Strait Islander people have retained their traditional relationship with their sea country. Marine native title rights, however, must coexist with other existing rights, which will prevail wherever conflicting rights occur.

Aboriginal and Torres Strait Islander families and individuals pursue subsistence hunting, fishing or gathering through traditional and recreational fishing practices throughout Australia. 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 cultural practices. 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.

For more comprehensive information on the fishing industry, please refer to pages 47–69 of the FRDC's R&D plan.

THE CHALLENGES FOR AUSTRALIA

The FRDC continually reviews its assessment of it business environment to ensure that the Corporation continues to focus on R&D of the highest priority. The assessment includes an analysis of the factors 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.[9] Currently, these factors are grouped into nine major challenges, which have been widely accepted by the fishing industry as key points for focusing efforts for improvement.

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

The fishing industry has widely accepted the nine main challenges resulting from the FRDC's 20-year forecasts as key focusing-points for improvement

Underlying the challenges is the fact that more fish will be required in future — 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, more 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.

These nine challenges are important points of focus in working towards the planned outcomes of the FRDC and its R&D partners. The R&D program reporting on pages 50–81 is therefore set out mainly in terms of the challenges.

Discussion of current factors in delivering the three R&D programs, especially in view of new Australian Government priorities, starts on page 39.

THE CHALLENGES FOR THE FRDC

R&D DEMAND FACTORS

Demand for FRDC investment in R&D is growing strongly because of increasing acknowledgement of the foregoing challenges and preparedness to address them. Legislation, reflecting higher expectations of the Australian public, is also creating significant demand for fisheries R&D.

Translating these demands into R&D projects is challenging because (particularly with wild-catch production):

- fisheries managers and the fishing industry often have conflicting views on R&D priorities, and generally the industry does not have the resolve or organisation to advocate R&D priorities for the industry;
- existing fisheries research capacities are dominated by biological disciplines, which strongly influences the nature of R&D — in particular, directing R&D away from economic and social topics;
- many researchers are not sufficiently in touch with their stakeholders — and particularly the end-users of R&D outcomes;
- many fisheries research institutes are driven by the need to gain access to external funding, which gives rise to a focus on cash rather than outcomes in their R&D planning; and
- the FRDC is under increasing pressure to fund a share of the cost of R&D infrastructure such as research vessels.

FUNDING SUPPLY FACTORS

Competing pressures for public sector funds limit R&D expenditure by the federal, state and territory governments. It is likely that governments will do no more than maintain current levels of investment in fisheries R&D, resulting in increasing demands being placed on the FRDC. Consequently, the FRDC needs to expand its revenue base to maximise investment in fisheries R&D by:

- providing increased incentives for fishers and aquaculturists to contribute to the FRDC above the limit to which the Australian Government will provide matching contributions;
- providing a mix of arrangements to facilitate contribution, such as levies (compulsory and voluntary) underpinned by legislation or memoranda of understanding;
- 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 increased incentives for other users of fisheries resources to contribute to the FRDC; and
- assuming a more commercial approach to the sale of knowledge, processes and technology.

Faced with limits to government funding, the FRDC is vigorously pursuing new sources of cost-effective R&D investment

Further, the FRDC needs to continue to develop flexible approaches to ensure that the most cost-effective arrangements are pursued on behalf of stakeholders. Therefore, although the competitive annual R&D cycle will remain the primary avenue for FRDC funding for the foreseeable future, the Corporation will need to employ other avenues, including by:

- commissioning research providers to undertake specific R&D,
- forming collaborative research teams (such as managed subprograms) to undertake specific R&D,
- requesting tenders for specific R&D, and
- supporting the formation of entities for effective commercialisation.

OTHER FACTORS

In making decisions about the FRDC's R&D investment portfolio, it is very important to strike the right balance in satisfying the varying needs of stakeholders, especially those who contribute substantially to the Corporation's revenue base. Such a balance would be helped by being able to distinguish clearly between private benefit and public good. In practice, as described in the panel overleaf, in fisheries R&D the distinction is blurred.

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 investment 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 Australian Government'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.

In achieving this balance, the FRDC as far as practicable ensures that its R&D investment is of direct relevance, within a five-year period, to the fishery, industry sector, or state / territory in which funds were collected.[10] Also as a consequence of its focus on the needs of end-users, a high proportion of activity is applied R&D — both short-term and long-term — although basic research is also funded.

10 This practice also complies with a ministerial direction issued under section 143(1) of the PIERD Act, which is summarised on page 124.

The FRDC not only needs to balance its investments in R&D; it needs to provide sufficient resources to maintain capabilities for effective management of projects. For that reason, the FRDC devotes a significant proportion of funds to project development, technology transfer and commercialisation, and evaluation.

Higher accountability to the Australian Government for achievement of outcomes requires increased effort in identifying and measuring outcomes, as described on pages 11 and 41.

Increasingly, innovation is based on effective use of knowledge, as distinct from originating new knowledge. The FRDC is continuing to encourage this process.

An important strategic consideration is that Australia's investment in R&D (all R&D, not just fisheries) is 2 per cent of the world total. Making use of the other 98 per cent is essential.

Development of knowledge-based systems is increasing (for example, R&D is increasingly being delivered by the Internet very soon after its discovery) and the time-lag between discovery and adoption is decreasing accordingly. The FRDC is making maximum use of this development.

Management of intellectual property is becoming more challenging. The FRDC accepts that it must be increasingly accountable for its expenditure of public funds and at the same time protect the commercial interests of its commercial partners.

Access to comprehensive, sound data and information is a prerequisite for developing policy, law and procedures in support of sustainable fisheries management. With increasing rates of change in information technology, there is a need for improved storage methods to ensure that aquatic data and information remains available for future use. This needs to be prepared collaboratively with other nations because of the international linkages in fisheries management.

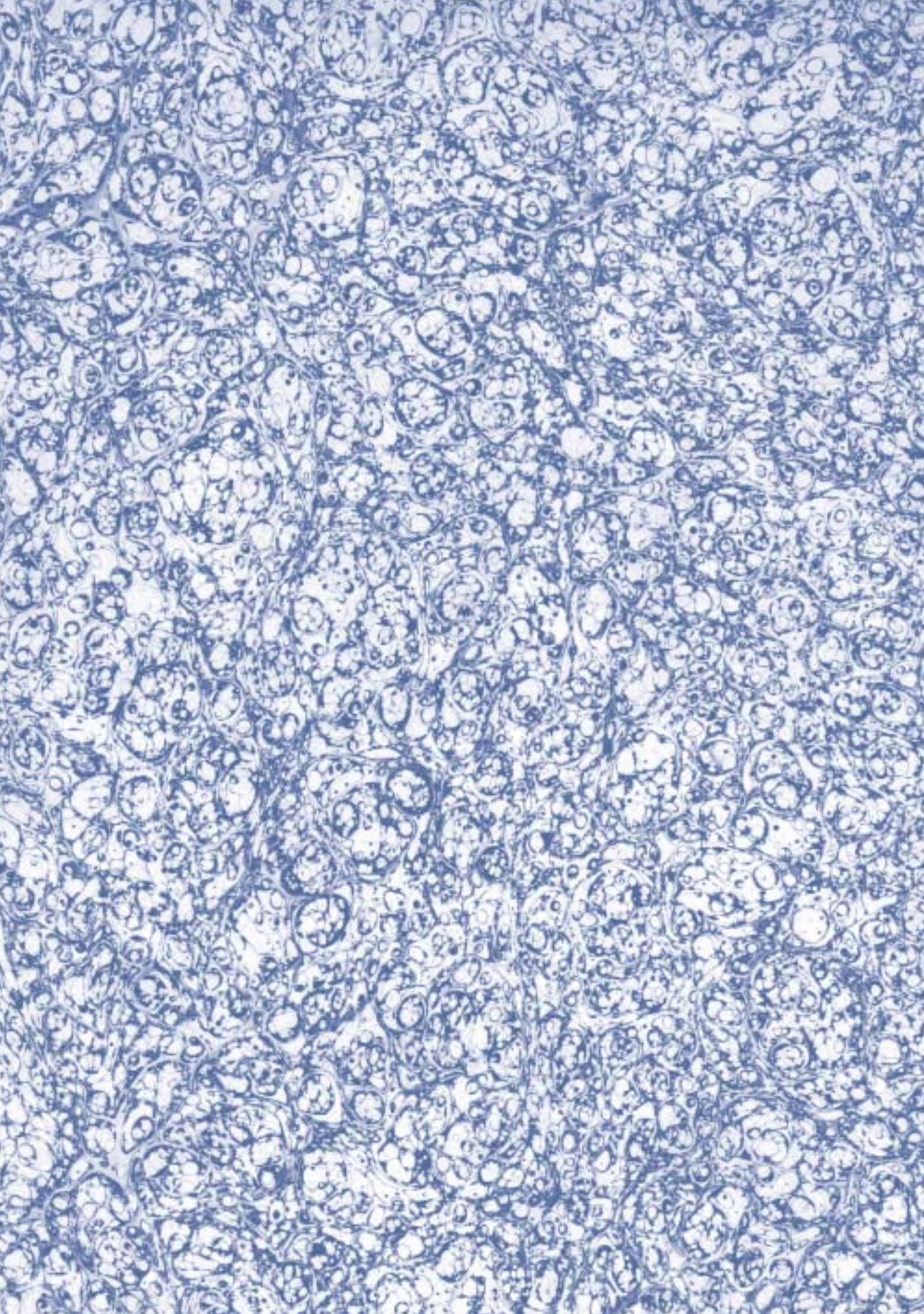
THE FRDC'S MANAGEMENT RESPONSE

Given the foregoing, the FRDC seeks to exercise a strong national leadership role in order to maximise Australia's investment in fisheries R&D. It carries out this role by:

- investing in high-priority R&D that has the potential to deliver the highest benefits;
- making R&D results widely known, and facilitating their adoption and (if appropriate) commercialisation;
- expanding the FRDC revenue base and influencing R&D fisheries investment by other parties; and
- managing R&D programs through effective, efficient, open and accountable management procedures and systems.

These factors constitute the strategies of Program 4 (Management and Accountability), described from page 84.

By assuming a strong national leadership role in fisheries R&D, the FRDC is obtaining better results for its stakeholders' investments



REPORT OF FISHERIES RESEARCH AND OPERATIONS DEVELOPMENT CORPORATION

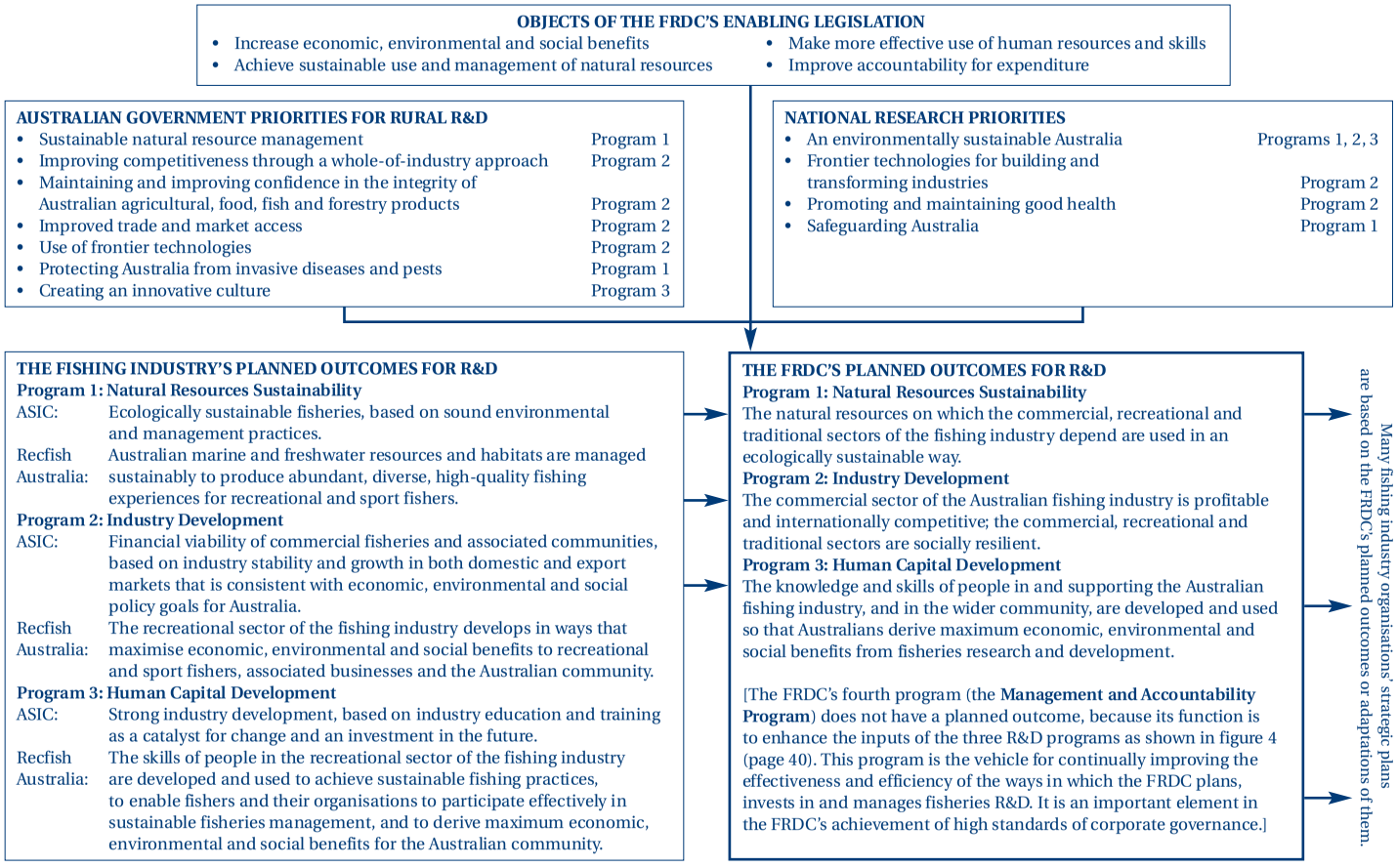
PART 2

The FRDC's OPERATIONAL AND FINANCIAL RESULTS

This part of the report of operations covers:

Part 3, which deals with corporate governance, starts on page 102.

FIGURE 3: THE FRDC'S FRAMEWORK FOR INTEGRATING LEGISLATIVE, GOVERNMENT AND INDUSTRY PRIORITIES



FACTORS IN DELIVERING THE R&D

THE CONTEXT FOR THE FRDC'S PLANNED OUTCOMES

The FRDC has aligned its four programs directly with the four objects of the PIERD Act and is responsive to:

- the Australian Government's national research priorities,
- the Government's priorities for rural R&D, and
- the planned outcomes of its two representative organisations — the Australian Seafood Industry Council (ASIC) and the Australian Recreational and Sport Fishing Industry Confederation (trading as Recfish Australia).

The relationships between these various criteria are shown in **figure 3**.

The FRDC's planning, operating and reporting framework[11] is centred on delivering outputs that help to achieve its planned outcomes. The concepts involved, as used in the Australian Government's outcome-output accountability framework, are shown in **figure 4**, overleaf.

11 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.

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 the actual impacts of those goods and services on the Australian economy, environment and society. In essence, the FRDC's planned outcomes are things that will make a real difference to Australia's fisheries resources and fishing industry.

ACHIEVING OUTCOMES THROUGH R&D OUTPUTS

As distinct from its obligation to invest in the most beneficial R&D, the FRDC has an obligation to foster the most effective and efficient transformation of R&D outputs into outcomes.

The FRDC's business environment is different from those of other rural R&D corporations. For example there is, uniquely, a particularly high component of public good in most fisheries R&D, as discussed on page 34. Another distinction is that whereas in the natural resources sphere the processes by which R&D outputs are taken up and applied to achieve outcomes are more diffuse than in most other R&D fields, in fisheries R&D they are even more diffuse.

The FRDC's efforts are focused on the actual impacts of R&D outputs on the Australian economy, environment and society

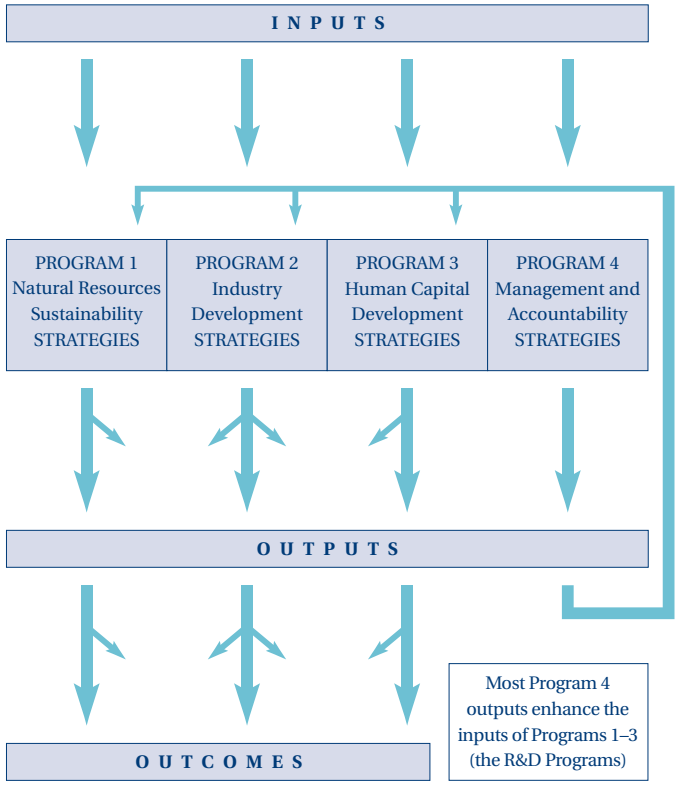
FIGURE 4: THE FRDC'S FOUR PROGRAMS: INPUTS, OUTPUTS AND OUTCOMES

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 24.

Definitions in the diagram have been adapted to the FRDC context from *Specifying outcomes and outputs*, Department of Finance and Administration, 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.

The links between outcomes and the R&D inputs and outputs that achieve them are far from direct and linear: they are many and complex. In general, outcomes result when R&D outputs are implemented by the fishing industry, fisheries managers and other end users. These contributing outputs come from many sources, including R&D project outputs of previous years. Further, when there are several projects proceeding in a particular area of R&D, many project outputs become inputs to related projects. Such inter-relatedness becomes most apparent when the FRDC and its R&D partners communicate and extend R&D results to potential beneficiaries, both before and after projects are completed.

The FRDC is increasing the demands it makes on beneficiaries and end-users to commit themselves to use R&D outputs

Despite the FRDC's rigorous focus on planned outcomes and 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. The Corporation is increasing the demands it makes on beneficiaries (such as industry) and end-users (such as fisheries managers) to commit themselves to use R&D outputs. Quicker, more efficient adoption and commercialisation of R&D outputs has been enabled by new communication technologies and greater involvement of stakeholders throughout the innovation chain, commencing at the planning stage. The FRDC also actively encourages cooperation between the fishing industry and other beneficiaries to further improve the rate of uptake.

The management processes for encouraging the transformation of R&D outputs into outcomes are focused by Program 4, Management and Accountability.

Identifying and measuring outcomes

Measuring achievement of outcomes in the wild fishery environment is more difficult and expensive than on land, posing large challenges for the fisheries R&D community in seeking to realise the huge potential benefits. To identify and measure R&D outcomes, the FRDC needs to work closely with end users — particularly management agencies — to unravel fisheries decision-making processes. In this context the FRDC's inputs are significant but nevertheless "some among many", the "many" being mainly non-R&D factors (for example, economic, social and political).

The FRDC has an R&D subprogram dedicated to developing an ESD reporting and assessment framework incorporating sustainability performance indicators for fisheries so that the industry can meet its obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. The FRDC is also using these indicators to measure the outcomes achieved through the 60 per cent of its investment that is directed to sustainability of natural resources.

The FRDC commissions about five full benefit-cost analyses on selected projects every year. The non-linear links between inputs and outputs, as outlined under the previous heading, make analysis complex and costly. Therefore, the Corporation is also constantly working towards better ways, short of full benefit-cost analyses, to identify and measure outcomes for all of its R&D outputs. The continually developing sustainability indicators for fisheries and the resultant fisheries status reports produced by management agencies are contributing significantly to this effort.

The FRDC is working with all other rural R&D corporations to identify ways to measure non-market benefits of R&D

REVIEW, PLANNING AND CONDUCT OF ACTIVITIES

The FRDC does not normally determine priorities at state, regional or fishery level with respect to the strategies in the R&D programs. That task is carried out by the Fisheries Research Advisory Bodies (FRABs), managed subprograms and other priority-setting structures, as described on pages 136 and 140 of the FRDC's R&D plan. However, to ensure a balanced portfolio and to comply with directions of the Australian Government and the FRDC's representative organisations, the Corporation determines the balance between projects funded within the R&D programs. Each year, therefore, the Corporation reviews its strategic assessment of the business environment, including through consultation with its 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 the R&D portfolio.

The FRDC's current strategic assessment of the business environment is reflected in the Corporation's funding targets for each R&D program, which are:

- Program 1 (Natural Resources Sustainability): 60 per cent;
- Program 2 (Industry Development): 35 per cent; and
- Program 3 (Human Capital Development): 5 per cent.

For 2003–04, the FRDC has identified the need to increase its effort in developing the knowledge and skills of people in and supporting the Australian fishing industry and in the wider community (Human Capital Development, Program 3). Without this increased effort, the FRDC's investment in Program 3 could continue to fall below its 5 per cent target, as it has during the past year. This tendency to under-achievement is due to two main factors. The first is Australia's limited capability in social science research as it relates to fisheries and the fishing industry. This factor, in itself, indicates the need for increased effort by the FRDC in human capital development. The second factor is that the current targets for the FRDC's three programs reflect FRDC stakeholders' priorities for R&D. The primary drivers at present are factors that underpin sustainability (Program 1) and profitability (Program 2). As a result, stakeholders have only infrequently identified Program 3 as a priority for R&D project investment. There is, nevertheless, a material component of human capital development in Programs 1 and 2: for example, postgraduate studies are often incorporated in R&D projects.

The 2003–04 annual operational plan and portfolio budget statement

The annual operational plan (AOP) sets out the ways in which the FRDC intends to work towards the planned outcomes of the R&D programs. The AOP for the forthcoming financial year, 2003–04, 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 $23.7 million on new and continuing projects. The Parliamentary Secretary approved the 2003–04 AOP on 11 June 2003.

The FRDC contributed directly to the Department of Agriculture, Fisheries and Forestry's portfolio budget statement. Unlike the R&D plan and AOP, it is tabled in the Parliament of Australia. Thus, as with the annual report, it is an important element of parliamentary scrutiny.

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 investing in R&D. Further details of the funding process are available in the R&D plan.

PRINCIPAL REPORTING REQUIREMENTS

In recent years, the Australian Government has significantly increased the criteria against which its agencies conduct and report their activities — especially through enactment of the CAC Act; introduction of the outcome-output framework; in the case of rural R&D corporations, specification of priorities for rural R&D; enactment of the EPBC Act; and most recently through national research priorities.

The various criteria that the Australian Government now requires to be addressed are listed in the compliance index on page 224, together with the pages on which the criteria are addressed. This year, in the interests of transparency, explicit references to the criteria have also been included in the compliance index.

The most recently introduced criterion is the Australian Government national research priorities, announced in December 2002. An outline of the way in which the FRDC is addressing them is on pages 42–47.

Additionally, to inform readers about the way in which the criteria apply to the FRDC, the topics themselves (as distinct from information provided in response to the criteria) have been addressed in the report as follows:

- Appendix C: Principal legislative requirements for reporting (the CAC Act, PIERD Act and EPBC Act) — page 173.
- Appendix D: The FRDC's legislative foundation and the exercise of ministerial powers (objects, functions, statutory powers, ministerial powers) — page 177.
- Appendix E: Updated Australian Government priorities for rural R&D (reproduces the text of the priorities) — page 181.

Despite the preponderance of these Australian Government requirements in shaping the annual report, the FRDC nevertheless addresses industry requirements to a considerable extent. As shown in figure 3 on page 38, R&D program activities take account of the planned outcomes of the FRDC's representative organisations, the Australian Seafood Industry Council and Recfish Australia. The Corporation liaises with these organisations and their various subsidiary groups and key individuals on virtually a daily basis. Consequently, the Corporation's R&D activities and reporting are based on an intimate knowledge of industry requirements.

HOW THE FRDC IS ADDRESSING THE NEW AUSTRALIAN GOVERNMENT NATIONAL RESEARCH PRIORITIES

Note: A full description of the priorities is at www.dest.gov.au/priorities/

The Australian Government introduced new national research priorities in December 2002. The FRDC is addressing them within its existing R&D programs since the priorities fit well within the framework of the Corporation's legislative foundation, the Government's priorities for rural R&D, and the planned outcomes of the Corporation's representative organisations — as shown in figure 3 on page 38.

The national research priorities and the subordinate research goals relevant to the FRDC, and the activities through which the FRDC will contribute to their achievement, are described as follows.

Many FRDC-funded projects produce R&D outputs spanning more than one of the FRDC's R&D programs and interact with other such projects (for example, natural resources sustainability with industry development and vice versa). Similarly, many projects address, interact with and produce outputs for, more than one national research priority or Australian Government priority for rural R&D.

AN ENVIRONMENTALLY SUSTAINABLE AUSTRALIA

Under this priority, the relevant research goals are:

- "Sustainable use of Australia's biodiversity": managing and protecting Australia's terrestrial and marine biodiversity to develop long-term use of ecosystem goods and services ranging from fisheries to ecotourism.
- "Transforming existing industries": new technologies for resource-based industries to deliver substantial increases in national wealth by reducing environmental impacts on land and sea.

Planned R&D activities

The FRDC's investment in natural resources sustainability and (in part) industry development embraces these two goals, and represents over 60% by value of the FRDC's investment portfolio. Specific R&D activities in 2003–04 include the following:

- *Continued support of the ESD framework* being developed and implemented by the National Resource Management Standing Committee through its Marine and Coastal Committee; specifically, maintenance of the subprogram dedicated to ESD Reporting and Assessment. This subprogram, covering all sectors of the fishing industry (commercial wild catch and aquaculture, recreational and traditional), will be underpinned by an investment of more than $15 million in ESD-related projects.

- *Investment to accelerate the implementation and adoption of Environmental Management Systems* (EMSs) in the fishing industry — up to $40,000 per year, for two years, for each state/territory to employ an EMS officer. The EMS officers will be supported by new EMS tools, including training materials; training will be provided to the EMS officers and associated industry leaders.

Performance indicators

- More sustainable fish stocks in wild catch fisheries.
- Improved health status of the environment that sustains all aquatic life.

Estimated expenditure in 2003–04

The estimated expenditure on this research priority in 2003–04 is $16 million.

PROMOTING AND MAINTAINING GOOD HEALTH

Under this priority, the relevant research goal is "Preventative healthcare": new evidence-based strategies to promote healthy attitudes, habits and lifestyles and to develop new health-promoting foods and nutraceuticals.

Planned R&D activities

Specific R&D activities in 2003–04 include:

- further development of the Australian Seafood Standard in consultation with Food Standards Australia and New Zealand, industry and other stakeholders;
- further promotion of best practice within the industry relating to quality and seafood safety (achieved through investment in Seafood Services Australia Ltd);
- further investment in the health benefits of seafood — specifically a health promotion program incorporating fish for withdrawal of antihypertensive drugs in overweight hypertensives and participation in the "SmartStart to Life" national schools program in collaboration with other R&D corporations and government agencies; and
- promotion of the health benefits of seafood to consumers.

Performance indicators

- Increased consumption of seafood.
- Improvement in the health of school children as indicated through the SmartStart program.
- Reduced incidence of seafood-related illnesses.

Estimated expenditure in 2003–04

The estimated expenditure on this research priority in 2003–04 is $0.5 million.

FRONTIER TECHNOLOGIES FOR BUILDING AND TRANSFORMING AUSTRALIAN INDUSTRIES

Under this priority, the relevant research goals are:

- "Frontier technologies": enhanced capacity in frontier technologies to power world-class industries in the future, building on Australia's strengths in research and innovation;
- "Advanced materials": advanced materials for applications in … agriculture;
- "Smart information use": improved data management for existing and new business applications and creative applications for digital technologies; and
- "Break-through science": better understanding of the fundamental processes that will advance knowledge and develop technological innovations.

Planned R&D activities

The FRDC invests in innovation throughout the supply chain; hence, all of the FRDC's R&D expenditure embraces these goals to varying degrees. Specific R&D activities in 2003–04 include:

- marine bio-prospecting that leads to novel compounds;
- development of gene fingerprinting technology — for example, development of a genetic method to estimate effective spawner numbers in tiger prawn fisheries, and genetic mark-recapture for real-time harvest rate monitoring;
- microchemistry using laser ablation technologies for improved measurement of the age of fish and understanding of their life-history habitats;
- mimicking natural pheromones in the form of manufactured attractants as a non-trawl means to harvest prawns;
- closing the life cycle of rock lobster by reducing larval rearing times by hormonal manipulation; and
- gene manipulation to increase Pacific oyster production.

Performance indicators

- Number of research institutions supported.
- Number of researchers supported.
- Increasing revenue derived from intellectual property arising from frontier technologies.

Estimated expenditure in 2003–04

The estimated expenditure on this research priority in 2003–04 is $1.5 million.

SAFEGUARDING AUSTRALIA

Under this priority, the relevant research goal is:

> *Protecting Australia from invasive diseases and pests*: Countering the impacts of invasive species through the application of new technologies and by integrating approaches across agencies and jurisdictions.

Planned R&D activities

In addition to the FRDC's ongoing investments in this area, the FRDC will continue to manage, on behalf of the Australian Government, aquatic animal health funding that resulted from the May 2000 Federal Budget Initiative. Specific R&D activities in 2003–04 include:

- continued investment of Federal Budget Initiative funds in diagnostics, training, emergency response planning, and database development and implementation;
- continued development of manufactured feed for southern bluefin tuna to reduce dependency on imported bait fish;
- continued investment in tools to understand Australia's largest fish kill due to pilchard herpes virus infection in wild pilchards; and
- continued development of knowledge and processes to support the development of a disease zoning policy for marteiliosis (QX disease) to support sustainable production, health certification and trade in Sydney rock oysters.

Performance indicators

- Improvement in capacity to detect and prevent the introduction and translocation of exotic diseases and pests.
- Development of products from Australian resources that reduce the need to import high-risk aquatic products from overseas.
- Increased availability of tools for rapid control and eradication of introduced diseases and pests.

Estimated expenditure in 2003–04

The estimated expenditure on this research priority in 2003–04 is $2 million.

OVER-ALL FOCUS OF R&D ACTIVITIES, 2002–03

The next section provides performance information on the FRDC's three R&D programs and Program 4, the Management and Accountability program. In addition to addressing the FRDC's enabling legislation and other priorities shown in figure 3 (page 38), the R&D program reporting fulfils the requirements of section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).[12]

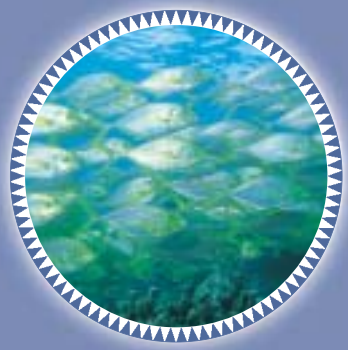
12 An outline of this section of the EPBC Act is on page 175.

As discussed on pages 31–32, reporting on the R&D programs is focused on the nine challenges 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. Reporting against the challenges is grouped under the R&D programs as follows:

Challenges	Program 1	Program 2	Program 3
1: Reaching sustainable levels of fisheries productivity	✔		
2: Increasing production through aquaculture		✔	
3: Discovering new fisheries and under-utilised fish species	✔		
4: Reducing bycatch and discarded fish	✔		
5: 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		✔	
6: Improving utilisation of processing wastes		✔	
7: Achieving objectively based, secure access to fisheries natural resources	✔		
8: Optimising market development, maximising seafood value and securing equitable financial returns		✔	
9: Developing and using the knowledge and skills of people in and supporting the Australian fishing industry			✔

All the year's R&D activities pursued the planned outcomes specified in the Corporation's 2000–2005 R&D plan. The planned outcomes are in accord with the objects of the FRDC's enabling legislation — see figure 3 on page 38.

During the year, all projected activities of the 2002–03 AOP were also implemented. In almost all of the activities, the FRDC achieved the levels of performance specified in the AOP.



R & D PROGRAM 1

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

NATURAL RESOURCES ·SUSTAINABILITY·

The **planned outcome** for this R&D program is:

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

Reporting of the year's R&D activities in this section is, for the most part, set out against the nine main challenges arising from the FRDC's forecasts of the next 20 years (pages 31 and 48).

The FRDC addresses these challenges as it works towards achieving its three planned outcomes, shown on page 38.

PROGRAM 1:
NATURAL RESOURCES SUSTAINABILITY

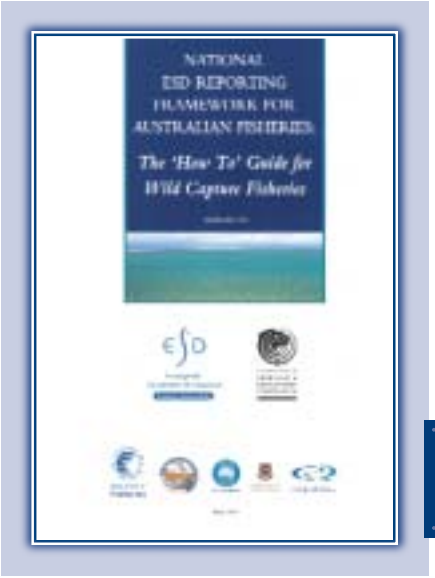
PRINCIPAL INPUTS

During 2002–03, $12.73 million (58 per cent of the FRDC's R&D investment) was invested in R&D activities within this program, through 181 projects listed in **appendix F** (page 190).[13]

13 The FRDC also oversaw an additional $0.82 million of R&D that was funded under the Federal Budget Initiative for Aquatic Animal Health. Details of these projects are on pages 207–208.

PRINCIPAL OUTCOMES AND OUTPUTS

Challenge 1 — Reaching sustainable levels of fisheries productivity



Reporting of data for use in environmental management of fisheries must be accurate and as user-friendly as possible. This "how to report" guide for wild-catch fisheries marks a major step forward in this area.

Sustainable fisheries production is a non-negotiable goal for the commercial, recreational and traditional sectors of the fishing industry, to which many participants are strongly committed. Fishers depend for their livelihood, recreational pursuits and cultural practices on healthy fisheries habitats and sustainable catching practices.

As a consequence of improved fishing technology and a higher human population, most known Australian species are at or near full exploitation; several have been exploited beyond sustainable limits. Non-fishing factors are also known to influence fish abundance, including loss of habitat, pollution, changes in water quality, reduced environmental flows from rivers and streams, and climate change.

The FRDC has invested heavily in the difficult task of moving ESD reporting from qualitative to quantitative modes

Against this background, the concepts of ecosystem-based management (EBM) and ecologically sustainable development (ESD) are increasingly being adopted in working to secure the sustainability of aquatic natural resources. The approaches include establishing sustainability indicators and performance measures, carrying out risk assessment, and monitoring fishing activities.

The fishing industry is developing improved practices towards sustainable fish production. The FRDC, in partnership with researchers, industry, managers and environmental special-interest organisations, has invested heavily in moving ESD reporting from qualitative to quantitative modes. Governance frameworks for reporting and tools for fishers to establish sector-level or enterprise-level environmental management systems (EMSs) are also under intensive development.

The most important outputs from the FRDC's investment include:

- a national ESD reporting framework,
- a "how to report" guide for wild-catch fisheries,
- eight case studies for the ecological component of the framework,
- a dedicated ESD website (www.fisheries-esd.com/c/home/index.cfm),
- a dedicated website for EMS (www.seafoodems.com.au/),
- a guide to choosing the right EMS — the *Seafood EMS Chooser*, and
- the National ESD Reporting and Assessment Subprogram, dedicated to developing an ESD reporting and assessment framework incorporating sustainability performance indicators for fisheries.

Environmental reporting and environmental management systems provide natural resource managers and the community with better information that provides more certainty that a fishery or ecosystem is actually sustainable. However, considerable investment is still needed — both to solve current problems and those "coming over the horizon". To ensure timely delivery of appropriate knowledge, processes and technology, the FRDC is investing in a wide range of tactical and strategic research, including:

- the fisheries component of the Australian Stocks and Flows Framework to model Australia's fisheries to 2050;
- numerous projects to determine key biological attributes of stocks, including stock structure, age, growth and habitat requirements to determine vulnerability to certain types of fishing;
- improved methods for collecting data about fisheries, including new methods for low-value fisheries;

- quantification of broader ecosystem interactions, including those of seals, birds and other components of the food chain;
- projects under the FRDC's National Strategy for the Survival of Released Line-Caught Fish — both investigating the survival of fish released in Australia's tropical, subtropical and temperate recreational line fisheries, and identifying and communicating current best practices; and
- assessment of how non-fishing activities are affecting fisheries sustainability, including the role of environmental flows, habitat loss or change, and declaration of marine protected areas.

To plan for the future, the FRDC has invested with the University of Canberra and CSIRO in a futures project for 2050. The project is providing insight into changing drivers for resource management in the future. In particular, it highlights the need to account for environmental allocations when assessing fish stocks. To advance the debate arising from this study, a workshop is planned for the next commercial sector conference, *Seafood Directions 2003*.

Challenge 3 — Discovering new fisheries and under-utilised fish species

The* Austral Leader *is a vessel that observes high standards of practice in fishing for Patagonian toothfish in sub-Antarctic waters within Australia's exclusive economic zone. A benefit-cost analysis of an important project in this fishery is summarised on page 90.

During the past five years, fisheries managers have become more confident about the stock assessment of small pelagic stocks — particularly pilchards, and to a lesser extent mackerels and herrings. Catches of pilchard (*Sardinops neopilchardus*) in South Australia from 1999–2000 to this year, for example, have risen from 4,000 to an estimated 20,000 tonnes, but this increasing confidence has made it possible to set the total allowable catch at 36,000 tonnes for 2003–04. The FRDC has invested more than $2.9 million in 17 projects ranging from biology, stock assessment techniques, stock structure, model development, assessment of pilchard kills and post-harvest development.[14] This investment has contributed to more accurate management strategies for this fishery, which is now Australia's largest by volume. The Corporation is further investing in R&D concerning small

14 See page 86 for a summary of a benefit–cost analysis of one of the projects.

Greater confidence in stock assessment of small pelagic stocks can lead to determining a higher total allowable catch

pelagic species to ensure that catches are sustainable from a commercial fishery perspective and to take into account recreational fishers' views about the ecosystem consequences of fishing further down the food chain. The latter factor has prompted project 2003/072, "Trophodynamics of the Great Australian Bight: assessing the need for an ecological allocation in the SA pilchard fishery".

Since distant fishing nations have been excluded from Australia's exclusive economic zone (EEZ)[15], and with improvements in fishing technology, the domestic longline fishery has expanded. Now, vessels are venturing further out to sea and are increasingly harvesting seafood outside the EEZ. Larger longline vessels are fishing for broadbill, swordfish, yellowfin and bigeye tuna. Australia has given a commitment to enhance knowledge of these species. Many projects have been commissioned, such as 1999/108 "Reproductive dynamics of broadbill swordfish (*Xiphias gladius*) in the domestic longline fishery off eastern Australia". This project provided the first description of the reproductive dynamics of this species in Australian waters, replacing information previously estimated or assumed from the northern hemisphere, to assist in the sustainable management of this increasingly targeted species.

15 The EEZ is almost identical to the Australian Fishing Zone (AFZ). For maps and comprehensive descriptions of these and other zones, see www.ga.gov.au/nmd/mapping/marbound/ bndrs.htm

In southern waters, Australia has entered the longline fishery for Patagonian toothfish, expanding from the current trawl fishery, in the Commission for the Conservation of Antarctic Marine Living Resources area and high seas areas. Research around Heard Island and McDonald Island (2000/108, "Population structure of the Patagonian toothfish, *Dissostichus eleginoides*, in Australian waters") has produced an emerging picture of separate populations of a non-migratory species, geographically isolated by distance and deepwater basins, within the Australian zone and — probably — across the Southern Ocean. The results will contribute to more effective management of commercial fisheries for Patagonian toothfish within and outside Australian fishing waters. The findings support the current management practice of considering Heard and McDonald Islands fish as a single stock. Another project (2000/109) is building on the stock assessment and management strategy evaluation process for this fishery. With the expansion to other gear types, the impacts of this change on the fishery and the assessment will be considered.

Domestically, ways of making use of the under-utilised jellyfish are being examined. Project 1999/138, "Jellyfish fishery development and assessment", is examining whether a commercially viable abundance of jelly fish exists in Port Phillip Bay, Western Port and Corner Inlet, Victoria. The project aims to determine the seasonality of the occurrence of the species and variation in sizes over this period; to determine whether the bells meet national health standards; and to provide annual fishery reports to determine effective harvest levels and strategies. A related project is determining post-harvest value-adding opportunities for this species. Further, project 1998/417, "Creating a shelf stable marinated jelly fish product from the under-utilised species (*Catostylus mosaicus*)", is developing suitable packaging and marinades for the product, undertaking pre-market trials, and preparing a comprehensive processing manual for the product.

Challenge 4 — Reducing bycatch and discarded fish

In reducing bycatch, continual development of better fishing practices, including use of gear that excludes unwanted marine animals, is important.

Bycatch consists of species and sizes taken incidentally in a fishery where other species and sizes are the target. Bycatch species may be of lesser economic value than the target species, and are often discarded over the side of the boat — though some with commercial value are retained for sale. Bycatch species also include marine mammals, seabirds, weed and coral.

For some time, projects associated with resolving challenge 4 had mainly been concerned with mitigation of bycatch species through developing bycatch reduction devices (BRDs) and turtle exclusion devices (TEDs) and alteration of targeting practices. However, more recently, especially as the importance of reducing bycatch has been understood in an ESD context, investment has increased in the broader areas of risk assessment for bycatch species, mitigation and avoidance of charismatic megafauna (namely whales, dolphins, seals, dugongs and turtles) and broader ecosystem effects. The core objectives of bycatch reduction through altering fishing practices continues.

Recently, bycatch R&D has extended from altering fishing practices into risk assessment and broader ecosystem effects

Several projects have been broadened to establish quantifiable targets for bycatch reduction to comply with management plans — for example, projects 2000/170, "Effects of Trawling Subprogram: bycatch weight, composition and preliminary estimates of the impact of bycatch reduction devices in Queensland's trawl fishery" and 2001/096, "Effects of Trawling Subprogram: the development of methods to quantify bycatch and assess TEDs and BRDs in support of the East Coast Trawl Management Plan". The Queensland East Coast Trawl Fishery has recently undergone a major restructure and is to reduce the capture of bycatch species by 40 per cent. This project will describe the components of bycatch before and after the implementation of TEDs and BRDs; determine the biology, population parameters and distributions of "permitted" byproduct species; and provide guidelines and descriptions of TEDs and BRDs so that compliance officers can correctly enforce regulations.

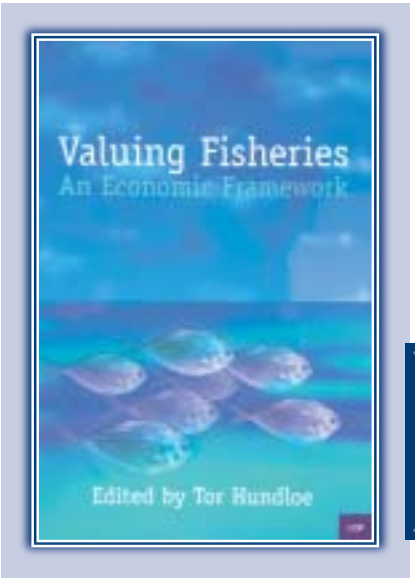
In the west, another project (2000/189, "Effects of Trawling Subprogram: implementation and assessment of bycatch reduction devices in the Shark Bay and Exmouth Gulf trawl fisheries") is to improve the efficiencies of BRDs (grids and fish escape devices) being introduced into the Shark Bay and Exmouth Gulf Trawl fisheries and ensure full implementation of the most appropriate BRD by the whole fleet in each fishery. This project will be comparing BRDs against standard gear to determine the most suitable devices for the fishery and to encourage trawl fisheries to take up the technology.

Another project has attempted to enhance the survival of bycatch species once they are brought onboard and are being sorted (2001/098 "Effects of Trawling Subprogram: evaluation of hoppers for reduction of bycatch mortality in the Queensland East Coast Prawn Trawl fishery"). Hoppers are devices originally developed to enhance prawn quality and to improve sorting. The research has found that sprays and a 'wet well' improve the quality of retained catch and increase the survival of bycatch species, allowing them to swim and remain in circulating seawater while the catch is sorted. Survival from hopper systems was twice as high as conventional sorting methods over the study period. The results from this project have led to another (2003/012 "Hoppers in action: a handbook for fishers on the use of hoppers in Australian prawn trawl fisheries") that will synthesise and document the types of hoppers in use around Australia and the world and produce a manual of best practice.

Although longline fisheries are selective because specific species are targeted, bycatch issues exist — especially in relation to charismatic megafauna, which are the subject of particular political sensitivity. Interactions with longline fishing occur with certain seabird species, turtles and marine mammals. An FRDC-funded study of underwater line-setting chutes (project 1998/205, "Construction and evaluation of an underwater setting device to prevent accidental capture of seabirds on tuna longliners") has since been further pursued by AFMA. The interaction of sea turtles with longline gear is being addressed by a new project based on a successful study undertaken in the Northern Prawn Fishery to determine species taken and methods for turtle revival (1998/202 "Monitoring the catch of turtles in the Northern Prawn Fishery"). The project works extensively with industry operators and provides training that will limit interactions and enhance survival of individual animals that come in contact with fishing gear.

Marine mammals often eat tuna that have been hooked on longlines, with quite severe economic effects on the fishery and a risk of the mammals becoming entangled in the gear. An innovative project has begun in the northern area of the eastern tuna and billfish fishery. The project is determining the frequency of signals emitted by the mammals and will incorporate devices that give off a warning signal to keep the mammals a safe distance away. Seal interactions in the blue grenadier fishery are being addressed with project (2001/008 "Assessment of seal fishery interactions in the South East Trawl Fishery (SETF) and the development of fishing practices and seal exclusion devices in the winter blue grenadier fishery to mitigate seal bycatch by SETF trawlers"). A seal excluder device has been developed to release seals that happen to find their way into the net.

Challenge 7 — Achieving objectively based, secure access to fisheries natural resources



The complex subject of achieving objectively based, secure access to fisheries natural resources has been clarified by **Valuing Fisheries: An Economic Framework**, *edited by Professor Tor Hundloe. This FRDC-funded project provided a mechanism for an "apples with apples" comparison of relative economic values when assessing the allocation between commercial, recreational, traditional and environmental uses.*

To date, investment in property rights and allocation has been difficult because of the political climate in which decisions on access allocation are often made. Property rights have changed to accommodate society's needs. Simple property rights — which previously linked a statutory fishing right with an allocated catch — are now more interconnected with rights associated with other components of the ecosystem.

To address this complex environment, the FRDC invested in *Valuing Fisheries: An Economic Framework* by Professor Tor Hundloe. This project provided a mechanism for an "apples with apples" comparison of relative economic values when assessing the allocation between commercial, recreational, traditional and environmental uses — an example of environmental use being a marine protected area. To put this framework into practice, the FRDC has invested in several case studies through project 2001/065, "Socio-economic valuation of allocation options between recreational and commercial sectors". Two of these case studies, namely blue swimmer crab and abalone, have been published (www.daa.com.au/~era/reports).

A workshop held in Coolangatta in October 2002 resulted in a communiqué, "The Principles and Strategies to Underpin the Development of Recreational Fishing Rights and Resource Allocation in Commonwealth Managed Fisheries". The communiqué included 13 recommendations to progress property rights and allocation issues for the recreational sector. Importantly for investment in R&D, recommendation 7 was as follows:

> There are responsibilities and obligations that must be met by those people who benefit from these rights. These responsibilities include maintaining sustainability, contributing to meeting international obligations, abiding by and participating in management arrangements, and respecting the rights of other sectors.

Further, the last part of Recommendation 8 included the observation: "With allocation of rights comes a responsibility on all sectors to share the fisheries management costs. Additional funding will be required to support the recommendations in this report." To this end the FRDC, working with the different sectors, is continuing to ensure that funding is increased to address the broadening responsibilities of fisheries management and the interconnectedness with other natural resources management.

Allocating access to natural resources between users can often result in conflict. By establishing the benefits and costs of the allocation, it is easier to make decisions that will lead to long-term sustainability and most beneficial use, and such decisions are less likely to cause conflict. The project "Socio-economic valuation of allocation options between recreational and commercial sectors" (2001/065) is using socio-economic methods to provide decision-makers with analyses of the benefits and costs of redistributing specific fisheries resources.

A benefit-cost approach to resource allocation is more likely to result in the most beneficial use and, in the longer term, sustainability of the resource

SUMMARY OF FINAL REPORTS RECEIVED FOR PROGRAM 1

Program 1 strategies (as on pages 120, 121 of R&D plan)	No. of projects 2002–03	FRDC investment 2002–03	No. of projects last year	FRDC investment last year
Fish biology	10	$2,618,893	14	$3,016,558
Interactions between fish and their ecosystems	2	$238,415	1	$462,214
Effects of fishing activities on fish and their ecosystems	4	$335,618	5	$1,416,771
Effects of non-fishing activities, pests and pollution on fish and their ecosystems	2	$462,971	4	$1,076,822
Health of fish and their ecosystems	1	$92,510	2	$101,794
Rehabilitation and enhancement of fisheries and their ecosystems	1	$70,448	—	—
Legislative, institutional, compliance and policy arrangements and their impacts	—	—	—	—
Access to fisheries resources	—	—	—	—
Stock assessment	8	$1,814,593	9	$3,001,199
Fisheries and ecosystems management	6	$952,062	3	$402,560
Total	**34**	**$6,585,510**	**38**	**$9,477,918**
Change	**–11%**	**–31%**		

Main reason for change: variations in timing of current and concluded projects.

NEW PUBLICATIONS RELATED TO PROGRAM 1

The FRDC also published, or co-published in partnership with other organisations:

- (With the National Land and Water Resources Audit) *Australian Catchment River and Estuary Assessment 2002*.
- (With the Department of Agriculture, Fisheries and Forestry and many other federal and state government agencies) *Gently Does It: A Guide for Releasing Fish to Survive*.

- (With CSIRO Marine) *Field Guide to Australian Sharks and Rays*.
- (With Seafood Services Australia Ltd) *Take Your Pick! – The Seafood EMS Chooser*.
- (With CSIRO Marine, Australian Maritime College and Department of Primary Industries Queensland) *Feasibility of Scallop Enhancement and Culture in Australian Waters*.

ACHIEVEMENT OF AOP TARGETS

Achievements against the key performance indicators and measures specified for the program's planned outcome in the 2002–03 AOP are summarised as follows:

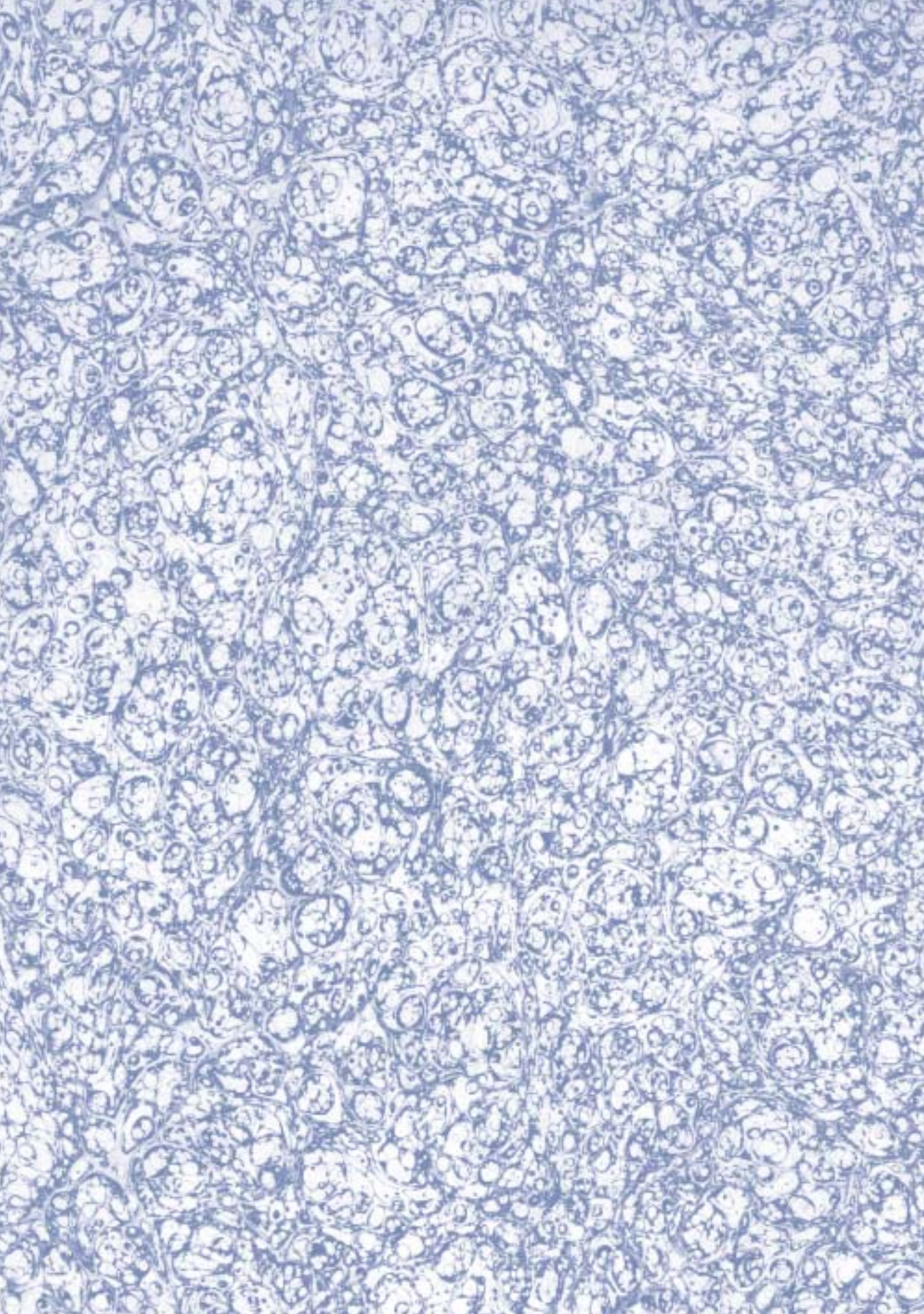
Key performance indicator	Performance measure	Achievement
Sustainable fish stocks	Improvement in status as reported in the annual fisheries status reports produced by government agencies	Fish stock sustainability was stated to have improved in the fisheries for which reliable information was reported.
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 PROGRAM 1 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.



R&D PROGRAM 2

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

INDUSTRY DEVELOPMENT

The **planned outcome** for this R&D program is two-tiered:

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

PROGRAM 2: INDUSTRY DEVELOPMENT

PRINCIPAL INPUTS

During 2002–03, $8.49 million (about 38 per cent of the FRDC's R&D investment) was invested in R&D activities within this program, through 134 projects listed in **appendix F** (page 199).

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

Challenge 2 — Increasing production through aquaculture

Australian aquaculture continues to grow strongly. This sector now provides 30 per cent of the gross value of Australian fisheries production (most from only eight species) and 19 per cent by volume.

The FRDC will invest in aquaculture R&D only when it has high potential for commercial success

As discussed on page 27, some 95.6 per cent of the gross value of Australia's aquaculture production is achieved by eight sectors — southern bluefin tuna, pearl oyster, Atlantic salmon, prawn, edible oyster, trout, barramundi and mussel. With regard to the top seven edible species, the Corporation's concentration on these species derives from their crucial role in meeting future demand for seafood, including (together with pearl oysters) the "$2.5 billion by 2010" industry target. The Corporation may, however, invest in other aquaculture species with commercial potential.

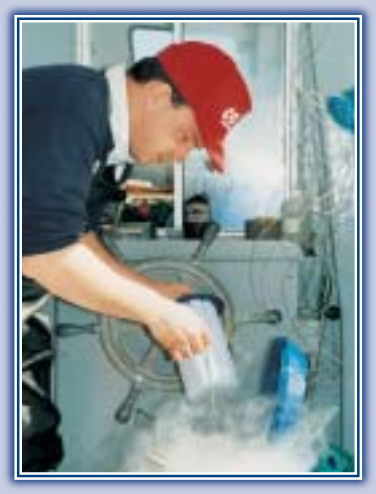
During the year, the FRDC firmed its criteria for investment in aquaculture. To meet the criteria for funding new species, at least three of the following criteria must be met:

1. The development is market-driven. This requires evidence of existing market size, value, growth and existence of distribution chains to supply it. Further, Australia must be in a position to exploit this market.
2. The development is being driven by industry with significant existing investment.
3. The cost of production will be less than the farm gate price. Normally this factor favours species that fetch high prices, offsetting the high cost of production in Australia.
4. The species is endemic to Australia and builds on successful existing wild-catch species with high value and large export markets.
5. Production infrastructure and access to resources exist to allow for timely and orderly development.

The FRDC has invested significantly in the five top species for aquaculture production in Australia. This includes investment in feed development, maximising environmental water quality around farms, improving product quality, and maximising fish health for southern bluefin tuna aquaculture. The investments in southern bluefin tuna and Atlantic salmon are through the Cooperative Research Centre for Sustainable Aquaculture of Finfish, of which the Corporation is a partner.

A considerable investment in amoebic gill disease for Atlantic salmon aims to address what is believed to cost the sector more than $10 million per annum. The domestication of *Penaeus monodon* and the production of specific pathogen-free stock hold considerable economic potential for Australia's prawn farmers. The FRDC is investing with a consortium of research providers and industry to achieve this outcome. Ongoing productivity improvements in edible oysters has required further FRDC investment in hatchery and selective breeding programs for both Sydney rock oysters and Pacific oysters. In partnership with the Pearl Producers Association, the FRDC is investing in the long-term sustainability of this industry. An FRDC-funded risk assessment of this sector indicates that it is extremely well managed. Given the need to document its environmental credentials, the industry is now using this assessment to provide a framework to ensure good environmental governance.

Challenge 5 — 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



The FRDC has made significant investments in developing non-fishmeal-based feeds for aquaculture, in particular by funding investigations into manufactured feeds to replace bait fish for southern bluefin tuna. Dr Rob van Barneveld is the Subprogram Leader of the Aquaculture Nutrition Subprogram.

About 30 per cent of the total world catch of seafood is presently used to produce fishmeal and fish oil for animal feed, of which about 40 per cent is used in the rapidly growing aquaculture sector. This use not only affects the ecological sustainability of fisheries but also the capacity to meet the ever-increasing demands of human consumption. The annual global demand for fish is estimated to rise by about 20 million tonnes by 2020.

In 2000, aquaculture feeds utilised 2.41 million tonnes of fishmeal and 0.55 million tonnes of fish oil, or 35% and 41% of total global production, respectively. The largest consumers of fishmeal were as follows:

Species	Fishmeal	Fish oil
Salmon	23.8%	64.1%
Other marine fish	22.1%	21.8%
Marine shrimp	17.7%	6.5%
Carp	15.2%	[not used]
Eels	7.7%	2.7%

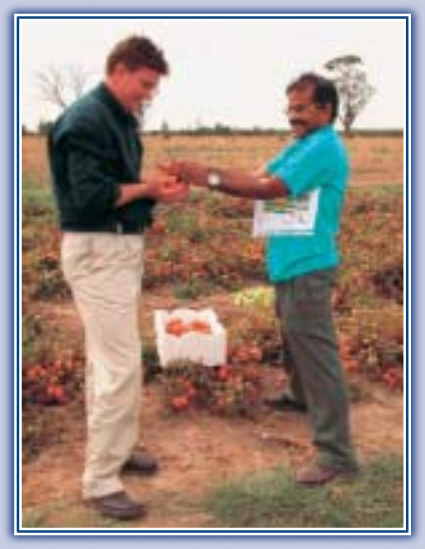
The FRDC has made significant investments in developing non-fishmeal-based feeds for aquaculture; in particular by funding investigations into manufactured feeds to replace bait fish for southern bluefin tuna. These manufactured diets reduce reliance on fresh bait fish as a nutrient source, potentially making them available for humans to eat. In addition, a recent project is attempting to increase the value of pilchards through better handling practices, thus making them a more marketable commodity for humans.

Previous FRDC-funded research undertaken within the Aquaculture Diet Development Subprogram led, in relation to silver perch aquaculture, to fishmeal diet being reduced to zero and fish oil being reduced to 7 per cent. The research also concluded that most fish meal can be substituted in barramundi and prawn (*P. monodon*) diets.

The FRDC has also invested in developing a better understanding of the nutritional requirements of Atlantic salmon, abalone, Murray cod and snapper. This information will lead to improved formulation of diets and provides the capacity for feed manufacturers to make informed decisions when incorporating non-fishmeal ingredients in diets.

The Aquaculture Nutrition Subprogram is a new FRDC subprogram that has evolved from the highly successful Aquaculture Diet Development Subprogram. One of the many aims of the new subprogram is to identify alternative sources of protein and lipids capable of sustaining aquatic animals exclusively of fresh bait, trash fish, fishmeals and fish oils. Identification of substitutes for fishmeal will allow more fish to be retained in the food chain and reduce Australia's reliance on imported feeds. To reduce reliance on fishmeal ingredients, nutrient sources that allow similar production levels and product quality will need to be identified.

Challenge 6 — Improving utilisation of processing wastes



There is a low supply of organic fertilisers in Australia, and fast-growing demand for them. Fisheries bycatch and processing wastes can meet some of this demand. Early results from tomato crops grown with fertilisers produced from these wastes are very promising. The project's Principal Investigator, Dr Ian Knuckey, is with Dr Aravind Surapaneni, of the Department of Primary Industries, Victoria.

Most Australian seafood processing is elementary: filleting, peeling, boiling and shucking; and chilling, freezing or packing such products. Waste comprises fish frames, heads and gut, and shell material. Some businesses derive returns from their waste materials by selling them as bait, but most often they use the least costly method of disposal: typically, discarding it at sea, flushing it down the drain, or paying for it to be dumped as landfill.

Some commercial incentives will come from increased costs of dumping to landfill. These increases are local government's response to community pressure to improve waste management as part of ecologically sustainable development. Continuation of such practices by members of an industry that is badly affected by urban and agricultural run-off will be increasingly counter-productive. Further, as governments move to encourage businesses to offset their pollution by contributing to environmentally beneficial projects, market forces will lead businesses to show themselves as meeting community expectations in this regard.

Businesses that innovate in waste management as an investment will thus gain a competitive edge by being able to demonstrate tangible "good corporate citizenship" — including by eco-labelling — to an increasingly perceptive consumer market. Further incentives will flow from byproducts fetching higher prices, thereby overcoming disincentives of transport costs, unwillingness of some businesses processing high-value products to become involved in low-value wastes, and current unsuitability of processing equipment for small volumes of waste.

Responding to findings of a stakeholder workshop, the FRDC initiated the South-east Fishery Industry Development Subprogram (2001/238) to address, among other things, waste issues in that fishery — principally post-harvest waste at present. The subprogram is managing a project that is researching the use of a fish-based fertiliser, derived from processing waste, that can be used for several farming practices. The project (2002/250, "SEF Industry Development Subprogram: agricultural trials of a fish-based fertiliser (BioPhos) produced from Australian seafood processing wastes"), is trialling an organic-waste-based fertiliser against current superphosphate fertilisers.

The project has identified three major forces that are beginning to control the movement of organic wastes:

- the need for minimisation of waste,
- the opportunity to utilise the high nutrient value in fish waste materials, and
- increased barriers to disposal of waste products (especially those rich in organic content) in waterways or landfills.

Organic fertilisers can be used in both conventional and organic agriculture. Meeting the needs of the organic agriculture sector is of particular interest, however, because there is a low supply of organic fertilisers and fast-growing demand for them. Fisheries bycatch and processing wastes are principally organic in nature and can therefore be designated as "organic wastes", subject to appropriate certification.

The subprogram is also examining other alternatives for processing waste. Project 2002/405, "Assessing the commercial viability of utilising fish processing wastes", has been initiated by Australian Seafood Co-products Pty Ltd. This new company, mainly comprising entities from the catching and post-harvest sectors (the FRDC also has a small interest), is seeking to increase profits to the seafood industry by utilising the many thousands of tonnes of fish waste produced each year.

To achieve the complementary outcomes of sustainability and economic benefits to the stakeholders, a whole-of-chain approach to R&D is required — which coincidentally accords with one of the new Australian Government national research priorities.

Niche-marketing of fish wastes to the organic farming sector is an excellent opportunity that can be exploited

Challenge 8 — Optimising market development, maximising seafood value and securing equitable financial returns

Developing management frameworks to make it easier for fisheries and seafood businesses to adopt environmental management systems is a high priority for the industry. This task is being pursued by Seafood Services Australia Ltd, which implements most of the FRDC's Industry Development Program. Warren Truss, Minister for Agriculture, Fisheries and Forestry (left), launched the key publication, the Seafood EMS Chooser, *joined by SSA Managing Director Ted Loveday (centre) and former FRDC Chairman Russell Reichelt.*

The FRDC's investment with respect to this Challenge is largely implemented through Seafood Services Australia Ltd (SSA), the company limited by guarantee set up jointly by the FRDC and the Australian Seafood Industry Council. The company works with stakeholders to help the seafood industry to continually improve its practices and to add value throughout the seafood supply chain.

The FRDC invested $849,000 in SSA during the year — the first full year of the company's operation.

The wisdom of setting up the company is already very evident. Through being a non-government entity, the company has been able to attract significant external funding to undertake its mission. This has allowed urgent development priorities to be fast-tracked.

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 aims, therefore, to be proactive in providing an Australia-wide service for people who catch, farm, process, transport, wholesale, retail, export, import or cook seafood. Services include:

- value-adding through seafood product and process development;
- product quality, food safety and consumer health;
- management systems and standards for quality and ecologically sustainable development;
- market development;

- seafood marketing names;
- seafood emergency management; and
- information and advice on other technical issues.

The roll-out of environmental management systems to the seafood industry is an example of an SSA service for which there has been high demand, reflecting the fact that many seafood enterprises and organisations are already proactively improving their environmental performance and are complying with the government and community standards required to be successful. The main problem is that these organisations have been less able to *demonstrate* their compliance. SSA is helping them to choose and act on management processes that will refine, and give rigour to, their continual improvement in environmental performance; and a significant element is to be able to make that rigour transparent to the community. It is encouraging to see the increasing acceptance in industry that such an approach usually helps to improve the business's bottom line and is likely to increase its long-term access to fisheries resources or aquaculture sites.

The Seafood Industry Development Fund (SIDF), administered by Seafood Services Australia, provides funding to the seafood industry to achieve Challenge 8 — Optimising market development, maximising seafood value and securing equitable financial returns. Funding of up to $30,000 on a dollar-for-dollar-maximum basis is available under this initiative.

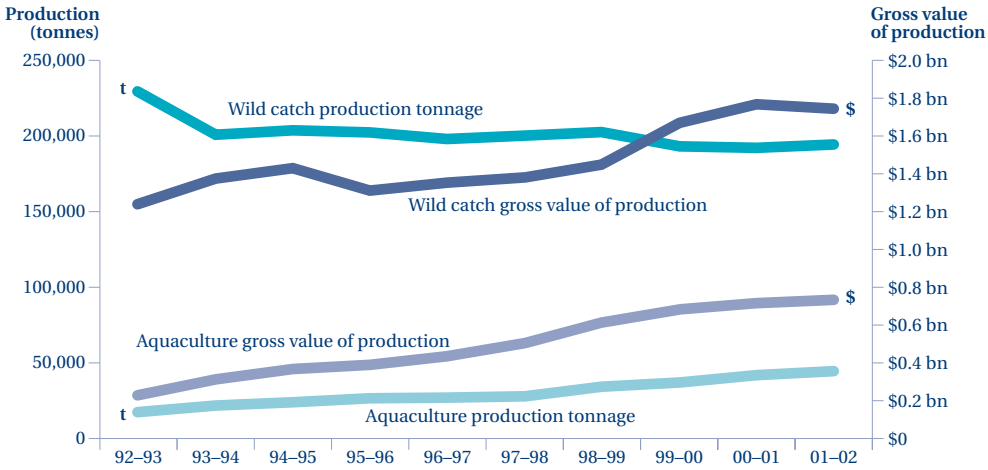
Projects which have attracted funding under the SIDF during the year covered:

- determining the effectiveness of FoodSafe Plus as a tool in meeting FSANZ food safety standards;
- developing quality standards, product specifications and a quality management framework to establish a farmed barramundi label and to support industry marketing activities;
- assessing the commercial viability of utilising fish processing wastes;
- investigating pathogenic vibrio in oysters;
- quantifying stress-induced catecholamine changes in the haemolymph of the Pacific oyster;
- improving post-harvest handling of value-added farmed mussels;
- holding a trial workshop for a national seafood emergency plan;
- publishing a diary for a seafood industry safety program;
- preparing an industry strategic plan for development of a quality index for Australian seafood;
- developing and evaluating a framework for a supply-chain approach to food safety and quality assurance for cooked prawns; and
- preparing an integrated program for prawn farming incorporating hazard analysis critical control points, quality assurance and environmental management system features.

Further information about SSA is at www.seafoodservices.com.au

STATE OF THE COMMERCIAL SECTOR

An overview of the commercial sector is on pages 25–28.



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:[16]

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

	GVP 1999–00 ($'000)	GVP 2000–01 ($'000)	GVP 2001–02 ($'000)	Change during last year	Ave yrly change in 3yrs since 1999–00
Wild catch	$1,743,642	$1,779,547	$1,746,166	–1.9%	+4.26%
Aquaculture	$684,892	$707,521	$732,633	+3.5%	+6.62%
Total	$2,343,660	$2,427,619	$2,408,651	–0.8%	+4.70%

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:

	1999–00 ($'000)	2000–01 ($'000)	2001–02 ($'000)	Change during last year	Ave yrly change in 3 yrs since 99–00
	$1,987,937	$2,168,661	$2,100,120	–3.2%	+12.5%

The main causes of the fall in value of exports during 2001–02 were a fall in the volume of crustaceans and molluscs, and lower unit prices for prawn, abalone and pearls.

Production

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

	1997–98	1998–99	1999–00	2000–01	2001–02
Wild-catch	199,349	209,779	193,509	193,227	194,256
Aquaculture	26,998	34,143	37,214	41,044	44,325
Total	226,347	243,922	230,723	234,271	238,581

Together, the figures for seafood value and tonnage on the previous page and above 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, in part because of investment in R&D, with the rate for the past year being 3.5%. Aquaculture was 30% of the total value of fisheries production and was 18.6% of total fisheries production by volume.

Employment

It is important — especially in relation to reporting changes in regional employment — to have accurate, timely 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 764 for all aquaculture in South Australia. The ABS figure of 19,627 people directly engaged during August 2001 in "total fishing employment" 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. The FRDC is endeavouring to improve the availability of this information.

During the year, the Aquaculture Industry Action Agenda stated that the aquaculture sector employs more than 7,000 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 — but highly conjectural — 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

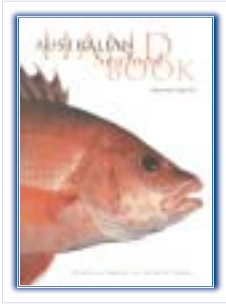
Program 2 strategies (as on pages 123–125 of R&D plan)	No. of projects 2002–03	FRDC investment 2002–03	No. of projects last year	FRDC investment last year
Aquaculture development	22	$4,593,502	17	$2,642,685
Economic and social values of the industry and its impacts	—	—	1	$97,242
Fishing technology	—	—	2	$135,513
Legislative, institutional, compliance and policy arrangements and their impacts	—	—	—	—
Market development	2	$422,713	—	—
Health and safety associated with fishing activities	1	$95,765	—	—
Quality, food safety and consumer health	9	$1,927,558	3	$774,193
Value-adding	2	$294,470	5	$133,463
Total	**36**	**$7,334,008**	**28**	**$3,783,096**
Change	**+29%**	**+94%**		

Main reasons for change: major SBT and salmon projects concluded during the year, and former SeaQual projects were taken up by Seafood Services Australia.

NEW PUBLICATIONS RELATED TO PROGRAM 2

The FRDC also published, or co-published in partnership with other organisations:

- (With Deakin University) *Abalone Nursery Manual: Algal Culture Methods for Commercial Abalone Nurseries*.
- (With Challenger TAFE, Western Australia) *Hatchery Manual for the Production of Snapper and Black Bream*.



The FRDC funded *The Australian Seafood Handbook — an identification guide to imported species* to help importers, buyers and processors to identify imported species and to standardise marketing names — an important strategy to minimise confusion in the marketplace. At the launch of the guide by Senator Ian Macdonald, Minister for Fisheries, Forestry and Conservation (holding book) were — from left — Noel Gallagher, Seafood Importers Association of Australasia, Barry Ross, Woolworths Australia; and Gordon Yearsley, CSIRO Marine Research.

- (With the Australian Fisheries Academy) *Handling Prawns at Sea: A Guide for Prawn Trawler Crew* (two levels: Level One and Advanced).
- (With CSIRO Marine) *The Australian Seafood Handbook: Imported Species*.

ACHIEVEMENT OF AOP TARGETS

Achievements against the key performance indicators and measures specified for the program's planned outcome in the 2002–03 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 PROGRAM 2 PERFORMANCE

All AOP performance measures were met

R&D PROGRAM 3

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

HUMAN CAPITAL DEVELOPMENT

The **planned outcome** for this R&D program is:

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.

About the title image

Jenny Shaw — elated after a vertical climb in a particularly challenging phase of the Australian Rural Leadership Program in the Kimberleys. A high priority for the FRDC is to invest in the personal development of potential industry leaders. People on the Australian Rural Leadership Program are among the more senior members of the fishing industry. They extend into the industry the knowledge, skills and contacts derived from this valuable program. Jenny said "Being on the Australian Rural Leadership Program gave me incredible opportunities to develop, both personally and professionally".

PROGRAM 3: HUMAN CAPITAL DEVELOPMENT

PRINCIPAL INPUTS

During 2002–03, $0.79 million (about 4 per cent of the FRDC's R&D investment) was invested in R&D activities within this program, through 27 projects listed in **appendix F** (page 206).

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.

Challenge 9 — Developing and using the knowledge and skills of people in, and supporting, the Australian fishing industry

The capacities of people are a crucial factor in maximising the economic, environmental and social values associated with fishing. Ensuring sufficient capacity to allow first-rate fisheries research to be conducted in Australia is a high priority.

The capacities of people are a crucial factor in maximising the economic, environmental and social values associated with fishing. This is an issue that crosses all sectors and needs the support of all those working in the industry. Shortfalls can be evident in a lack of capacity in research, an ageing group of leaders, or in understanding of new and novel matters that influence fisheries management.

The FRDC, in partnership with industry and other stakeholders, has invested in a wide range of human capital development initiatives to meet the industry's people development challenge. The centrepiece of its investment in leadership is its ongoing commitment to the Australian Rural Leadership Program. The FRDC sponsors two participants per course in this program. To ensure there is adequate training at different levels of industry leadership, the FRDC has invested for the second year in the Australian Seafood Industry "Advanced In" Leadership Training Program. This program is providing an opportunity for young leaders to learn through experience about how they can become future leaders. The FRDC also sponsors one graduate from this program (this year: Lisa McKenzie — see page 80) to undertake a course conducted by the Australian Institute of Company Directors, funded by the Department of Agriculture, Fisheries and Forestry, under the *Industry Partnerships — Corporate Governance for Rural Women* initiative. Another initiative this year has been an investment with the Australian Fisheries Management Authority and Seafood Training Australia in the development of a model induction kit for Management Advisory Committees, now being implemented.

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:

- Australian Rural Leadership Program — 4;
- Australian Seafood Industry "Advanced In" Leadership Training Program — 13; and
- the Department of Agriculture, Fisheries and Forestry's Science Awards for Young People — 1.

The FRDC-funded participants in the Australian Rural Leadership Program (Steven Gill, Jenny Shaw, Martin Breen and Tim Mirabella) have senior leadership positions in the fishing industry. They are very well placed to extend into the industry the knowledge, skills and contacts derived from the program.

Seafood industry candidates who have completed the Australian Seafood Industry "Advanced In" Leadership Training Program may be selected for the higher-level Australian Rural Leadership Program.

The FRDC continues to invest in projects for which there is a strategic need and in which a component will develop people for future industry needs. The Board has identified that gaps in human capital exist in aquatic animal health, fisheries management, ecosystem-based modelling, and economic and social sciences.

As fisheries science evolves from a main focus on biology to broader ecosystem management and includes economic and social components, there is a need to ensure that new graduates are being trained with appropriate skills

The Story of Seafood in Australia, ***part of the Kondinin Group's*** **Workboot** ***Series, won one of*** **The Australian** ***Awards for Excellence in Educational Publishing in the "primary school, single title" category. Kylie Paulsen collected the award from actor Graeme Blundell at the awards ceremony on behalf of all those involved in the publication.***

The FRDC's 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, 220 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 2003, staffing details are as follows:

Source	PhD / Master students	Honours students	Other staff	Total
FRDC investment	3	1	69	73
In-kind contribution	1.85	1	47	49.85
Total both sources	4.85	2	116	122.85

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.

To this end FRDC collaborated during the year with the Kondinin Group, Primary Industries and Resources South Australia and the Australian fishing industry to develop a high-quality educational book on Australia's fishing industry. Titled *The Story of Seafood in Australia*, the publication is for children of primary school age. It is expected to broaden their perceptions and understanding of the role of the Australian seafood industry, its diversity and sustainable management. A comprehensive teacher's resource kit to complement the book is also under development.

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:

- funding a national community survey to determine perceptions of the Australian fishing industry; and
- funding a national recreational and indigenous fishing survey, including a summary brochure for distribution to beneficiaries and contributors to the survey.

At the launch of the FRDC-funded book **The Story of Seafood in Australia** *were (from left) Michael Angelakis; Peter Dundas-Smith; the Hon. Paul Holloway (SA Minister for Agriculture, Food and Fisheries); Blunnie the Workboot; Catriona Nichols (author); Senator the Hon. Ian Macdonald (Federal Minister for Fisheries, Forestry and Conservation); Rob de Castella; and Trudy Huczko.*

SOME OF THE PEOPLE THE FRDC HAS HELPED TO DEVELOP

Tansy Boggon

FRDC funding, as part of the 2002 *Science and Innovation Awards for Young People*, has supported my research, enabling me to do more in-depth studies into the effects of human activity on the food web relationships in mangrove forests. I am now able to do analyses of food web relationships that I would not have been able to do without the support of this funding. This funding has enabled me to add more strength to my study and establish stronger linkages between my study and industry, and thus ensure my study outcomes contribute to future fisheries management.

Tansy Boggon, a PhD student who was the FRDC-sponsored winner of the 2002 Science and Innovation Awards for Young People in rural industries

Glen Davidson

Glen Davidson (left) receives the R&D Prize at the Western Australian 2002 Fishing Industry Awards on behalf of the Geraldton Fishermen's Co-Operative — from Simon Bennison, FRDC director and Executive Director of the Aquaculture Council of Western Australia.

Funding from the FRDC has allowed me (in conjunction with collaborators) to pursue a number of highly relevant commercially-focused projects in the area of post-harvest handling of rock lobsters. These projects have covered a variety of topics, ranging from on-board handling to cooking and processing. The contacts, skills and knowledge I have gained in the course of these projects and through participation in FRDC-sponsored forums, such as rock lobster congresses and subprogram workshops, has facilitated my move from the tertiary sector to employment within the fishing industry itself. This reversal of my former position, where I was "on the outside looking in", has been very beneficial to me and has heightened my awareness of the requirements of successful applied research projects that the FRDC seeks to fund. Quantifying and realising real and lasting returns on investment in research and extension of practical and cost-effective solutions derived from research is one of the key areas in which I continue to gain understanding. Ongoing involvement with the FRDC has made a significant contribution to this process.

Glen Davidson, Research and Quality Manager, Geraldton Fishermen's Co-Operative

Ted Loveday

My seafood industry involvement includes 20 years as a practising commercial fisher, twelve years as the head of Queensland's peak seafood industry organisation, and Managing Director of Seafood Services Australia Ltd (SSA) for almost two years.

My involvement with the FRDC, including as a director from 1992 to 1997, has exposed me to a wealth of seafood industry issues and opportunities. It has also raised my awareness of the critical role to be played by industry leaders in fostering the commitment and cultural change required to secure a prosperous and vibrant future for the seafood industry.

My participation in the Australian Rural Leadership Program was also made possible through FRDC support. The Program helped to develop my leadership skills and confidence to the level required to tackle the challenging and rewarding role that SSA is now playing as a catalyst for sustainable development of the seafood industry.

The FRDC's investment in human capital development as a founding sponsor of the Australian Rural Leadership Program, and in the many other human development related FRDC investments, is helping to establish the "critical mass" of human resources that is essential to the seafood industry's future.

Ted Loveday, Managing Director, Seafood Services Australia Ltd

Simon Hoyle

The FRDC has helped to fund most of my research for the last eight years. I've worked on three FRDC projects: the integrated stock assessment and monitoring program, for which we won the national seafood industry award; modelling for management of longfin eels; and innovative stock assessment using VMS and electronic logbooks. I collaborated in a couple of really interesting genetics-based projects: gene-tagging Spanish mackerel, and genetic effective population size for stock assessment. The FRDC's support has played a big role in developing stock assessment here in Queensland, and I've learnt a huge amount. It's been particularly good to see our results being taken up by management.

Simon Hoyle, Fisheries Biologist/Modeller, Agency for Food and Fibre Sciences, Queensland

Lisa McKenzie (left) with Senator Judith Troeth, Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, on graduating from the course **Corporate Governance for Rural Women,** *having been sponsored by the FRDC.*

Lisa McKenzie

I began my involvement in the seafood industry in the wild-catch sector; then I moved to the export and processing sector. The assistance and encouragement that I have received from the FRDC has enabled me to participate in both the Australian Seafood Industry "Advanced In" Leadership Training Program and the Australian Institute of Company Directors' course under the *Industry Partnerships — Corporate Governance for Rural Women* initiative. The FRDC's support has given me an invaluable opportunity to broaden my understanding of the industry and develop a diverse network of industry contacts. I would like to think that the knowledge and skills that I have gained through my participation in these initiatives can enable me to positively contribute to the industry in the future. The FRDC, in acknowledging the role of exporters and processors within the industry and by assisting in my professional development, is strengthening the links between the diverse sectors of our large and varied industry.

Lisa McKenzie: Factory Manager, A. Raptis & Sons Pty Ltd — seafood exporters and trawler operators

NEW PUBLICATIONS RELATED TO PROGRAM 3

The FRDC also published, in partnership with other organisations:

- (With ABARE) *Australian Fisheries Statistics 2002*.
- (With the Kondinin Group and Primary Industries and Resources South Australia) *The Story of Seafood in Australia*.

SUMMARY OF FINAL REPORTS RECEIVED FOR PROGRAM 3

Program 3 strategies (as on page 129 of R&D plan)	No. of projects 2002–03	FRDC investment 2002–03	No. of projects last year	FRDC investment last year
Leadership development	5	$245,261	4	$246,242
Vocational development	6	$181,714	2	$272,179
Consumer education	1	$104,931	1	$394,764
Community education	—	—	1	$83,628
Community involvement	—	—	—	—
Total	**12**	**$531,906**	**8**	**$1,022,765**
Change	**+50%**	**–48%**		

Main reason for change: variations in timing and cost of projects (there is no correlation between the number and the cost of R&D projects).

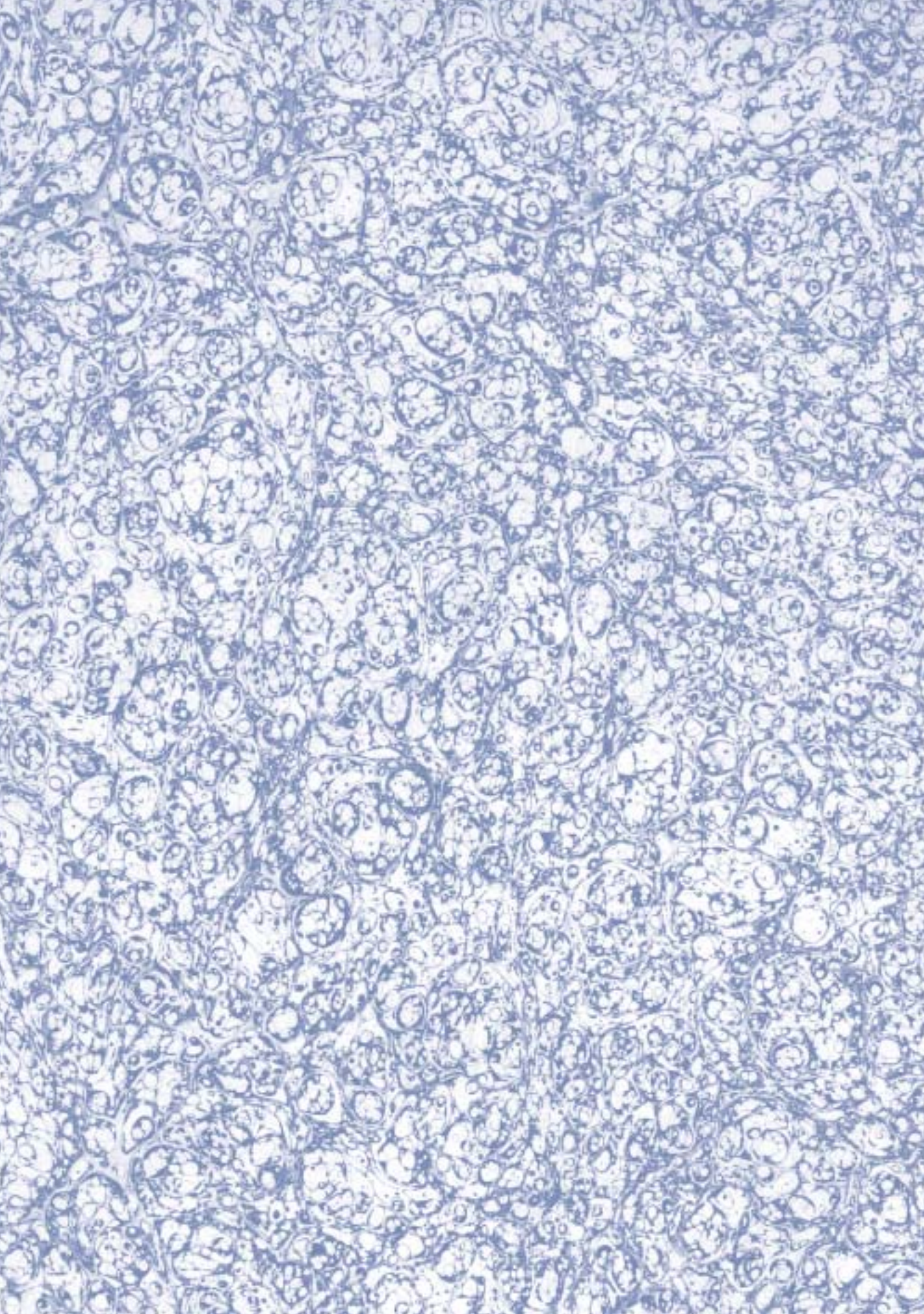
ACHIEVEMENT OF AOP TARGETS

Achievements against the key performance indicators and measures specified for the program's planned outcome in the 2002–03 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 PROGRAM 3 PERFORMANCE

All AOP performance measures were met



R&D PROGRAM 4

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

MANAGEMENT AND ACCOUNTABILITY

This program does not have a planned outcome, because its function is to enhance the inputs of the three R&D programs.

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.

The rationale for the strategies in this program is discussed on pages 32–35.

PROGRAM 4: MANAGEMENT AND ACCOUNTABILITY

Note: In the interests of improved accountability, some minor modifications have been made to the reporting structure of this program that were not incorporated into the AOP for 2002–03 prepared in early 2002. The program's coverage, however, is the same.

PRINCIPAL INPUTS

During 2002–03, $2.6 million was invested in activities within this program, including $0.6 million on communications.

PRINCIPAL 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. Since these outputs contribute to the planned outcomes of the three R&D programs, they are crucial to the FRDC's effectiveness and efficiency.

Selected 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 against key performance indicators nominated in the AOP.

INVESTMENT IN HIGH-PRIORITY R&D THAT HAS THE POTENTIAL TO DELIVER THE HIGHEST BENEFITS

Regard for the views and priorities of stakeholders and research providers in the development of R&D programs

The current edition of the R&D plan and the 2002–03 annual operational plan incorporated the R&D priorities of the Australian Government and the FRDC's two representative organisations. In disseminating the R&D plan, the FRDC consulted many of its stakeholders to seek more effective utilisation of fisheries R&D outputs.

The FRDC sought the advice of its two representative organisations in its annual review of the R&D plan.

Relevance to federal, 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

Investment in high-priority R&D as identified by stakeholders through FRABs, managed subprograms and other mechanisms

The number of applications received through the FRABs and ranked by them as high-priority was 52; the number approved was 37, amounting to an approval rate of 71%.

AOP performance measure was met

In response to the priorities of stakeholders, spending on R&D during the year was as follows:

R&D Program	Target (% of R&D outlay)	Spent (%)	Spent ($ million)
1: Natural Resources Sustainability	60%	58%	12.729
2: Industry Development	35%	38%	8.487
3: Human Capital Development	5%	4%	0.787
Total:	**100%**	**100%**	**22.004**

Note: Aquatic animal health activities funded under the Federal Budget Initiative are not included above; they totalled $812,726, making a grand total of $22,816,387 on R&D spending.

For further information, see 'Project expenditure by program', starting on page 140.

During the year, investment in the highest-value groups (i.e., fisheries/species with a GVP greater than $100 million and the southern Commonwealth wild-catch fisheries that have significant domestic seafood production) was as follows:

		Gross value of production, 2001–02 ($ million)	FRDC R&D investment, 2002–03 ($ million)
Rock lobster	— wild catch	$500.96	$1.14
	— aquaculture	Nil (investment is in frontier technology)	$0.98
Prawn	— wild catch	$357.07	$2.48
	— aquaculture	$64.44	$0.59
Abalone	— wild catch	$245.34	$0.69
	— aquaculture	$4.00	$0.46
Southern bluefin tuna	— wild catch	$72.43	$0.23
	— aquaculture	$188.07	$1.27
Pearl		$175.00	$0.14
Salmon		$112.07	$1.32
Southern Commonwealth fisheries		$97.23	$0.95
Total		$1816.62	$10.25
Percentage these species/fisheries		75.4% of industry GVP of $2408.65 million	44.9% of R&D expenditure

AOP performance measure was met within 3%

Return on investment for nominated high-cost projects

Benefit-cost analyses were conducted on five projects, as nominated in the AOP. The aim is to use the analyses to review activities and ensure that investment is targeted on R&D applications that return positive benefits to the industry. The results are summarised below.

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.

Benefit–cost analysis of project 1994/029: A collaborative investigation of the usage and stock assessment of bait fishes in southern and eastern waters, with special reference to pilchards

This project was initiated in the context of a rapidly developing South Australian pilchard fishery, fuelled by growing demand for pilchards for use as a feed source for the expanding southern bluefin tuna farming industry. Fisheries managers in South Australia were being asked to make appropriate management decisions regarding the pilchard fishery in the virtual absence of scientific understanding of the nature of the pilchard stocks. Adding further pressure to the situation was growing concern over the broader ecosystem impacts of increased commercial pilchard harvests on other predators of the pilchards, particularly seabirds, fur seals, sea lions and southern bluefin tuna.

The research focused on gathering basic biological fisheries and ecosystem data on pilchards in Australia and identifying the most appropriate stock assessment methodology for pilchard stocks.

The findings from this project are being used in the ongoing management of the South Australian pilchard fishery. In particular, the daily egg production model (DEPM) developed in the project is the key stock assessment methodology used in the fishery and the results from the DEPM are a key factor influencing levels of total allowable catch.

Pilchard numbers are estimated to have increased substantially since the completion of the project, particularly during the past two years. Although this increase is the result of natural phenomena and would have occurred irrespective of this project, the new DEPM technique improved fishery managers' ability to detect the build-up. This in turn enabled higher total allowable catches to be set, generating extra profits for pilchard fishers as a result of a higher pilchard catch.

The part of the increased pilchard catch attributable to the project is represented by the difference between the actual pilchard catch and the assumed catch in the absence of the DEPM methods. This additional catch is estimated as about 52,000 tonnes during the period 1998–2004.

The benefits of the FRDC's investment in this bait fish R&D are conservatively estimated to be more than 10 times the cost

The project is estimated to have delivered total economic benefits of $21 million during 1998–2004 (present value, using a discount rate of 5%). This is a conservative estimate, given that benefits generated beyond 2004 have not been considered and it has been assumed that there are no direct benefits accruing to the farm sector. Using current value of investment and benefit, the returns on the FRDC's $1.02 million investment in the project (current value of 51% of total project cost) are conservatively estimated at $10.02 million, representing a benefit–cost ratio in excess of 10.4:1.

A number of non-market benefits attributable to the project have not been quantified, including:

- benefits accruing to the farming sector from having a more diversified source of feed materials;
- benefits arising to fishery stakeholders from their having greater confidence in the management arrangements being implemented in the fishery; and
- benefits arising to the broader Australian community from knowing that the South Australian pilchard fishery is being managed on a sustainable basis.

Benefit–cost analysis of project 1994/045: Development, application and evaluation of the use of remote sensing data by Australian fisheries

The influence of environmental variables such as water temperature and associated nutrient levels has anecdotally been associated with migration, catch rates, and the presence or absence of several fish species. Determining methods to quantify and predict these types of environmental variables and their association with species behaviour would potentially assist managers and extractive users of the resource alike.

Past studies have concentrated purely on point measurements of sea surface temperature taken from vessels. This project intended to develop a facility to receive, process, archive and disseminate ocean colour data and correlate this with industry data on catch success or failure. It was stated that satellite data — particularly SeaWiFS data — had the potential to substantially advance the understanding of the role of the environment on the distribution of many commercial fish species. Environmental data could be incorporated within stock assessments and fishers could be helped to determine productive fishing grounds.

The project was developed in the context of the expected imminent launching of a new United States satellite designed to monitor changes in the concentration of photoplankton chlorophyll (a measure of biological productivity) in oceanic waters. However, unanticipated events — a three-year delay in launching the satellite and a tenfold rise in the cost of a real-time commercial licence to access the satellite data — resulted in the focus of the project shifting to assessing the benefits to fishers of greater use of sea surface temperature data.

The project identified significant relationships between fish abundance, as measured by catch rates, and certain environmental conditions. These results have been used in subsequent scientific studies examining the impact of environmental conditions on fish growth and reproduction

A model was also developed based on historical catch and sea surface temperature data. The catch prediction model was used by fishery managers in an attempt to address the southern bluefin tuna interaction issue in the East Coast Longline Fishery. The catch prediction model was used to forecast areas of high probability of abundance of southern bluefin tuna. The results were made available to east coast fishers via the AFMA website and were updated regularly during June–September 1999.

The key rationale for developing the catch prediction model was to generate benefits to commercial fishers. However, the catch prediction model has not been used by commercial fishers other than during the trials conducted as part of the project. Given that the catch prediction model has not been utilised, the benefits expected from developing such a model have not been realised.

The project identified significant relationships between fish abundance, as measured by catch rates, and certain environmental conditions. These results have been used in subsequent scientific studies examining the impact of environmental conditions on fish growth and reproduction. Should any attempt be made in future to develop some form of ecosystem model for the east coast fishery, the model will rely on using data such as that generated by the project.

The main objective of the project was to understand, hence to model and predict, the impact of environmental factors on fishery abundance. The project has made significant inroads towards meeting this objective, with information generated during this project providing the foundation for further work examining the impact of environmental conditions of growth and reproduction. The project has also generated a number of intangible benefits such as the development of technology capable of continuous monitoring of fine-scale oceanographic environmental conditions and a strengthening of the skills and expertise of Australian scientists working in the remote sensing field.

Although the use of turtle exclusion devices and bycatch reduction devices has imposed a cost on fishers, the general view within the trawling industry is that the project was highly successful. Many non-tangible — but potentially valuable — benefits have been generated

Benefit–cost analysis of project 1996/254: Commercialisation of bycatch reduction devices within northern Australian prawn trawl fisheries

The project was developed in the context of growing community and government concern about the impacts of commercial fishing on non-target species. This issue was particularly relevant for prawn trawl fisheries: catches of prawns accounted for only about 20 per cent of the total catch and most of the remaining catch was discarded. Decisions by the United States of America about the capture of turtles in prawn trawl fisheries banned the importation of prawns to the US unless vessels within that fishery used turtle bycatch mitigation measures such as turtle exclusion devices (TEDs).

Before the project started, several alternative TED and bycatch reduction device (BRD) designs had been developed and tested in limited research and commercial conditions. However, lack of information and concerns over possible lowering of catch rates had made commercial fishers hesitant to experiment with such devices.

The upward escape response of many bycaught finfish to escape panels, as determined by this project, showed the potential benefit of these devices. Reductions of finfish bycatch up to 40 per cent during the day and 20 per cent at night are achievable. In comparison, TEDs were effective at excluding larger animals such as sharks and turtles. Combinations of the two design features assisted both sizes of animals.

The number of vessels regularly using TEDs and BRDs increased twenty-fold during the course of the project — a result largely attributable to the project results. In recognition of this, project staff were awarded a Queensland Seafood Festival Award for environmental promotion within the fishing industry.

Previous management experience, both locally and internationally, suggests that such devices would become mandatory in time. However, this project helped to gain industry confidence in the devices and resulted in the introduction of TEDs and BRDs three years earlier than initially anticipated.

Although the use of TEDs and BRDs are estimated to be a cost to the Northern Prawn Fishery of $2.4 million per year, the general view within the trawling industry is that the project was highly successful.

A number of non-tangible benefits have been generated. They are not readily quantified, since most bycatch species have no commercial value, nor are they significant species for the recreational fishing sector. However, they are highly valued in an biodiversity context, and therefore have social values.

Since the death of turtles in trawl nets generates great public concern, it follows that the saving of turtles will be of great public benefit. In the Northern Prawn Fishery alone, hastening of the use of TEDs and BRDs is estimated to have saved about 3300 turtles over a three-year period, 48 per cent of which can be attributed to the FRDC's contribution to the project — amounting to 1600 turtles.

Aside from turtles, the knowledge that trawl fisheries have lowered the level of mortalities on other bycatch species — such as sharks, rays and swimming fish — and are having less impact on the overall marine ecosystem adds further value to the Australian community.

Other benefits generated include cooperative relationships between industry, researchers, managers and conservationists. The results have also been beneficial to other prawn fisheries in NSW, SA and WA and have displayed Australia's reputation in environmentally sustainable fisheries management to an international audience.

Benefit–cost analysis of project 1997/122: Ecologically sustainable development of the fishery for Patagonian toothfish around Macquarie Island: population parameters, population assessment and ecological interactions

This project was developed to provide the Australian Fisheries Management Authority with scientific information necessary to sustainably manage the newly discovered fishery for Patagonian toothfish in the sub-Antarctic waters around Macquarie Island. Commercially viable stocks had been found, but substantial gaps in understanding of basic toothfish biology — such as age, growth and movement — meant that virtually nothing was known about the size and structure of the toothfish stocks. There was considerable uncertainty, hence concern, about the impact that a developing commercial fishery would have on the overall Macquarie Island ecosystem.

Despite about 1000 tonnes of toothfish being taken in the second year of the fishery, the project found that the resident toothfish stocks at Macquarie Island are simply too small to support such catches on a regular basis.

The benefits of the FRDC's investment in ascertaining the sustainability of this new fishery are estimated to be between 0.5 and 2.4 times the cost

The Aurora Trough grounds would probably remained closed for longer if this study had not been undertaken

Work is in progress to estimate long-run sustainable yields for the Aurora Trough grounds utilising the models developed during the project. Preliminary results indicate average sustainable yields in the order of 80–130 tonnes per year, with considerable variations around this long-term average. Such yields are inadequate to support the size of vessel needed to operate in the environmentally difficult conditions found around Macquarie Island for any more than one to two trips per year. The scope of the Macquarie Island fishery is therefore limited to forming only part of an overall fishing strategy for a single vessel.

A key outcome from the project has been the development of a tag-recapture model capable of estimating the size of the available fishery biomass. Fishery managers have been able to use the results from the model to adjust the total allowable catch to reflect changes in fish availability in a more timely fashion than would otherwise have been possible. Outcomes include the closure of the Aurora Trough grounds in 1999 and reopening the grounds in 2004. There is a very high likelihood that the Aurora Trough grounds would have remained closed for a longer period of time had this study not been undertaken.

The more timely reopening of the fishery is estimated to generate benefits of between $2.2 million and $11.7 million, depending on the actual long-term sustainable yield from Aurora Trough and how long the grounds would otherwise have remained closed. These benefits represent a return to between 0.5:1 and 2.4:1 on the FRDC's investment in the project.

Benefit–cost analysis of project 1998/322: Aquaculture feed development for Atlantic salmon

This project was developed in the context of expected future increases in the costs of marine-based salmon feeds such as fishmeal and marine oils. Alternative protein sources being developed overseas were either unavailable in Australia or not considered appropriate for Australian farms. Further research was needed into the suitability of a number of ingredients commonly available in Australia that were thought to have potential as an alternative protein source in salmon feeds and in aquaculture feeds more generally.

Tests were conducted to assess the chemical composition and digestibility of 19 alternative protein sources. De-hulled lupins were found to have the greatest potential for fishmeal replacement. producing the best growth response and no adverse impact on the salmon's immune system. The project also identified potential cost savings to farmers from using a lower protein feed to replace a higher protein feed at the second feeding time each day, and from reducing lysine concentrations in existing feed mixes.

The project has not yet displaced any of the fishmeal content in aquaculture feeds, but lupin meal has replaced imported plant-based ingredients, bringing a three-fold return on investment

The key output from the project has been implemented by the salmon-feed producing sector and lower cost feeds using a lupin-meal additive are being commercially manufactured in Australia.

Although the initial rationale of the project was to develop new food products that were less reliant on the use of fishmeal, the addition of the lupin meal to the feed has not yet displaced any of the fishmeal content. Instead, the lupin meal has replaced imported plant-based ingredients — such as soy meal and gluten meal — that were formerly used. Lupins can be sourced domestically at a cheaper price than these imported meals. Feed manufacturers advise that the full benefits of these lower raw material costs have been passed on to aquaculture farmers in the form of cheaper feed prices, with the lupin-added feeds estimated at being $30 to $40 cheaper per tonne than feed using the imported plant meals. With annual production of lupin-added feed estimated at about 10,000 tonnes — of which about 25% is exported — the drop in feed price represents a saving to Australian aquaculture producers of $225,000 to $300,000 per year.

The net present value of the forecast return over the period 2002–2008 to the FRDC's $235,000 investment in the project is estimated at between $630,000 and $840,000. This represents a benefit–cost ratio of about 3:1. This estimate does not include the potential benefits that may arise over the longer term, should increased quantities of higher-protein lupins become available and be used to replace fishmeal, or should foreign-based feed manufacturers start to purchase large quantities of Australian-grown lupins.

AOP performance measure was met

MAKING R&D RESULTS WIDELY KNOWN, AND FACILITATING THEIR ADOPTION AND (IF APPROPRIATE) COMMERCIALISATION

Principal publications released during the year are listed on pages 58–59, 71–72 and 80. Other publications, and access to publications via the FRDC's website, are described on page 236.

Dissemination of R&D results and their availability

During the year, 82 final reports were received from FRDC-funded projects: 34, 36 and 12 respectively for Programs 1–3.

Most research providers widely distribute 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 identify pathways that will lead to achievement of planned outcomes. When evaluating applications, the Board carefully examines the proposed adoption methods.

Four issues of the FRDC's *R&D News* (each with a print run of 33,000) were distributed mainly through industry magazines.

The FRDC website is one of the Corporation'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, FRDC Subprograms and projects. 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.

The website has been certified by the National Archives of Australia to be compliant with the Australian Government Locator Service Metadata Standard, which improves the visibility and accessibility of an organisation's services and information over the Internet.

Four editions of *R&D News* were published during 2002–03. An average circulation of 33,000 was achieved for each edition by distributing the magazine as an insert in 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.

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.

AOP performance measures were met

Influence over the adoption of R&D results by stakeholders, especially potential beneficiaries

Each new project is 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. This has resulted in a significant increase in communication of continuing and completed R&D projects to beneficiaries.

The FRDC has actively involved fisheries extension providers in developing effective extension components of R&D projects. However, the Corporation has identified a lack of service providers in the industry in comparison with land-based rural industries as a significant barrier to facilitating adoption of R&D results. Efforts are being made to overcome this deficiency.

The FRDC also produced a range of communication and extension outputs designed to encourage adoption of R&D results, listed on pages 58–59, 71–72 and 80.

AOP performance measures were met

EXPANDING THE FRDC REVENUE BASE AND INFLUENCING FISHERIES R&D INVESTMENT BY OTHER PARTIES

Contributions from fishers and aquaculturists above that which will be matched by the Australian Government

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.

Note: The FRDC's revenue base, which is the context for **table 2**, is described on pages 171–172.

Notes for **table 2**:

1. 'Maximum matchable contribution' is the maximum amount to which the Australian Government will match industry contributions.
2. The Northern Prawn Fishery contributes to the FRDC under the terms of a memorandum of understanding.
3. Contributions refer only to Australian Prawn Farmers' Association levies and do not include moneys paid via government licences.
4. Production figures for prawn aquaculture are not available to the FRDC other than statistics for Queensland and NSW in ABARE's Australia Fisheries Statistics.
5. All Australian Prawn Farmers Association contributions are currently attributed to Queensland because a break-down by states is not yet available from the Levies Revenue Service.
6. The Tuna Boat Owners Association contributes to the FRDC under the terms of a memorandum of understanding.
7. The Tasmanian Salmon Growers Association contributes to the FRDC under the terms of a memorandum of understanding.

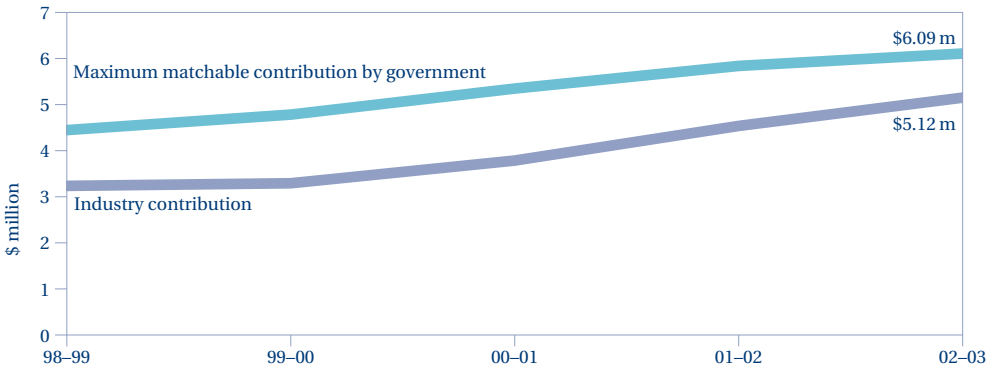
TABLE 2: INDUSTRY CONTRIBUTIONS AND MAXIMUM MATCHABLE CONTRIBUTIONS BY THE AUSTRALIAN GOVERNMENT, 2002–03

	Maximum matchable contribution $ [see note 1]	Actual industry contribution $	%
C'wealth Nthn Prawn Fishery [note 2]	338,887	438,829	129%
Commonwealth fisheries other	793,652	709,937	89%
Commonwealth fisheries total	1,132,539	1,148,766	101%
NSW prawn aquaculture	13,702 [note 4]	Not available [notes 3, 5]	Cannot be calculated
NSW other	324,298	274,875	85%
New South Wales total	338,000	274,875	81%
NT pearls and other non-prawn aquaculture	77,814	0	0%
NT prawn aquaculture FRDC estimate:	625 [note 4]	Not available [notes 3, 5]	Cannot be calculated
NT other	109,811	80,720	74%
Northern Territory total	188,250	80,720	43%
Qld prawn aquaculture	124,000	116,913 [notes 3, 5]	94%
Qld other	622,250	630,280	101%
Queensland total	746,250	747,193	100%
SA tuna aquaculture [note 6]	452,094	364,500	81%
SA other	574,406	469,686	82%
South Australia total	1,026,500	834,186	81%
Tas salmon aquaculture [note 7]	246,307	350,000	142%
Tasmania other	511,943	161,000	31%
Tasmania total	758,250	511,000	67%
Victoria total	288,250	240,289	83%
WA prawn aquaculture	0	0	0
WA other	1,607,750	1,281,108	80%
Western Australia total	1,607,750	1,281,108	80%
Total	6,085,789	5,118,137	84%

The $5.1 million industry contribution that was matched by the Australian Government was 13% more than last year's contribution. This amount was 84% of the maximum that was matchable by the Australian Government, and 7% above the 77% nominated in the AOP. The reasons for the under-achievement — 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 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 fisheries has significantly increased R&D contributions from these sectors. Importantly, the sectors have confidence that their investments will result in benefit.

AOP performance measures were met

Influencing fisheries R&D investment by other parties

Total actual investment in fisheries R&D projects under FRDC management in 2002–03 was $60 million (up from $57 million last year). Of this, the FRDC invested $23 million (up from $21 million last year). The remaining $37 million was invested by other parties — representing leverage of 1.63 times the FRDC investment (down 3 per cent from 1: 1.69 last year).

AOP performance measures were met

Contributions from other parties with an interest in fisheries and the fishing industry

During the year, Primary Industries and Resources South Australia asked the FRDC to manage $1.1 million of their funds through the Innovative Solutions for Aquaculture initiative.

AOP performance measure was met

Definition of AGVP expanded to recognise the economic value of the natural resources used by the recreational and traditional sectors

This target was not achieved.

AOP performance measure was not met

The level of revenue received for other services and products

The FRDC received $0.32 million (against a target of $0.2 million) 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

MANAGING R&D PROGRAMS THROUGH EFFECTIVE, EFFICIENT, OPEN AND ACCOUNTABLE MANAGEMENT PROCEDURES AND SYSTEMS

Compliance with all acts, regulations, ordinances and by-laws of federal, state, territory and local governments as well as with government policies and FRDC policies/procedures

The FRDC fully complied.

AOP performance measure was met

Maximum FRDC expenditure on R&D programs

The targets for the FRDC's expenditure in 2002–03, which took into account R&D priorities, were as follows:

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

The proportions spent on each of these 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.

AOP performance measure was met

Results of external quality and financial audits

All programs management and administrative procedures have been documented. They were audited in November 2002 by an external quality auditor, Quality Assurance Services Pty Ltd.

The FRDC's quality management system remained certified to AS/NZS ISO 9002:1994.

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.

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

The FRDC collaborated with all other R&D corporations in a project to identify best practice in the corporations' "triple bottom line" reporting, coordinated by Land & Water Australia.

AOP performance measures were met

Accountability to industry, governments and other stakeholders

The 2001–02 annual report was presented to the Minister before the stipulated deadline and the Minister tabled it in Parliament on time. Details of the awards won by the report are on page 18.

The FRDC's two representative organisations (the Australian Seafood Industry Council and Recfish Australia) accepted the FRDC's 2001–02 annual report at their respective annual meetings.

The FRDC meets its obligations to be accountable to its stakeholders through many channels. For example, key elements of this annual report are repeated in each January edition of *R&D News* — including **table 3** (overleaf), 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 124).

"The assistance of FRDC staff [with making an R&D application] was brilliant. They were always helpful and cheerful, and problems were always resolved quickly — in fact proactive to the point where potential problems were brought to my attention and resolved before I experienced them."

R&D funding applicant

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

Fishery:	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	2002–03:	1,132,500	1,148,767	3,366,875	2.9 : 1
	5-year running total:	4,891,345	4,621,779	14,320,388	3.1 : 1
NSW	2002–03:	338,000	274,875	2,038,951	7.4 : 1
	5-year running total:	1,580,250	1,217,877	9,545,407	7.8 : 1
NT	2002–03:	188,250	80,720	959,105	11.9 : 1
	5-year running total:	948,750	331,120	3,556,884	10.7 : 1
Qld	2002–03:	746,250	747,193	3,335,591	4.5 : 1
	5-year running total:	3,238,250	2,771,300	14,603,239	5.3 : 1
SA	2002–03:	1,026,500	834,186	3,725,869	4.5 : 1
	5-year running total:	3,936,500	3,088,516	13,570,334	4.4 : 1
Tas	2002–03:	758,250	511,000	3,212,558	4.8 : 1
	5-year running total:	3,072,500	2,121,050	10,283,586	6.3 : 1
Vic	2002–03:	288,250	240,289	1,454,937	6.1 : 1
	5-year running total:	1,194,250	1,098,598	6,703,762	6.1 : 1
WA	2002–03:	1,607,750	1,281,108	4,616,075	3.6 : 1
	5-year running total:	7,645,500	4,633,135	18,006,436	3.9 : 1

Notes for table 3:

1. 'Maximum matchable contribution' is the maximum amount to which the Australian Government will match industry contributions in accordance with the criteria detailed on page 171.
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 $4.45 in R&D that benefited the contributor

All AOP performance measures were met

REPORT OF FISHERIES RESEARCH AND OPERATIONS DEVELOPMENT CORPORATION

· 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 — including, among others, characteristics such as authority, accountability, stewardship and leadership. Corporate governance is concerned with structures and processes for decision-making, and with controls and behaviour within organisations that support effective accountability for performance outcomes.[17]

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

STRUCTURES

Key elements of the FRDC's legislative foundation (the PIERD Act) are summarised in appendix D (page 177).

The FRDC also operates under the provisions of the CAC Act, which applies high standards of accountability while providing for the independence required by the Corporation's role as a statutory authority.

The FRDC's objects, deriving from section 3 of the PIERD Act, shown in appendix D on page 177, are incorporated in the FRDC's visions, mission and planned outcomes. As reflected in figure 3 on page 38, the FRDC's three R&D programs mirror the industry development, natural resources sustainability and human capital development themes of, respectively, sub-sections 3(a), (b) and (c) of the Act. This alignment has brought simplicity and robustness to the FRDC's R&D planning, implementation and reporting, and that of many of the organisations with which it does business.

The functions of the FRDC, deriving from section 11 of the PIERD Act, are also described on page 177.

The FRDC's organisation and the context in which it operates are shown in figure 1 on page 5. Ten staff cooperatively manage the functions of programs, business, communications, and quality. Staff names and titles are shown on page 125.

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

THE BOARD

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 Minister for Fisheries, Forestry and Conservation.
- The Executive Director is appointed by the Board on terms and conditions determined by the Board.
- The other six directors are appointed by the Minister for Fisheries, Forestry and Conservation on the nomination of an independent selection committee convened under section 123 of the PIERD Act. 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 derived from the PIERD Act:

- 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 and the Executive Director. All directors except the Executive Director are appointed on a part-time basis.

A finance and audit committee and a remuneration committee, and other ad hoc committees of the Board as deemed necessary from time to time, act on the Board's behalf.

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. Mr Peter Dundas-Smith is the only executive director.

On 28 August 2003, the Minister for Fisheries, Forestry and Conservation approved recommendations by the committee to select FRDC directors (see page 167). Two existing directors were re-appointed and four retired from the Board. (This selection process applies to the six directors nominated by the selection committee for appointment by the Minister; the Chairman, Executive Director and Government Director's appointments lie outside the process.)

Directors' biographies

Mr Denis Byrne: Chairman (non-executive)

Appointed as Chairman from 1 January 2002 until 31 August 2004. 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 Australian 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 Downlands College Foundation. He is a director of Total Care Technologies Pty Ltd, Birkdale Nursery Holdings Pty Ltd, and the Ball Solutions group of companies. He is a member of the Queensland advisory board of the Starlight Children's Foundation.

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.

Until recently, Denis served as the chair of the Queensland Gas Appeals Tribunal; the tribunal's jurisdiction is to be assumed by a new, single body dealing with all land and resource issues in Queensland.

Mr Sandy Wood-Meredith: Deputy Chairman (non-executive)

Appointed from 1 January 1998;
re-appointed 2001 until 31 August 2003.

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 from 1 January 1998;
re-appointed 2001 until 31 August 2003.
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 20 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 executive officer of several other producer associations. He is a member of the Australian Shellfish Quality Assurance Committee and Co-Chair of the FRDC Aquatic Animal Health Subprogram, and has been a member of 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. He has a Diploma of Company Directorship and is a Fellow of the Australian Institute of Company Directors.

Mr Ian Cartwright: director (non-executive)

Appointed from 1 January 2001 until 31 August 2003.

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 held the post of Deputy Director of a multinational tuna management agency, the Forum Fisheries Agency in Honiara, Solomon Islands.

Currently Ian is a fisheries consultant working within Australia and the Asia-Pacific region, specialising in fisheries management issues. He is also chairman of two Commonwealth fisheries management advisory committees (Bass Strait Scallops and Southern and Western Tuna and Billfish). 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 from 1 January 1995;
re-appointed in 1998 and 2001. Appointment ends 31 August 2003.
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 Associate Professor, Academic Development at the University of Sydney. 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, a Diploma in Education and a Diploma of Company Directorship. 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 Glenn Hurry:
Government Director (non-executive)
from 13 September 2002

Holds office during the Minister's pleasure.

Glenn is the General Manager Fisheries and Aquaculture in the Department of Agriculture, Fisheries and Forestry. He holds a Master's Degree in Aquaculture from Deakin University.

Mr David Newton:
director (non-executive)

Appointed from 1 January 2001 until 31 August 2003.
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 Nuplex Industries Limited, Stem Cell Sciences Limited and Stem Cell Sciences KK [Japan]. He is a member of the Advisory Board of the Animal Gene Resource Bank, and a member of the French- Australian Industrial Research Committee. He was previously on the Boards of Aventis Australia Holdings Pty Ltd and Boron Molecular Pty Ltd and chairman of the Australia France Foundation.

David was formerly CEO of the Rhône-Poulenc Group for Australia and New Zealand (1987–1998), Commercial Director of Coopers Animal Health, UK, and General Manager of ICI Australia's Biologicals Group. 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.

David holds degrees of Bachelor of Commerce and Bachelor of Arts and is a graduate of the Advanced Management Program, MIT. He is a Fellow of the Australian Institute of Company Directors.

Mr Bill Sawynok: director (non-executive)

Appointed from 1 January 1998;
re-appointed 2001 until 31 August 2003.
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) until 12 September 2002

Appointed from 14 February 2000.

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. Holds office during the Corporation's pleasure.

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 2002–03 the Board held six meetings as follows:

Date	Location and main activities
13–17 August 2002	Cairns.
	Evaluated R&D applications; considered 2001–02 annual report, including the 30 June 2002 financial statements. Participated in the World Congress on Aquatic Protected Areas. The Chairman undertook an evaluation of Board performance.
	Visited DPIQ's Northern Fisheries Centre, a prawn farm and several seafood processing companies.
	Participated in presentations on FRDC-funded R&D projects.
	Met with industry and government representatives and researchers; discussed industry issues and R&D opportunities.
14–16 October 2002	Hobart.
	Evaluated R&D applications.
	Conducted FRDC Board strategic planning workshop.
	Visited CSIRO (including inspection of RV Southern Surveyor), Tasmanian Aquaculture and Fisheries Institute, Tasmanian salmon production and processing facilities.
	Participated in presentations on FRDC-funded R&D projects.
	Met with industry and government representatives and researchers; discussed industry issues and R&D opportunities.
16–17 December 2002	Melbourne, Queenscliff.
	Visited Victorian Institute of Animal Science, Marine and Freshwater Resources Institute, a seafood export company. Participated in presentations on FRDC-funded R&D projects.
	Met with industry and government representatives and researchers; discussed industry issues and R&D opportunities.
4–6 March 2003	Canberra.
	Evaluated 2003–04 R&D applications, considered 2003–04 draft annual operational plan.
	The Chairman and ED met with Senator Judith Troeth to discuss the FRDC's recent activities and future directions.
	The Chairman and ED attended a meeting of chairs of R&D corporations.
29–30 April 2003	Canberra.
	Further evaluated 2003–04 R&D applications; finalised 2003–04 annual operational plan and portfolio budget statement.
	Met with industry and government representatives and researchers, discussed government–FRDC issues.

Date	Location and main activities
10–11 June 2003	Grafton.
	Evaluated R&D applications; considered draft 2002–03 annual report; reviewed the Executive Director's remuneration.
	Visited the Clarence River Cooperative and NSW Fisheries Grafton Aquaculture Centre. Viewed coastal floodplain restoration works.
	Participated in presentations on FRDC-funded R&D projects.
	Met with industry and government representatives and researchers, discussed industry issues and R&D opportunities.

Currently the Board has two committees: the Finance and Audit Committee and the Remuneration Committee. The Finance and Audit committee's main responsibilities are concerned with helping the FRDC and its directors to comply with their obligations and providing a forum for communications between the directors, the senior managers and the internal and external auditors. The Remuneration Committee's main responsibilities are concerned with reviewing staff remuneration policy and practices and the annual staff remuneration budget, reviewing the Executive Director's remuneration and recommending his remuneration to the Board for approval, and ensuring that remuneration payments made are consistent with approvals. As with their other roles as directors, members of the Board committees retain their rights to gain access to all information held by the FRDC and to seek independent third-party advice.

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

12 August 2002	Examined the 30 June 2002 financial statements; reviewed associated compliance checklists signed by the Corporation officers; reviewed the draft 2001–02 annual report for compliance with the FRDC's legislative responsibilities; made appropriate recommendations to the Board.
3 March 2003	Examined the 31 December 2002 (internally audited) and 31 January 2003 financial statements; met with Acumen Alliance (internal auditors) and reviewed the 2003–04 internal audit plan; met with ANAO (external auditors) to discuss the 30 June 2003 financial audit; reviewed the risk management policy (including the fraud control framework) and the compliance register; reviewed the draft 2003–04 budget for incorporation in the AOP; made appropriate recommendations to the Board.
28 April 2003	Reviewed 31 March 2003 financial statements; reviewed the risk management policy (including the fraud control framework) and the compliance register; met with representatives of ANAO and Deloitte Touche Tohmatsu (selected service providers to ANAO) and reviewed the engagement letter and related audit strategy for the 30 June 2003 financial statements audit; made appropriate recommendations to the Board.

The Finance and Audit Committee's operation is consistent with the Australian National Audit Office *Better Practice Guide*, July 1997 (Audit Report No. 39 of 1996–97).

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

12 August 2002	Reviewed the performance planning and review process and in particular the ED's performance targets for 2002–03.
3 March 2003	Examined the proposed remuneration budget for the 2003–04 AOP; made appropriate recommendations to the Board through the Finance and Audit Committee.
9 June 2003	Reviewed the Executive Director's performance in 2002–03; made appropriate recommendations to the Board for his remuneration in 2003–04.
26 June 2003 (teleconference)	Reviewed the Executive Director's performance goals for 2003–04; ratified remuneration of the three managers who report directly to the Executive Director.

Directors' attendance at the Board meetings held in 2002–03 was as follows:

	Board meetings	Finance and Audit Committee meetings	Remuneration Committee meetings
Number of meetings held →	6	3	4
Mr Denis Byrne §	6		4
Mr Simon Bennison Δ	6	2*	
Mr Ian Cartwright	6		
Dr Diana Day	5*	3	
Mr Peter Dundas-Smith	6		
Mr Glenn Hurry	4*		
Mr David Newton	6		4
Mr Bill Sawynok	6		4
Dr Derek Staples	nil*		
Mr Sandy Wood-Meredith	4**		
Mr John Wilson (Business Devt Manager)		3	

* [One less than the maximum attendance that was possible during the director's tenure]

** [Two less than the maximum attendance that was possible during the director's tenure]

§ Chair of Remuneration Committee.

Δ Chair of Finance and Audit Committee.

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

REPRESENTATIVE ORGANISATIONS AND OTHER STAKEHOLDERS

To enhance 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 formally reports to the representative organisations at their annual general meetings in keeping with section 29 of the PIERD Act and has regard to their expectations of the FRDC and to their R&D needs. 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 29 October 2002. In response, ASIC directors expressed an interest in continuing dialogue with the FRDC to ensure maximum feedback on, and involvement with, the broad range of matters covered in the report.

The FRDC reported to Recfish Australia at the Confederation's annual meeting on 11 October 2002. Recfish Australia thanked the FRDC for its continuing support and acknowledged the role that the Corporation has played in increasing understanding of the impact of recreational fishing on fisheries sustainability. The members also discussed with the FRDC how the recreational sector can increase its financial contributions to the FRDC.

"For the future, our status as one of the FRDC's two representative organisations will remain essential as we continue to look at ways of growing and improving our industry."

John Harrison, President, Recfish Australia

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 2002–03 the FRDC incurred $4,155 in such expenses; planned expenditure during 2003–04 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. During the year the FRDC expended $15,510 on project 2002/319, managed by Seafood Training Australia (ASIC's training and education arm and the seafood industry's training advisory body). The project developed a model induction kit for new members of Commonwealth fisheries Management Advisory Committees.

FISHERIES RESEARCH ADVISORY BODIES

Fisheries Research Advisory Bodies (FRABs) set research priorities for R&D at the federal and state/NT level, and communicate those priorities to investors. The FRABs' recent efforts to attract more R&D investment (for example, by obtaining higher industry contributions) and to focus on high-priority R&D made the most recent funding round the most successful yet.

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

The FRABs have an extremely important role in maximising the efficiency of the FRDC's planning and investment processes. 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 2003 were as follows.

Chairs of FRABs at 30 June 2003

Commonwealth	Mr Rob Lewis: Executive Director, South Australian Research and Development Institute; formerly a director of the Australian Fisheries Management Authority.
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; former Chief of CSIRO Division of Fisheries and a former 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	Associate Professor John Sherwood: Chair, Victorian Fisheries Co-Management Council; Associate Professor, School of Ecology and Environment, Deakin University.
Western Australia	Mr John Newby: commercial fisherman and company director.
Tasmania	Mr Tony Ibbott: management consultant.

OTHER STRUCTURES

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

To increase their effectiveness at the strategic level and to share information the rural R&D corporations — including the FRDC — collaborate through a committee of their Chairs, supported by a part-time secretariat. The Chairs Committee also provides continuity and consistency in communication about the role and contribution of RDCs, and in representation, networking and participation in formulation of policy.

PROCESSES

The starting points for the FRDC's planning, operating and reporting processes are set by legislation, especially the PIERD Act and CAC Act. Four documents, including this annual report, are key elements in the framework. The others 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, Australian Government policy, and consultation with the fishing industry — including the FRDC's representative organisations.
- *The annual operational plan (AOP)*. This document, also prepared under the provisions of the PIERD Act, 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.

Figure 5, opposite, shows the planning, operating and reporting processes involved.

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 119) and Standard AS/NZS ISO 9001:2000.

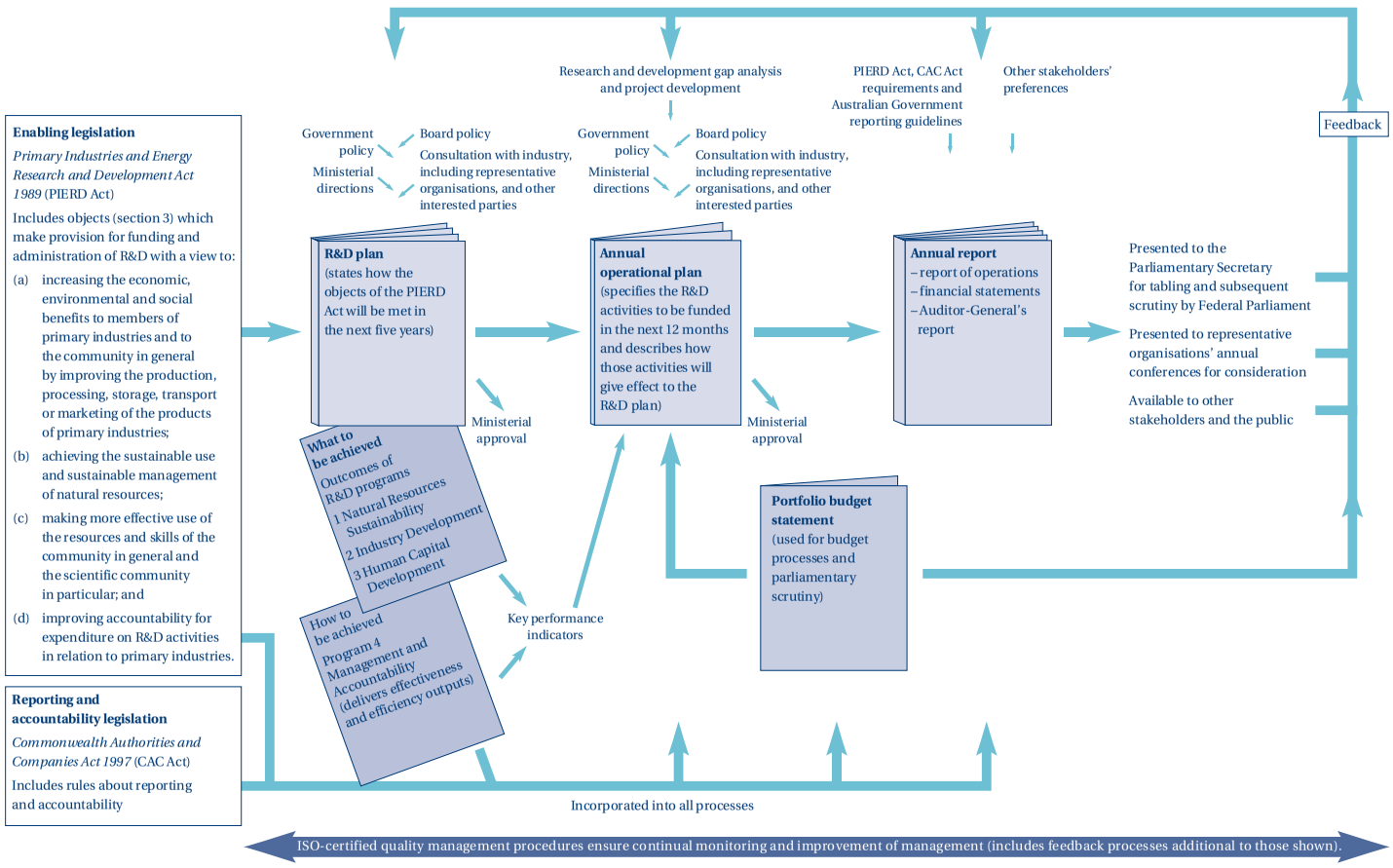
The FRDC's finances are audited internally twice a year and externally (by the Australian National Audit Office) once a year. Quality management processes are audited internally and externally, in both cases once a year.

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 another 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 funding applications, certifies that the process used was consistent with the FRDC's quality management procedures and that he/she agrees with the evaluation results.

Directors are able to seek independent professional advice at FRDC expense in carrying out their duties.

FIGURE 5: KEY PROCESSES IN THE FRDC'S PLANNING, OPERATING AND REPORTING FRAMEWORK



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 registry identifies each risk, describes its probability, likely severity and mitigation strategy, and records the status of the mitigation strategy.

The Board further improved its management of compliance risk during the year by introducing a compliance registry, which will be reviewed annually.

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* (ANAO Audit Report No. 39 of 1996–97), which 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 2002–03.

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 financial, indirect financial, or non-financial 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 financial	Absent	Absent	Absent
Indirect financial	Absent	May be invited back to provide input based on the director's related expertise and to answer related questions	Absent
Non-financial	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.

Quality System
Quality Endorsed Company
ISO 9001:2000 Lic 11389

"Your quality management system is on a par with the best I have audited. It is pragmatic and tailored to the continual improvement of the way you do business."

independent quality auditor

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 continual 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

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

The FRDC is required by the Australian 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.

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.

See also note 1.5 of the financial statements (page 142).

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 project agreements 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 118) 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 three 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:	Neill Buck & Associates Pty Ltd
Nature and purpose of consultancy:	Prepared a compliance registry for all aspects of the FRDC's legislative and policy compliance
Cost:	$17,600
Name of consultant:	Blake Dawson Waldron Lawyers
Nature and purpose of consultancy:	Legal advice — particularly on a new form of project agreement between the FRDC and research providers and advice on the newly formed company, Australian Seafood Co-products Pty Ltd
Cost:	$131, 079
Name of consultant:	Fisheries Economics Research and Management Specialists
Nature and purpose of consultancy:	Benefit-cost analysis of five completed FRDC projects
Cost:	$54,481

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.

Corporate governance practices are evolving rapidly, both in Australia and overseas. The FRDC is pro-active in integrating these practices, including those governing ethical behaviour, into its own processes. The Corporation has a code of conduct that complies with division 4 of the CAC Act, to which all directors and staff are required to adhere. 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). Information about the FRDC's legislative foundation is on pages 177–179.

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

Throughout the year the Minister for Agriculture, Fisheries and Forestry was the Hon. Warren Truss, MP. The Parliamentary Secretary to the Minister was Senator the Hon. Judith Troeth. The Minister for Fisheries, Forestry and Conservation (whose title until November was Minister for Forestry and Conservation) 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 pages 179–180. The powers may be exercised by any of the three ministers.

During 2002–03, ministerial powers were exercised as follows:

- approving the 2003–04 annual operational plan,
- causing a coordination meeting to be held of all R&D corporations,
- extending the appointment of the Presiding Member of a committee to select FRDC directors,
- appointing members of a committee to select FRDC directors,
- appointing six directors nominated by the selection committee, and
- appointing a new Government Director.

The following tables summarise a ministerial direction and notifications of Government general policies and administrative matters that have been issued to the FRDC by responsible ministers and have not been superseded. All the matters stipulated 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

During the year, the Minister for Agriculture, Fisheries and Forestry and the Parliamentary Secretary to the Minister notified Government general policies and administrative matters to the FRDC as follows:

Date	Subject
14 April 2003	New cost recovery policy.
12 March 2003	Updated Australian Government priorities for rural R&D.[18]
18 December 2002	Australian Government national research priorities.[19]
21 August 2002	Need to adopt the Commonwealth Fraud Control Guidelines.

18 The text of this notification is reproduced in appendix E, starting on page 181.

19 The priorities are shown in figure 3 on page 38. Details of how the FRDC is addressing them are on pages 44–47.

The following notifications by the Ministers 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 January 1999	Accountability arrangements for statutory authorities.
6 July 1998	Guidelines for payment of representative organisations' costs in consulting with the FRDC.

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

STAFF

At 30 June 2003, 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*. There were no staff changes during the year.

The Programs team:
Dr Patrick Hone (Programs Manager, left) and his Projects Managers — Research: Jane Graham and Crispian Ashby.

Inset: Annette Lyons (Projects Manager — Finance). Annette is also the FRDC Quality Manager.

The Business team:
John Wilson (Business Development Manager); Debbie Bowden (Office Manager); Kristina Jarnjevic (Office Administrator).

The Executive Director, Peter Dundas-Smith (left) with the Communications Team: Michael Parolin (Communications Manager) and Kylie Paulsen (Communications Manager — R&D Extension).

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 personal performance assessment process that involves staff and the Executive Director[20] in reaching agreement on key performance indicators against which the staff member will be evaluated. The performance component of remuneration variations and individual development needs are also identified. Personal performance assessment 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.

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

STAFF DEVELOPMENT

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

During 2002–03, one continued fisheries management studies at Master level, one continued studies of fishing gear selectivity at Master level, and one continued studies for a Bachelor of Business degree. 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, 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 two have 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 119) and the attendant emphasis on continual improvement.

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.

No injuries occurred on FRDC premises during 2002–03.

DISABILITIES

The Commonwealth Disability Strategy is a framework to help Australian Government 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 an extent appropriate to the functions and size of the Corporation.

The FRDC provides information and other services about R&D in which it has invested. 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 in meeting a person's needs.

ENERGY EFFICIENCY

The policy for *Improving Energy Efficiency in Commonwealth Government Operations* seeks to improve energy efficiency in relation to vehicles, equipment and building design.

The FRDC follows the policy with respect to factors relevant to the Corporation. The Corporation is a minority tenant occupying part of an office building and does not own motor vehicles or large equipment. Prudent management of power consumption is followed within the FRDC office.

PRIVACY OF INFORMATION

The FRDC manages personal information in accordance with the *Privacy Act 1988*. In particular, the Corporation's privacy policy explicitly implements the Information Privacy Principles set out in section 14 of the Privacy Act, which specify how organisations should collect, use, keep secure and disclose personal information. The principles also give individuals a right to know what information an organisation holds about them and a right to correct that information if it is wrong.

In keeping with the Privacy Principles, therefore, the FRDC's privacy policy covers soliciting, collecting, storing, gaining access to, altering and using personal information. These provisions also include privacy of personal information provided electronically to the FRDC.

FREEDOM OF INFORMATION

During 2002–03, the FRDC did not receive 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 G (page 209).

COMMITTEE TO SELECT FRDC DIRECTORS

The Minister for Fisheries, Forestry and Conservation extended the appointment of Ms Jenny Varcoe-Cocks until 31 December 2003 as the Presiding Member of a committee to select FRDC directors. Ms Varcoe-Cocks established the committee and nominated selected candidates to the Minister, who approved their appointment on 28 August 2003, with effect from 1 September 2003. The selection committee report is at appendix A on page 167.

AUDITOR-GENERAL'S REPORT

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

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 2003. 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 Fisheries Research and Development 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 the 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 Fisheries Research and Development 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

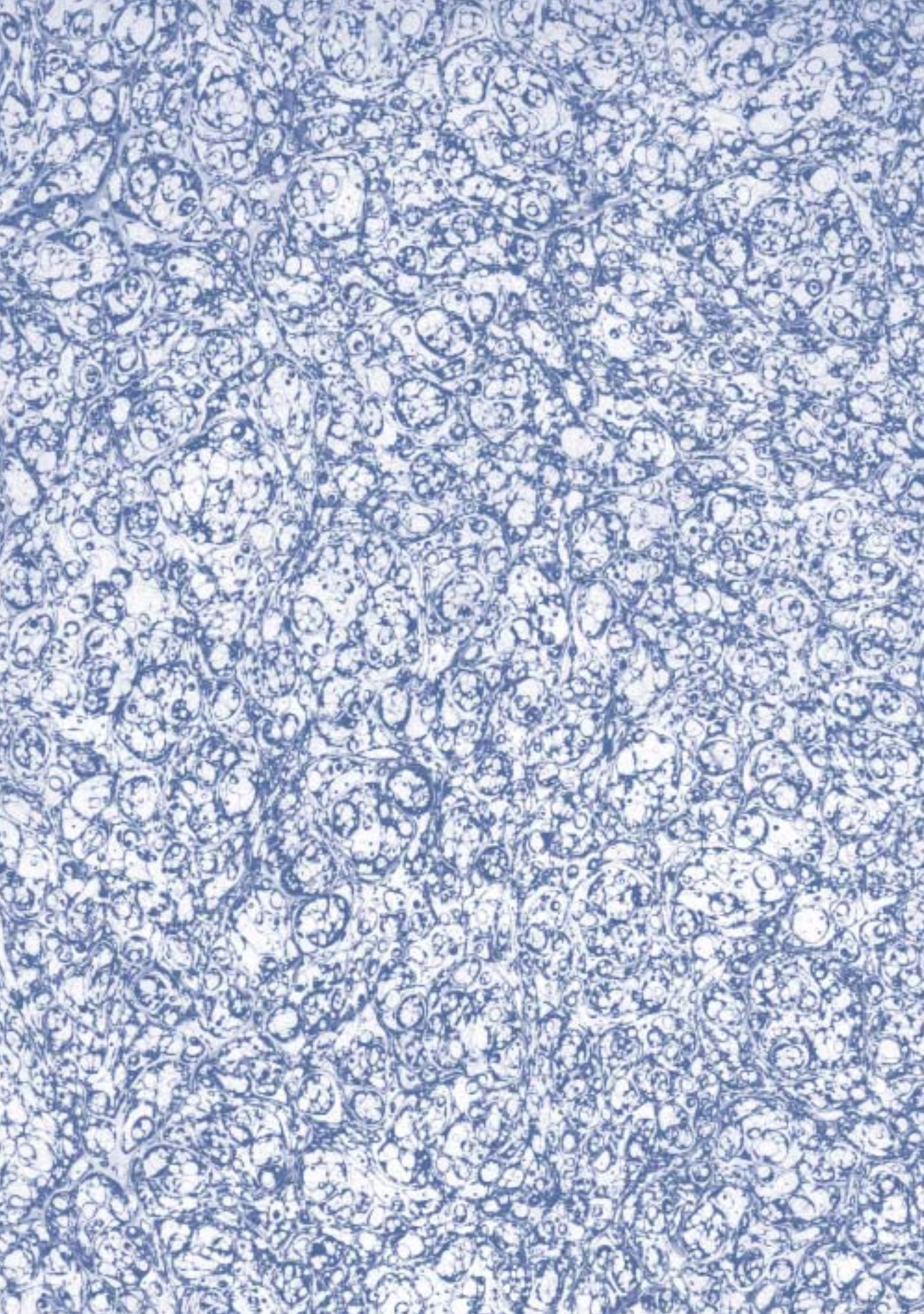
(ii) give a true and fair view, in accordance with applicable Accounting Standards and other mandatory professional reporting requirements in Australia and the Finance Minister's Orders, of the financial position of Fisheries Research and Development Corporation as at 30 June 2003, and its financial performance and cash flows for the year then ended.

Australian National Audit Office

David C. McKean
Executive Director

Delegate of the Auditor-General

Canberra
18 August 2003



FINANCIAL STATEMENTS

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

as at

30 JUNE 2003

STATEMENT BY DIRECTORS

In our opinion, the attached financial statements of the Fisheries Research and Development Corporation give a true and fair view of the matters required by Schedule 2 to the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* for the year ended 30 June 2003.

Denis Mark Byrne
Chairman

12 August 2003

Peter Dundas-Smith
Executive Director

12 August 2003

STATEMENT OF FINANCIAL PERFORMANCE

for the year ended 30 June 2003

	Notes	30 June 2003 $	30 June 2002 $
REVENUE			
Revenues from ordinary activities			
Revenues from Government	5A	**17,391,216**	15,836,642
Contributions	5B	**8,409,740**	6,763,675
Goods and services	5E	**68,760**	65,399
Revenue from sale of assets	6D	**599**	3,183
Interest	5C	**242,912**	200,814
Other	5D	**11,057**	0
Revenues from ordinary activities		**26,124,284**	22,869,713
EXPENSE			
Expenses from ordinary activities (excluding borrowing costs expenses)			
Employees expenses	6A	**1,252,026**	1,197,920
Suppliers expenses	6B	**623,247**	565,700
Depreciation and amortisation	6C	**119,640**	59,912
Written down value of assets sold	6D	**3,152**	12,424
Projects expenditure	7	**22,816,387**	20,454,487
Write-down of assets	6E	**13,964**	0
Operating expenses - other	8	**576,802**	801,961
Total expenses from ordinary activities (excluding borrowing costs expenses)		**25,405,218**	23,092,404
Borrowing costs expense	9	**0**	532
Operating surplus from ordinary activities		**719,066**	(223,223)
Net surplus	14	**719,066**	(223,223)
Net surplus attributable to the Commonwealth		**719,066**	(223,223)
Net credit/(debit) to asset revaluation reserve	14	**(13,127)**	3,477
Total revenues, expenses and valuation adjustments recognised directly in equity		**(13,127)**	3,477
Total changes in equity other than those resulting from transactions with owners as owners		**705,939**	(219,746)

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

STATEMENT OF FINANCIAL POSITION
as at 30 June 2003

	Notes	30 June 2003 $	30 June 2002 $
ASSETS			
Financial assets			
Cash	15B	**1,177,660**	157,283
Receivables	10A	**525,587**	1,066,938
Investments	10B	**626,094**	0
Total financial assets		**2,329,341**	1,224,221
Non-financial assets			
Infrastructure, plant and equipment	11A,C	**178,886**	208,960
Intangibles	11B,C	**677,896**	242,758
Non-financial assets - other	11D	**20,876**	6,026
Total non-financial assets		**877,658**	457,744
Total assets		**3,206,999**	1,681,965
LIABILITIES			
Provisions			
Employees	12A	**304,324**	239,671
Total provisions		**304,324**	239,671
Payables			
Suppliers	13A	**63,891**	54,709
Projects	13B	**0**	237,911
Other	13C	**1,984,570**	1,001,399
Total payables		**2,048,461**	1,294,019
Total liabilities		**2,352,785**	1,533,690
NET ASSETS		**854,214**	148,275
EQUITY			
Parent entity interest			
Reserves	14	**0**	13,127
Accumulated surpluses	14	**854,214**	135,148
Total parent entity interest		**854,214**	148,275
Total equity		**854,214**	148,275
Current assets		**2,350,217**	1,230,247
Non-current assets		**856,782**	451,718
Current liabilities		**2,199,628**	1,425,645
Non-current liabilities		**153,157**	108,045

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

STATEMENT OF CASHFLOWS

for the year ended 30 June 2003

	Notes	30 June 2003 $	30 June 2002 $
Operating Activities			
Cash received			
Appropriations		**28,370,964**	23,864,036
Goods and services		**68,760**	71,939
Interest		**242,912**	200,814
GST received from ATO		**1,324,295**	1,784,719
Other		**11,057**	0
Total cash received		**30,017,988**	25,921,508
Cash used			
Employees		**(1,187,373)**	(1,117,949)
Suppliers		**(628,916)**	(647,111)
Projects expenditure		**(25,424,079)**	(22,948,316)
Borrowing costs		**0**	(532)
Other		**(576,802)**	(870,594)
Total cash used		**(27,817,170)**	(25,584,502)
Net cash from operating activities	15A	**2,200,818**	337,006
Investing Activities			
Cash received			
Proceeds from sale of infrastructure, plant and equipment		**599**	3,182
Total cash received		**599**	3,182
Cash used			
Purchase of infrastructure, plant and equipment		**(78,703)**	(185,849)
Purchase of intangibles		**(476,243)**	(255,413)
Total cash used		**(554,946)**	(441,262)
Net cash (used by) investing activities		**(554,347)**	(438,079)
Net increase in cash held		**1,646,471**	(101,073)
Cash at the beginning of the reporting period		**157,283**	258,356
Cash at the end of the reporting period	15B	**1,803,754**	157,283

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

SCHEDULE OF COMMITMENTS
as at 30 June 2003

	Notes	30 June 2003 $	30 June 2002 $
By Type			
Other commitments			
Operating leases (1)		**170,485**	260,591
Other commitments (2)		**59,938,177**	55,046,184
Total other commitments		**60,108,662**	55,306,775
Commitments receivable		**(5,464,424)**	(5,027,889)
Net commitments		**54,644,238**	50,278,886
Operating lease commitments			
One year or less		**80,544**	86,228
From one to five years		**89,941**	174,363
Over five years		**0**	**0**

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

The lease for office accommodation expires 31 July 2005.

- lease for telephone system which expired 30 July 2002.

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 payables. The FRDC contracts to fund projects in future years in advance of receipt of the income needed to fund them. It manages this risk by having the project agreement allow for termination due to lack of funds.

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

SCHEDULE OF CONTINGENCIES
as at 30 June 2003

At 30 June 2003, 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 2003

Notes to and forming part of the financial statements for the year ended 30 June 2003

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 Orders (Financial Statements for reporting periods ending on or after 30 June 2003));
- Australian Accounting Standards and Accounting Interpretations issued by the Accounting Standards Board; and
- Consensus Views of the Urgent Issues Group.

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, however, 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 2001-02, except in respect of:

- measurement of certain employee benefits at nominal amounts (refer to Note 1.5);
- the initial revaluation of property, plant and equipment on a fair value basis (refer to Note 1.12).

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 Australian Government overall.

Notes to and forming part of the financial statements for the year ended 30 June 2003

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 upon delivery of the goods to customers.

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

Revenue from the 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.

Revenues from Government – output appropriations

The full amount of the appropriation for departmental outputs for the year is recognised as revenue.

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 Benefits

(a) Benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for wages and salaries (including non-monetary benefits), annual leave and sick leave are measured at their nominal amounts. Other employee benefits expected to be settled within 12 months of their reporting date are also measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability. This is a change in accounting policy from last year required by initial application of a new Accounting Standard AASB 1028 from 1 July 2002. As the FRDC's employment contract reviews pay rates on 1 July each year, as at 1 July 2003 pay rates have been used to determine leave liabilities.

All other employee benefit liabilities are measured as the present value of the estimated future cash outflows to be made in respect of services provided by employees up to the reporting date.

(b) Leave

The liability for employee benefits includes provision for annual leave and long service leave. The FRDC has a policy that it will act to ensure its financial assets are greater than its employee provisions. 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.

Leave liabilities are calculated on the basis of employees' remuneration, including the FRDC's employer superannuation contribution rates, to the extent that the leave is likely to be taken during service rather than paid out on termination.

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 1 July 2003. See Notes 12 Provisions, 16 Directors' remuneration and 18 Remuneration of officers.

In determining the present value of the liability, attrition rates and remuneration increases have been taken into account.

Notes to and forming part of the financial statements for the year ended 30 June 2003

(c) Separation and redundancy

Provision is made for separation and redundancy benefit 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 contribute to either the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or other elected schemes as appropriate. The liability for their superannuation benefits is recognised in the financial statements of the Commonwealth and is settled by the Commonwealth in due course.

No liability for superannuation benefits is recognised at 30 June 2003 as the employer contributions fully extinguish the accruing liability which is assumed by the Commonwealth.

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 effectively 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.

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.

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.

Notes to and forming part of the financial statements for the year ended 30 June 2003

1.10 – Financial instruments
Accounting policies for financial instruments are stated at Note 21.

1.11 – Acquisition of assets
Assets are recorded at the cost of 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, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor entity's accounts immediately prior to the restructuring.

1.12 – Infrastructure, plant and equipment

Asset recognition threshold

Purchases of infrastructure, plant and equipment, and off-the-shelf 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).

Revaluations

All infrastructure, plant and equipment were revalued as at 1 July 2002 and again as at 30 June 2003 by the Australian Valuation Office.

Infrastructure, plant and equipment are carried at valuation. Revaluations undertaken up to 30 June 2002 were done on a deprival basis; revaluations since that date are at fair value. This change in accounting policy is required by Australian Accounting Standard AASB 1041 Revaluation of Non-Current Assets.

Under both deprival and fair value, assets which are surplus to requirement are measured at their net realisable value. At 30 June 2003 FRDC held no surplus assets.

The financial effect for 2002-03 of this change in policy relates to those assets to be recognised at fair value at 30 June 2003. The financial effect of the change is given by the difference between the carrying amount at 30 June 2002 of these assets and their fair values as at 1 July 2002. The financial effect by class is as follows:

Asset class	Adjustment	Contra account
Infrastructure, plant and equipment	-27,090	Asset Revaluation Reserve

Of the amount shown above, only $13,127 was offset aginst the asset revaluation reserve. The remainder was taken to the Loss on Disposal of Assets Account.

The valuation undertaken 30 June 2003 at fair value revealed in no material difference from book and therefore no adjustment was recorded.

Accounting Standard AAS 6 Accounting Policies requires, where practicable, presentation of the information that would have been disclosed in the 2001-02 Statements had the new accounting policy always been applied. It is impracticable to present this information.

Recoverable amount test

From 1 July 2002, Schedule 1 no longer requires the application of the recoverable amount test in AAS 10 Recoverable Amount of Non-Current Assets to the assets of authorities when the primary purpose of the asset is not the generation of net cash inflows.
No property plant and equipment assets have been written to recoverable amount per AAS 10. Accordingly the change in policy has had no financial effect.

Frequency
In 2002-03 all infrastructure, plant and equipment were revalued. Assets in this class acquired after the commencement of a revaluation cycle are not captured by the progressive revaluation in progress.

Notes to and forming part of the financial statements for the year ended 30 June 2003

Conduct

All valuations are conducted by an independent qualified valuer.

Depreciation and amortisation

Depreciable infrastructure, 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 period, 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:

	2002–03	2001–02
Infrastructure, plant and equipment	**3–5 years**	3–5 years
Computer software developed in-house	**10 years**	10 years
Trademarks	**10 years**	–

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

1.13 – Taxation

The FRDC is exempt from all forms of taxation except fringe benefits tax (FBT) and the goods and services tax (GST).

Revenues, expenses and assets are recognised net of GST:

- except where the amount of GST incurred is not recoverable from the Australian Taxation Office; and
- except for receivables and payables.

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, called 'Comcover'. Workers compensation is insured through Comcare Australia.

1.16 – Intangibles

The FRDC's intangibles are made up of internally developed software for internal use and trademarks. The assets are carried at cost as required by the Finance Minister's Orders.

From 1 July 2002, Schedule 1 no longer requires the application of the recoverable amount test in Australian Accounting Standard AAS 10 Recoverable Amount of Non-Current Assets to the assets of authorities when the primary purpose of the asset is not the generation of net cash inflows.

However, Schedule 1 now requires such assets, if carried on the cost basis, to be assessed for indications of impairment. The carrying amount of impaired assets must be written down to the higher of its net market selling price or depreciated replacement cost.

All software assets were assessed for impairment as at 30 June 2003. None were found to be impaired.

Notes to and forming part of the financial statements for the year ended 30 June 2003

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 to:

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

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 way, 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 research and development.

	Output Group 1		Output Group 2		Output Group 3		Total	
	2002-03	2001-02	2002-03	2001-02	2000-03	2001-02	2002-03	2001-02
	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenues								
Revenues from Government	**10,435**	9,502	**6,087**	5,543	**870**	792	**17,392**	15,837
Contributions	**5,046**	4,058	**2,943**	2,367	**421**	339	**8,410**	6,764
Sale of goods and services	**41**	39	**24**	23	**3**	3	**68**	65
Other non taxation revenues	**153**	120	**89**	70	**13**	11	**255**	201
Total Operating Revenues	**15,675**	13,719	**9,143**	8,003	**1,307**	1,145	**26,125**	22,867
Operating expenses								
Employees	**752**	719	**438**	419	**62**	59	**1,252**	1,197
Suppliers	**374**	339	**218**	198	**31**	28	**623**	565
Depreciation and amortisation	**72**	36	**42**	21	**6**	3	**120**	60
Projects expenditure	**13,690**	12,273	**7,986**	7,159	**1,141**	1,023	**22,817**	20,455
Other	**356**	488	**208**	285	**30**	40	**594**	813
Total operating expenses	**15,244**	13,855	**8,892**	8,082	**1,270**	1,153	**25,406**	23,090
Total assets deployed as at 30 June 2003	**1,924**	1,009	**1,122**	589	**160**	84	**3,206**	1,682
Total net assets deployed as at 30 June 2003	**513**	89	**299**	52	**43**	7	**855**	148

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 3: Economic dependency

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

The FRDC is dependent on appropriations from the Parliament of 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 2003 $	30 June 2002 $
Revenues from Government		
- 0.5% of AGVP *	**12,170,000**	11,435,000
- matching of industry contributions	**5,221,216**	4,401,642
Total revenues from government	**17,391,216**	15,836,642

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

The Australian Government's contribution of 0.5 % of AGVP is made on the grounds that it 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 % of AGVP) by the Australian 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 Australian Government should contribute.†

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

5B – Contributions revenue

	30 June 2003 $	30 June 2002 $
Fisheries managed by:		
Australian Government	**1,148,766**	1,076,847
New South Wales	**274,875**	275,260
Northern Territory	**80,720**	80,000
Queensland	**747,193**	569,107
South Australia	**834,186**	766,603
Tasmania	**511,000**	677,500
Victoria	**240,289**	217,711
Western Australia	**1,281,108**	866,977
Sub-total	**5,118,137**	4,530,005
Projects		
Project funds received from other parties	**3,165,617**	2,215,270
Project refunds of prior years' expenditure	**125,986**	18,400
Sub-total	**3,291,603**	2,233,670
Total contributions revenue	**8,409,740**	6,763,675

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.

Notes to and forming part of the financial statements for the year ended 30 June 2003

5C – Interest revenue

	30 June 2003 $	30 June 2002 $
Deposits	242,912	200,814
Total interest revenue	**242,912**	200,814

5D – Other revenue

	30 June 2003 $	30 June 2002 $
Other – miscellaneous	11,057	0
Total other revenue	**11,057**	0

5E – Sales of goods and services

	30 June 2003 $	30 June 2002 $
Sale of goods to external entities	68,760	65,399
Total sales of goods and services	**68,760**	65,399

Note 6: Operating expenses

6A – Employee expenses

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

	30 June 2003 $	30 June 2002 $
Remuneration (for services provided)		
Wages and salaries (includes leave and other entitlements and separation and redundancy)	1,080,912	977,270
Superannuation	169,252	164,727
Other employee	0	54,012
Total employee benefits expenses	**1,250,164**	1,196,009
Workers compensation	1,862	1,911
Total employee expenses	**1,252,026**	1,197,920

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. Contribution rates from 1 July 2002 to 30 June 2003 were 18.9% of salary for CSS members and 11.2% of salary for PSS members.

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

Notes to and forming part of the financial statements for the year ended 30 June 2003

6B – Supplier expenses

	30 June 2003 $	30 June 2002 $
Board		
Travel	**99,222**	76,759
Other	**35,976**	14,285
Secretariat		
Audit fees	**9,000**	9,000
External service providers	**204,772**	169,288
Insurance	**23,875**	21,911
Office supplies	**25,934**	38,693
Property	**87,646**	98,399
Telecommunications	**27,489**	36,020
Training	**18,943**	15,030
Travel	**17,849**	25,836
Other	**72,541**	60,479
Total suppliers expenses	**623,247**	565,700

6C – Depreciation and amortisation

	30 June 2003 $	30 June 2002 $
Amortisation of intangibles	**41,105**	12,655
Depreciation of infrastructure, plant and equipment	**78,535**	47,257
Total depreciation and amortisation	**119,640**	59,912

6D – Net gains/(loss) from sale of assets

	30 June 2003 $	30 June 2002 $
Infrastructure, plant and equipment		
Proceeds from sale	**599**	3,183
Net book value at sale	**(3,152)**	(12,424)
Net gain/(loss) on disposal of infrastructure, plant and equipment	**(2,553)**	(9,241)

6E – Write-down of assets

	30 June 2003 $	30 June 2002 $
Infrastructure, plant and equipment – revaluation decrement	**13,964**	0
Total write-down of assets	**13,964**	0

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 7: Project expenditure

	30 June 2003 $	30 June 2002 $
Projects (1)		
Natural Resources Sustainability	**12,729,103**	11,881,540
Industry Development	**8,487,255**	7,187,583
Human Capital Development	**787,303**	963,645
Aquatic animal health activities funded by the Australian Government initiative 'Building a national approach to animal and plant health'	**812,726**	421,719
Total project expenditure	**22,816,387**	20,454,487

(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.*

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 8: Operating expenses – other

	30 June 2003 $	30 June 2002 $
Communications		
Annual Report	**57,897**	56,607
ANRO	**9,663**	25,410
Fisheries Research Advisory Bodies	**169,491**	192,703
FRDC initiated project extension	**62,451**	223,479
Other	**91,113**	117,631
R&D News	**164,932**	157,089
R&D Plan	**480**	3,500
Representative organisations consultation[1]	**4,155**	13,582
Website	**16,619**	11,960
Total other expenditure	**576,801**	801,961

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

Note 9: Borrowing costs expense

	30 June 2003 $	30 June 2002 $
Interest on overdraft facilities	**0**	532
Total interest expense	**0**	532

Note 10: Financial assets

10A – Receivables

	30 June 2003 $	30 June 2002 $
GST receivable	**380,279**	145,875
Other receivables	**145,308**	921,063
Total receivables	**525,587**	1,066,938

All receivables are current assets.

Receivables are aged as follows:		
Not overdue	**525,587**	921,063
Overdue by:		
Less than 30 days	**0**	0
30 to 60 days	**0**	0
60 to 90 days	**0**	0
More than 90 days	**0**	0
	0	0
Total receivables	**525,587**	921,063

10B – Investments

	30 June 2003 $	30 June 2002 $
Funds on deposit	**626,094**	0
Total investments	**626,094**	0

All investments are current assets

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 11: Non-financial assets

11A – Infrastructure, plant and equipment

	30 June 2003 $	30 June 2002 $
Infrastructure, plant and equipment – at 30 June 2002 valuation	**0**	292,095
Accumulated depreciation	**0**	(83,135)
	0	208,960
Infrastructure, plant and equipment – at 30 June 2003 valuation	**312,540**	
Accumulated depreciation	**(133,654)**	
	178,886	0
Total infrastructure, plant and equipment	**178,886**	208,960

All revaluations are independent and are conducted in accordance with the revaluation policy stated in Note 1. In 2002–03 the revaluations were conducted by the Australian Valuations Office.

11B – Intangibles

	30 June 2003 $	30 June 2002 $
Trademarks	**13,360**	0
Accumulated amortisation	**(800)**	0
	12,560	0
Computer software (internally developed in use)	**718,296**	255,413
Accumulated amortisation	**(52,960)**	(12,655)
	665,336	242,758
Total intangibles	**677,896**	242,758

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 11C – Analysis of infrastructure, plant and equipment and intangibles.

		Infrastructure, plant and equipment $	Intangibles $	Total $
Gross value at 1 July 2002		292,095	255,413	**547,508**
Additions - purchase of assets		78,703	476,243	**554,946**
Write off			0	**0**
Net revaluation increment/decrement		(52,458)	0	**(52,458)**
Disposals		(5,800)	0	**(5,800)**
Gross value at 30 June 2003		312,540	731,656	**1,044,196**
Accumulated depreciation at	**30 June 2002**	83,135	12,655	**95,790**
Adjustment for disposals		(2,648)	0	**(2,648)**
Depreciation/Amortisation expense		78,535	41,105	**119,640**
Adjustment for write–offs		0	0	**0**
Net revaluation increment/decrement		(25,368)	0	**(25,368)**
Accumulated depreciation at	**30 June 2003**	133,654	53,760	**187,414**
Net book value at	**30 June 2003**	178,886	677,896	**856,782**
Net book value at	**30 June 2002**	208,960	242,758	**451,718**

In accordance with the FRDC's accounting policy (refer Note 1.12), items under the infrastructure, plant and equipment heading were revalued at their fair value, effective 30 June 2003, by the Australian Valuations Office.

11D – Other

	30 June 2003 $	30 June 2002 $
Prepayments	**20,876**	6,026
Total other non-financial assets	**20,876**	6,026

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 12: Provisions

12A – Employee

	30 June 2003 $	30 June 2002 $
Salaries and wages	0	1,387
Annual leave	120,573	106,553
Long service leave	183,751	131,731
Aggregate employee entitlement liability	304,324	239,671
Current	151,167	131,626
Non-current	153,157	108,045
	304,324	239,671

Note 13: Payables

13A – Suppliers

	30 June 2003 $	30 June 2002 $
Trade creditors	63,113	27,822
FBT Payable	778	2,795
PAYG payable	0	24,092
Total supplier payables	63,891	54,709

All supplier payables are current liabilities.

13B – Projects

	30 June 2003 $	30 June 2002 $
Project creditors	0	237,911
Total project creditors	0	237,911

All project payables are current liabilities.

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 60 days.

13C – Other

	30 June 2003 $	30 June 2002 $
Unearned revenue:		
Aquatic Animal Health	866,570	1,001,399
South Australian Government	1,118,000	0
Total unearned revenue	1,984,570	1,001,399

All unearned revenue is recognised as a current liability.

Moneys paid by:
- AFFA (against the Aquatic Animal Health contract), and
- the South Australian Government (against the Initiative to develop outputs relating to the ecological sustainable development of aquaculture)

are initially shown as revenue received in advance in the Statement of Financial Position. Since project payments are made for milestone achieved, unearned revenue is recognised as project income received from other parties.

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 14: Analysis of equity

Item	Accumulated Surpluses		Asset Revaluation Reserve		Total Equity	
	2002–03	2001–02	**2002–03**	2001–02	**2002–03**	2001–02
	$	**$**	$	$	$	$
Opening balance at 1 July	**135,148**	358,371	**13,127**	9,650	**148,275**	368,021
Net surplus/deficit	**719,066**	(223,223)	**0**	0	**719,066**	(223,223)
Net revaluation increment/(decrement)	**0**	0	**(13,127)**	3,477	**(13,127)**	3,477
Closing balance at 30 June	**854,214**	135,148	**0**	13,127	**854,214**	148,275
Less: outside equity interests	**0**	0	**0**	0	**0**	0
Total equity attributable to the Australian Government	**854,214**	135,148	**0**	13,127	**854,214**	148,275

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 15: Cash flow reconciliation

15A – Reconciliation of operating surplus (deficit) to net cash provided by operating activities

	30 June 2003 $	30 June 2002 $
Operating surplus/(deficit)	**719,066**	(223,223)
Non-Cash Items		
Depreciation and amortisation	**119,640**	59,912
Assets Revalued	**0**	0
Write down of assets	**13,964**	0
Revaluation of Assets	**0**	0
(Gain)/loss on disposal of assets	**2,553**	9,241
Changes in net assets and liabilities		
(Increase)/decrease in receivables and other financial assets	**526,500**	(399,528)
Increase/(decrease) in payables - supplier	**9,182**	(37,677)
Increase/(decrease) in other financial liabilities	**983,171**	1,001,399
Increase/(decrease) in employees provisions	**64,653**	78,060
Increase/(decrease) in payables - projects	**(237,911)**	(151,178)
Net cash from operating activities	**2,200,818**	337,006

15B – Reconciliation of cash

	30 June 2003 $	30 June 2002 $
Cash balance comprises:		
Cash at bank	**1,177,360**	156,983
Cash on hand	**300**	300
Total cash on hand and at bank	**1,177,660**	157,283
Investments	**626,094**	0
Total cash	**1,803,754**	157,283
Balance of cash as at 30 June 2003 shown in the Statement of Cash Flows	**1,803,754**	157,283

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 16: Directors` remuneration

	30 June 2003 $	30 June 2002 $
Total remuneration received, or due and receivable, by directors of FRDC	**390,828**	362,350

The basis for directors' remuneration is detailed at Note 1.5(a).

The Government Directors, successively Dr Staples and Mr Hurry, received no remuneration.

There were no superannuation payments in connection with the retirement of directors.

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	2002 - 03 Number	2001 - 02 Number
Directors		
0 - 9,999	**2**	1
10,000 - 19,999	**0**	2
20,000-29,999	**6**	6
30,000 - 39,999	**1**	0
190,000 - 199,999	**0**	1
220,000-229,999	**1**	0
Total number of directors of FRDC	**10**	10

Note 17: Related party disclosures

The Directors of the FRDC during the year were:

Mr S. Bennison	Director
Mr D. Byrne	Chairman
Mr I. Cartwright	Director
Dr D. Day	Director
Mr P. Dundas-Smith	Executive Director
Mr G. Hurry	Government Director from 13 Sep 2002
Mr D. Newton	Director
Mr W. Sawynok	Director
Dr D. Staples	Government Director to 12 Sep 2002
Mr A.Wood-Meredith	Deputy Chairman

The aggregate amount of remuneration of directors is disclosed in Note 16.

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 17: Related party disclosures (cont'd)
Transactions with director related parties

Director	Organisation & Position held	Nature of Interest	Income $	Expenditure $
Mr D.Byrne	Horticulture Australia Limited *Director*	Research projects or work undertaken by the organisation	1,699	631
Mr I.Cartwright	Australian Fisheries Management Authority *Chairman AFMA Scallop MAC*	Research projects or work undertaken by the organisation	389,554	22,105
Dr D.Day	Australian Maritime College Council *Member*	Research projects or work undertaken by the organisation	0	79,754
	University of Sydney Associate Professor (Academic Development) Commenced 22 April 2003	Research projects or work undertaken by the organisation	0	77,660
	Women's Industry Network Seafood Community *Member*	Research projects or work undertaken by the organisation	109	637
Mr P. Dundas-Smith	University of Sydney - Advisory Committee of the Centre for Ecological Impacts of Coastal Cities *Member* Ceased 30 Jan 2003	Research projects or work undertaken by the organisation	9,574	0
	CRC for Sustainable Aquaculture of Finfish *Director*	Research projects or work undertaken by the organisation	1,746,524	257,471
	Seafood Services Australia *Director*	Research projects or work undertaken by the organisation	8,172	1,080,299

Director	Organisation & Position held	Nature of Interest	Income $	Expenditure $
Mr G.Hurry	Agriculture Fisheries and Forestry - Australia *General Manager Fisheries and Aquaculture* Commenced 13 Sept 2003	Research projects or work undertaken by the organisation	12,286,394	3,837,689
	Bureau of Rural Sciences *General Manager Fisheries and Aquaculture* Commenced 13 Sept 2002	Research projects or work undertaken by the organisation	0	358,800
Mr W.Sawynok	CRC Reef Research Centre *Director*	Research projects undertaken by the institute, universities, society and CRCs	0	137,107
	InfoFish *Fisheries consultant*	Research projects or work undertaken by the organisation	0	469,292
Dr D.Staples	Bureau of Rural Sciences *Deputy Executive Director* Ceased 13 Sept 2002	Research projects or work undertaken by the organisation		18,543
	Agriculture Fisheries and Forestry - Australia Bureau of Rural Sciences *Deputy Executive Director* Ceased 13 Sept 2002	Research projects or work undertaken by the organisation	2,002,120	808,454

All transactions were conducted under normal terms and conditions.

Notes to and forming part of the financial statements for the year ended 30 June 2003

Note 18: Remuneration of officers

The officer remuneration includes all officers with the exception of the Executive Director, who:

- are concerned with, or have taken part in, the management of the economic entity during 2002–03; and
- as at 30 June 2003 are due to receive total remuneration of $100,000 or more.

The officers meeting these criteria were the Business Development Manager, the Communications Manager and the Programs Manager. Details in relation to the Executive Director are incorporated in Note 16.

	30 June 2003 $	30 June 2002 $
The aggregate amount of total remuneration of officers shown below is:	**446,793**	346,439

The basis for officers' remuneration is detailed at Note 1.5(a).

The number of officers of the FRDC who received or were due to receive remuneration of $100,000 or more:

Annual remuneration bands	**2002– 03 Number**	**2001– 02 Number**
Officers		
100,000 - 109,999	**1**	0
160,000 - 169,999	**0**	1
170,000 - 179,999	**2**	1
Total	**3**	2

Note 19: Remuneration of auditors

	30 June 2003 $	30 June 2002 $
Amounts received or due and receivable by the Australian National Audit Office as auditors of FRDC.	**9,000**	9,000

Deloitte Touche Tohmatsu have been contracted by the Australian National Audit Office to provide audit services on the ANAO's behalf. Fees for these services are included above. No other services were provided by the Auditor-General or Deloitte Touche Tohmatsu during the reporting period.

Note 20: Average staffing levels

	2002–03	2001–02
Average staffing levels during the year	10	10

Notes to and forming part of the financial statements for the year ended 30 June 2003

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	15B,10B	Deposits are recognised at their nominal amounts. Interest is credited to revenue 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	10A	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 60 days after receipt of an invoice.

Notes to and forming part of the financial statements for the year ended 30 June 2003

21B – Interest rate risk

Financial instrument	Note	Floating interest rate		Fixed interest rate				Non-interest bearing		Total		Weighted average effective interest rate	
				2002-03									
		2002-03	2001-02	1 year or less	1 to 5 years	> 5 years		2002-03	2001-02	2002-03	2001-02	2002-03	2001-02
Financial assets													
Cash at bank	15B	1,177,360	156,983							1,177,360	156,983	1.50%	1.50%
Cash on hand	15B							300	300	300	300	n/a	n/a
Other receivables	10A							145,308	921,063	145,308	921,063	n/a	n/a
Investments	10B	626,094	0							626,094	0	4.50%	n/a
Total		1,803,454	156,983					145,608	921,363	1,949,062	1,078,346		
Total assets										3,206,999	1,681,965		
Financial liabilities													
Trade creditors	13A							63,113	27,822	63,113	27,822	n/a	n/a
Project creditors	13B							0	237,911	0	237,911	n/a	n/a
Unearned revenue	13C							1,984,570	1,001,399	1,984,570	1,001,399	n/a	n/a
Total		0	0					2,047,683	1,267,132	2,047,683	1,267,132		
Total liabilities										2,352,785	1,533,690		

Notes to and forming part of the financial statements

for the year ended 30 June 2003

21C – Net fair values of financial assets

	Notes	2002 - 03 Total carrying amount	2002 - 03 Aggregate net fair value	2001-02 Total carrying amount	2001-02 Aggregate net fair value
Financial assets					
Cash at bank	15B	**1,177,360**	**1,177,360**	156,983	156,983
Cash on hand	15B	**300**	**300**	300	300
Receivables for goods and services	10A	**145,308**	**145,308**	921,063	921,063
Deposits at call	10B	**626,094**	**626,094**	0	0
		1,949,062	**1,949,062**	1,078,346	1,078,346
Financial liabilities					
Trade creditors	13A	**63,113**	**63,113**	27,822	27,822
Project creditors	13B	**0**	**0**	237,911	237,911
Other creditors	13C	**1,984,570**	**1,984,570**	1,001,399	1,001,399
		2,047,683	**2,047,683**	1,267,132	1,267,132

Financial Assets

The net fair values of cash, deposits at call and non-interest-bearing monetary financial assets approximate their carrying amounts

Financial Liabilities

The net fair values for trade, project and other creditors, all of which are short term in nature, are approximated by their carrying amounts.

Notes to and forming part of the financial statements for the year ended 30 June 2003

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

The FRDC is one of two members of Seafood Services Australia Limited (SSA), a company limited by guarantee. Although the FRDC has significant influence over SSA, the 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 that is not carried on for the profit or gain of its individual members.

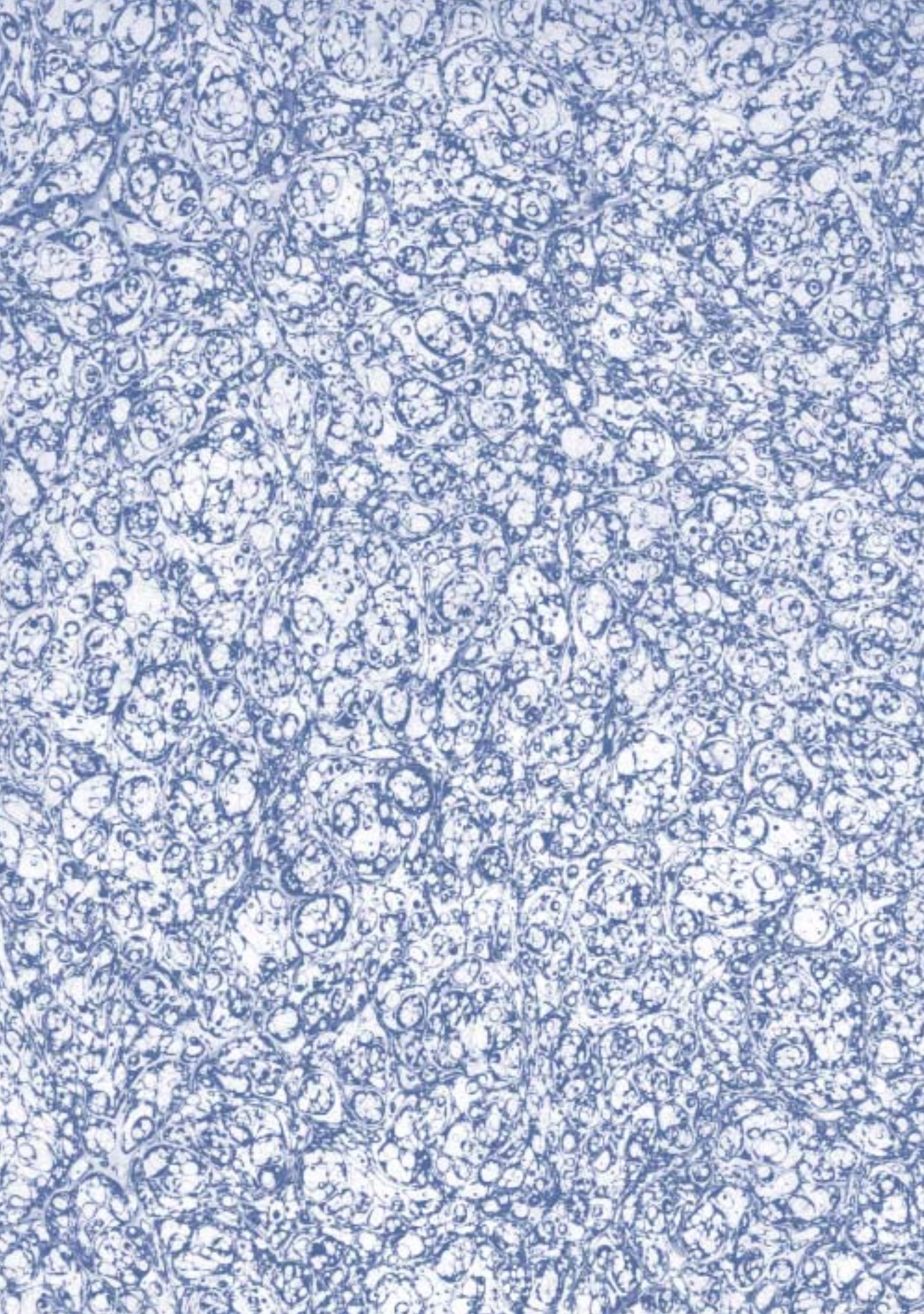
During the year, the FRDC paid a total of $935,497 to SSA by way of grant funding. As at 30 June 2003 SSA had total assets of $540,487; total liabilities of $495,963; and for the year then ended made a surplus from ordinary activities of $28,517.

APPENDICES

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

FROM A TO G

2002–03



APPENDIX A

FRDC ANNUAL REPORT 2002–03

REPORT OF THE COMMITTEE TO SELECT FRDC DIRECTORS

BOARD SELECTION COMMITTEE — FRDC

1 September 2003

Senator the Hon. Ian Macdonald
Minister for Fisheries, Forestry and Conservation
Parliament House
CANBERRA ACT 2600

Dear Minister,

Report of the Selection Committee — FRDC

This Report summarises the activities of the Selection Committee to nominate persons for appointment as Directors of the Fisheries Research and Development Corporation, pursuant to section 141(1) of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act).

Background
The term of appointment for nominated Directors of the Fisheries Research and Development Corporation expires on 31 August 2003. My appointment as Presiding Member continues to 31 December 2003 as a result of your approval, on 31 January 2003, of a further period of appointment (PIERD Act s.122). I subsequently responded to your request (under PIERD Act s.123) to establish a Selection Committee and to seek nominations for membership of this Committee from the FRDC's representative organisations - the Australian Seafood Industry Council and Recfish Australia.

Selection Committee Membership
Further to your approval of Committee members on 1 May 2003 (under PIERD Act s.124), the Selection Committee duly appointed were as follows:

- Ms Jenny Varcoe-Cocks - Board Consultant, Director
- Mr John Cole - former Chair, WA Fishing Industry Council, current rock lobster fisher from WA
- Mr Neville Perryman - Director, Australian Seafood Industry Council, Owner, operator fishing vessel *Minnamurra II*
- Ms Sandra Phythian - Director Tasmanian Fishing Industry Council, General Manager, Netcraft Pty Ltd
- Mr John Roach - Chair, Seafood Training Australia and President of the Master Fish Merchants' Association of Australia

Ms Jenny Varcoe-Cocks
Presiding Member
FRDC Board Selection Committee
PO BOX 170, FLINDERS VIC 3929
Phone: 03 5989 0294
Fax: 03 5989 0611
Email: smivc@ozemail.com.au

For inquiries contact FRDC Board Secretary, John Wilson *Phone: 02 6285 0411*

- Mr Bruce Schumacher – Chairman, NSW Advisory Council on Recreational Fishing
- Mr Richard Sellers – Director of Fisheries, Northern Territory

Mr Bruce Schumacher was nominated by Recfish Australia and the remaining Committee members were nominated by the Australian Seafood Industry Council.

Selection Process
The Selection Committee members together agreed on the core criteria required of Board members, which included (as prescribed in the PIERD Act) demonstrated experience in one or more of the following fields:

- Conservation and management of natural resources
- Fisheries and aquaculture technology and production
- Seafood processing and marketing
- Natural resources science
- Economics
- Sociology
- Technology transfer and commercialisation

The Selection Committee also agreed that candidates should demonstrate a capability to bring sound strategic judgement, wide-ranging experience and an understanding of the role of a Director. The Presiding Member also conferred with the FRDC Chair for his views on the future strategic direction of the FRDC and relevant comments required pertaining to the skill requirement of the future Board. Discussions were also held with key stakeholders relevant to the FRDC and fishing industries.

A combination of national advertising and a search process was utilised to ensure a wide range of competent and relevantly qualified applicants were attracted to the positions.

Advertisements were placed in the national newspapers – *The Australian* on 29 March 2003, and *The Financial Review* on 4 April 2003. The existing FRDC Directors were invited to apply. The advertisements attracted strong interest and some 89 applications were received. Of these candidates, 17 were women.

Professional databanks were also confidentially accessed and details pertaining to prospective candidates forwarded to the Presiding Member. Each Committee member individually evaluated each candidate against the key selection criteria.

The Committee as a whole then conferred and agreed 17 preferred candidates for interview, two of whom were women. The candidates were deemed to bring as a whole a relevant balance of skills and expertise. Following the interviews the Committee made its final decisions taking into account the balance of expertise, the need for diversity and importantly the professional, scientific and strategic business acumen was evident.

The Presiding Member undertook appropriate reference checking of the potential candidates and prepared full reports for recommendation.

The nominations were forwarded to your office on 15 July 2003. You formally appointed these candidates on 28 August 2003, as follows:

- **Mr Simon Bennison**, Executive Director, Aquaculture Council of Western Australia
- **Mr Ian Cartwright**, Director, Thalassa Consulting Pty Ltd
- **Mr John Harrison,** Executive Director of the Amateur Fishermen's Association of the Northern Territory.
- **Professor Tor Hundloe AM,** Professor of Environmental Management and Director of the Technology Management Centre, The University of Queensland
- **Dr Nick Rayns**, Director of Aquaculture, NSW Fisheries
- **Mr Stuart Richey**, Director and CEO, Richey Fishing Company Pty Ltd

The Directors have been appointed for a term from 1 September 2003 to 31 August 2006.

When I have received confirmation from you, I will formally abolish the Selection Committee pursuant to s.129 of the PIERD Act.

Expenses incurred were as follows:

Item	$
Selection Committee's travel and expenses	7,467.56
Applicants' travel and expenses	16,299.56
Advertising	4,715.41
Presiding Member's fees and expenses, Dec 02 – Aug 03	14,986.27
Secretarial costs (supporting the Selection Committee)	3,366.00
Administration	804.43
TOTAL (INCLUDING GST)	**47,639.23**

Jenny Varcoe-Cocks
Presiding Member

3

APPENDIX B

FRDC ANNUAL REPORT 2002–03

THE FRDC'S PRINCIPAL REVENUE BASE

As stipulated in the PIERD Act, and as shown in **figure 6** overleaf, the FRDC's primary revenue source is based on:

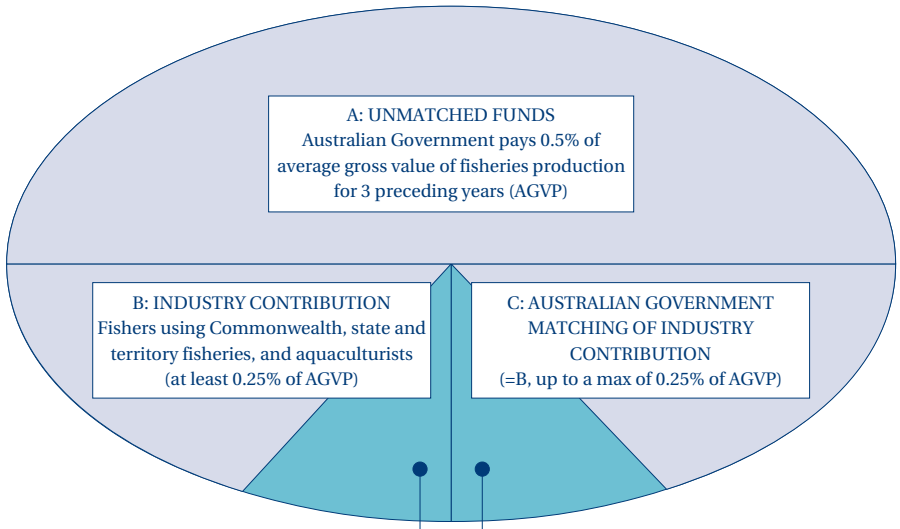
- the Australian Government providing unmatched funds equivalent to 0.5 per cent of the average gross value of Australian fisheries production for the three preceding years (AGVP);
- state, territory and Commonwealth fishers and aquaculturists providing contributions of at least 0.25 per cent of AGVP;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

Industry contributions for the past financial year and trends for the past five years are shown on page 95.

Details of all FRDC revenue (including investments, royalties, and sales of products, information and services) are in the financial statements on page 135.

FIGURE 6: PROPORTIONS OF THE FRDC'S REVENUE



IN 2002–03, THE INDUSTRY CONTRIBUTION ROSE FROM 77% TO 84% OF THE AMOUNT THAT IS MATCHED BY THE AUSTRALIAN GOVERNMENT

Rationale for the FRDC's revenue base

The high component of public good in the operating environment of wild-catch fishing, described on page 34, has significance for the FRDC's revenue base. The Australian Government's contribution of 0.5 per cent of AGVP is made on the grounds that the Australian Government exercises a stewardship role in relation to fisheries resources on behalf of the Australian community.

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 Australian 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 Australian Government should contribute.

APPENDIX C

FRDC ANNUAL REPORT 2002–03

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:[21]

21 The sub-paragraphs are an edited version of clauses 8 to 18 of the CAC Orders 2002.

- a review of how the FRDC has performed during the financial year in relation to its statutory objects and functions, its R&D plan and its principal outputs and contribution to outcomes;
- factors influencing its performance over the financial year and in the future;

- significant events;
- operational and financial results, including principal outputs, major investing and financing activities, and key financial and non-financial performance indicators;
- significant changes in the FRDC's state of affairs or principal activities;
- developments since the end of the financial year; and
- matters required to be included by the PIERD Act and any other legislation.

PIERD ACT REQUIREMENTS

The PIERD Act also specifies matters that must be reported. In particular, section 28 states:

(1) The directors must include in each report on an R&D Corporation prepared under section 9 of the *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 D.

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 on page 178, 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 visions 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 Australian Government is seeking*. Reporting of the three R&D programs (pages 39–100) 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 entering project agreements with research providers: it does not undertake research itself. Management of fisheries R&D involves reporting against economic, environmental and/or social outcomes — at a strategic level 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. The FRDC also has an entire R&D subprogram dedicated to developing an ESD reporting and assessment framework so that the industry can meet its obligations under the Act.

– *FRDC internal operations*. Mechanisms for reviewing and improving performance are incorporated in the Corporation's ISO-certified quality management system, which provides a structure for continual improvement that permeates all management processes. The FRDC manages the process through Program 4 — the Management and Accountability Program.

A compliance index (on page 223) shows the page numbers in this report on which information nominated by legislation and Australian Government policies is reported.

APPENDIX D

FRDC ANNUAL REPORT 2002–03

THE FRDC'S LEGISLATIVE FOUNDATION AND THE EXERCISE OF MINISTERIAL POWERS

ENABLING LEGISLATION

The FRDC's enabling legislation is the *Primary Industries and Energy Research and Development Act 1989* (Commonwealth of Australia) (the PIERD Act).

The FRDC Board is responsible to the Minister for Agriculture, Fisheries and Forestry; to the Parliamentary Secretary to the Minister; and to the Minister for Fisheries, Forestry and Conservation — and, through them, to the Parliament of Australia.

The objects, functions and statutory powers of R&D corporations are specified in the PIERD Act, the text of which is available via the FRDC website.

In the interests of clarity, the following statements of the FRDC's objects, functions and statutory powers mirror the wording of the PIERD Act but are specific to the FRDC and its business environment. Similarly, the statements of the FRDC's functions and statutory powers have been made shorter and simpler than the wording of the Act.

OBJECTS

The objects of the FRDC, deriving from section 3 of the PIERD Act, are to make provision for the funding and administration of fisheries 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 Fisheries, Forestry and Conservation; 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.

MINISTERIAL POWERS

Ministerial powers under the enabling legislation may be exercised by the Minister for Agriculture, Fisheries and Forestry; the Parliamentary Secretary to the Minister; and the Minister for Fisheries, Forestry and Conservation. They 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 Australian Government to the FRDC;
- establishing written guidelines covering the payment by the FRDC to an eligible industry body, or member of an eligible industry body, for expenses reasonably incurred in connection with consultation with the FRDC;

- causing, at least once in each financial year, a coordination meeting to be held of all R&D Corporations;
- granting leave of absence to the Chairperson; and
- terminating the appointment of the Chairperson or a director other than the Executive Director.

Additional powers under the *Commonwealth Authorities and Companies Act 1997* relating to corporate governance and reporting are available to the Minister for Agriculture, Fisheries and Forestry; the Parliamentary Secretary to the Minister; the Minister for Fisheries, Forestry and Conservation; and the Finance Minister.

Exercise of ministerial powers during 2002–03 is described on page 123.

APPENDIX E

FRDC ANNUAL REPORT 2002–03

UPDATED AUSTRALIAN GOVERNMENT PRIORITIES FOR RURAL R&D

These priorities, which supersede those issued in 1999, were notified to the FRDC by the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry on 12 March 2003.

The Government, through the Agriculture, Fisheries and Forestry portfolio, has programs to promote and develop competitive, profitable and sustainable Australian agriculture, food, fisheries and forest industries which promote economic development and job creation, particularly in rural and regional Australia. The Government's priorities for rural research and development (R&D) are designed to assist it in meeting those outcomes.

The Government, and industry, expect that the rural R&D Corporations and Companies (RDCs) will pursue excellence in the planning, management and delivery of the outputs of their R&D investments. This should be demonstrated through systematic evaluations that show the corporations are operating at a standard that is comparable, or preferably better, than other comparable R&D delivery systems.

The RDCs are also expected to be forward looking, with a vision for their industries and other key stakeholders that will allow them to respond to future demands and challenges and take advantage of the opportunities that will invariably arise. In this regard it is important that the RDCs have a balanced R&D portfolio with an appropriate mix of longer-term strategic research programs and shorter-term demand-driven research.

In a similar vein there is also a clear need for the RDCs to be flexible and open to new ideas and technologies that could be applied in portfolio industries and/or to the benefit of the Australian community.

For the more specific issues impacting on the agriculture, fisheries, forest and food industries, the Government considers that successful R&D in the following areas can deliver substantial benefits to both industry and the broader community. These priorities are consistent with and reflect the Government's National Research Priorities that were outlined by the Prime Minister on 5 December 2002.

SUSTAINABLE NATURAL RESOURCE MANAGEMENT

It has long been recognised that the sound use and management of natural resources is fundamental to realising the long-term economic, social and environmental goals of the nation. As its most significant land managers, Australia's agricultural, pastoral, forestry and fisheries industries have a fundamental influence on how well our natural resources are managed and, as such, have a significant responsibility for its sound stewardship.

Of particular interest is the opportunity to better link investment in research and development with the Commonwealth's major Natural Resource Management (NRM) investments in the National Action Plan on Salinity and Water Quality and the Natural Heritage Trust.

The goal of the National Action Plan is to motivate and enable regional communities to use coordinated and targeted action to:

- prevent, stabilise and reverse trends in dryland salinity affecting the sustainability of production, the conservation of biological diversity and the viability of our infrastructure; and
- improve water quality and secure reliable allocations for human uses, industry and the environment.

The goal of the Natural Heritage Trust is to conserve, repair and replenish Australia's natural capital infrastructure. The Trust seeks to promote biodiversity conservation and the sustainable use and management of natural resources. Landcare encourages sustainable agriculture and is now being broadened to cover resource-based industries and generally strengthen industry engagement.

In this context, the Government has an expectation that the RDCs will improve the delivery of science and information to support the regionally driven approach to natural resource management, and to develop more sustainable and profitable agricultural management practices. A high priority needs to be accorded to research into:

- designing farming, fisheries and forestry systems which are more attuned to natural processes, are compatible with protection of biological diversity, minimise and avoid adverse off-farm impacts and maintain ecosystem function;
- understanding the impacts of climate variability and change on primary industries and natural resources;

- optimising landscape design for native vegetation and wildlife habitat management; and
- understanding and assessing the development of property right regimes, market-based instruments and ecosystem service trading systems.

Under the National Action Plan and the Natural Heritage Trust, there is an expectation that planning, implementing and monitoring of regional, integrated, natural resource management will be underpinned by good science. This approach requires an increased focus on regions gaining access to high-quality and up-to-date information and data, practical decision-support tools, and sound technical skills and expertise in a range of disciplines. The RDCs can play a more active role in ensuring the science to support sustainable agricultural practices is available to regional NRM bodies and land managers by helping to facilitate opportunities for the research community (providers) and regional organisations, industry and the like (users) to better communicate and work collaboratively.

The National Land and Water Resources Audit has identified a critical need to address on-farm land use and management practices to deliver off-farm environmental benefits as a 'package' — i.e. to deal with on-farm soil erosion, acidity, nutrient and salinity management issues which also have downstream impacts on rivers, estuaries and near-shore marine environments. The RDCs have a key role to play in addressing on-farm management practices through developing and demonstrating user-friendly solutions and associated NRM strategies to support sustainable and profitable agricultural practices.

To this end a multi-disciplinary approach that integrates the economic, social and environmental dimensions of natural resource decision-making by landholders is necessary. As part of this process the Government expects close collaboration and cooperation between industries and researchers and Land and Water Australia has been charged with promoting, integrating and coordinating the R&D necessary to achieve this key Government priority.

This priority area aligns with the first National Research Priority of an environmentally sustainable Australia and the related priority goals of:

- Water — a critical resource;
- Transforming existing industries;
- Overcoming soil loss, salinity and acidity; and
- Sustainable use of Australia's biodiversity.

IMPROVING COMPETITIVENESS THROUGH A WHOLE-OF-INDUSTRY APPROACH

Portfolio industries export the majority of their produce and face intense competition in the global marketplace. To be successful, industry must focus on meeting the needs of increasingly sophisticated and demanding consumers, while at the same time coping with what are often distorted markets for their products. This demands a whole-of-industry approach to improving the production, processing, promotion and marketing of our primary produce, with a focus on lifting profitability at each step in the value chain.

Price is a key determinant of profitability, but Australian producers are largely price-takers and it is only consistently high productivity improvements over recent decades that have helped ensure that our producers remain competitive. Such productivity improvements must continue in order to maintain market share and build profitability. Production systems need to be robust with inputs more precisely matched to needs and integrated with effective natural resource management. The recent drought has also emphasised the need for better financial management systems and improved risk management, the latter covering not only the natural climatic variability that afflicts the Australian environment, but also broader issues in market volatility.

Quality is the other key determinant of success in the international market place and offers opportunities for producers to become price-makers, through filling a specific market niche. Australian producers and processors have a proven capacity to innovate and meet the expectations of consumers and this capacity must continue to be explored and supported with appropriate R&D.

Diversification of production to meet niche markets, such as for organic produce or meeting specific quality requirements, should also be supported, as this diversification can assist producers in improving their financial and risk management.

It is also important that processors be integrated into the R&D arrangements. While it is well known that the agricultural, fisheries and forestry industries represent only a relatively small part of the nation's gross domestic product, those industries provide the feedstock for our largest manufacturing sector, the food and fibre processing industries.

The steps from primary producer to consumer represent a chain with value added at each stage in the process and the Government sees potentially great value in integrating those steps to optimise the price and quality of the final consumer products. The food and fibre processing sector has a relatively low level of R&D expenditure and the RDCs can play a seminal role in transforming its approach by encouraging joint ventures and providing practical demonstrations of how R&D can contribute to the sector's overall profitability and viability.

MAINTAINING AND IMPROVING CONFIDENCE IN THE INTEGRITY OF AUSTRALIAN AGRICULTURAL, FOOD, FISH AND FORESTRY PRODUCTS

It is critical that all parts of the portfolio work to maintain and improve consumer confidence in the integrity of Australian agricultural, food, fish and forestry products. To this end it is also important that the RDCs provide leadership on food supply chain policies and food regulation reform to ensure that rational, evidence-based policies are developed and implemented. To be effective such policies must be underpinned with good data and information and it is in these areas that the RDCs can make a significant contribution to this priority area.

More specifically the Government sees a need for improving risk assessment and our ability to manage food-borne hazards associated with pathogens, agri-chemical residues and contaminants.

This aligns with the second National Research Priority of promoting and maintaining good health and the priority goal relating to preventative healthcare.

IMPROVED TRADE AND MARKET ACCESS

The rural sector is highly dependent on access to international markets and to the prices received on those markets. These markets are often difficult to penetrate because they are distorted by protection in the form of domestic price supports, import barriers, export subsidies and various less transparent arrangements. However, there are opportunities available for the removal of such arrangements, through various bilateral and multilateral trade forums.

The negotiations taking place in the World Trade Organization Doha Round, and the implementation of the eventual agreement, will be particularly important to the future returns of Australian primary producers. Similarly, free trade agreements under negotiation with a number of countries have the prospect of reducing or removing barriers, in particular markets resulting in an expansion of trade with those countries.

Economic research into the nature and impact of trade barriers imposed in various countries to protect their rural industries, and scientific research into technical market access issues have been vital to the efforts of Australian trade negotiators in improving the trade prospects for our rural industries. Further research in these areas will make an essential contribution to future market access negotiations by providing a strong scientific and economic basis to Australia's negotiating position.

Conversely a successful conclusion to future trade negotiations could result in increased imports of rural products into Australia. Research in areas such as the impact of such increased competition on the international competitiveness and structure of our rural industries and the associated social impact on rural and regional communities could help facilitate the necessary policy response.

USE OF FRONTIER TECHNOLOGIES

New technologies, particularly biotechnology and genomics, have the potential to significantly contribute to the sustainability and profitability of Australian agriculture.

The development of smart fabrics and new polymers from agricultural fibres and produce also offers new opportunities for the rural sector, while the continuing integration and application of new information and communication technologies will be integral to the development of improved production systems.

Practical application of biotechnologies is built upon an understanding of genomics and the interaction of the genome and proteins to produce the organism and its characteristics (phenomics). Fundamental research in these areas is clearly desirable and necessary.

Many studies suggest that biotechnology in agriculture can deliver a range of sustainability and productivity benefits to farmers. However, some international and domestic markets remain uncertain of GM produce. The coexistence of different types of production systems offers producers flexibility to respond to markets, while ensuring the farther development of biotechnology in Australian agriculture.

The Government believes that consumer focused technologies, such as those involving nutraceuticals, offer new market opportunities and the potential for wider public acceptance of biotechnology applications. In this regard it is also important that the benefits flowing from new genetic technologies are quantified and documented so that evidence-based policies can be formulated and applied to foster their future development.

This aligns with the third National Research Priority of emerging technologies for building and transforming Australian industry and the related priority goals of:

- Frontier technologies and new industries; and
- Advanced materials.

PROTECTING AUSTRALIA FROM INVASIVE DISEASES AND PESTS

Protecting Australia's animal, plant and human health status through effective national quarantine arrangements is a key challenge. As our approach affects our relationship with key trading partners there are also significant implications for the export and ongoing market access of key commodities and processed products.

The Government takes a scientific approach to its quarantine rules and regulations, and any necessary import risk analysis. Research to improve risk analysis will be a key element in delivering the benefits of trade liberalisation.

New risk management tools for pests and diseases of plants and animals are also needed, including better diagnostic and taxonomic processes so that our national capacity to identify pests and our ability to assess whether new reports of pests represent new invasions is not compromised.

Such approaches should also encompass the need to prepare for and be able to mitigate exotic pest and disease incursions. This can be achieved through better preparedness of individual farms and enterprises for such eventualities, improved monitoring and surveillance, and laboratory testing capabilities to ensure early detection of incursions, complemented by action plans and resources to combat any incursion. R&D that can help define the best framework for such processes can assist in the development of a systematic and effective approach to the problem.

At a more practical level the development of new technologies that can disinfest and/or devitalise quarantine pests associated with internationally traded commodities is a key safeguard for Australia's agricultural crop and environmental resources. Such technologies not only help maintain our quarantine barriers but also provide a means to facilitate exports of Australian plants and plant products.

Such research will also need to encompass consumer acceptance as well as the broader issues of safety and effectiveness. Success in this area would also have significant implications for other aspects of domestic food safety, so there are broader benefits, rather than those just accruing to quarantine, potentially flowing to industry and the consumer.

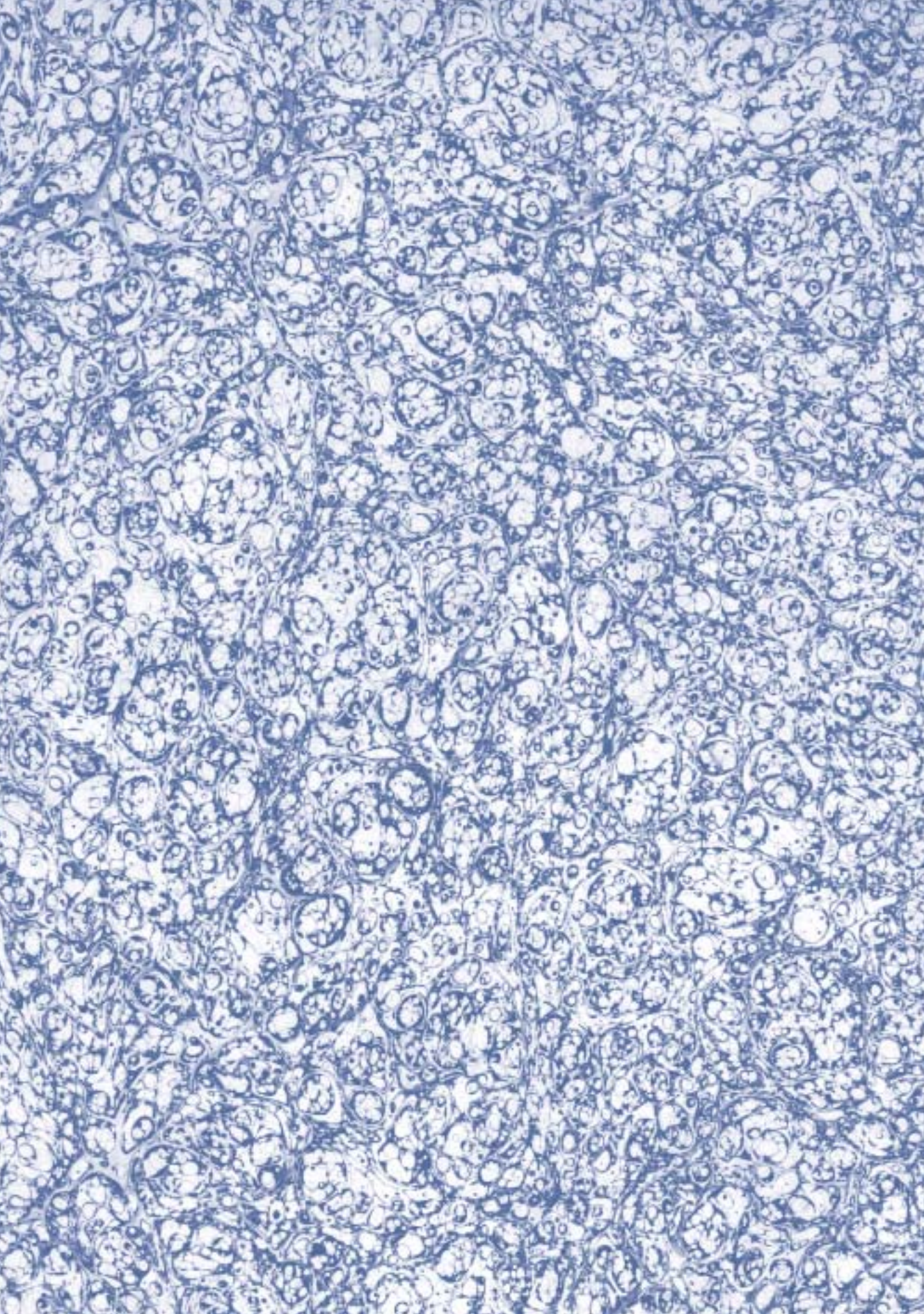
This aligns with the fourth National Research Priority of safeguarding Australia and the related priority goal of protecting Australia from invasive diseases and pests.

CREATING AN INNOVATIVE CULTURE

The people of our rural sector have been severely tested over recent times and their resilience and capacity to innovate have been important factors in maintaining confidence in the commercial viability and outlook of much of rural and regional Australia. Individual producers remain the key to ensuring that new technologies are applied, as are the skills and communication abilities of the RDCs to ensure that the results of the R&D are delivered in ways that are easy to be adopted.

At a more general level the RDCs have a clear and strong mandate to develop the skills and abilities of the people in their industries and those of the relevant scientific community. An innovative culture is essential for those involved in our rural industries. Productivity improvements are continually required to remain viable as the terms of trade of most rural production continues to decline as well as the changes required by the market, including environmental concerns.

The adoption of research results is fundamental to the RDCs' existence and the Government expects the RDCs to actively promote the adoption of new technologies and knowledge, whether this is through the general release of new information and/or products or through more exclusive arrangements involving the commercialisation of intellectual property.



APPENDIX F

FRDC ANNUAL REPORT 2002–03

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, the Federal Budget Initiative 'Building a national approach to animal and plant health', and management and accountability activities.

Expenditure on R&D was as follows:

	2002–03 expenditure ($m)
Program 1: Natural Resources Sustainability	12.729
Program 2: Industry Development	8.487
Program 3: Human Capital Development	0.787
Aquatic animal health activities funded by the Federal Budget Initiative 'Building a national approach to animal and plant health'	0.813
Total	22.816

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	$
1992/144	Fisheries biology and interaction in the northern Australian small mackerel fishery	Department of Primary Industries, Qld	70,138
1993/109	Use of the bomb radiocarbon chronometer to validate fish age	Australian National University	32,954
1994/022	The origin of recruits to the east coast yellowfin tuna fishery and the delineation of the structure of yellowfin stocks in the western Pacific	CSIRO Marine Research	3,568
1994/152.80	BCA — Resolution of taxonomic problems and preparation of a user-friendly identification guide to whole fish and fillets for South East Fishery "quota species"	CSIRO Marine Research	5,981
1994/167	A data management and reporting system and temporal and spatial analysis of historical catch records in the SA abalone fishery	SA Research and Development Institute	18,653
1995/004	In situ time-stamping of abalone shells to determine how abalone stocks can be aged	University of Melbourne	36,168
1995/054	Development and implementation of a national standard for a recreational fisheries database by all fisheries agencies	Department of Primary Industries, Qld	41,192
1995/162.80	BCA — Prawn farm effluent: origin, composition and treatment	CRC for Aquaculture	5,981
1996/139.80	BCA — Changes over 20 years in relative abundance of species and composition of catches from fishery-independent surveys of South East Fishery trawl grounds	NSW Fisheries	5,981
1996/142	Spawning and reproductive characteristics of blue warehou in south-east Australian waters	Department of Primary Industries, Victoria	17,664
1997/101	Assessment of broad-scale exploitation rates and biomass estimates for the Tasmanian southern rock lobster fishery	University of Tasmania	40,481
1997/115	Modelling the population dynamics of high priority SEF species	CSIRO Marine Research	17,900
1997/124	Effects of line fishing on the Great Barrier Reef and evaluation of alternative potential management strategies	James Cook University	70,730
1997/126	Assessment of length and age composition of commercial kingfish landings	NSW Fisheries	3,672
1997/128	Fisheries biology of blue-throat wrasse (*Notolabrus tetricus*) in Victorian waters	Seafood Industry Victoria Inc.	7,150
1997/133	Fisheries biology and habitat ecology of the southern sea garfish (*Hyporhamphus melanochir*) in southern Australia	SA Research and Development Institute	20,750
1997/201	Impacts of ponded pastures on barramundi and other finfish populations in tropical coastal wetlands	Department of Primary Industries, Qld	14,994
1997/207	Development of discard-reducing gears and practices in the estuarine prawn and fish haul fisheries of NSW	NSW Fisheries	36,274
1997/210	Effects of haul seining in Victorian bays and inlets	Department of Primary Industries, Victoria	25,658
1997/220	Seagrasses in southern NSW estuaries: their ecology, conservation, restoration and management	University of Wollongong	15,533
1998/103	Synthesis of existing data on the early life history of southern Australian finfish	CSIRO Marine Research	32,009

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
1998/108	Catch analysis and productivity of the deep-water dogfish resource in southern Australia	CSIRO Marine Research	12,105
1998/117	Fisheries biology and assessment of the blue swimmer crab (*Portunus pelagicus*) in Queensland	Department of Primary Industries, Qld	16,952
1998/133	Stock size of beche-de-mer, and recruitment patterns and gene flow in the black teatfish on the Great Barrier Reef	Australian Institute of Marine Science	92,520
1998/135	Fishery biology and management of black jewfish *Proteonibea diacanthus* (*Sciaenidae*) aggregations near Injinoo community, far northern Cape York	Balkanu Cape York Development Corporation	8,000
1998/150	Development and assessment of methods to reduce the predation of pot-caught southern rock lobster (*Jasus edwardsii*) by maori octopus (*Octopus maorum*)	University of Adelaide	50,932
1998/151	Fisheries biology of the cuttlefish (*Sepia apama Gray*) in South Australian waters	SA Research and Development Institute	14,649
1998/152	Demersal finfish resource assessment survey of the north-west slope of Western Australia	Department of Fisheries, WA	12,938
1998/156	Optimising the efficiency of enforcement in commercial fisheries	Department of Fisheries, WA	20,267
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, WA	9,175
1998/208	Habitat modification and its influence on prawn and crab fisheries	SA Research and Development Institute	26,872
1998/215	Coastal floodplain management in eastern Australia: barriers to fish and invertebrate recruitment in acid sulphate soil catchments	NSW Fisheries	104,198
1998/221	Impoundment stocking strategies for eastern and northern Australia	Department of Primary Industries, Qld	41,188
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
1999/104	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	32,707
1999/105	Improved fishery independent estimates of southern bluefin tuna recruitment through integration of environmental, archival tag and aerial survey data	CSIRO Marine Research	17,628
1999/106	Size at first maturity and recruitment into egg production of southern bluefin tuna	CSIRO Marine Research	18,820
1999/107	Development of an operating model for evaluation of harvest strategies for the Eastern Tuna and Billfish Fishery	CSIRO Marine Research	21,274
1999/108	Reproductive dynamics of broadbill swordfish (*Xiphias gladius*) in the domestic longline fishery off eastern Australia	CSIRO Marine Research	44,206
1999/109	Migration and habitat preferences of bigeye tuna (*Thunnus obesus*) on the east coast of Australia — A project using archival and conventional tags to determine key uncertainties in the species' stock structure, movement dynamics and CPUE trends	CSIRO Marine Research	82,246

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
1999/111	Development and application of a combined industry/ scientific acoustic survey of orange roughy in the Eastern Zone	CSIRO Marine Research	37,306
1999/112	Arrow squid in southern Australian waters — supplying management needs through biological investigations	University of Tasmania	13,693
1999/119	Sustainable *Penaeus monodon* (tiger prawn) populations for broodstock supply	Department of Primary Industries, Qld	18,895
1999/122	Biology, management and genetic stock structure of mangrove jack (*Lutjanus argentimaculus*) in Australia	Department of Primary Industries, Qld	82,034
1999/123	Age validation in tailor (*Pomatomus saltatrix*)	Department of Primary Industries, Qld	22,939
1999/124	Trawl by-catch of syngnathids in Queensland: catch rates, distribution and population biology of (*Solegnathus* pipehorses) seadragons	Griffith University	-13,362
1999/128	Research to develop and manage the sea urchin fisheries of NSW and eastern Victoria	NSW Fisheries	29,742
1999/134	Migratory dynamics and recruitment of snapper (*Pagrus auratus*) in Victorian waters	Department of Primary Industries, Victoria	77,722
1999/140	Impact of management change to an individual transferable quota system in the Tasmanian rock lobster fishery	University of Tasmania	31,216
1999/142	Modelling prawn movement and spatial dynamics in the Spencer Gulf and West Coast Prawn Fisheries	University of Adelaide	48,000
1999/145	Stock assessment models with graphical user interfaces for key South Australian marine finfish stocks	SA Research and Development Institute	72,183
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.	38,955
1999/150	Pilchard (*Sardinops sagax*) nursery areas and recruitment process assessment between different regions in southern Western Australia	Department of Fisheries, WA	3,281
1999/151	Stock assessment of Spanish mackerel (*Scomberomorus commerson*) in Western Australia	Department of Fisheries, WA	38,055
1999/155	Modelling Western Australian fisheries with techniques of time series analysis: examining data from a different perspective	Department of Fisheries, WA	22,553
1999/158	Implementation of the National Recreational and Indigenous Fishing Survey	Aust Dept of Agriculture, Fisheries And Forestry	31,350
1999/160	Assessing Australia's future resource requirements to the Year 2020 and beyond: strategic options for fisheries	University of Canberra	140,739
1999/163	A coordinated commercial fishing industry approach to the use of marine protected areas	University of Canberra	19,436
1999/164	Application of molecular genetics to the Australian abalone fisheries: forensic protocols for species identification and blacklip stock structure	University of Tasmania	39,631
1999/217	Stable isotope tracing of the contribution of seagrass production to subtropical fisheries species occurring outside seagrass areas	Griffith University	21,170
1999/226	Aquatic Animal Health Subprogram: generation of diagnostic reagents for pilchard herpes virus	CSIRO Livestock Industries	2,880

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
2000/105	Preparation of a field guide to sharks and rays caught in Australian fisheries	CSIRO Marine Research	26,000
2000/108	Population structure of the Patagonian toothfish (*Dissostichus eleginoides*) in Australian waters	CSIRO Marine Research	17,805
2000/112	Assessment of illegal catches of Australian abalone: II. Development of desk-based survey methods	Department of Primary Industries, Victoria	54,830
2000/121	Population dynamics and reproductive ecology of the southern calamari in Tasmania	University of Tasmania	41,011
2000/123	Risk analysis and sustainability of the southern rock lobster (*Jasus edwardsii*) resources in SA	SA Research and Development Institute	96,525
2000/127	Predicting and assessing recruitment variation — a critical factor for the management of the mother-of-pearl (*Pinctada maxima*)	Department of Fisheries, WA	58,877
2000/132	Characterisation of the inshore fish assemblages of the Pilbara and Kimberley coasts	Department of Fisheries, WA	185,351
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, WA	198,879
2000/135	Regrowth of pilchard (*Sardinops sagax*) stocks off southern WA following the mass mortality event of 1998–1999	Department of Fisheries, WA	48,394
2000/138	Minimising the cost of future stock monitoring, and assessment of the potential for increased yields from the oceanic snapper (Pagrus auratus) stock off Shark Bay	Department of Fisheries, WA	11,634
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, WA	14,602
2000/142	Methods for monitoring abundance and habitat for northern Australian mud crab (*Scylla serrata*)	NT Dept Business, Industries & Resource Devt	124,372
2000/145	National application of sustainability indicators for Australian fisheries	Department of Fisheries, WA	40,000
2000/146	Developing environmental management standards for the Australian seafood industry	Seafood Services Australia Limited	658
2000/151	Control of *Perkinsus* disease in abalone	University of Queensland	62,617
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	89,880
2000/157	Development of a fisheries habitat suitability model utilising a geographic information system	Department of Primary Industries, Victoria	39,106
2000/159	The importance to commercial and recreational fish species of the various habitats found in the nearshore marine waters and estuaries of south-western Australia	Murdoch University	46,657
2000/160	Surrogates 1 — predictors, impacts, management and conservation of the benthic biodiversity of the Northern Prawn fishery	CSIRO Marine Research	53,025
1999/230	Inventory and assessment of Australian estuaries	CSIRO Land and Water	245,550
2000/100	Age and growth of bigeye tuna (*Thunnus obesus*) from the eastern and western AFZ	CSIRO Marine Research	66,334

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
2000/164	Aquafin CRC — FRDC 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	148,048
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, WA	6,611
2000/169	Effects of Trawling Subprogram: assessment of bycatch in the Great Australian Bight Trawl Fishery	Department of Primary Industries, Victoria	24,443
2000/170	Effects of Trawling Subprogram: bycatch weight, composition and preliminary estimates of the impact of bycatch reduction device	Department of Primary Industries, Qld	383,128
2000/172	Bycatch assessment of the estuarine commercial gill net fishery in NSW	NSW Fisheries	22,813
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	56,819
2000/176	Effects of Trawling Subprogram: assessment and management of potential impacts of prawn trawling on estuarine assemblages	University of Sydney	98,301
2000/179	Habitat restoration and management: a trial of an investment-based approach	WBM Oceanics Australia	500
2000/180	Restocking of the Blackwood River estuary with black bream (*Acanthopagrus butcheri*)	Challenger TAFE	80,603
2000/182	Eradicating European carp from Tasmania and implications for national European carp eradication	Inland Fisheries Services, Tasmania	30,243
2000/185	Rock Lobster Enhancement and Aquaculture Subprogram: evaluating the release and survival of juvenile lobsters released for enhancement purposes	University of Tasmania	100,938
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	70,671
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, WA	40,017
2000/190	Development of a business plan for enhancement of saucer scallops in sub-tropical waters	Department of Primary Industries, Qld	8,803
2000/194	Maximising survival of released undersize west coast reef fish	Department of Fisheries, WA	47,719
2000/195	Assessing the impact of proposed marine protected areas on South Australian rock lobster catches	SA Research and Development Institute	3,750
2001/002	A new approach to assessment in the NPF: spatial models in a management strategy environment that includes uncertainty	CSIRO Marine Research	62,079
2001/004	Stock structure and spatial dynamics of the warehous: a pilot study	Department of Primary Industries, Victoria	8,648
2001/005	Stock assessment for south east and southern shark fishery	CSIRO Marine Research	130,502

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
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	Department of Primary Industries, Victoria	130,246
2001/007	Shark and other chondrichthyan byproduct and bycatch estimation in the SEF trawl and non-trawl sectors	Department of Primary Industries, Victoria	10,567
2001/008	Assessment of seal fishery interactions in the South East Trawl Fishery (SETF) and the development of fishing practices and seal exclusion devices (SEDs) in the winter blue grenadier fishery to mitigate seal bycatch by SETF trawlers	Bureau of Rural Sciences	42,020
2001/014	Age and growth of broadbill swordfish (*Xiphias gladius*) from Australian waters	CSIRO Marine Research	76,264
2001/018	Development of a genetic method to estimate effective spawner numbers in tiger prawn fisheries	Department of Primary Industries, Qld	92,326
2001/019	Exploitation dynamics and biological characteristics of east coast Spanish mackerel harvested by the recreational and commercial sectors	CRC Reef Research Centre	72,183
2001/020	Modelling multi-species targeting of fishing effort in the Queensland Coral Reef Finfish Fishery	CRC Reef Research Centre	36,460
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	83,652
2001/023	Spatial arrangement of estuarine and coastal habitats and the implications for fisheries production and diversity	University of Queensland	104,816
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	88,366
2001/029	Studies of the growth and mortality of school prawns	NSW Fisheries	105,687
2001/031	Reducing the discarding of small prawns in NSW's commercial and recreational prawn fisheries	NSW Fisheries	98,075
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	Department of Primary Industry, Victoria	133,325
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	72,351
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	27,332
2001/055	Biological and fisheries data for managing deep sea crabs in Western Australia	Murdoch University	63,382
2001/060	Characterising the fish habitats in the Recherche Archipelago, Western Australia	University of Western Australia	177,755
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, WA	43,199
2001/064	Aboriginal fishing strategy	Department of Fisheries, WA	28,124

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
2001/065	Socio-economic valuation of allocation options between recreational and commercial sectors	Economic Research Associates Pty Ltd	107,286
2001/067	Quantification of changes in recreational catch and effort on blue swimmer crabs in Cockburn Sound and Geographe Bay	Department of Fisheries, WA	40,667
2001/068	Development of stock allocation and assessment techniques in WA blue swimmer crab fisheries	Department of Fisheries, WA	125,173
2001/069	Compliance program evaluation and optimisation in commercial and recreational Western Australian fisheries	Department of Fisheries, WA	127,688
2001/070	Can production in the southern rock lobster fishery be improved? Linking juvenile growth, survival and density dependence to sustainable yield	Department of Primary Industries, Victoria	102,618
2001/072	Development of options for improving the planning and managing of abalone and southern rock lobster wild catch R&D	Abalone Industry Association of SA Inc.	10,000
2001/074	Linking fishery-dependent and fishery-independent assessments of abalone fisheries	University of Tasmania	79,616
2001/076	Assessing survey methods for greenlip abalone in South Australia	SA Research and Development Institute	121,315
2001/082	ESD Reporting and Assessment subprogram: strategic planning, project management and adoption	Department of Fisheries, WA	46,621
2001/093	Aquatic Animal Health Subprogram: strategic planning, project management and adoption	Aust Dept of Agriculture, Fisheries and Forestry	67,095
2001/094	Rock Lobster Enhancement and Aquaculture Subprogram: health assurance for southern rock lobsters	University of Tasmania	20,259
2001/097	Aquafin CRC — Atlantic Salmon Aquaculture Subprogram: system-wide environmental issues for sustainable salmonid aquaculture	CSIRO Marine Research	187,520
2001/098	Effects of Trawling Subprogram: evaluation of "hoppers" for reduction of bycatch mortality in the Queensland Coast Prawn Trawl fishery	Department of Primary Industries, Qld	36,567
2001/099	Environmental risk and impact assessment of the pearling industry	Pearl Producers Association	25,254
2001/100	National strategy for the survival of line caught fish: planning, project management and communications	FRDC	3,631
2001/101	National strategy for the survival of line caught fish: a review of research and fishery information	SA Research and Development Institute	10,135
2001/102	Aquafin CRC — 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	50,731
2001/103	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: tuna environment subproject — evaluation of waste composition and waste mitigation	SA Research and Development Institute	60,051
2002/001	Adult migration, population replenishment and geographic structure for snapper in South Australia	SA Research and Development Institute	86,272
2002/003	Biological parameters for managing the fisheries for blue and king threadfin salmons, estuary rockcod, malabar grouper and mangrove jack in north-western Australia	Murdoch University	108,741

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
2002/004	Determination of biological parameters for managing the fisheries for mulloway and silver trevally in Western Australia	Murdoch University	65,421
2002/005	Arresting the decline of the commercial and recreational fisheries for mulloway (*Argyrosomus japonicus*)	NSW Fisheries	38,828
2002/007	Larval transport and recruitment processes of southern rock lobster	CSIRO Marine Research	66,728
2002/008	Biology, larval transport modelling and commercial logbook data analysis to support management of the NE Queensland rock lobster (*Panulirus ornatus*) fishery	CSIRO Marine Research	110,018
2002/011	GENETAG: genetic mark-recapture for real-time harvest rate monitoring. Pilot studies in northern Australia Spanish mackerel fisheries	NT Dept Business, Industries & Resource Devt	101,299
2002/014	Developing a new method of evaluating catch rates of spatially mobile and aggregating prawn resources	CSIRO Marine Research	183,067
2002/015	Estimation of mortality rates from tagging data for pelagic fisheries: analysis and experimental design	CSIRO Marine Research	91,202
2002/016	Synthesis and gap assessment of fish dietary data required for modelling ecosystems in south-western Australia	Murdoch University	34,724
2002/017	Impact of environmental changes on the biota of Western Australian south coast estuaries	Murdoch University	42,379
2002/028	Trophic dynamics of the eastern shelf and slope of the South East Fishery: impacts of and on the fishery	CSIRO Marine Research	57,150
2002/033	Rapid assessment of sustainability for ecological risk of shark and other chondrichthyan bycatch species taken in the SSF, SENTF, SETF and GABTF	Department of Primary Industries, Victoria	160,242
2002/035	Effects of Trawling Subprogram: design, trial and implementation of an integrated long-term bycatch monitoring program, road tested in the NPF	CSIRO Marine Research	336,491
2002/038	Effects of Trawling Subprogram: development of biodiversity and habitat monitoring systems for key trawl fisheries in Western Australia	Department of Fisheries, WA	405,431
2002/039	National strategy for the survival of line caught fish: assessment of post-release survival and stress physiology of barramundi (*Lates calcarifer*)	NT Dept Business, Industries & Resource Devt	45,861
2002/040	Workshop on interactions with large marine vertebrates due to human use of the marine environment	SA Dept for Environment and Heritage	3,924
2002/043	Aquatic Animal Health Subprogram: the production of nodavirus-free fish fry and the nodaviruses' natural distribution	Department of Primary Industries, Qld	105,886
2002/044	Aquatic Animal Health Subprogram: pilchard herpes virus infection in wild pilchards	Department of Fisheries, WA	62,047
2002/045	Rock Lobster Enhancement and Aquaculture Subprogram: assessing the possibilities for enhancing the natural settlement of western rock lobster	Department of Fisheries, WA	136,767
2002/048	Enhancement of saucer scallops (*Amusium balloti*) in Western Australia	West Coast Scallops Pty Ltd	500,667
2002/056	Innovative stock assessment and effort mapping using VMS and electronic logbooks	Department of Primary Industries, Qld	98,942

Natural Resources Sustainability projects, continued

Project ID	Project title	Organisation name	$
2002/057	Sustainability of small-scale, data-poor commercial fisheries: developing assessments, performance indicators and monitoring strategies for temperate reef species	University of Tasmania	78,571
2002/059	Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries	NSW Fisheries	205,288
2002/061	Development and evaluation of egg-based stock assessment methods for blue mackerel (*Scomber australasicus*) in southern Australia	SA Research and Development Institute	385,122
2002/064	Northern Australian sharks and rays: the sustainability of target and bycatch species, phase 2	CSIRO Marine Research	295,341
2002/072	Assessing the feasibility of an industry-based fishery-independent survey of the SEF	Fishwell Consulting	34,111
2002/075	Development and testing of a dynamic model for data from recreational fisheries	Murdoch University	46,506
2002/079	Digital video techniques for assessing population size structure and habitat of greenlip and Roe's abalone	Department of Fisheries, WA	57,643
2002/083	Towards an industry-based abalone fishery monitoring program	Seafood Industry Victoria Inc.	148,199
2002/086	ESD Reporting and Assessment Subprogram: development of assessment tools for the National ESD framework — initial scoping exercise	Department of Fisheries, WA	109,816
2002/094	Using information for 'data-rich' species to inform assessments of 'data-poor' species through Bayesian stock assessment methods	Department of Primary Industries, Victoria	36,418
2002/096	To review previous research on northern mackerel and to assess current and future research needs for these fisheries	SA Research and Development Institute	4,790
2002/097	Development of national habitat classification framework	FRDC	15,348
2002/099	National Strategy for the Survival of Released Line Caught Fish: planning, project management and communications	InfoFish Services	421,985
2002/100	Workshop to develop a national strategy for hopper R&D in Australian prawn trawl fisheries	Ocean Watch Australia Ltd	10,886
2002/101	Designing, implementing and assessing an integrated monitoring program for the NPF	CSIRO Marine Research	293,439
2002/102	Effects of Trawling Subprogram: quantifying the effects of trawling on seabed fauna in the Northern Prawn Fishery	CSIRO Marine Research	100,169
2002/103	Southern bluefin tuna research review	Shellack Pty Ltd	72,206
2003/012	Hoppers in action: a handbook for fishers on the use of hoppers in Australian prawn trawl fisheries	Ocean Watch Australia Ltd	9,980
2003/062	Driving innovation in environmental performance in the Queensland fishing industry	CRC Reef Research Centre	16,000
2003/063	Adoption of an environmental management systems by NSW commercial estuary fishers and oyster farmers	Ocean Watch Australia Ltd	16,000
	R&D funding application and final report external reviews	FRDC	1,750
Total Natural Resources Sustainability projects			**$12,729,103**

INDUSTRY DEVELOPMENT PROJECTS

Project ID	Project title	Organisation name	$
1991/056	SBT grow-out	Australian Tuna Boat Owners Association	43,458
1991/077.80	BCA — Orange roughy and other marine oils: Characterisation and commercial applications	Former CSIRO Division of Oceanography	5,981
1994/115.80	BCA — Marine oils from Australian fish: characterisation and value added products	CSIRO Marine Research	5,981
1994/136	Handbook of Australian seafood — a guide to whole fish and fillets	CSIRO Marine Research	41,923
1995/082	Feasibility study to evaluate non-lethal measurements of health of farmed tuna using biochemical methods and surrogate species	Flinders University	9,596
1995/136	Modelling prawn larvae dispersion and settlement in Spencer Gulf — technology transfer	University of Adelaide	3,779
1995/166	High quality eggs and nauplii for the Australian prawn industry	Australian Institute of Marine Science	24,158
1996/285	Identification of environmental factors, with particular reference to acid sulfate soil runoff, causing production losses in Sydney rock oysters	University of New South Wales	150
1996/308	Development of aquaculture techniques for production of the WA dhufish (*Glaucosoma hebraicum*)	Challenger TAFE	17,286
1996/342	Production of micro algal concentrates for aquaculture — an extension to project 1993/123	NSW Fisheries	10,383
1996/386	Abalone Aquaculture Subprogram: formulated feeds for newly settled juvenile abalone based on natural feeds (diatoms and crustose coralline algae)	CSIRO Marine Research	16,123
1997/307	Biochemical measures of health of farmed tuna using surrogate species	Flinders University	21,915
1997/344	Pearl oyster genetics	Australian Institute of Marine Science	27,602
1997/362	Southern Bluefin Tuna Aquaculture Subprogram Project 2: development and optimisation of manufactured feeds for farmed southern bluefin tuna	SA Research and Development Institute	19,961
1997/363	Southern Bluefin Tuna Aquaculture Subprogram Project 3: experimental analyses of the effects of ration and feeding frequency on the thermodynamics, energetics, growth and condition of farmed southern bluefin tuna	CSIRO Marine Research	17,723
1997/364	Southern Bluefin Tuna Aquaculture Subprogram Project 4: effect of husbandry and handling techniques on the post-harvest quality of farmed bluefin tuna	Department of Primary Industries, Qld	20,141
1997/413	Development of five UHT seafood soups using waste and under-utilised species	Mures Fishing Pty Ltd	5,500
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, WA	9,461

Industry Development projects, continued

Project ID	Project title	Organisation name	$
1998/305	Rock Lobster Enhancement and Aquaculture Subprogram Project 5: determination of the optimum environmental and system requirements for juvenile and adult rock lobster holding and grow-out	University of Adelaide	58,678
1998/306	Abalone Aquaculture Subprogram: early life history of abalone (*Haliotis rubra, H. laevigata*): settlement, survival and early growth	Deakin University	12,922
1998/307	Abalone Aquaculture Subprogram: development of an integrated management program for the control of spionid mudworms in cultured abalone	University of Tasmania	61,072
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	43,943
1998/314	Evaluation of anti-foulants on over-catch, other forms of bio-fouling and mud worm in Sydney Rock Oysters	University of New South Wales	52,774
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	250
1998/322	Aquaculture Diet Development Subprogram: feed development for Atlantic salmon (*Salmo salar*)	University of Tasmania	16,935
1998/328	Health problems of the Western Australian dhufish (*Glaucosoma hebraicum*)	Murdoch University	424
1998/333	Husbandry of the blue swimmer crab in aquaculture	Ocean Gold Investments Pty Ltd	11,700
1998/352	Live export opportunities for value-adding of Australian freshwater and estuarine fishes	Southern Fishermen's Association Inc.	27,185
1999/201	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram: development of selective enrichment culture-polymerase chain reaction (SEC-PCR) for the detection of bacterial pathogens in covertly infected farmed salmonid fish	University of Tasmania	29,314
1999/320	Factors required for the successful aquaculture of black bream in inland water bodies — extension to project 1997/309	Murdoch University	18,355
1999/322	Further development of aquaculture techniques for production of the W.A. Dhufish (*Glaucosoma hebraicum*)	Challenger TAFE	30,650
1999/323	Aquaculture Diet Development Subprogram: rapid development of diets for Australian snapper	NSW Fisheries	28,936
1999/328	Development of intensive commercial aquaculture production technology for Murray cod	Department of Primary Industries, Victoria	34,251
1999/330	Validation of longfin eel aquaculture potential	Department of Primary Industries, Qld	10,741
1999/331	Nutritional value of Australian seafood II: factors affecting oil composition of edible species	CSIRO Marine Research	32,443
1999/332	Development of a national biotoxin strategy	Primary Industries and Resources SA	28,795
1999/346	Hooking into Asian festivals	Department of Primary Industries, Qld	32,970
1999/347	Hooking into Asian seafood markets	Department of Primary Industries, Qld	47,209

Industry Development projects, continued

Project ID	Project title	Organisation name	$
1999/357	Establishment of the Seafood Services Australia Stage 1 — seafood quality management and seafood safety (SeaQual Australia)	Seafood Services Australia Limited	91,332
1999/361	Development of a stock protection system for flexible oceanic pens containing finfish	Tasmanian Salmonid Growers Assoc Ltd	19,224
1999/421	Development of an automated oyster grader	Stainless Engineering and Design Pty Ltd	5,000
1999/423	Processing of redclaw crayfish for improvement of quality and shelf-life — adding value	Capricorn Crayfish Farmers Association Inc	13,360
2000/200	Abalone Aquaculture Subprogram: facilitation, administration and promotion	Abalone Aquaculture Consultancy Pty Ltd	38,977
2000/201	Abalone Aquaculture Subprogram: selective breeding of farmed abalone to enhance growth rates	SA Research and Development Institute	30,192
2000/202	Abalone Aquaculture Subprogram: development of spermatozoa cryo-preservation techniques in farmed abalone	SA Research and Development Institute	9,000
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	11,751
2000/204	Abalone Aquaculture Subprogram: the commercial control of spawning in temperate abalone	University of Tasmania	22,220
2000/206	Sustainable genetic improvement of Pacific oysters in Tasmania and South Australia	CSIRO Marine Research	121,367
2000/210	Development of commercial production systems for mud crab (*Scylla serrata*) aquaculture in Australia: hatchery and nursery	NT Dept Business, Industries & Resource Devt	218,960
2000/211	Rock Lobster Enhancement and Aquaculture Subprogram: investigation of tail fan damage in live-held adult rock lobsters	University of Adelaide	25,573
2000/212	Rock Lobster Enhancement and Aquaculture Subprogram: the nutrition of juvenile and adult lobsters to optimise survival, growth and condition	CSIRO Marine Research	32,778
2000/214	Rock Lobster Enhancement and Aquaculture Subprogram: advancing the hatchery propagation of rock lobsters	University of Tasmania	345,713
2000/215	Improved performance of marron using genetic and pond management strategies	Department of Fisheries, WA	195,010
2000/219	Southern Bluefin Tuna Aquaculture Subprogram: management, service delivery, infrastructure and technical support	SA Research and Development Institute	98,244
2000/220	Southern Bluefin Tuna Aquaculture Subprogram: use of steam extrusion and nutritional surrogates to develop a suitable manufactured diet to replace bait fish as the primary source of nutrients for SBT	SA Research and Development Institute	88,277
2000/221	Aquafin CRC — FRDC Southern Bluefin Tuna Aquaculture Subprogram: quality and nutritional evaluation of baitfish used for tuna farming	Tuna Boat Owners Association of SA	60,816
2000/223	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram: facilitation, administration and promotion	University of Tasmania	110,471
2000/224	Atlantic Salmon Aquaculture Subprogram: molecular genetic tools for the Tasmanian Atlantic salmon industry — development and application	CSIRO Marine Research	161,511

Industry Development projects, continued

Project ID	Project title	Organisation name	$
2000/234	National commercial fishing industry response to changes to the USL code	WA Fishing Industry Council	25,000
2000/240	Operation of Seafood Services Australia: technical information and advice	Department of Primary Industries, Qld	197,102
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	28,137
2000/250	Rock Lobster Post Harvest Subprogram: facilitation, administration and promotion	Curtin University of Technology	43,981
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	202,205
2000/252	Rock Lobster Post Harvest Subprogram: optimising water quality in rock lobster post-harvest processes	University of Tasmania	31,768
2000/255	Chemo-attraction and the development of an artificial bait for the western rock lobster (*Panulirus cygnus*)	University of Western Australia	22,340
2000/257	Analytical techniques for assessment of water quality, contamination and quality assurance in farmed Pacific oysters in SA	Flinders University	174,433
2000/263	Rock Lobster Enhancement and Aquaculture Subprogram: reducing rock lobster larval rearing time through hormonal manipulation	Australian Institute of Marine Science	91,386
2000/264	Australian eel aquaculture industry development strategy and associated investment analysis	Department of Primary Industries, Victoria	15,000
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	49,569
2001/200	Aquafin CRC — FRDC Southern Bluefin Tuna Aquaculture Subprogram: tuna cell line development and their application to tuna aquaculture health surveillance	CSIRO Livestock Industries	20,564
2001/201	Aquafin CRC — SBT Aquaculture Subprogram: commercialisation trials for a manufactured tuna feed	Australian Tuna Fisheries	65,141
2001/205	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram: treatment and pathophysiology of amoebic gill disease	University of Tasmania	110,278
2001/206	Aquafin CRC — Improving growth and survival of cultured marine fish larvae: striped trumpeter (*Latris lineata*) a test case for Tasmania	University of Tasmania	288,003
2001/208	Aquafin CRC — Increasing the profitability of snapper farming by improving hatchery practices and diets	NSW Fisheries	111,384
2001/211	Rock Lobster Enhancement and Aquaculture Subprogram: strategic planning, project management and adoption	Barneveld Nutrition Pty Ltd	131,535
2001/213	Review of hatchery production technology for Sydney rock oysters	University of New South Wales	6,016

Industry Development projects, continued

Project ID	Project title	Organisation name	$
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	84,532
2001/220	Aquaculture Diet Development Subprogram: development of marine fish larval diets to replace *Artemia*	Department of Fisheries, WA	157,171
2001/225	Development of sponge (*Spongia* spp.) farming as a viable commercial enterprise for remote Aboriginal communities	Northern Territory University	3,000
2001/227	Australian fisheries statistics	ABARE	29,948
2001/231	Upgrade of national fisheries database to include images an common names of Australian fishes	CSIRO Marine Research	63,084
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	25,532
2001/238	South East Fishery Industry Development Subprogram: strategic planning, project management and adoption	Fishwell Consulting	73,035
2001/244	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram: host-pathogen interactions in amoebic gill disease	University of Tasmania	210,808
2001/245	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram: model development for epidemiology of amoebic gill disease	University of Tasmania	69,374
2001/246	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram: control of precocious sexual maturation in Atlantic salmon	University of Tasmania	91,807
2001/248	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: maximising the control of quality in farmed SBT	Flinders University	134,702
2001/249	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: development and commercial evaluation of manufactured diets	SA Research and Development Institute	152,531
2001/250	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: strategic planning, project management and adoption	SA Research and Development Institute	25,394
2001/251	Aquaculture Nutrition Subprogram: strategic planning, project management and adoption	Barneveld Nutrition Pty Ltd	80,241
2001/252	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: infrastructure management, service delivery and technical support	SA Research and Development Institute	38,158
2001/253	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: a risk assessment of factors influencing the health of farmed southern bluefin tuna	University of Tasmania	63,965
2001/254	Abalone Aquaculture Subprogram: selective breeding of farmed abalone to enhance growth rates	SA Research and Development Institute	44,984
2001/255	Rock Lobster Post Harvest Subprogram: quantifying and controlling hyper- and hyposaline-induced post-harvest leg autotomy in the western rock lobster	Geraldton Fishermen's Co-operative Ltd	38,029
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	22,900

Industry Development projects, continued

Project ID	Project title	Organisation name	$
2001/257	Australian aquaculture — practical solutions to the triple bottom line — a national workshop	Department of Primary Industries, Victoria	24,057
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 in Australia	University of Queensland	10,292
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	62,828
2002/201	Abalone Aquaculture Subprogram: a national survey of diseases of commercially exploited abalone species to support trade and translocation issues and the development of health surveillance programs	University of Tasmania	75,831
2002/202	Abalone Aquaculture Subprogram: use of marker assisted genetic breeding to improve abalone and abalone products	Department of Primary Industries, Victoria	77,501
2002/204	Development of techniques for production of homozygous Pacific oysters	SA Research and Development Institute	50,988
2002/206	Sydney rock oyster hatchery and nursery health workshop	NSW Fisheries	7,694
2002/209	Understanding and removing the barriers to *Penaeus monodon* domestication	Australian Prawn Farmers Association	411,152
2002/223	National atlas of fishing activities and coastal communities	Bureau of Rural Sciences	223,212
2002/231	Occupational health and safety national extension strategy	WA Fishing Industry Council	82,164
2002/232	A case study into the development of OH&S processes in the *Pinctada maxima* pearling industry to benchmark world's best industry diving practice	Pearl Producers Association	27,000
2002/233	Seafood Services Australia Ltd: adding value throughout the seafood supply chain	Seafood Services Australia Limited	808,776
2002/235	Improving post-harvest swordfish quality	Department of Primary Industries, Qld	121,202
2002/236	Optimising at-sea post harvest handling procedures for the pilchard (*Sardinops sagax*)	SA Research and Development Institute	101,037
2002/237	Rock Lobster Post Harvest Subprogram: a code of practice for handling rock lobster	WA Fishing Industry Council	34,313
2002/238	Rock Lobster Post Harvest Subprogram: quantification of shell hardness in southern rock lobster	University of Tasmania	64,324
2002/239	Rock Lobster Post Harvest Subprogram: the effect of on-board cold water stunning on the survival and growth of caught and returned western rock lobsters (*Panulirus cygnus*)	Geraldton Fishermen's Co-operative Ltd	97,996
2002/242	A health promotion program incorporating fish for withdrawal of antihypertensive drugs in overweight hypertensives	University of Western Australia	31,091
2002/249	Aquafin CRC — Southern Bluefin Tuna Aquaculture Subprogram: service delivery and infrastructure management for projects requiring Port Lincoln based R&D support	SA Research and Development Institute	284,122
2002/251	Aquafin CRC — FRDC Atlantic Salmon Aquaculture Subprogram — development of a vaccine for amoebic gill disease: genomic and cDN library screening for antigen discovery	CSIRO Livestock Industries	63,090

Industry Development projects, continued

Project ID	Project title	Organisation name	$
2002/401	Pilot project to determine the effectiveness of FoodSafe Plus as a tool in meeting FSANZ food safety standards	WA Fishing Industry Council	22,176
2002/404	The development of quality standards, product specifications, and a quality management framework to facilitate market expansion for farmed barramundi	Australian Barramundi Farmers Association	20,988
2002/405	SEF Industry Development Subprogram: assessing the commercial viability of utilising fish processing wastes	Australian Seafood Co-products Pty Ltd	39,895
2002/409	Pathogenic *Vibrio parahaemolyticus* in Australian oysters	University of Tasmania	19,637
2002/414	Development of techniques for quantification of stress-induced catecholamine changes in the hemolymph of the Pacific oyster (*Crassostrea gigas*)	SA Research and Development Institute	15,198
2002/418	Improving post harvest handling to add value to farmed mussels	Ruello & Associates Pty Ltd	4,920
2002/419	National seafood emergency plan — SA trial workshop	SA Fishing Industry Council	5,000
2002/421	Seafood safety program industry diary	Seafood Industry Victoria Inc.	500
2002/423	Formation of an industry strategic plan for development of a quality index for Australian seafood	Allan Bremner and Associates	4,585
2002/425	Food safety and quality assurance for cooked prawns: development and evaluation of a framework for the validation of a supply chain approach	SA Research and Development Institute	17,623
2002/426	APFA integrated HACCP/QA/EMS program	Australian Prawn Farmers Association	15,600
2003/202	Abalone Aquaculture Subprogram: strategic planning, project management and adoption	Abalone Aquaculture Consultancy Pty Ltd	651
2003/209	Sydney rock oysters: overcoming constraints to commercial scale hatchery and nursery production	NSW Fisheries	250
2003/215	The development of a strategic research and development plan for the yellowtail kingfish (*Seriola lalandi*) industry	SA Marine Finfish Farmers Association Inc.	20,358
2003/222	Innovative solutions for aquaculture: development and validation of carrying capacity models for shellfish and finfish in South Australian waters	SA Research and Development Institute	500
2003/224	South Australia innovative solutions for aquaculture access and management initiative	Primary Industries and Resources SA	9,960
2003/646	Aquatic Animal Health Subprogram: Australian aquatic animals diseases and pathogens database	F1 Solutions Pty Ltd	5,500
	R&D funding application and final report external reviews	FRDC	150
Total Industry Development projects			**$8,487,255**

HUMAN CAPITAL DEVELOPMENT PROJECTS

Project ID	Project title	Organisation name	$
1998/165	Framework for valuing fisheries resource use	University of Queensland	85
1999/335	Seventh international symposium on genetics in aquaculture	Australian Institute of Marine Science	21,337
2000/192	The Third International Billfish Symposium	University of Queensland	19,204
2000/265	International Association of Astacology (freshwater crayfish) symposium and workshop	Curtin University of Technology	3,750
2000/307	Development and delivery of a model for a national seafood industry advanced leadership program	Australian Fisheries Academy	43,186
2000/311	Development of research methodology and quantitative skills for integrated fisheries management in WA	Murdoch University	84,261
2001/300	South Australia's Strategic Plan for Fisheries and Aquaculture Research	SA Fishing Industry Council	6,125
2001/304	2nd National Rock Lobster Industry Conference — Melbourne September 2001	SA Rock Lobster Advisory Council	4,000
2001/306	ASFB workshop: towards sustainability for data limited multi-sector fisheries	Department of Fisheries, WA	8,000
2001/309	Community perceptions of fishing: implications for industry image, marketing and sustainability	Bureau of Rural Sciences	56,603
2001/311	The Workboot Series — Fishing: The story of the fishing industry in Australia	Kondinin Group	39,215
2001/318	Revision of the Northern Territory strategic plan for fisheries research and development 1999–2003	NT Dept Business, Industries & Resource Devt	14,875
2002/300	Australian Rural Leadership Program	Australian Rural Leadership Foundation	85,059
2002/301	National Seafood Industry Advanced Leadership Program — scholarships	Seafood Council (SA) Ltd	98,499
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	40,281
2002/304	Seafood Directions 2003 — 3rd biennial national seafood industry conference	WA Fishing Industry Council	84,525
2002/306	Aquafest Australia 2002 — national aquaculture conference and trade exhibition	Tasmanian Aquaculture Council	20,117
2002/307	2nd National Abalone Convention 2003	Seafood Industry Victoria Inc.	19,145
2002/313	Southern rock lobster R&D plan and subprogram development	SA Rock Lobster Advisory Council	60,574
2002/314	3rd National Rock Lobster Congress — 2003	Western Rock Lobster Council Inc	4,000
2002/315	An international conference on governance of deep-seas fisheries	NZ Ministry of Fisheries	13,237
2002/319	Development of a model induction kit for management advisory committee members	Australian Seafood Industry Council	15,510
2002/320	Sponsorship for a WIN representative to attend the 3rd Women in Agriculture conference in Spain	Sandra Phythian	3,000

Human Capital Development projects, continued

Project ID	Project title	Organisation name	$
2002/321	Pilot project for a national database on fisheries R&D capacity	WA Fishing Industry Council	15,782
2002/322	Development of a fisheries stream in a new an innovative online course in environmental statistics offered by the University of Canberra	University of Canberra	2,000
2003/302	Zoological Catalogue of Australia Volume 35.2 Pisces — completion to book and electronic publication	Environment Australia	3,000
2003/305	Identification of the role and long term support of a peak industry body for the Australian aquaculture industry, and its role to ensure the implementation of an industry driven National Aquaculture Action Agenda	National Aquaculture Council	20,962
	R&D project development	FRDC	965
Total Human Capital Development projects			**$787,302**

AQUATIC ANIMAL HEALTH PROJECTS FUNDED BY THE FEDERAL BUDGET INITIATIVE

Note: all the titles of the following project are preceded by "Aquatic Animal Health Subprogram:"

Project ID	Project title	Organisation name	$
2001/620	Development of improved procedures for the identification of aquatic birnaviruses	CSIRO Livestock Industries	61,277
2001/621	Molecular diagnostic tests to detect epizootic ulcerative syndrome (*Aphanomyces invadens*), and crayfish plague (*Aphanomyces astaci*)	Murdoch University	39,163
2001/624	Development of diagnostic procedures for the detection and identification of *Piscirickettsia salmonis*	CSIRO Livestock Industries	62,137
2001/625	Development of diagnostic capability for priority aquatic animal diseases of national significance: spawner-isolated mortality virus	James Cook University	58,419
2001/626	Development of diagnostics tests for the detection of nodavirus	Department of Primary Industries, Qld	75,112
2001/628	Vibrios of aquatic animals: development of a national standard diagnostic technology	University of Tasmania	49,579
2001/630	Validation of DNA-based (PCR) diagnostic tests suitable for use in surveillance programs for marteiliosis of rock oysters in Australia	Queensland Museum	45,328
2002/600	Facilitating the establishment of the Aquatic Animal Health Consultative Committee (AAHCC) as the primary industry-government interface for aquatic animal health issues in Australia	Aust Dept of Agriculture, Fisheries and Forestry	8,899
2002/640	Production of AQUAVETPLAN disease strategy manual for viral haemorrhagic septicaemia	Aust Dept of Agriculture, Fisheries and Forestry	3,840
2002/641	Crayfish plague disease strategy manual	Aquatilia Healthcare	18,263
2002/643	Viral encephalopathy and retinopathy, a disease strategy manual	IDEXX/VPS	15,000
2002/645	Exotic disease training manual	Murdoch University	12,678

Aquatic animal health projects, continued

Project ID	Project title	Organisation name	$
2002/647	Production of an AQUAVETPLAN disease strategy manual for white spot disease of all WSV-susceptible crustaceans	AusVet Animal Health Services Pty Ltd	31,000
2002/651	Whirling disease a disease strategy manual	Paul Hardy-Smith	13,136
2002/652	Enhancement of the emergency disease management capability in Victoria — developing a Victorian Control Centres Management Manual	Department of Primary Industries, Victoria	2,000
2002/653	AQUAVET aquatic disease disinfection manual	Livestock & Aquaculture Veterinary Consulting Services	2,000
2002/654	Development of a training course on exotic diseases of aquatic animals	CSIRO Livestock Industries	9,417
2002/655	Design and organisation of a multi-state disease emergency simulation exercise	Aust Dept of Agriculture, Fisheries and Forestry	9,824
2002/660	Enhancement of emergency disease management through the education and training of the CCEAD participants on the CCEAD process	Aust Dept of Agriculture, Fisheries and Forestry	22,750
2002/661	Enhancing the emergency disease response capability of NSW and Qld Government agencies and industry bodies associated with oyster culture	NSW Fisheries	12,202
2002/664	Aquatic animal health emergency management training and incident simulation	Seafood Training (SA)	12,004
2002/665	Enhancement of the emergency disease management capability in Victoria — adapting the AQUAVET control centre management manual	Department of Primary Industries, Victoria	4,994
2002/666	Training course on exotic diseases of aquatic animals	CSIRO Livestock Industries	13,000
2002/668	Enhancing the emergency disease response capability of Department of Fisheries and industry bodies associated with non-maxima oyster culture	Department of Fisheries, WA	23,885
2003/600	Development of strategies for improved stock loss insurance and for development of a cost-sharing arrangement for emergency disease management in aquaculture	Aust Dept of Agriculture, Fisheries and Forestry	6,206
2003/620	Establishment of diagnostic expertise for detection and identification of red sea bream iridovirus (RSIV)	CSIRO Livestock Industries	102,405
2003/621	Development of diagnostic and reference reagents for epizootic haematopoietic necrosis virus of finfish	University of Sydney	70,100
2003/640	Subprogram conference 'Emergency disease response planning and management'	CSIRO Livestock Industries	17,616
2003/641	Development of the Control Centre Manual for managing aquatic disease emergencies in Queensland	Department of Primary Industries, Qld	2,000
2003/642	Revision and expansion of the Australian Aquatic Animal Disease Identification Field Guide for publishing to CD-ROM	Aust Dept of Agriculture, Fisheries and Forestry	3,992
2003/643	Production of a training video on aquatic animal disease emergency management	Byrne Young Communication Pty Ltd	4,500
Total Aquatic Animal Health activities funded under the Federal Budget Initiative			**$812,726**
TOTAL R&D EXPENDITURE			**$22,816,387**

APPENDIX G

FRDC ANNUAL REPORT 2002–03

FREEDOM OF INFORMATION STATEMENT

The *Freedom of Information Act 1982* (FOI Act) requires each Australian 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 Attorney-General's Department (www.ag.gov.au/foi/foi%5Fact/welcome.html).

ROLE, STRUCTURE AND FUNCTIONS

The FRDC's role is described on the inside front cover of this annual report; its structure and functions are described respectively on pages 5 and 178. Further information is on pages 8–16 of the FRDC's R&D plan. Both these publications are freely available to the public from the FRDC.

The legislation under which the FRDC is established is the *Primary Industries and Energy Research and Development Act 1989*; further information is in appendix C (page 174) and appendix D (pages 177–179).

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*
FRDC policy manual	Unpublished document
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.

Sources of information currently available from the FRDC in paper publications and in electronic form are described on page 236.

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 where you live.

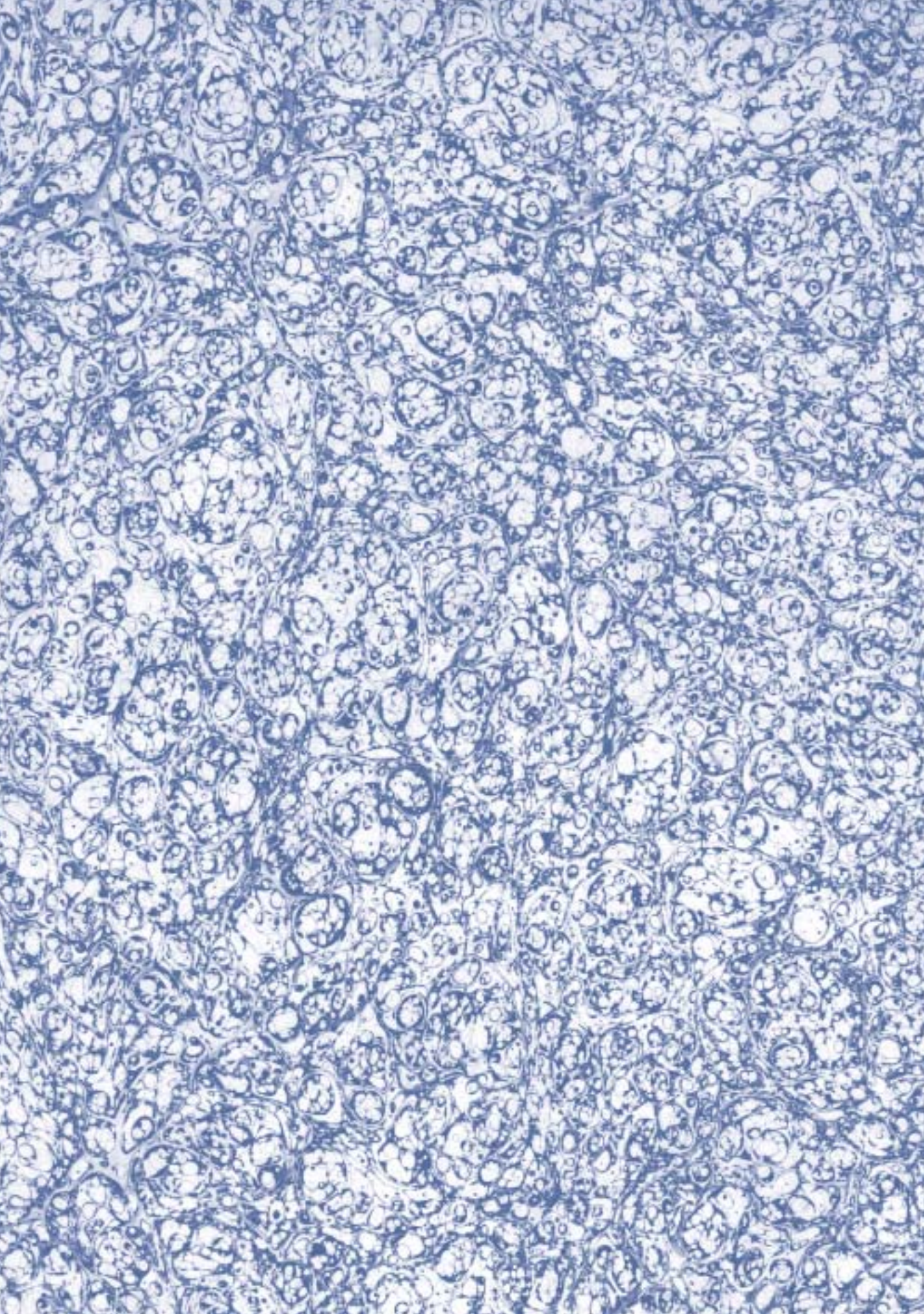
ORGANISATION, POWERS, AND DECISIONS MADE

The FRDC's organisation is shown in figure 1 on page 5. The FRDC's powers are summarised in appendix D (page 178). The principal decisions made by the FRDC Board during 2002–03 are summarised in the directors' review of operations and future prospects starting on page 9. A ministerial direction is summarised on page 124, followed by ministerial notifications of policies from the Australian Government.

ARRANGEMENTS FOR PUBLIC INVOLVEMENT

The FRDC's relationship with its stakeholders is described on page 113 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 9) and in R&D Program achievements (from page 37).

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 Fisheries, Forestry and Conservation; and to any parliamentary committee that may concern itself with matters relating to the FRDC.



GLOSSARY OF TERMS

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

2002–03

2002–03	The financial year 2002–03, namely 1 July 2002 to 30 June 2003.
ABARE	The Australian Bureau of Agricultural and Resource Economics.
AFMA	See Australian Fisheries Management Authority.
AFMF	See *Australian Fisheries Management Forum*.
AGVP	See *average GVP*.
ANAO	The Australian National Audit Office.
annual operational plan	The ministerially 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 the Department of Agriculture, Fisheries and Forestry is implementing the Australian 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 statutory authority responsible for the management of fisheries under Australian Government jurisdiction.
Australian Fisheries Management Forum	Comprises directors of Commonwealth, state and territory fisheries.
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 171.
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 Australian 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.
Department of Agriculture, Fisheries and Forestry	The Australian Government Department of Agriculture, Fisheries and Forestry. Among other things, the department manages ministerial portfolio responsibilities for the rural R&D corporations.
DPIQ	The Department of Primary Industries, Queensland.
during the year	During the financial year, i.e. 1 July 2002 to 30 June 2003.
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 an Australian Government 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 an Australian Government 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 2002 to 30 June 2003.
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 114.
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. For the FRDC context, see the diagram on page 40.
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 federal Minister for Agriculture, Fisheries and Forestry, within whose portfolio the FRDC is established. See also *ministerial powers*.
ministerial powers	Powers exercised under the provisions of legislation, especially the PIERD Act, by the federal Minister for Agriculture, Fisheries and Forestry; the Parliamentary Secretary to the Minister; or the Minister for Fisheries, Forestry and Conservation.
NHT	Natural Heritage Trust.
nutraceuticals	Food components that provide demonstrated physiological benefits or reduce the risk of chronic disease, above and beyond their basic nutritional functions. They are similar to "functional foods" — the distinction being that functional food is similar to a conventional food (examples are breads fortified with Omega-3 polyunsaturated fatty acids, fortified beverages, and cereals fortified with fibre, iron and calcium), whereas a nutraceutical is isolated from a food and sold in dosage form. Cholesterol reduction, cardiovascular disease and osteoporosis are the most attractive targets for nutraceuticals, followed by child development, high blood pressure, diabetes, gastro-intestinal disorders, menopause and lactose intolerance.
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. For the FRDC context, see the diagram on page 40. * [The fishing industry comprises commercial, recreational and traditional sectors, as defined on page 24.]
output	The goods and services (mainly knowledge, processes and technology) that the FRDC and its R&D partners produce for external organisations or individuals. For the FRDC context, see the diagram on page 40.
Parliamentary Secretary, the	The Parliamentary Secretary to the federal Minister for Agriculture, Fisheries and Forestry, who exercises ministerial powers in relation to rural R&D corporations. See also *ministerial powers*.

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.
precautionary approach	A set of measures taken to implement the precautionary principle. They comprise a set of cost-effective measures and actions that reduce or avoid risk to a resource, the environment and/or the people to the extent that is economically possible — explicitly taking into account existing uncertainties and the potential consequences of being wrong. See *precautionary principle*.
precautionary principle	Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by: • careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and • an assessment of the risk-weighted consequences of various options. See *precautionary approach*.
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, Australian 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 investing in 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 the Australian Seafood Industry Council 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 ecologically sustainable development; • 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 seafood industry.
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 federal, state and the territory governments; and the people of Australia.
strategy	A focus for activities that produce the outputs required to achieve planned outcomes. For the FRDC context, see the diagram on page 40.
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 120.
sustainable	A characteristic of a process or a state that can be maintained indefinitely. See *ecologically sustainable development*.
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.

COMPLIANCE

FISHERIES RESEARCH AND

INDEX

DEVELOPMENT CORPORATION

· 2002–03 ·

This compliance index shows the numbers for pages on which information is provided to comply with Commonwealth legislation and policies contained in:

- 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 Australian Government policy, including national priorities for research and priorities for rural R&D;
- *Requirements for annual reports*, Department of the Prime Minister and Cabinet, June 2001, approved by the Joint Committee of Public Accounts and Audit under sub-sections 63(2) and 70(2) of the *Public Service Act 1999*;
- other Australian 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.

* Note: "Government policy" in column 7 includes ministerial directions under s. 143(1) of the PIERD Act, ministerial notifications of Australian Government policy (including priorities for research and rural R&D), the PM&C document *Requirements for annual reports*, other Australian Government guidelines, and recommendations by the Australian National Audit Office.

Compliance subject	Page no.	PIERD Act	CAC Act & Orders	EPBC Act	Other legis-lation	Govt policy*	Sources
advertising and market research	—				✔		*Commonwealth Electoral Act 1918*, s. 311A, as specified by the *Political Broadcasting and Political Disclosure Act 1991* s. 20
annual operational plan							
extent of implementation of	48	✔					PIERD Act s. 28 (1)(b)(ii)
revision of	—	✔					PIERD Act s. 28(1)(a)(iii)
annual report (last year)							
given to Minister by 15 October	99		✔				CAC Act s. 9(1)(b)
tabled by Minister on time	99		✔				CAC Act s. 9(3)
Auditor-General's report on the financial statements	129		✔				CAC Act s. 8(2)
board, see *directors*							
companies							
formation of	—	✔					PIERD Act s. 28(1)(a)(vii)
in which FRDC has an interest, activities of	66, 67	✔					PIERD Act s. 28(1)(a)(vi)
consultancy services	122					✔	PM&C guidelines
contact officer	210					✔	FOI Act s. 8(1)(v) and PM&C guidelines
corporate governance, also see *directors*							
ethical standards	122		✔				CAC Orders cl. 15(3)(e)
main practices, statement of	102		✔				CAC Orders cl. 15(1)
developments since the end of the financial year, and their effects	—		✔				CAC Orders cl. 10(1)(f)
directors							
Board meetings and attendance	112		✔				CAC Orders cl. 14(1)(b)
committee meetings and attendance	112		✔				CAC Orders cl. 15(2)(c)
committee member details	112						CAC Orders cl. 15(2)(b)
committee responsibilities and rights	111		✔				CAC Orders cl. 15(2)(a)
independent advice to, provisions for	116		✔				CAC Orders cl. 15(3)(c)
induction and education in directorship	19, 116		✔				CAC Orders cl. 15(3)(a)
particulars of	104		✔				CAC Orders cl. 14(1)(a)
particulars encompass current and ceased	108		✔				CAC Orders cl. 14(2)
performance, review of	15		✔				CAC Orders cl. 15(3)(b)
risks, business, approach to	15, 118		✔				CAC Orders cl. 15(3)(d)
selection committee for appointment of, report by	168	✔					PIERD Act s. 141
disability strategy	127		✔			✔	CAC Orders cl. 18 and Commonwealth Disability Strategy
ecologically sustainable development	23, 44, 50, 62, 74	✔		✔			EPBC Act s. 516A PIERD Act s.28(1)(a)(iia)

Compliance subject	Page no.	PIERD Act	CAC Act & Orders	EPBC Act	Other legis-lation	Govt policy*	Sources
enabling legislation and its objects and functions	177		✔				CAC Orders cl. 8(a)
energy efficiency	128				✔		National Greenhouse Strategy 1998
environmental reporting, see *ecologically sustainable development*							
equal employment opportunity	127					✔	PM&C guidelines
external scrutiny	42, 98, 113					✔	PM&C guidelines
financial statements	133		✔				CAC Act s. 9 and cl. 2 of schedule 1
fraud control, see *risk*							
freedom of information	128, 209				✔		FOI Act s. 8
functions of the FRDC	178		✔				CAC Orders cl. 8(b)
indemnities against liabilities of officers	—		✔				CAC Act s. 27M, CAC Orders cl. 16(1)
insurance premiums	120		✔				CAC Act s. 27N, CAC Orders cl. 16(2)
exceptions to prohibitions	—		✔				CAC Act s. 27P
industrial democracy	127				✔	✔	Public Service Act 1922 s.22C(10A), PM&C guidelines
influences on performance, see *performance*							
information officer	210				✔		FOI Act s. 8(1)(a)(v)
internal scrutiny	116					✔	DPM&C guidelines
judicial decisions and reports by outside bodies	—		✔				CAC Orders cl. 11
legislation, enabling; objects and functions	178		✔				CAC Orders cl. 8(a)
major activities and facilities, location of	102		✔				CAC Orders cl. 9
major investing and financing activities	7, 16, 85		✔				CAC Orders cl. 10(1)(d)(ii)
ministers to whom responsible, names of	123		✔				CAC Orders cl. 8(b)
ministerial directions and notifications	123		✔				CAC Orders cl. 12(1)
effects of	123		✔				CAC Orders cl. 12(1) and (2)
objectives, see *outcomes, planned* under *performance* heading							
objects, legislative	178		✔				CAC Orders cl. 8(a)
extent to which attained	15, 48	✔					PIERD Act s. 28(1)(c)
occupational health and safety	127				✔		*OH&S (Cth Employment) Act* s. 74
officers, see *directors*							
operational and financial results, see *performance*							
organisational structure, outline of	5		✔				CAC Orders cl. 9
outcomes, planned, achievement of, see *performance*							

Compliance subject	Page no.	PIERD Act	CAC Act & Orders	EPBC Act	Other legis-lation	Govt policy*	Sources
real property, acquiring or disposing of	—	✔					PIERD Act s. 28(1)(a)(viii)
report of operations			✔				CAC Act s. 9 and cl. 1 of schedule 1
certification of	10		✔				CAC Orders cl. 4(1)
includes all matters required by legislation (for Corporation only, since it has no subsidiaries)	through-out report		✔				CAC Orders cl. 17
standards of presentation	observed through-out		✔				CAC Orders cl. 6 and note to cl. 10
representative organisations, project or consultancy conducted by, details of	113					✔	Guidelines on Funding of Consultation Costs by Primary Industries and Energy Portfolio Statutory Authorities
representative organisations and persons, meeting consultation expenses of	113	✔				✔	PIERD Act s. 15 and Ministerial guidelines
review of operations and future prospects — performance in relation to corporate plan, principal outputs and contribution to outcomes, and statutory objects and functions — see those headings under *performance*			✔				CAC Orders cl. 10
risk, also see *performance*							
management of	118, 120		✔			4	CAC Orders cl. 15(3)(d); Fraud Control Policy (ANAO Audit Report of 1996–97) and PM&C guidelines
service charter	120					✔	PM&C guidelines
significant changes in state of affairs or principal activities	—		✔				CAC Orders cl. 10(1)(e)
significant events referred to in s.15 of the CAC Act	—		✔				CAC Act s. 15 and CAC Orders cl. 10(1)(c)
staffing and resources information	125, 142, 160					✔	PM&C guidelines
stakeholders	inside front cover					✔	ANAO Report No. 23 of 1998–99, recommendation 5
subsidiary, inability to obtain information from	—		✔				CAC Orders cl. 7
suppliers, selection of	120						PM&C guidelines

ALPHABETICAL INDEX

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

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PUBLICATIONS AND OTHER INFORMATION

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

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

The following information is available from the FRDC:	Printed	On website
• New publications this year, listed in R&D program reporting on pages 58–59, 71–72 and 80.	✔	
• 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 2)

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 2188, Ascot, 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 types of documents and information available on request and under the provisions of the *Freedom of Information Act 1982* are in appendix G, page 209.

FISH WORLDS

FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

a painting by

TIFFANIE BROWN

In recent years, the fishing industry has acquired considerable knowledge about the more highly valued commercial, recreational and traditional species; their supporting environment; human-induced changes to their ecosystems; and the impacts of fishing practices. However, much remains unknown because of the very great diversity of species and their habitats. The change to more ecologically sustainable approaches has also placed additional demands on scientific knowledge. Over all, fisheries managers and the fishing industry still operate in a context of considerable scientific uncertainty.

Fisheries R&D is increasingly focusing on ecosystems — that is, communities of organisms interacting with each other, and the environment in which they live — because a narrower focus does not take into account the important factors that often lie beyond the immediate habitat. This wider scope is in keeping with ever-increasing emphasis on ecologically sustainable development.

To give form to the many factors involved in fisheries ecosystems, the FRDC commissioned Tiffanie Brown to paint *Fish worlds*, displayed on the front cover. The painting illustrates many ecosystem effects on — and from — wild-catch and fish-farming activities. It will be used in many ways to increase understanding of these complex ecosystems.

Fisheries Research and
Development Corporation
PO Box 222
DEAKIN WEST ACT 2600

www.frdc.com.au

frdc@frdc.com.au
tel: 02 6285 0400 /
+61 2 6285 0400
fax: 02 6285 4421 /
+61 2 6285 4421

On the web, this report is at:
www.frdc.com.au/
pub/anrep/index.htm

The Fisheries Research and Development Corporation plans, invests in and manages fisheries research and development throughout Australia. It is a statutory authority of the Australian Government Department of Agriculture, Fisheries and Forestry, jointly funded by the Australian Government and the fishing industry.