A REPORT ON A STUDY UNDERTAKEN BY THE

AUSTRALIAN FISHING INDUSTRY COUNCIL (AFIC) TITLED:

- (A) The current state of fishing industry use of and access to the data and information systems available to State and Federal authorities responsible for the regulation and management of the fishing industry, and the extent to which industry has the capacity to obtain and utilize these information sources.
- (B) The availability, cost, distribution, storage and usage patterns of fuel as these relate to the Australian commercial fishing industry, and the possible impact of these fuel associated factors on the catching, ship building, processing and marketing sectors of the industry.

ABSTRACT

Information relating to the Commercial Fishing Industry's access to the data and information systems and industry's input into the research and management policies of State/Territory and Federal Fisheries Authorities was obtained. Evidence suggests that in States with a strong <u>unified</u> industry representative body "access and input" is extremely good compared with States where industry is divided. Evidence also suggests that the attitude of the Head of a State or Commonwealth Fisheries Authority towards the fishing industry relates strongly to industry's "access and input" and hence economic and biological viability of the fisheries.

The office of "extension and publicity officer" is a valuable liaison between industry and research and most useful in dissemination of information.

The brief of the AFIC Executive Officers (W.A. & S.A.) is very effective in assisting the unity of the State fishing industry and in the day to day liaison and relationship with Fisheries Authorities and hence industry's input into management and research.

Computer terminals, sited in major fish processing factories or co-operatives, could assist in timely collection and sharing of data and information.

The ever increasing cost of diesel fuel is having a major impact on the economics of fishing, is strongly curtailing exploratory fishing and increasing the fishing pressure on known stocks. Compressed Natural Gas, C.N.G., used as a dual fuel with diesel appears to be the alternative cheap fuel source industry needs. Fuel costs could be halved with the use of C.N.G.

Evidence suggests that for industry to have any chance to actively participate with Govenment on fisheries management policies, it must first speak with one voice. Fishing industry individualism and economic viability cannot co-exist at the management policy level.

ACKNOWLEDGEMENTS

This report was funded by the Fishing Industry Research Trust Account (FIRTA) without whose support this research could not have been accomplished.

An expression of appreciation is extended to those people in State and Federal fisheries authorities, relevant research institutions, AFIC State and Federal Branches and industry members who offered assistance and information.

Some of the information within this report has been obtained from various bibliographies, including AMRIP and VIMSIS, and annual reports without due acknowledgement in the text. This report is intended in part as a compilation of existing data and information compared with an all original text.

> Peter C. Halsey, B.Sc. National Research Officer Australian Fishing Industry Council*

October, 1983.

* P.O. Box 63, ARANDA, A.C.T. 2614.

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INTRODUCTION

1.

The commercial fishing industry in Australia has a varied history regarding its access to fisheries data and its input into the research and management programmes of State and Federal fishery authorities. Almost from the onset of commercial fishing, authorities in many instances have implemented management policies which do not necessarily reflect the requirements of the fishing industry nor of the fish stocks.

Never before, in the history of commercial fishing in Australia, have there been so many International, National and State obligations affecting access to our fisheries, including recreational and tourism. These, coupled with the economic problems caused by diesel fuel price increases have accentuated the need for the fishing industry to be fully informed, consulted and more actively participate in the decision making process in management and research policies.

The Australian Fishing Industry Council (AFIC) has long believed that intrinsic to the aims of responsible and efficient fisheries management, there is the need for industry to be not only fully consulted and participate more actively in the decision making process, but have access to and be fully informed of the data and information, which is held by fisheries authorities and is used in formulating policy.

This report attempts to elucidate the fishing industry's use of and access to the data and information systems available to State and Federal fishery authorities and its input into research and management policies. It also details:

- data collected and areas of research;
 - dissemination of data/research results of the relevant fisheries research institutions in Australia;
- Fisheries Council/Committees; and
- data bases of relevance to industry.

As well, it considers the problems facing the industry relating to diesel fuel supply and cost, and alternative sources of fuel energy.

Field work was carried out in all State/Territories, with visits to major and many minor ports. Information was obtained where possible on a personal basis from Directors/Heads of Departments, Principal Research Officers, oil companies and industry. All the States/ Territory/Commonwealth fisheries authorities were approached for information. A common questionnaire was used.

Where a personal approach was not possible, information was obtained from various marine research bibliographies (e.g. AMRIP and VIMSIS) and annual reports.

RECOMMENDATIONS

- Attitudes of the bureaucracy must change to accommodate total industry participation in management and research policies.
- Industry on a State and Federal level must become overwhelmingly united to ensure one voice to Government. (This will assist bureaucracy to accommodate industry participation in management and research policies.)
- Federal and State fisheries authorities who do not have an "extension and publicity officer" should assign a high priority to the creation and functions of this office.
- Raw data should be programmed into computer data banks in such a manner to enable direct on-line access by industry whilst maintaining confidentialities. Industry is technically capable of analysing raw data. (On-line access would decrease the time gap in dissemination of information considering the isolation of the industry.)
 - Industry must establish avenues of liaison with the Universities in order to more effectively tap into the vast reservoir of research expertise and knowledge available. Similarly, liaison with the Australian Institute of Marine Sciences would assist industry.
- Free, blanket postal dissemination of information/data availability (even if it is only summaries) is necessary for industry to be kept aware of the "state of the art".
 - The journal Australian Fisheries, being the official avenue whereby Commonwealth Fisheries information is disseminated, should be posted free each month to all industry members.
 - Being totally representative of industry, the new Interim Fishing Industry Consultative Panel (IFICP) may be the forum for discussing the advantages of siting computer terminals in major processing establishments and the subsequent assistance to Government in data and information collection from industry and the immediate access of data by industry. This should be considered in the light of the geographical isolation of industry and the time required for normal postal services.

Industry should consider the advantages in forming "fuel and marine lubricants" buying groups of perhaps 20 - 30 individuals.

A research project to prove the application in the first instance of Dual Fuel Conversion of an existing diesel fired vessel to fire on a dual fuel mix of Compressed Natural Gas (CNG) and diesel (ADO) should be implemented as soon as possible.

CHAPTER ONE

Results - Fisheries Data Availability

Chapter One details per relevant research institutions on a State by State basis what fisheries data is available, industry access and input, dissemination procedures and where necessary, possible ways to improve industry's input and access to the data.

There is no formal summary of Chapter One. It is intended that Chapter One should be read on an institution or State by State basis.

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AUSTRALIAN CAPITAL TERRITORY (A.C.T.)

Research Institutions relevant to the fishing industry:

- Fisheries Division, Department of Primary Industry
- Fisheries Research Section, Bureau of Agricultural Economics, Department of Primary Industry

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Fisheries Division, Department of Primary Industry

FUNCTIONS:

The Fisheries Division is responsible for providing advice to the Commonwealth Government on all matters related to the commercial utilisation of living marine resources. In practice, the development of policies, fisheries management and administration of legislation related to the 200 mile Australian Fishing Zone (AFZ) account for most of the Division's activities. In addition the Division is responsible for conducting negotiations with foreign countries whose nationals wish to fish in the AFZ. The Division also has a key co-ordinating role: it provides the secretariat for the Australian Fisheries Council; it is represented on, and provides the secretariat for, the Standing Committee on Fisheries, and is involved with all of the Standing Committees, Page 100).

(1) Data collected and areas of research:

This includes:

- Tropical rock lobster study
- Assessment of the Norfolk Island domestic fishery with a study on the biology of the major species *Lethrinus chrysostomus*.
- South east Australian squid mesh net survey.
- South east Queensland prawn/scallop fishery: an economic survey
- Western Australian prawn fisheries in Shark Bay and Exmouth Shelf: an economic survey
- North west Australian gill net survey
- Survey of the pattern of Fish and Shellfish consumption in Australia
 - Economic survey of the Northern Prawn Fishery

- Research on technology of processing Rock lobster in relation to drowning before tailing
- Study of the Southern Bluefin Tuna recruitment
- . Australian participation in tuna handline-pole fishery
- South Australian deepwater line fishing development
- Log book catch and effort data Northern Prawn Fishery and Southern Bluefin Tuna Fishery
- Foreign fishing vessel operation data in the AFZ
- Overseas fish market information
- Domestic fish market information
- Fishery resource surveys
 - Report on mercury and fish and fish products

Many of the programmes undertaken by the Fisheries Division are in conjunction with State Authorities.

(2) Industry input into (1) above:

This occurs via:

- The Federal Executive of the Australian Fishing Industry Council (AFIC) regularly liaise with the Minister for Primary Industry and Senior Officers of the Division on all aspects of fisheries management.
- The AFIC Technical Standing Sub-Committee regularly liaise with the Division on "Fish processing procedures and export requirements, inspection etc".
- Relevant State AFIC's and other industry bodies are consulted in relation to Joint Venture or Bilateral Fishing Operations in the AFZ.
 - Industry bodies are also involved in formulating management programmes where State and/or Commonwealth boundaries/ jurisdiction integrate, e.g. Northern Prawn Fishery, South East Trawl Fishery, South East Shark Fishery, Southern Bluefin Tuna Fishery, East Queensland Prawn Fishery.
 - Industry is a member of -
 - Australian Fishing Zone Committee
 - Fishing Industry Research Committee
 - Tuna Task Force
 - Northern Prawn Advisory Committee
 - Personal contact
- (3) Other research institutions input into (1) above:

This occurs via membership of:

- Ministerial membership of Australian Fisheries Council
- Standing Committee on Fisheries

Australian Fishing Zone Committee

. Fishing Industry Research Committee

South Eastern Fisheries Committee

Tuna Task Force

Demersal Mollusc Research Group

Demersal and Pelagic Fish Research Group

Squid Research Group

Northern Fisheries Committee

. Northern Prawn Advisory Committee

Northern Fisheries Committee Technical Working Group

Western Fisheries Research Committee

(4) Dissemination of data/research results:

This occurs via:

Australian Fisheries (the monthly journal published by DPI - free to licenced fishermen)

A.F.Z. Bulletin (quarterly, free on request)

- Overseas Marketing Notes (monthly, free on request)
- Domestic Marketing Notes (bi-monthly, free on request)

Departmental Reports (purchase from AGPS*, free to key personnel)

Fisheries Leaflets, Australian Fisheries inserts.

Workshops/Seminars

The Industry Technology and Liasion Section of Fisheries Division DPI is involved in the practical/development area of fisheries research. This includes:

organisation of and carrying out fishery surveys (including exploratory surveys)

- the development of gear, boats, catching techniques, etc.
- in an advisory capacity to other sections within the DPI.

This Section is regularly approached by fishermen for technical information and assistance. Officers of this Section regularly liaise with fishermen in on/board work face situations.

* AGPS - Australian Government Publishing Service

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(5) Industry access to data/research results:

Direct access to Australian fishermen Log book data stored on CSIRONET is not available to Industry. Confidentialities must be maintained. Summaries of data are available on request. Information on the operations of foreign vessels in the AFZ is freely available.

Other information (reports etc.) available on request.

(6) Other research institutions access to data/research results:

State Fishery authorities with the ability to log into CSIRONET have direct access to Australian Fishermen log book data and foreign fishing vessel data.

Other information available on request.

The journal Australian Fisheries is posted free to various State and Overseas Authorities etc. on a reciprocal basis.

(7) Inadequacies of Fisheries Division - DPI

In many instances, scientific personnel are now involved with the industry in a consulting role compared with the bureaucracy only. Also many members of industry possess formal and technical training which enables them to interpret data.

Whilst there are numerous formal avenues for industry organisation consultative processes with Fisheries Division -DPI, evidence suggests that individual members of industry are successfully lobbying the Division.Whilst the right of individuals to do so is accepted, it must be realised that such practices on behalf of the individual and the bureaucracy undermines the value of a "united industry voice" and can lead to major problems in management of the fisheries.

(3) Recommendations for solving inadequacies:

- Computer programmes could be designed which would ensure maintenance of confidentialities yet still allow industry to have on-line access to raw data held on CSIRONET or any other data base.
- The Fisheries Division must realise it is empowered to administer on behalf of industry and not individuals, and hence encourage united consultation only.

Fisheries Research Section, Bureau of Agricultural Economics

FUNCTIONS:

"The Fisheries Research Section is responsible for economic research and policy analysis for the fishing industries. The Section's functions are: To conduct a comprehensive program of research into the economics of processing and marketing of Australian seafood, fish and marine products, with attention being paid to the economic developments and market prospects in the domestic and overseas markets.

- To conduct analyses and make recommendations to government, government instrumentalities and industry organisations on economic issues and policies affecting the fishing industries.
- To assist government departments and agencies with the provision and interpretation of fisheries economic information and research results in connection with the discharge of their responsibilities.
- To publish assessments of the short, medium and long-term economic outlook for the fishing industries.
- To study and assess the fisheries economic policies of overseas countries, the objectives of this work being to determine the economic effects of such measures on market prospects for Australian seafood, fish and marine products; to assess the potential economic effects of such policies if they were adopted in Australia; and to provide information and analyses for use in conducting international negotiations involving fish and fish products.
- To conduct research into the economic effects on the fishing industry of measures designed to influence developments in other sections of the economy.
 - To carry out special investigations into economic matters of relevance to the fishing industry at the request of the Minister or government."
- (1) Data collected and areas of research:

This includes -

- Assessment of the economic impact of boat replacement policies on limited entry management regimes.
- An assessment of the economic impact on the catching and processing sectors of the Australian tuna industry of reductions in the catch.
- An assessment of the economic impact of a reduction in the catch of juvenile Southern Bluefin Tuna on the Australian tuna industry.
- . BAE fisheries data base development.
- Examination of price relationships for scale fish on the domestic market.
- Submission to the Interim Inquiry on the S.E. Trawl.
- Submission to the Inquiry into Fish, crustacea and molluscs.

- Economic study of the northern N.S.W. and southern Queensland prawn fisheries.
- . Economic evaluation of southern rock lobster fishery.
 - Fuel and the Australian fishing industries.

(2) Industry input into (1) above:

The B.A.E. has a formal process of soliciting input. Each January, some 200 individuals (representing Agricultural Industries, Academics etc.) are invited to suggest projects they consider suitable for/or in need of research by the B.A.E. Suggestions received are considered by the Executive. Currently 25 Fishing Industry personnel and fisheries research academics are included in the 200 individuals. Industry input is also obtained via FIRTA grants.

(3) Other research institutions input into (1) above:

Other research institutions are included in the "200" individuals solicited for input (as in (2)). Also, the B.A.E. is often contacted by institutions seeking information or seeking the B.A.E.'s involvement as a partner in a joint project.

(4) Dissemination of data/research results:

This is published in a variety of ways including:

- Detailed Bureau Reports Occasional Papers (if related to the Fishing Industry, then also published in Australian Fisheries.)
- Detailed I.A.C. Submissions
- B.A.E. National Outlook Conference Documents
- Quarterly Review of the Rural Economy
- Australian Journal of Agricultural Economics
- American Journal of Agricultural Economics

(5) Industry access to data/research results:

Normally available on request, subject to the maintenance of confidentiality where applicable. Timeliness of this access can be as short as ten minutes, or as long as several months (results of a survey).

Published results are automatically disseminated to key industry representatives.

(6) Other research institutions access to data/research results:

- Normally available on request, subject to confidentialities.
- Automatic dissemination of published work to -
 - Departments of Agriculture and Fisheries
 - Key academics

(7) Inadequacies of Fisheries Research Section - B.A.E.:

This includes:

- Standard Public Service bureaucratic constraints on staff, floor space, access to computer time etc. can affect the efficiency of the research. These artificial resource constraints should not be allowed to affect efficiency.
- Dissemination of information, depending on the research project, can take several months to traverse the system. This is considered necessary by the B.A.E. to maintain quality control, ensuring B.A.E. standards are not jeopardized. However, if the information is of direct relevance as the "Information on the Northern Prawn Fishery" was, the B.A.E. can, and in fact did accommodate an early release to the interested parties.

(8) Recommendations for solving inadequacies:

Whilst industry opinion may not effectively remove bureaucratic constraints relating to B.A.E. expenditure of Public Monies, it may well alter the constraints as they apply to industry monies granted to the B.A.E. for industry research.

It may be appropriate for industry to take the necessary steps with the Department concerned to allow the B.A.E. flexibility in expending industry funds.

NEW SOUTH WALES (N.S.W.)

Research institutions relevant to Fishing Industry:

- . Division of State Fisheries, Department of Agriculture
- . University of Sydney
- . University of New South Wales
- . Macquarie University
- . University of New England
- . University of Newcastle
- . Australian Museum
- C.S.I.R.O. Division of Fisheries Research, Cronulla

Division of State Fisheries, Department of Agriculture

FUNCTIONS:

"Authorized under the "Fisheries and Oyster Farms Act (1935)", the Minister for Agriculture is responsible for the conservation and protection of the existing fisheries, and the development of new fisheries. To assist in this, and to provide a sound basis for the department's regulation and management of fisheries, the Division of State Fisheries carries out practical research programmes in key areas. The department's regulatory and management policies are generally based on the concept of ensuring maximum sustainable yield of fish or animals in a fishery."

(1) Data collected and areas of research:

This includes:

Catch and effort statistics which specifically relate to a research program, e.g. danish seine program, prawn fishery program or abalone program. This is in addition to the ongoing log book statistics which are required to be lodged by the fisherman.

Brackish water fish culture research station

- oyster culture
- prawn farming research
- bass breeding
- Marine resources surveys by F.R.V. Kapala
- Prawn stock research
- Danish seine and trawl fish research

Abalone research

Marine angling program

Gamefish tagging program

Biometrics

Artificial reef research

Fish product development

Sydney estuary fish research

Conservation and preservation of aquatic resources

Estuarine inventory programme

Aquatic reserves programme

Water quality and primary production

Estuarine benthos and fish studies

Botany Bay studies

Heavy metals programme

Fish attracting system

Clarence River pilot prawn farming project

(2) Industry input into (1) above:

The Director of State Fisheries and senior officers hold quarterly meetings with the N.S.W. Association of Professional Fishermen discussing regulatory, management and research programmes. Programmes where industry suggestions have been implemented include:

. aquaculture research

. danish seine programme

- . abalone programme
- . prawn programme

. 🐪 F.R.V. Kapala marine resources programme

It is anticipated that the inclusion of State Fisheries into the Department of Agriculture will strengthen the input Industry has into regulatory, management and research programmes.

(3) Other research institutions input into (1) above:

Joint programmes currently occur with

- Australian Maritime College, co-ordinate educational activities e.g. radar, sonar courses etc.
- . Australian Museum exploration
- . CSIRO Division of Food Research
- State/Commonwealth/State programme, e.g. danish seine and trawl

Unlike S.A. and W.A., no State Fisheries Journal is published. However, this appears to be well compensated for by the publication of different "reports etc." on an "as soon as information available basis". This includes:

Kapala Cruise Reports

- interim reports posted free to all fishermen within few days cruise ending
- summaries of Cruise reports posted free to all fishermen when research programme finalised
- information is disseminated as relevant not historical data
- mailing list is currently 800 including some fishermen in Queensland and Victoria

Also fishing charts off surveys and charts on trawl bottom are available on request.

- State Fisheries "Leaflet" series available on request. Includes information on -
 - estuaries; fish in farm dams; Sydney rock lobsters; oyster culture in N.S.W.; guide to artificial reefs etc.
- Information is also disseminated to industry via workshops for seminars and technical reports.

The Information and Extension Service will distribute on request a wide range of fisheries information. This includes everything from fish catching, net designs, boat designs for specific fisheries to product handling and biological information on marine resources etc. The Service receives approximately 20 calls per week from fishermen asking for information. A library of national and international fisheries journals etc. is kept and used as a source of information available to industry. Industry is informed of the availability of research reports by Press releases and word of mouth (branch offices and inspectors, etc.).

Papers are also reprinted in Australian Fisheries.

As the State Fisheries is now a part of the N.S.W. Department of Agriculture, a wider range of information dissemination avenues to industry is available through the increased number of branch offices and inspectors.

(5) Industry access to data/research results:

No access is allowed to confidential information which may lead to the identity of the person furnishing the information, or unfair competition.

Summaries of catch and effort data are distributed annually. The Kapala cruise reports contain extensive operational data. Published information available on request to Information and Extension Officer.

(6) Other research organisations access to data/research results:

Confidential information not available. Access to summaries and general data available.

(7) Inadequacies of N.S.W. State Fisheries:

Evidence suggests that a previous inadequacy has been in the area of industry consultation and input into regulatory, management and research programmes.

Argument could be put forward favouring the implementation of a bi-monthly "fishermen's journal". However this would focus on the presentation of a multitude of subjects under one binding (more difficult to misplace etc.) and not on the content of nor timeliness of current publications.

(8) Recommendations for solving inadequacies:

It is anticipated that the inclusion of State Fisheries into the Department of Agriculture will strengthen the input Industry has into regulatory, management and research programmes.

University of Sydney

FUNCTIONS:

This is primarily a teaching university with research being undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes:

- Ecophysiology of mangroves in the Sydney region
- Ecology of fishes: Structure and functions of colour patterns in fishes of New South Wales
- Reef fish ecology
- Law and the cultural heritage (including the underwater cultural heritage)
- . Effects of oil pollution and oil dispersants on mangroves in Botany Bay
- Investigation of the causes of depletion of seagrass beds in Botany Bay
 - Seasonality of ichthyoplankton, biology of baitfish *Hypoatherina tropicalis*

(2) Industry input into (1) above:

There is no formal avenue for industry input. Industry input is welcome.

(3) Other research institutions input into (1) above:

Personal contact.

(4) Dissemination of data/research results:

This includes publication in -

Australian Fisheries (esp. if FIRTA funded)

. AMSTAC-FAP Reports

. Deep Sea Research

. Australian Journal of Marine and Freshwater Research

. Continental Shelf Oceanography

. Japanese Journal of Ichthyology

Environmental Biology of Fishes

Ecological Monographs

(5) Industry access to data/research results:

Access is generally available on request. Release of unpublished data is carefully considered.

(6) Other research institutions access to data/research results:

Same as in (5) above.

(7) Inadequacies of University of Sydney:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish a formal avenue for input.

University of New South Wales

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff and higher degree students.

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(1) Data collected and areas of research:

This includes:

- Breaking of internal waves
- Hydraulic behaviour of tidal inlets
- Ocean dynamics of the south-central Great Barrier Reef Lagoon
 - Tides of the southern Great Barrier Reef
- Oysters of the Indo-West Pacific region (Bivalvia: Ostreidae and Gryphaeidae)
- Physiology and anatomy of sensory receptors and central nervous systems of crustaceans.

(2) Industry input into (1) above:

There is no formal avenue for industry input. Industry input welcome.

(3) Other research institutions input into (1) above:

Personal contact.

(4) Dissemination of data/research results:

This includes publication in -

- Australian Journal of Marine and Freshwater Research
- Journal of Physical Oceanography
- Journal of Fluid Dynamics
- . Continental Shelf Oceanography
- Water Research Laboratory Reports
- Deep Sea Research
- Australian Fisheries (esp. if FIRTA funded)
 - AMSTAC FAP Reports

(5) Industry access to data/research results:

Access is generally available on request. Release of unpublished data is carefully considered.

(6) Other research institutions access to data/research results:

Same as in (5) above.

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(7) Inadequacies of University of New South Wales:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish a formal avenue for input.

Macquarie University

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes -

- . Systematic revision of Onuphidae (Polychaeta)
- . Aspects of the taxonomy and biology of the fish family Teraponidae
 - Systematic revision of Atherinidae, Isonidae (Fishes)
 - Ecology of coral reef fishes

Assessment of the role of large transient fishes in shaping shallow water communities of small resident reef fish

Ecology of the sharp nosed puffer Canthigaster valentini

(2) Industry input into (1) above:

There is no formal avenue for industry input. Industry input welcomed.

(3) Other research institution input into (1) above:

Personal contact.

(4) Dissemination of data/research results:

This includes publication in -

- . Australian Journal of Marine and Freshwater Research
- . Australian Journal of Zoology

. Japanese Journal of Ichthyology

. Environmental Biology of Fishes

- Oceanographic Marine Biology Annual Review
- . Ecological Monographs
- Australian Fisheries (occasionally)

(5) Industry access to data/research results:

Access is generally available on request. Release of unpublished data carefully considered.

(6) Other research institutions access to data/research results:

Same as in (5) above.

(7) Inadequacies of Maguarie University:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish a formal avenue for input.

University of New England

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and area of research:

This includes -

- Biology and taxonomy of the Indo-Pacific Gerreidae
- Ecology of intertidal Littorinids
- . Ecology of marine parasites
 - Studies on Southern-Ocean marine invertebrates:
 - metal contents in sub-antarctic holothuroids
 - reproductive condition in
 - (a) Littoral vertebrates
 - (b) Euphausia superba

(2) Industry input into (1) above:

There is no formal avenue for industry input. Industry input welcome.

(3) Other research institutions input into (1) above:

Personal contact.

(4) Dissemination of data/research results:

This includes publication in -

- . Australian Journal of Marine and Freshwater Research
- . Journal of Parasitology
- Australian Journal of Zoology
 - Australian Fisheries (esp. if project FIRTA funded)

(5) Industry access to the data/research results:

Access is generally available. Release of unpublished data carefully considered.

(6) Other research institutions access to the data/research results:

As in (5) above.

(7) Inadequacies of University of New England:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish a formal avenue for input.

University of Newcastle

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes -

- Reproductive biology of the male Port Jackson shark Heterodontus portus jacksonii
- Assessment of distribution, reproduction and recruitment of sea urchins in the Newcastle region
 - The ecology of the sea urchin *Centrostephanus rodgersii* with respect to commercial harvesting

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(2) Industry input into (1) above:

There is no formal avenue for industry input. Industry input welcome.

(3) Other research institutions input into (1) above:

Personal contact only.

(4) Dissemination of data/research results:

This includes publication in -

- Australian Journal of Marine and Freshwater Research
- Australian Fisheries (esp. if FIRTA funded)
- . AMSTAC FAP reports

. Australian Journal of Zoology

. Australian Journal of Marine Biology

(5) Industry access to the data/research results:

Access is generally available on request. Release of unpublished data carefully considered.

(6) Other research institutions access to the data/research results:

As in (5) above.

(7) Inadequacies of University of Newcastle:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to initiate a formal avenue for input.

The Australian Museum

FUNCTIONS:

Functions include providing:

- basic identification of specimens for the general public and government institutions
 - library of fauna and flora via reference collections of specimens

documentation of New South Wales fauna and flora and to a lesser extent fauna and flora of Australia

(1) Data collected and areas of research:

This includes -

- Taxonomic revision of the opisthobranch family Choromodoridae (Mollusca) in the Indo-West Pacific
- An illustrated key to the parrot fishes of the Great Barrier Reef
- Compilation of information for a Checklist of Fishes of Capricornia
- Checklist of Fishes of Australia

(2) Industry input into (1) above:

Personal contact. No formal avenue for industry input.

(3) Other research institutions input into (1) above:

Personal contact.

(4) Dissemination of data/research results:

Dissemination is via journals including -

- . Records of Australian Museum
- . Japanese Journal of Ichthyology
- . Australian Journal of Marine and Freshwater Research
- . Australian Journal of Zoology
- . AMSTAC FAP Reports

(5) Industry access to data/research results:

Access is on application to -

relevant Curator

Department of Science and Technology if AMSTAC-FAP funded

(6) Other research institutions access to data/research results:

As in (5) above.

(7) Inadequacies of the Australian Museum:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

CSIRO - Division of Fisheries Research (Cronulla)

FUNCTIONS:

The Science and Industry Research Amendment Act 1978 which amends the Science and Industry Act 1949 states the amended functions of CSIRO as being:-

- "(a) to carry out scientific research for any of the following purposes:
 - (i) assisting Australian Industry;
 - (ii) furthering the interests of the Australian community;
 - (iii) contributing to the achievement of Australian national objectives or the performance of the national and international responsibilities of the Commonwealth;
 - (iv) any other purpose determined by the Minister;
 - (b) to encourage or facilitate the application or utilization of the results of such research;
 - (c) to act as a means of liaison between Australia and other countries in matters connected with scientific research;
 - (d) to train, and to assist in the training of, research workers in the field of science and to co-operate with tertiary education institutions in relation to education in that field;
 - (e) to establish and award fellowships and studentships for research, and to make grants in aid of research, for a purpose referred to in paragraph (a);
 - (f) to recognize associations of persons engaged in industry for the purpose of carrying out industrial scientific research and to co-operate with, and make grants to, such associations;
 - (g) to establish, develop and maintain standards of measurement of physical quantities and, in relation to those standards -
 - (i) to promote their use;
 - (ii) to promote, and participate in, the development of calibration wtih respect to them; and
 - (iii) to take any other action with respect to them that the Executive thinks fit;

- (h) to collect, interpret and disseminate information relating to scientific and technical matters; and
- (i) to publish scientific and technical reports, periodicals and papers. "

"The Division investigates the ecology and life histories of the principal components of the marine food webs in tropical and subtropical waters of Australia and applies the knowledge gained to the development of management strategies for harvestable resources such as lobsters, prawns and fish."

(1) Data collected and areas of research:

This includes -

- Data and information service to the northern prawn fishery. (Cleveland laboratory, Qld.) - FIRTA funded
- The occurrence and significance of pathogenic vibrios in oysters FIRTA funded
- Application of satellite real-time sea surface temperature (SST) data to the tuna, salmon and pilchard fisheries. (Marmion laboratory, W.A.) FIRTA funded
- Northern pelagic fish stock research FIRTA funded
- Measuring the feeding range of western rock lobster and the effective fishing area of a baited pot (Marmion laboratory W.A.) - FIRTA funded
- Stock identity of no-thern fishes FIRTA funded
- A bibliography of world-wide research on Tuna (S.B.T.)
- A bibliography of world-wide research on Spiny Rock Lobsters (family Palinuridae)
- Phytoplankton production
- Algal culture collection
- Algal physiology
- Phytoplankton ecology
- Migratory species (Tunas and Billfish)
- Tagging of Southern Bluefin Tuna off the coast of Australia - FIRTA funded
- Fish taxonomy
- Tropical rock lobsters
- . Temperate Fisheries
- Ecology of ocean fronts
- Fish population dynamics
- Barramundi life history studies and tagging FIRTA funded
- Gulf Prawn survey
- Tropical demersal fisheries

Squid - to determine types of squid in Australian waters which may have commercial potential.

- Northern shark
- Temperate demersal fish ecology
- . Tropical pelagic fisheries
- . Tropical fish biology
- . Gulf of Carpentaria fish ecology
- . Fish population genetics
- . Reproductive physiology of fish

(2) Industry input into (1) above:

Liaison with the fishing industry primarily occurs through the consultative bodies of:

- Northern Fisheries Committee (NFC)
- Northern Prawn Advisory Committee (NORPAC)
- . Technical Working Group (to the NFC)
- South Eastern Fisheries Committee (S.E.F.C.)
- . Tuna Task Force
- Demersal and Pelagic Fish Research Group
- Squid Research Group
- . Fishing Industry Research Committee (FIRTA)
- Western Fisheries Research Committee (W.F.R.C.)

Industry representation on/to these bodies can lead to input and initiation of research programmes.

(3) Other research institutions input into (1) above:

This occurs through the same representation on/to the consultative bodies as in (2) above.

Priorities for research by CSIRO are assigned in various ways:

- Perception of Section Head
- . Department of Primary Industry requirements
- . Scientific staff input
- . State Fisheries via "committees"
- Industry via some committees
 - Australian International obligations (eg. Aust.-Japan SBT research, FAO, WESTPAC and JETINDOFISH)
 - Areas of promise in the forefront of scientific research must be considered by the Chief as ones of priority.

(4) Dissemination of data/research results:

Relevant information is published in journals/reports including -

- Northern Prawn Fishery "Information Notes" (posted free to N.P.F.)
- . Australian Fisheries
- CSIRO Division of Fisheries and Oceanography "Reports"
- Australian Journal of Marine and Freshwater Research
- U.S. National Marine Fisheries Service Fishery Bulletin
- Journal of Experimental Marine Biology and Ecology
- Analytica Clinica Acta
- Marine Ecology Progress Series
- . Aquatic Botany
- Mathematical Biosciences
- . Ecological Modelling
- Canadian Journal of Fisheries and Aquatic Sciences
- . Biometrika
- . Marine Biology (Berlin)
- Personal contact
- (5) Industry access to data/research results:

Access to published reports available on request to individual scientist or Chief. Direct access to data stored on CSIRONET is not available to industry. Requests for information on CSIRONET must be directed to the Chief. This is for several reasons:

- (i) To maintain confidentiality where appropriate
- (ii) To respect the priority publishing rights of individual research scientists
- (iii) It is not practical for industry personnel untrained in interpreting raw data to have access. Misinterpretation of such data can create major conflicts between Industry and Government re management policies etc.

Reprints available via CSIRO Library.

(6) Other research institutions access to data/research results:

Fisheries Authorities have direct access to some of the research data held by CSIRO on CSIRONET. Again, priority publishing rights of individual CSIRO scientists must be respected. Confientiality problems are also considered. Co-operation re sharing of information occurs on a personal basis and generally relates to joint research programmes. (7) Inadequacies of CSIRO - Division of Fisheries Research, Cronulla:

- . There is no Industry liaison officer at Cronulla.
 - Evidence suggests that whilst there are several specific fishery committees by which industry has input to CSIRO, some fisheries are subject to more industry relevant research than others.
 - Many members of industry possess formal and technical training which enables them to interpret raw data.
 - Adherence to respecting priority publishing rights of individual scientists can lead to data and information becoming of historical value only to industry.

(8) Recommendations for solving inadequacies:

The Division of Fisheries Research has plans for an Industry liaison officer to be based at Cronulla, but no funds are available for this position. Realising the value to industry of such a position, it may be appropriate for the Division to explore various avenues for immediate funding.

Industry has the capability_to interpret raw data. Confidentialities can be maintained by adequate computer programming, allowing industry direct access to raw data.

Reasons why some fisheries receive more industry relevant research include:

- total industry/fishery representation to Division of Fisheries compared with partial representation
- availability of research scientist to carry out the project
 - political embarrassment of the Government or the Division leading to the instigation of a specific piece of research
- some sectors of the Division are of the opinion that industry relevant research is as important a role of the CSIRO as is pure research.

It could be argued that, depending on interpretation, the Science and Industry Research Amendment Act 1978 authorises the CSIRO to assist industry much more than is currently happening.

QUEENSLAND (QLD)

	Research institutions relevant to Fishing Indust	ry:
•	Queensland Fisheries Research Branch (Department of Primary Industries)	p28
•	Australian Institute for Marine Sciences (AIMS)	p37
	Great Barrier Reef Marine Park Authority	P 31
•	Cleveland Laboratory, C.S.I.R.O., Division of Fisheries Research	P42
	Queensland Museum	p41
•	University of Queensland	p35
•	James Cook University of Townsville (J.C.U.)	p 45
	Queensland Fish Management Authority	PA
	Griffith University	P 33

Queensland Fisheries Research Branch (Q.F.R.B.)

FUNCTIONS:

The Qld. Fisheries Research Branch has the responsibility to provide recommendations and guidelines for effective management of commercial and recreational fisheries both in State waters and those adjacent to the Great Barrier Reef; to foster the rational development of Queensland's fishery resources; and to promote the State's fishing industry.

To fulfil this role, the Branch is involved in a number of activities including:

- The assessment of the biological status of aquatic resources and the effects of amateur and professional fishing and other activities on these resources
- The consideration of socio-economic factors which may affect the fishing industry
- The identification and evaluation of the potential of unexploited fisheries resources and the development of appropriate fishing, product handling and processing techniques
- The improvement of freshwater recreational fisheries through impoundment stocking programmes
 - The development of improved handling, processing and storage techniques to upgrade the standard of Queensland fisheries products.

(1) Data collected and areas of research:

This includes:

- Barramundi study growth, distribution, migrations, genetic composition, spawning, juvenile ecology, feeding and maturation of barramundi in selected river systems in the Northern Territory and Gulf of Carpentaria
- Biology of *Portunus pelagicus* (Crustacea: Decopoda: Portunioae)
- . Biology of mud crabs Scylla serrata

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- . Mangrove revegetation Brisbane international airport redevelopment
- . Boat ramp surveys
- Reef fish tagging in the Capricornia Section of the Great Barrier Reef Marine Park
- Assessment of the east Queensland inshore commercial gill net fishery
 - Giant Clams on the Great Barrier Reef and poaching by foreign fishing vessels
- Northern Queensland inshore gill-net fisheries management study
- Population biology of the spanner crab (*Ranina ranina*) in south Queensland waters
- Queensland recreational fisheries resources
- Squid research programme
- . The fishery biology of *Trochus* on the Great Barrier Reef
- Crown of Thorns starfish clearance from Green Island Reef
- Trochus resource survey
- Preliminary biological mapping of the inter-reef areas of the Great Barrier Reef using benthic macro invertebrates and fishes
- Fish ladder design for Queensland coastal streams
- Gulf of Carpentaria tiger and endeavour prawn project
- (2) Industry input into (1) above:

This occurs via:

- Membership of NORPAC
- . Q.F.R.B. as a member of the Moreton Bay Advisory Committee
- . Membership of the Q.C.F.O. who outline research priorities and management problems to the Fish Management Authority or the Minister
- . Occasional Q.F.R.B. workshops to determine priorities
- . Research scientist personal contact with industry

There are no formalised liaison committees as exist in some other States (e.g. W.A., S.A., Vic.)

(3) Other research institutions input into (1) above:

This occurs via:

- Membership of the Northern Fisheries Committee (N.F.C.)
- Membership of the NORPAC Technical Advisory Committee
- . Personal contact

(4) Dissemination of data/research results:

The Fisheries Research Board do not publish an industry journal. Where research information is considered to be of immediate use to industry, steps are taken to have the report published in the Q.C.F.O. Newsletter.

The general public (including industry) are informed of the availability of a report via city and country newspapers who obtain such information from Departmental "press releases".

Any recommendations arising from research for/or against a particular fishery management programme are communicated to the Fish Management Authority for consideration and possible action.

Methods of publication include:

- Australian Fisheries (esp. if a FIRTA project)
- Queensland Fisheries Information Series and reports
- Marine Behaviour and Physiology
- Australian Journal Marine Freshwater Research
- Journal Applied Bacteriology
- Fish World News
 - Fisheries Research
- Fish Biology
- Australasian Plant Pathology
- Tropical prawn Information Notes (published by CSIRO)

There are some 3,000 odd fishermen in Queensland. Of the 90 odd fisheries libraries/biologists/departments etc. who receive free copies of reports published by the Fisheries Research Branch, only one (1) industry representative in Queensland is on the mailing list (i.e. Q.C.F.O. headquarters).

(5) Industry access to data/research results:

Access is freely available (barring confidentialities) upon request. The Q.F.R.B. considers it has a role to assist industry.

(6) Other research institutions access to data/research results:

Access is considered on request (barring confidentialities).

(7) Inadequacies of Fisheries Research Branch (F.R.B.):

There is no fisheries Extension Officer or structure for adequate dissemination of information to industry. It is the responsibility of the individual scientist to write a paper suitable for inclusion in an industry journal. This places considerable extra demand on the individual.

As in the N.T. Fisheries Division, industry relevant research programmes due to be undertaken by the Fisheries Research Branch but financed by FIRTA or Q.F.R.B. research funds (both industry funds) are being postponed due to Public Service Staff ceiling regulations.

(8) Recommendations for solving inadequacies:

It may be appropriate for both the FIRC and Q.F.R.B. to liaise with the Queensland Public Service Board on this matter.

As the needs for fisheries management in Queensland are increasing, it may be appropriate for the Department of Primary Industries to implement an "Information and Extension Training Branch" (I. & E.T.B.) This could have similar functions to the I. & E.T.B. currently operating for the benefit of the agricultural industry in Queensland but under the direction of the Fisheries Research Branch.

The Great Barrier Reef Marine Park Authority (GBRMPA)

FUNCTIONS:

The Authority is a Commonwealth agency responsible to the Minister for Home Affairs and the Environment. Its functions as states in the Great Barrier Reef Marine Park Act 1975 are:

- "(a) to make recommendations to the Minister in relation to care and development of the Marine Park including recommendations, from time to time as to
 - i. the areas that should be declared to be parts of the Marine Park; and
 - ii. the regulations that should be made under the Act;
 - (b) to carry out, by itself or in co-operation with other institutions and persons, and to arrange for any other institutions or persons, and to carry out, research and investigations relevant to the Marine Park;
 - (c) to prepare zoning plans for the Marine Park;
 - (d) such functions relating to the Marine Park as are provided for by the regulations; and
 - (e) to do anything incidental or conducive to the performance of any of the foregoing functions."

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(1) Data collected and areas of research:

The GBRMPA is not primarily a research organisation. However it may commission or if necessary itself conduct, research relevant to planning and management of the Marine Park.

During 1981/82, sixty nine (69) research projects funded by the authority were in progress. These included:

- Development of Bibliographic Computer Data Base for the Great Barrier Reef
- . Remote sensing by Landsat as support for management of the Great Barrier Reef
- Aerial and LANDSAT imagery for coral reef monitoring
- BRIAN (Barrier Reef Image Analysis) extension exercise
- Drift card study of Great Barrier Reef surface currents
- Man made noise in the ocean
- Lagoonal sedimentation at One Tree Reef
- Sedimentation between the Herbert Delta and Orpheus Island
- Study of reef top sediments on Wreck Reef
- Study of the fringing reef at Orpheus Island
- Coral Reef Survey; manta tow data analysis
- Systematics and Ecology of Phytobenthos of Swain Reefs
- Genetic variability in crown of thorns starfish Acanthaster planci
- Population biology of Montipora ramosa
- Survey of Arginine decarboxylase amongst reef-building Scleractinians
- Assessment of the role of large transient fishes in shaping shallow water communities of small resident reef fish
- Ecology of the sharp nosed puffer Canthigaster valentini
- Interactive biology of plate and encrusting Montipora species
- *Plectropomus leopardus* (coral trout) monitoring at Escape Reef
- Seabird colonies of the Capricorn and Bunker groups
- Seasonality of icthyoplankton, biology of baitfish *Hypoatherina* tropicalis
- . Algal flora of Heron Island and adjacent reefs
- Compilation of information for a checklist of fishes of Capricornia
- Boat ramp surveys: Cairns
- Economic impacts of the tourist/recreational and fishing industries in the proposed Cairns Section of the Great Barrier Reef
 - Reef Region Tourism Data Base Review 1946-1980

- Reef Tourism Attitudinal and Socio-economic assessment survey
- Research and planning of information facilities on the Great Barrier Reef
- Fisheries economics of the Capricornia Section of the Great Barrier Reef
- Fisheries economics of the Great Barrier Reef except Capricornia
- Reef fish tagging in the Capricornia section of the Great Barrier Reef Marine Park
- The fishery biology of Trochus on the Great Barrier Reef
- Analysis of present and predicted uses of the natural environment: National parks and the proposed Cairns Section of the Great Barrier Reef Marine Park
- Crown of thorns starfish clearance from Green Island Reef
- Hydrocarbons in Heron Island Boat Harbour
 - Preparation of a complementary management plan Capricornia Section
 - Social and economic elements of a strategic plan for the Whitsunday area
 - Review of Socio-Economic Research Program requirements of the Great Barrier Reef Marine Park Authority

(2) Industry input into (1) above:

Industry - (Q.C.F.O.) is a member of the Great Barrier Reef Consultative Committee. In carrying out the functions of the GBRMP Act 1975, Industry (as a member of the public) is formally consulted on such matters as -

- proposed management programmes
 - developing zoning plans, etc.

(3) Other research institutions input into (1) above:

Most of the research projects funded by the Authority are carried out by other institutions.

As well interested institutions/departments of the Queensland and Commonwealth Governments are members of the Consultative Committee.

(4) Dissemination of data/research results:

Results of projects funded by the GBRMPA are published in various scientific, technical and industry journals under the name of the researcher or institutions carrying out the work. The GBRMPA stipulate that it must be informed of where the data is stored and obviously receive copies.

If the information obtained is not of a format suitable for scientific publications etc., then the GBRMPA itself publishes the work.
(5) Industry access to data/research results:

This occurs via:

- Membership of the G.B.R. Consultative Committee
- on request to the Extension Program
- access (upon application) to the REEF printout "Current Awareness Bulletin" (bibliography of publications and research which has been carried out on the G.B.R.)
 - on request to the various institutions carrying out research funded by the Authority.

(6) Other research institutions access to data/research results:

Same as (5) above.

(7) Inadequacies of the Great Barrier Reef Marine Park Authority:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

Griffith University

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes -

- . Feeding and breeding ecology of seabirds
 - Analysis of variation between and within plant populations of introduced and naturally occurring plant populations on coral atolls
- . Ecology of coastal wetlands
 - The role of natural selection in the maintenance of the shell colour polymorphism in the mangrove snail *Littorina* scabra
- Boat ramp surveys: Cairns
- The economic characteristics of commercial and recreational fishing: Queensland east coast
 - Behaviour of poly-chlorinated biphenyls (PCB's) in the Brisbane River estuary

- Petroleum hydrocarbons in aquatic ecosystems behaviour and effects of sub-lethal concentrations
- . Study of background concentrations of existing hydrocarbon levels in Great Barrier Reef ecosystems to establish baseline data on pollution
- Seabird colonies of the Capricorn and Bunker Groups
- Economic impacts of the tourist/recreational and fishing industries in the proposed Cairns Section of the Great Barrier Reef
- Fisheries economics of the Capricornia Section of the Great Barrier Reef
- Fisheries economics of the Great Barrier Reef except Capricornia

Analysis of present and predicted uses of the natural environment: National parks and the proposed Cairns Section of the Great Barrier Reef Marine Park

- Hydrocarbons in Heron Island Boat Harbour
- Social and economic elements of a strategic plan for the Whitsunday area
- (2) Industry input into (1) above:

There is no structure for direct input. However, some studies are sub-contracted from the Bureau of Agricultural Economics (BAE), Great Barrier Reef Marine Park Authority or funded by FIRTA. Industry has input to these Bodies which means they have an initial consultation on the research programme.

(3) Other research institutions input into (1) above:

This occurs via:

- personal contact
- funding bodies have input, eg GBRMPA/FIRTA etc.

(4) Dissemination of data/research results:

This includes:

Australian Fisheries

Australian Journal Marine Biology

Journal Marine Biology

- Australian Journal of Marine and Freshwater Research
- Reports to Funding Organisations, e.g. -

- Fishing Industry Research Committee (FIRC)

- Great Barrier Reef Marine Park Authority

(5) Industry access to data/research results:

Industry has access via DPI if project is funded by the FIRTA. Access is also available if funded by GBRMPA or the BAE. By direct contact with the project supervisor.

(6) Other research institutions access to data/research:

Same as (5).

(7) Inadequacies of Griffith University

There is no formal structure for industry input or dissemination to industry.

(8) Recommendations for solving inadequacies:

Industry bodies are welcome to personally approach the University to establish a meaningful liaison.

The University of Queensland

FUNCTIONS:

This is primarily a teaching university, with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes:

- . Modelling the tides of the Coral Seaway
- Tidal dynamics of Pumice Stone Passage
- Effect of sediment characteristics on beach profiles and surf-zone hydraulics
- . Impact of coastal engineering works upon coral cays
- Systematic and ecological studies on the marine algae of the Southern Great Barrier Reef
- . Systematic and ecological studies on the marine algae of mainland southern Queensland
- . Systematic studies on marine fungi from Queensland
- . Taxonomy and ecology of benthic invertebrates from Heron Island, Queensland

Biochemical studies on the major zooplanktonic groups in Moreton Bay, Queensland, with particular reference to seasonal variation and environmental effects on the biochemical composition of the sergestid shrimp

Prehistoric Aboriginal exploitation of the Keppel Islands

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- Fish ladder design for Queensland coastal streams
- Algal flora of Heron Island and adjacent reefs
- A study of the movement and behaviour of the sand crab using ultrasonic tags
- Investigations into QX disease in oysters and other problems associated with marine parasites
- A study of Ciguatera Poisoning
- Investigation to determine the cause of "Jelly" disease and "Cotton Flesh" Disease in Barramundi
- A study of the biology and ecology of juvenile prawns in the Noosa River-lakes system

(2) Industry input to (1) above:

There is no formal structure for input. The Parasitology Department is rapidly gaining a reputation for excellent research into marine parasite problems and related disease research. Industry (processing, aquaculturalists, etc.) initially contact this Department direct with a problem or have their concerns referred here via their State Fisheries Authority. Regularly such programmes become a FIRTA funded research project. Industry projects are welcomed.

(3) Other research institutions input into (1) above:

- This occurs via:
- Personal contact
- . Liaison with the funding body e.g. GBRMPA/FIRTA etc.
- (4) Dissemination of data/research results:

Papers are published in journals including -

- Australian Fisheries (via FIRTA reports)
- Australian Journal of Marine and Freshwater Research
- . Journal of Parasitology
- . Journal of Fish Diseases
- . Australian Journal of Zoology
- (5) Industry access to the data/research results:
 - . Access is available on request
 - Access available via DPI (FIRTA reports)

(6) Other research institutions access to the data/research results:

As in (5) above.

(7) Inadequacies of the University of Queensland:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to initiate a formal avenue for input.

Australian Institute of Marine Science (AIMS)

FUNCTIONS:

The Australian Institute of Marine Science (AIMS) was created in 1972 and is wholly supported by the Australian Government. The functions of AIMS as set out in the Australian Institute of Marine Science Act 1972, are as follows:

- to carry out research in marine science
- to arrange for the carrying out of research in marine science by any other institution or person
- to co-operate with other institutions and persons in carrying out research in marine science
- to provide any other institution or person with facilities for carrying out research in marine science or otherwise assist any other institution or person in carrying out research in marine science
- to collect and disseminate information relating to marine science, and in particular to publish reports, periodicals and other papers relating to marine science
- to do anything incidental or conducive to the performance of any of the foregoing functions

(1) Data collected and areas of research:

"Currently the activities of the Institute are concentrated in the province of the Great Barrier Reef, its waters and the adjacent coastline, principally in an effort to understand the key environmental and ecosystem processes of the region and especially the major intrinsic and extrinsic controls which influence the integrity of the entire system and its distinctive components. This is an undertaking of great challenge. Accordingly the Institute has already sought and will continue to encourage interaction with other research organizations and individuals with compatible interests to the extent that its resources permit. Effective interaction will be sustained by regular formal and informal planning and review sessions and workshops. It is hoped that these meetings will attract participation from representatives of other involved agencies. Equally, arrangements have been made to facilitate data sharing and analysis by upgrading the AIMS Computer Centre, by expanding its staff and by establishing a mode linked to CSIRONET through the Cyber 76 system."

No commercial fisheries research as such is undertaken by the AIMS because CSIRO is the Commonwealth Institution which traditionally does this type of research. As well, each State/Territory has its own Fisheries Research Department. However the facilities and expertise at the AIMS are available on request for joint research etc.

Current research includes:

- Techniques for underwater photogrammetry using simple cameras
- The genus Sonneratia (Sonneratiaceae) in Australia
- . Biochemical ecology of algal-invertebrate symbioses
- . Sensory systems of the shrimp *Acetes* in relation to behaviour
 - A study of morphology, growth and regeneration in Acropora formosa
 - Photosynthetic carbon assimilation in the sea grass *Thallassia hemprichii*
- A study of the biology of alga-sponge symbiosis
- Distribution and abundance of epibenthic/hypoplanktonic communities in the Davies Reef Lagoon
- * Readers are referred to the AIMS "Projected Research Activity 1982/83" publication for a most extensive research programme list.

(2) Industry input into (1) above:

There is no official brief to liaise with the fishing industry as such. However the AIMS is most interested to consider industry related projects from industry organisations. Also the staff of AIMS are available on a consultative basis with costs being met by industry if the information is not available in AIMS data bank.

(3) Other research institutions input into (1) above:

"Interactions with Commonwealth and State Government Departments and Agencies and some overseas bodies have now become so extensive and varied that it would be impracticable to attempt a detailed review. Excluding regular administrative and executive relationships, the listing which follows will indicate the nature and scope of present associations:

- Commonwealth Departments -
 - Administrative Services: extensive assistance in mapping, survey and aerial photogrammetry from the Australian Survey Office, in Coastal Queensland, GBR and Western Australia
 - Defence: a variety of activities involving mutual assistance including provision of field experience for officer cadets of RMC, Duntroon; access to RAN vessels; interactions with the Hydrographer to the Navy.

- Environment: see Authorities and Agencies.
- Foreign Affairs: participation in conferences and other discussions related to marine science through agencies such as ICC and UNESCO
- Housing and Construction: maintenance of headquarters facilities; assistance and advice in design of reef platforms.
- National Development and Energy: collaborations in research and consultations with BMR: consultation and interaction with the Division of National Mapping over bathymetric surveys in the GBR region.
- Science and Technology: advice and collaboration with Bureau of Meteorology in questions of investigating air-sea interaction; advice concerning the Commission on Antarctic Marine Living Resources and interaction with the Antarctic Division in krill research.
- Transport: operation of R/V Lady Basten and other matters in marine logistics; assistance with access to field study sites, King Sound, W.A.

Commonwealth authorities, agencies and other organisations -

- CSIRO: consultations with the Executive in matters related to marine science; research interactions with the Division of Fisheries Research, and Division of Oceanography, Division of Forest Research, Division of Land Use Research; Division of Land Resources Management, Division of Atmospheric Physics, Australian Numerical Meteorology Research Centre, Division of Computing Research, Central Information, Library and Editorial Section.
- GBRMPA: advice and consultation with respect to research on the Great Barrier Reef.
- Office of the Supervising Scientist: discussions concerning research along tropical coastlines.
- Australian Broadcasting Commission: production of television documentaries dealing with marine science; news releases; radio and television appearances concerning marine science.
- ASTEC: AMSTAC: advice and consultations on marine science
- Australian Academy of Science: various interactions related to marine science including public lectures.
- Consortium of Island Marine Stations: discussions on reef research
- Rural Credits Development Fund: mangrove research.
- Universities and other institutions of tertiary education: direct research interactions.

State Departments and Agencies -

- Museums: research collaborations
- Queensland Fisheries Service: mangrove research, reef research

- Queensland National Parks and Wildlife Service: common interests in Raine Island, mangrove wildlife
- NSW State Fisheries: estuarine research.

Overseas organisations - Contacts and interactions normally arise through the Visiting Investigator Program and other links directly connected with the research of the Institute. Agencies involved include universities, museums, national research foundations, scientific publishers and societies and bodies such as IOC and UNESCO and their companion organisations, as well as the BBC and other media organisations seeking advice on marine science. Bodies such as Earthwatch also assist Institute programs. Interactions in all of the above areas have been intensified during the current year."

(4) Dissemination of data/research results:

The Director of AIMS is conscious that information must be disseminated to those who require it and is willing to make information available to industry or other scientific bodies as requested. There is no structure for dissemination to industry. However, staff are prepared to write papers specifically for inclusion in Industry journals if requested.

All relevant State/Commonwealth research institutions etc. are regularly informed (via Newsletter) of the availability of a particular "paper", and that copies are available on request.

Papers are normally published in scientific journals, including:

Marine Ecology Progress Series

- Marine Biology
- Journal of Biological Chemistry
- . Australian Computer Journal
- Australian Fisheries (occasionally)
- . Limnology and Oceanography
- Biochemical Physical Research Communication
- AIMS Technical Bulletin
- . Photochemistry
- Australian Journal of Marine and Freshwater Research
- . AIMS Data Report
- . Estuarine, Coastal and Shelf Science
- . Science and Public Policy
- Australian Journal of Botany

(5) Industry access to data/research results:

Stored in individual files, the AIMS Computer and CSIRONET, AIMS computer personnel are involved in making the data available on call (direct access). It appears that industry can have direct access if required. Access is statutory, under the Freedom of Information Act. As well it is a policy of the AIMS for anyone to have access to data and information.

(6) Other research institutions access to data/research results:

As per (5) above.

(7) Inadequacies of the Australian Institute of Marine Sciences:

There is no official structure for industry input into research projects and dissemination of information to industry.

(8) Recommendations for solving inadequacies:

These can be readily overcome by Industry bodies liaising with the AIMS. The AIMS is most interested to assist the fishing industry. The offer is made, it is now up to Industry to respond.

Queensland Fish Management Authority (Q.F.M.A.)

FUNCTIONS:

The Q.F.M.A. was established as a statutory authority under the "Fishing Industry Organisation and Marketing Act 1982."

It is responsible for the overall management of the catching and marketing sectors of the Queensland fishing industry. This management function includes both biological and economic considerations and hence it is essential that the Authority has access to information on catching production, marketing and satisfactory statistical and research data base for it to carry out its functions. Its other functions include the promotion of high standards of catching, handling, preparation and presentation of fish, together with the encouragement of research, promotion and extension within the fishing industry.

Membership:

- Dr. W.D. Mitchell	Chairman
- Dr. G.I. Alexander	Director-General of Queensland Dept. of Primary Industries - Deputy Chairman
- Mr. G. Haling	representing the Queensland Fish Board
- Mr. J. Stratton	representing fish processors
- Mr. G. Denovan	representing fish wholesalers
- Mr. D. Bryan	representing fishermen
- Mr. J. Graham	representing fish co-operatives

FUNCTIONS:

This laboratory was originally established to research into the biology of "Tropical Prawns". "By the use of experimental and observational techniques, information is being obtained on the mechanisms whereby organisms adapt to various environmental conditions. This knowledge can then be applied to account for and predict the distribution of larvae, juveniles and adults of commercially important species."

(1) Data collected and areas of research:

Areas of prawn research include -

- Physiology
- . Behaviour
- . Bacterial and Seagrass production
- Seagrass Ecology
- . Larval Ecology
- . Juvenile Ecology
- . Adult Ecology

Field work and laboratory studies have resulted in reports and papers being available. These include:-

- . Temporal and spatial variations of plankton abundance in the Gulf of Carpentaria
- Methods of assessing species specific distribution and abundance of penaeid prawn larvae in the Gulf of Carpentaria
- Vertical migration and its effect on the dispersal of penaeid prawn larvae in the Gulf of Carpentaria
- Effects of changes in catchability on sampling of juvenile and adolescent banana prawns
- Seasonal migration patterns of postlarval and juvenile banana prawns in the major rivers of the Gulf of Carpentaria
- Ecology of juvenile and adolescent banana prawns in a mangrove estuary and adjacent off-shore area of the Gulf of Carpentaria I. Immigration and settlement of post larvae II.Emigration, population structure and growth of juveniles
- Non-linear model of the tides in the Gulf of Carpentaria
- . Osmoregularity ability and juvenile habitat preference in some penaeid prawns
- Quantitative studies on bacteria and algae in the food of the mullet *Mugil cephalus* L. and the prawn *Metapenaeus bennettae* (Racek & Dall).
- Circulation in the Gulf of Carpentaria and its relation to banana prawn larval dispersion
- DNA synthesis as a measure of bacterial growth rates in seagrass sediments.

Historically, this laboratory has concentrated its research into the biology of the banana prawn (*Penaeus merguiensis*) in the Gulf of Carpentaria. Whilst this still occurs, research emphasis now involves the biology of the Tiger prawns. Work in this area includes:

> Preliminary study and feasibility survey of Tiger Prawns in the Gulf of Carpentaria

Investigation of the biology of Tiger Prawns in the Western Gulf of Carpentaria.

(2) Industry input into (1) above:

This occurs via industry membership of the Northern Prawn Advisory Committee (NORPAC). NORPAC is an advisory committee which reports to the Northern Fisheries Committee (N.F.C.)

- Industry convened workshop/seminars
- Industry also "sits in" on the Technical Working Group which reports to the N.F.C.
 - The successful 1983 pre-banana prawn sampling programme was a direct result of Industry input
 - FIRTA funding

(3) Other research institutions input into (1) above:

This occurs via:

- Membership of NORPAC
- Membership (via the Minister responsible for the particular institution) of the N.F.C.
- personal contact
- membership of the Technical Working Group of the N.F.C.

Many of the programmes in the Gulf of Carpentaria are joint projects between CSIRO, DPI, NT, and Qld. Fisheries.

(4) Dissemination of data/research results:

An "Industry Liaison Officer" position has recently been created within the Cleveland Laboratory. This part time position is held by a CSIRO Technical Officer with extensive experience in the Northern Prawn Fishery. This position is FIRTA funded.

The Industry Liaison Officer, who will act as an interface between industry and research, has a brief to:

- Supply industry pre-banana prawn season with rainfall figures on an area basis
- Supply industry with catch indication data ("models" to explain catch variance)
 - Issue "information notes" to the industry re statistical data, summaries of general research situations/results, a bibliography of current scientific papers relative to the NPF.

"Information notes" are posted to processing companies and delivered via the "log book collector" to individual skippers of the N.P.F. and D.M.Z. The Liaison Officer will also make available to industry computer summaries of the preceding year's catch and effort data.

Industry convened workshops, held just prior to the opening of the season are an important venue for the dissemination of scientific data/ information and discussion of current research projects/requirements. This venue is well supported by Government research institutions and industry.

Papers from the Cleveland Laboratory are also published in such journals as:

- CSIRO Marine Laboratories Reports
- Australian Fisheries
- . Marine Biology
 - Journal of Fisheries Research Board Canada
 - . Journal of Experimental Marine Biology and Ecology
 - . Australian Journal of Marine and Freshwater Research
 - . Journal of Experimental Marine Biology and Ecology
 - . Marine Ecology Progress Series
 - . Fishery Bulletin U.S.
 - Journal of Plankton Research

(5) Industry access to data/research results:

Information is regularly disseminated via "Information Notes" and "Workshop Seminars". Access to summaries of data and information on research results are now available on request to the Industry Liaison Officer.

Evidence suggests the operations of the "Industry Liaison Officer" are becoming very useful to industry in the Northern Prawn Fishery.

Direct access to data on CSIRONET is not available to Industry.

(6) Other research institutions access to data/research results:

Access is available to participants of joint research programmes. For others, access considered on request. Basic statistical data is held on CSIRONET with access available to CSIRO, DPI and States with the facilities to log in.

(7) Inadequacies of the Cleveland Laboratory:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes -

- Development of Bibliographic Computer Data Base for the Great Barrier Reef
- Biology and ecology of mugiloidid fishes at Lizard Island, North Queensland
- Ecology and conservation of the dugong and other marine mammals in Northern Australian waters
- Studies on flatfish larvae (Order: Pleuronectiformes) from North Queensland waters
- Studies on the biology of Grunters (Teleostei:Pomadasyidae) from North Queensland waters
- Population genetics of the Crown-of-Thorns starfish
 - A study of morphology, growth and regeneration in Acropora formosa
 - Aspects of the structure and function of the statocyst of the banana prawn *Penaeus Merguiensis* (De Man)
- Aspects of the biology of herbivorous reef fishes, with particular reference to parrot fish (family Scaridae)
- Ecology of intertidal tropical seagrasses
- Consumption Patterns of Fish and Shellfish in the Moreton Region
- The role of benthic diatoms in the productivity of a tropical marine estuary
- Ecology of migratory pathways of the larvae of commercially important fish and decapod species in the continental shelf zone of the Great Barrier Reef
- Studies on north Queensland fishes
- The distribution and feeding of mackeral larvae (family Scombridae) in north Queensland waters
- Pilot study: National monitoring programme for metals in commercially important shellfish
- Analysis of shipping risks in the Great Barrier Reef.

(2) Industry input into (1) above:

Industry in the Townsville area have an input via membership of the Townsville Development Committee (The James Cook University is also represented on this Committee).

Industry also has an input if the research is funded by the FIRTA or the GBRMPA.

Whilst there is no official structure for direct industry input, this University is most interested in fisheries research of relevance to industry and should be contacted directly by industry.

(3) Other research institutions input into (1) above:

This occurs via:

personal contact

funding bodils have an input, e.g. GBRMPA/FIRTA etc.

(4) Dissemination of data/research results:

Papers are published in journals including:

Australian Fisheries (often FIRTA Reports)

. Australian Journal of Marine and Freshwater Research

. Environmental Conservation

. Australian Journal of Ecology

. Marine Biology

-

- Australian Journal of Zoology
- Proceedings of the Royal Society of Queensland
- Australian Wildlife Research

(5) Industry access to data/research results:

Access to unpublished data (often Thesis material) carefully considered. Published information available on request.

(6) Other research institutions access to data/research results:

Same as (5) above.

(7) Inadequacies of James Cook University of North Queensland:

There is no formal avenue for industry input.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish a formal avenue for input.

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Queensland Museum

FUNCTIONS:

Functions include providing:

- basic identification of specimens for the general public and government institutions
- library of fauna and flora via reference collections of specimens
- documentation of Queensland fauna and flora

(1) Data collected and areas of research:

This includes -

- Taxonomy of free living and symbiotic turbellaria (especially Rhabdacoela)
- . Taxonomy of the Asciadicea
- Preliminary biological mapping of the inter-reef areas of the Great Barrier Reef using benthic macro invertebrates and fishes
- Systematic revision of the Australian fishes of the family Pomadasyidae

(2) Industry input into (1) above:

Personal contact

(3) Other research institutions input into (1) above:

Personal contact

(4) Dissemination of data/research results:

Dissemination is via journals including:

- Australian Journal of Zoology
- Australian Journal of Marine and Fresh-water Research
- . Australian Fisheries (often FIRTA reports)
- . AMSTAC-FAP Reports
- . Proceedings Royal Society of Queensland

(5) Industry access to data/research results:

Access is on application to -

relevant Curator (Fishes/Crustraceans)

DPI Fisheries Div. if FIRTA funded

Dept. Science and Technology if AMSTAC-FAP funded

(6) Other research institutions access to data/research results: As in (5) above.

(7) Inadequacies of Queensland Museum: Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

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NORTHERN TERRITORY (N.T.)

Research institutions relevant to Fishing Industry:

- N.T. Fisheries Division, Department of Primary Production
- Northern Territory Museum
- Northern Fisheries Committee

N.T. Fisheries Division

FUNCTIONS:

Under the Fish & Fisheries Act 1979, the Research Branch undertakes research on exploited and potentially exploitable fish stocks in waters adjacent to the Northern Territory to:

- determine the status of the stocks and the effects of fishing pressure on those stocks;
- assess the potential of unfished or under fished stocks for possible exploitation; and
- provide advice on biological aspects of fish stocks and the implications for management.

(1) Data collected and areas of research:

Data is obtained by research, log books, industry questionnaires, workshops, monthly returns. This results in such information available as:

- Northern Prawn Fishery log books
- North and West Coast Prawn Fishery Monitoring
- Western Gulf Prawn Fishery Monitoring
- . Commercial Fishery Monitoring Barramundi
- . Barramundi Biology
- . Gill-net and Longline Survey of Pelagic Fish Resources
- . Northern Pelagic Research Programme

. Darwin Harbour Shark Biology

- . Mercury in Shark Study
- . Reef and Mackerel Fishery
 - Mud Crab Fishery
- Fisheries Development
 - Dropline fishing

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Longlining

- Scallop processing
- Tangle netting for Rock Lobster
- Marketing of Shark, Reef fish and Mud crab
- Game fishing
- fisherman data: catch statistics/specie/effort/gear type/ area of operation/days at sea
- Processor data: monthly returns for prawn processors, licensed fish traders and buyers
- . Foreign Fishing Vessel data for operations in N.T. waters
- . Vessel data and licensing data
- (2) Industry input into (1) above:

This occurs via -

- membership of the N.T. Fishing Industry Consultative Committee
- membership of the N.T. Fishing Industry Development Trust Fund Advisory Committee
- . membership of NORPAC
- Representation to W.F.R.C.
- (3) Other research institutions input into (1) above:

This occurs via -

- membership of the Northern Fisheries Committee (N.F.C.)
- . personal contact
- . Membership of the N.F.C. Technical Working Group

(4) Dissemination of data/research results:

- Raw data not disseminated. Summaries of and research reports published in format suitable for industry interpretation and in journals, including:
 - N.T. Fisheries Div. Reports
 - N.T. Rural News
 - Tropical Prawn Information Notes
 - Australian Fisheries
 - Australian Journal of Marine and Freshwater Research
 - Journal Fisheries Research
 - Journal Fish Biology

(5) Industry access to data/research results:

Individual fishermen and processors have access to own raw data. Raw data confidentialities protected by legislation. N.T. Fisheries internal access to raw data on a need only basis. Summaries and reports freely available, unpublished information generally available.

(6) Other research institutions access to data/research results:

Access to raw data very strictly controlled. Access to summaries, reports, unpublished reports etc. freely available.

(7) Inadequacies of N.T. Fisheries Division:

Industry relevant research projects due to be undertaken by N.T. Fisheries Division, but financed by the N.T. Fishery Industry Research Development Account are being postponed due to Maximum Staffing Allocation (MSA) regulations. The MSA limits increases in staff levels above certain numbers. Whilst this may be understandable when the Government itself is funding increased staff etc., it is rather more difficult to understand when the research is being financed by the Fishing Industry, i.e., non Government funds.

(8) Recommendations for solving inadequacies:

It may be appropriate for the N.T. Fishing Industry Research Development Advisory Committee to consult with the N.T. Public Service Board on this matter of projects delayed by lack of staff despite outside funding.

N.T. Museum

FUNCTIONS:

Functions of the Natural Science Section includes:

- basic identification of specimens for the general public and government institutions
- establish a library of fauna and flora via reference collection of specimens
- documentation of the N.T. fauna and flora

(1) Data collected and areas of research:

This includes research on selected groups of fishes:

- systematics of a potential commercial fish Threadfin Bream (Family Nimteridae)
- systematics of Gobies

establishment of a fish specimen library

(2) Industry input into (1) above:

Minimal, but industry input via specimens and information welcomed.

(3) Other research institutions input into (1) above:

- . Personal contact
- Input welcomed

(4) Dissemination of data/research results:

The Ichthyology (Fishes) Dept. of the Natural Sciences Section is in its infancy. A few papers have been published in journals including:

Australian Journal of Marine and Freshwater Research

Australian Zoology

If requested, papers would be written suitable for inclusion in Australian Fisheries.

(5) Industry access to data/research results:

Access on request.

(6) Other research institutions access to data/research results:

Access on request.

(7) Inadequacies of Natural Science Section - N.T. Museum:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

VICTORIA (Vic)

Research Institutions relevant to Fishing Industry:

- Ministry for Conservation Fisheries & Wildlife Division Commercial Fisheries Section (Queensland Marine Science Laboratory is now under
- the direction of the Commercial Fisheries Section)
- Victorian Institute of Marine Sciences (V.I.M.S.)
- . National Museum of Victoria
- . Warrnambool Institute of Advanced Education
- Royal Melbourne Institute of Technology (R.M.I.T.)
- Melbourne University
- La Trobe University

Ministry for Conservation - Commercial Fisheries Section (C.F.S.)

FUNCTIONS:

This Department operates under the Fisheries Act 1968 which in part states: Subject to the direction and control of the Minister the Director shall carry out or cause to be carried out any experimental or research activity or field studies or use any fishing equipment or other device of any kind or any liquid, solid, or gaseous matter for the purpose of scientific, sociological, technological, economic and developmental research and management with particular reference to:

- determining the possible effects and influence on fish and fish habitat of proposed and existing water conservation structures, river improvement work, drainage projects, water conservation projects and any other project which may affect fish environment;
- . ascertaining the economics of any phase of any fishery;
- . determining the effects of contamination of the atmosphere, soil and water on aquatic organisms and fish habitat;
- . ascertaining whether fish exist in any waters in commercial quantities;
- developing any fishery in any waters;
- taking fish for examination and study;
- destroying fish for the establishment of other fisheries in their stead;

- removing fish from any waters;
- stocking any waters with any kind or species of fish;-

doing any act matter or thing for the betterment or better management of any fishery.

The C.F.S. has a brief to liaise with and disseminate information to industry.

(1) Data collected and areas of research:

Data is obtained by research, log books, industry questionnaires/ workshops etc. This results in such information available as:

- catch and effort statistics per species, gear type used, area/depth caught, ocean floor type, fisherman.
- Eastern Victoria trawl fish biology pilot study determining the potential for development of the Jackass Morwong, School Whiting and Tiger Flathead fisheries.
- . Gippsland Lakes fish biology and ecology
- . Biology of Scallops in Port Phillip Bay and Bass Strait
- Evaluating potential for mariculture of mussels in Port Phillip Bay.
- Squid-ecology pilot study.
- A Bibliography of Recent Squid Biology Research
- The effects of scallop dredging on Port Phillip Bay
- Optimal Aggregation of Catch Data for the Estimation of Relative Fishing Powers of Fishing Vessels
- . Cario Bay Plankton Communities
- Squid in the diets of Commercially Important Fish from South-East Australia
- The effects of seagrass denodation upon water quality in a tidal mudflat environment
- Deepwater line-fishing trials off Victoria
- Fisheries resources of Victoria's coastal and offshore waters
 - Mercury content of edible flesh from snapper, *Chrysophrys auratus* (Bloch & Schneider), in the Victorian Commercial catch.

(2) Industry input into (1) above:

This occurs via membership of the "Fisheries Management Committee". Industry holds 9 of the 12 seats on this Committee. (3) Other research institutions input into (1) above:

This occurs via:

- membership of the South East Fisheries Committee (S.E.F.C.)
- . personal contact
- . membership of the VIMS Council
- . representation to W.F.R.C.

(4) Dissemination of data/research results:

Dissemination to industry occurs via the quarterly journal Fishermens News &/or "situation reports".

Summaries of research reports are sent to other State Fishery Authorities.

Papers are also published in other journals including:

- Australian Fisheries
- Journal of Australian Marine and Freshwater Research
- Journal of Experimental Marine Biology and Ecology
- Aquatic Botany
- Marine Biology Letters
- Commercial Fishery Section Reports

(5) Industry access to data/research results:

Access to summaries only is on request. Individual fishermen/ processors have access to own records.

(6) Other research institutions access to data/research results:

Access to summaries only and is on request.

(7) Inadequacies of Commercial Fisheries Section:

This involves the inability of this Department to ensure the journal 'Fishermens News' is published. This is blamed on the lack of qualified staff. The journal has not been published for more than a year. Being the official "link" between C.F.S. information and industry, this represents a breakdown in vital communications is occurring.

As well, evidence suggests the industry members of the Fisheries Management Committee are not adequately briefed prior to meeting by the C.F.S. as to the agenda items. This can cause problems when important management decisions need to be made. (8) Recommendations for solving inadequacies:

It may be appropriate for the C.F.S. to consider the employment of a suitable journalist for the publication of the Fishermens News as a matter of high priority.

It appears that industry are now liaising directly with the Minister to ensure adequate agenda briefings and timely notification of meetings.

Victorian Institute of Marine Sciences (V.I.M.S.)

FUNCTIONS:

This Institute operates under the Act of 1974 and its Amendments of 1977. It is an Act to Establish a Victorian Institute of Marine Sciences and purposes connected therewith. VIMS has several roles including:

- . conduct marine research
- . co-ordinate other marine research
- . an education role

(1) Data collected and areas of research:

Initiated by VIMS, this includes:

Marine Bibliographic Data Base

- A survey of Marine Invertebrate Data from the Bass Strait region
- Identification guide to Australian Arrow Squid (Family *Ommastrephidae*)
- Biology and Resource potential of Cephalopods
- . Numerical modelling of water circulation in Bass Strait
- Phytoplankton of Bass Strait
- Zooplankton of Bass Strait
- Review of biological resources
- Benthic fauna

(2) Industry input into (1) above:

Industry is not directly represented on the VIMS Council. Representation could occur via the Ministry for Conservation who is a member of the Council or by personal contact with VIMS.

(3) Other research institutions input into (1) above:

This occurs through membership of the Council. VIMS Council members include:

- . Royal Zoological Gardens
- . Marine Science laboratories Queenscliffe
- 3 Parliamentarians

. Zoology Dept - University of Melbourne

. Botany Dept - Monash University

. Maths Dept - Swinburne Inst. of Tech.

B.H.P.

Civil Engineering Dept - University of Melbourne

- . Royal Society of Victoria
- . National Museum
- Connell Eddie & Assoc. Civil Engineers
- . Mallisons Law Firm
- . Ministry for Conservation
- Botany Dept. La Trobe University

(4) Dissemination of data/research results:

Information is published in:

- VIMS technical reports, working papers
- individual papers in various scientific journals

(5) Industry access to data/research results:

Access is on request.

(6) Other research institutions access to data/research results:

Access on request.

(7) Inadequacies of Victorian Institute of Marine Sciences:

The Victorian fishing industry should have direct representation on the VIMS Council.

Evidence suggests this would be available if industry so requested.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to request representation on the VIMS Council.

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National Museum of Victoria

FUNCTIONS:

- basic identification of specimens for the general public and government institutions
- a library of fauna and flora via reference collections of specimens
 - documentation of the State's (Vic) fauna and flora
- (1) Data collected and areas of research:

This includes:

- Benthos sampling
- . Midwater trawling for fish, squid and cuttles
- . Monographs of the family *Mytilidae* (Mollusca, Bivalvia)
- Systematics and distribution of the Squid family *Loliginidae* (Cephalopoda: *Myopsida*) in Australian waters
- . Revision of the Australian gurnards, family *Triglidae*.
- Taxonomy and distribution of marines fishes occurring in Bass Strait and other Victorian waters
- Analysis of the marine fauna of Bass Strait
 - Survey of fauna and flora of Anderson and Shallow Inlets, and waters adjacent to coastlines of Cape Patterson, Inverloch and Wilsons Promontory, Victoria.
- (2) Industry input into (1) above:

Personal contact

(3) Other research institutions input into (1) above:

This occurs via:

- membership of the VIMS Council
- . personal contact

(4) Dissemination of data/research results:

Dissemination is via journals including:

- . Proceedings of the Royal Society of Victoria
- . Australian Journal of Marine and Freshwater Research

VIMS "technical reports" & "working papers"

- Australian Fisheries
- Australian Journal of Zoology
- Victorian Naturalist

(5) Industry access to data/research results:

Access is on request.

(6) Other research institutions access to data/research results: Access is on request.

(7) Inadequacies of National Museum:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

Warrnambool Institute of Advanced Education

FUNCTIONS:

This is a teaching institute with research being undertaken by staff or as an undergraduate project.

(1) Data collected and areas of research:

Information is available from projects including:

Chemical oceanography

Mercury in Deep Sea Trawl Fish

- . Mercury and Selenium in Ccastal Waters and Sediments
- . Possible use of School Shark as a Source of Fish Meal
- . Australian Ocean Currents
- An upwelling event at the western end of Bass Strait
- Hydrodynamics of the Hopkins River Estuary

(2) Industry input into (1) above:

personal contact (interested in Industry research requests)

(3) Other research institutions input into (1) above:

This occurs via:

contact with the VIMS Council

personal contact

(4) Dissemination of data/research results:

Reports are published in the following:

- internal reports
- . CSIRO reports
- . VIMS reports
- . Australian Journal of Marine and Freshwater Research

(5) Industry access to data/research results:

Access on request.

(6) Other research institutions access to data/research results:

Access on request.

(7) Inadequacies of Warrnambool Institute of Advanced Education:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

Royal Melbourne Institute of Technology (R.M.I.T.) - Dept. of Food Science & Technology

FUNCTIONS:

This is an institute for the teaching of the "applied sciences". Research is undertaken by staff, higher degree students and as undergraduate projects.

(1) Data collected and areas of research:

This includes:

- . Factors affecting the quality and yield of canned abalone
- . Thermal processing requirements for canned abalone
- . Consumer preferences for fisheries products
- . Some preferences for fish products by Asian and Australian consumers
- . Fish canning A review of some recent Australian research
- Prospects for fish silage in Australia
 - Fish canning Quality control and new product development

(2) Industry input into (1) above:

This occurs via personal contact. Industry research projects are welcomed.

(3) Other research institutions input into (1) above:

This occurs via:

- Personal contact
- Input into the VIMS Council

(4) Dissemination of data/research results:

Dissemination of results occurs in several ways including:

direct report to organisation which request research (often confidential)

Publication in:

Food Technology Australia

- . Australian Fisheries
- . Infofish

Australian Packaging

. Bulletin of Fisheries Research

- Australian Journal of Marine and Freshwater Research
- Fish Technology News

(5) Industry access to data/research results:

Access on request (unless confidential).

(6) Other research institutions access to data/research results: Access on request (unless confidential)

(7) Inadequacies of the Dept. of Food Science & Technology: Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

University of Melbourne

FUNCTIONS:

This is a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes:

- . Trace metals and radionuclides in squid and other organisms from Bass Strait
- . Application of side-scan sonar to mapping deep-water roughbottom fishing grounds
- . Dynamics of mooring lines
- . Floating breakwaters
- Motions of moored vessels

(2) Industry input into (1) above:

Personal contact (industry input into research projects welcomed)

(3) Other research institutions input into (1) above:

. membership of the VIMS Council

personal contact

(4) Dissemination of data/research results:

This occurs via publication in various journals including:

- Australian Journal of Marine and Freshwater Research
- Australian Journal of Zoology
- VIMS technical reports & working papers
- Coastal Engineering
- . Offshore Technology Conference Papers
- Commercial Fisheries Section Reports

(5) Industry access to data/research results:

Access on request.

(6) Other research institutions access to data/research results:

Access on request.

(7) Inadequacies of University of Melbourne:

This involves the lack of an established University/Industry liaison.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish an effective liaison.

La Trobe University

FUNCTIONS:

This is a teaching university with research undertaken by staff and higher degree students.

(1) Data collected and areas of research:

This includes:

Determination of copper, cadmium and mercury in the tissues of two species of squid, *Nototodarus gouldii* and *Sepiateuthis australis*, using histochemical and analytical methods.

Study of the biology of scallops in Port Phillip Bay contributing to fisheries assessment and environmental monitoring programs.

Survey of polychlorinated biphenyls (PCBs) in Australian coastal waters.

The determination of Optimal Management Regimes for the Southern Bluefin Tuna Fishery in the context of the Australian Fishing Zone.

(2) Industry input into (1) above:

Personal contact only (industry input to research projects welcomed).

(3) Other research institutions input into (1) above:

This occurs via:

Membership of the VIMS Council

Personal contact

(4) Dissemination of data/research results:

This occurs in several ways, including:

Published as thesis

Australian Journal of Marine and Freshwater Research

. VIMS technical reports &/or working papers

. Australian Journal of Zoology

(5) Industry access to data/research results:

Personal contact

(6) Other research institutions access to data/research results:

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This occurs via:

- Membership of the VIMS Council
- Personal contact

(7) Inadequacies of La Trobe University:

This involves the lack of a suitable University/Industry liaison.

(8) Recommendations for solving inadequacies:

It may be appropriate for industry to establish a liaison.

TASMANIA (Tas.)

Research Institutions relevant to the Fishing Industry:

Tasmanian Fisheries Development Authority (T.F.D.A.)

C.S.I.R.O. Division of Food Research, Tasmanian Laboratory

The University of Tasmania

Tasmanian Fisheries Development Authority (T.F.D.A.)

FUNCTIONS:

The Fisheries Development Act 1977, with Amendments (1980) in part states the functions of the Authority as being:

- The promotion and development of the fishing industry that is carried on in or from, the State;
- The maintenance of proper standards with respect to fish and fish products intended for consumption in, or export from, the State, both as to quality and as to the methods of handling, processing, storage, packaging, and transport;
- The undertaking of research, exploratory, and experimental work related to the management of the living resources in the waters in or around the State or to the fishing industry of the State;
 - Without prejudice to the generality of the provisions of this section the powers of the Authority thereunder shall be deemed to include the giving, or the arranging for the giving, of financial assistance to persons engaging in the fishing industry of the State, but no such assistance shall be given by the Authority to any person without the approval of the Minister.

The T.F.D.A. has a brief to disseminate information to industry via the journal FINTAS and/or technical reports.

66.

(1) Data collected and areas of research:

Data is collected via research, log books, industry questionnaires/workshops etc. This results in such information available as:

- Arrow Squid Study Continuing
- . Tasmanian Squid
- . Feasibility fishing in Tasmanian waters
- Biology of mussels, reproduction, life cycle and habitat
- . Biological considerations in the choice of mussel growing areas
 - Preliminary experiments in commercial scallop (*Pecten meridionalis*) culture in Tasmania
- Abalone culture in Japan
- Seawater culture of Rainbow Trout
- New locality records and preliminary information on demersal fish fauna assemblages in Tasmanian water
- . Challenge cruises
- . Deep sea trevalla research project
- Rock lobster Escape Gap survey

(2) Industry input into (1) above:

-

- Industry occupies three seats on the Authority board of five
- Liaison committees (Scallop, Abalone, Trawl, Rock Lobster & Aquaculture)
- personal contact

(3) Other research institutions input into (1) above:

This occurs via:

- membership of the South Eastern Fisheries Committee S.E.F.C.
- personal contact

(4) Dissemination of data/research results:

Information is disseminated to Industry via the journal FINTAS which is posted free to members of Industry. Results are also published in other journals including:

- Australian Journal of Marine and Freshwater Research
- Tasmanian Fisheries Research
- Australian Fisheries

- . Tasmanian Fisheries Development Authority reports
- . Australian Zoology
- . Papers Proceeding of Royal Society of Tasmania

(5) Industry access to data/research results:

Any fisherman/processor can obtain his own catch returns at any time and obtain a "pattern" for an area.

(6) Other research institutions access to data/research results:

Access is available on request.

(7) Inadequacies of Tasmanian Fisheries Development Authority:

The FINTAS journal is the direct link between the T.F.D.A. and industry. Yet with all the effort the T.F.D.A. is putting into the promotion & development of industry in Tasmania it is reducing the number of publications from 6 per year to 4. Valuable information could become of historic use only.

(8) Recommendations for solving inadequacies:

Research to promote and develop the industry is an expensive operation. To obtain maximum benefit, Industry must be aware of the results of such research in a timely fashion.

It may be appropriate for T.F.D.A. to compare the economic gain by having only 4 publications of FINTAS per year to the possible loss to Industry. If the information is too old to act on and if negative reinstate 6 publications per year.

CSIRO - Division of Food Research, "Tasmanian Regional Laboratory"

FUNCTIONS:

This laboratory functions as a "food technology research unit", researching into the technologies applying to fish processing. This can involve any aspect of fish processing from "in the net thru to consumer demands".

This laboratory considers it has a brief to liaise with Industry.

(1) Data collected and areas of research:

This includes:

Efficient handling and attention to detail ensure high quality of fish in Japan

Hygiene control in Seafood processing.

Fish finger taste trials at Fishexpo '76

- Zinc, Cadmium, Copper and Manganese in species of Finfish and Shellfish caught in the Derwent Estuary, Tasmania
- Quality loss in frozen fish can be avoided
- Studies on the processing of Abalone
- Processing and freezing of the flesh of the Blue Grenadier (Macruronus novaezelandiae)
- Taste panel assessment of textural properties of fish minces from Australian Species
- Effects on Quality Attributes of Holding Rock Lobsters in slush ice before tailing
- Catching and Handling Squid.

(2) Industry input into (1) above:

This occurs thru:

- . personal contact
- FIRTA projects
- (3) Other research institutions input into (1) above:

This occurs thru:

personal contact

membership of the South East Fisheries Committee (S.E.F.C.)

(4) Dissemination of data/research results:

The stringency of refereeing within the CSIRO - Division of Food Research makes it very difficult for papers to be presented as data in a timely fashion to industry.

Papers are published in various industry and scientific journals including:

- FINTAS
- . Australian Fisheries
- . Food Technology Australia
- . CSIRO Tasmanian Regional Laboratory Occasional Paper
- . Rural Research CSIRO
- . Advanced Food Research
- . Food Technology in New Zealand
- . Tasmanian Fisheries Research
- . Australian Engineering Bulletin
- Marine Pollution Bulletin
(5) Industry access to data/research results:

This is available on request (by telephone or letter)

(6) Other research institutions access to data/research results:

This is available on request.

(?) Inadequacies of Tasmanian Regional Laboratory - Division Food Technology, CSIRO:

It would appear that the stringency of refereeing any paper prior to publishing can adversely affect its' usefulness to industry. A paper of a "technical nature (useful to industry)" published by staff of this Division is not well received by the heirarchy of this Division compared with a scientific paper.

One of the constraints placed on this laboratory is the lack of fresh fish for research purposes.

(8) Recommendations for solving inadequacies:

In the Science & Industry Research Amendment Act 1978, the functions of the CSIRO Organisation are in part:

to carry out scientific research for any of the following purposes:

- assisting Australian industry;
- to encourage or facilitate the application or utilization of the results of such research;
- to collect, interpret and disseminate information relating to scientific and technical matters;
- to publish scientific & technical reports, periodicals & papers.

Given the authority under the Act, it may be appropriate for this Division to redefine its role in assisting the fishing industry.

It may be appropriate for Industry to ensure there is a regular supply of fresh fish to this laboratory for research purposes.

University of Tasmania

FUNCTIONS:

This is primarily a teaching university, with research being conducted by staff and higher degree students.

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(1) Data collected and areas of research include:

- . Tasmanian Marine Natural products
- The ecology of three species of flounder
- . Dependence of commercially important fish on krill as a food source in south-east Tasmania
- Ecology of faunal communities among macroalgae
- . Improved solar drying and storage of fish in developing countries
- Evaluation of temperate marine organisms as bioindicators of heavy metals
- Biological monitoring of heavy metals in marine waters

(2) Industry input into (1) above:

Industry input is via:

personal contact

(3) Other research institutions input into (1) above:

This occurs via:

personal contact

(4) Dissemination of data/research results:

There is no avenue for direct dissemination to Industry except for sporadic publications in FINTAS, Aust. Fisheries or FIRTA reports.

Much of the research is published as higher degree Thesis.

Reports (papers) are also published in various journals including:

Journal of Australian Marine and Freshwater Research

- . Australian Zoology
- . Science
- . Limnology and Oceanography
- . Journal of Experimental Marine Biology and Ecology

(5) Industry access to data/research results:

Access is on request.

(6) Other research institutions access to data/research results:

Access is on request.

71.

(7) Inadequacies of University of Tasmania:

This involves the lack of direct liaison between University and Industry.

Much more useful industry research could occur if such a link existed.

(8) Recommendations for solving inadequacies:

The University and Industry should establish a direct liaison for the discussion of and direction of priorities for Industry relevant research.

Australian Maritime College (A.M.C.)

FUNCTIONS:

Established under the Australian Maritime College Act 1978 as a national institution of tertiary education, it is the only one of its kind in Australia providing exclusively for maritime and maritimerelated education and training for the shipping, fishing and allied industries.

"The courses offered at the A.M.C. are designed to provide fundamental theoretical studies and practical training for officers or those wishing to become officers, on merchant or fishing vessels, as well as those otherwise engaged in the shipping or fishing industries. In addition to Certificate and Diploma courses for fishermen and trainee officer entrants there are intensive vocational training courses of tas refresher, upgrading or specialist nature for experienced officers in both sea-going and shore-based operations.

The A.M.C. will also be providing vocationally-orientated courses at degree level and will be engaging in developmental work to advance and develop knowledge and skills, and to provide a service to the maritime industries, in areas in which the College has special expertise."

(1) Data collected and areas of research:

The A.M.C. is not a research institution as such. Rather, it is an institution for tertiary study. Research which does occur within the A.M.C. aims at the development of skills and knowledge for example flume tank experiments for net rigging and modifications.

Courses offered by the A.M.C. include:

- Certificate of Technology in Fisheries Operations
- Diploma of Applied Science (Fisheries Technology)
- Bridging Courses
 - Statutory Certificate Courses

Short courses

- Net Repair and Maintenance
- Fish Detection (Echo sounder)
- Business Management for Fishermen
- Fishing Vessel Hydraulics
- Fishing Vessel Refrigeration
- Safety Course for Fishermen
- Fisheries Technology (Trawl)
- Fish Handling and Presentation
- Engine Room Care and Maintenance
- Fisheries Technology (Instrumentation)
- Marine Science for Fishermen
- Certificate of Competancy

Lecturers from the A.M.C. will visit fishing ports around Australia offering short courses (of a few days to a fortnight's duration).

(2) Industry input into (1) above:

Industry is represented on the Fisheries Course Advisory Committee. Immediate needs are provided for via short courses run by lecturers of the A.M.C. in various ports.

(3) Other research institutions input into (1) above:

The Tasmanian Fisheries Development Authority (T.F.D.A.) is represented on the Fisheries Course Advisory Committee.

The A.M.C. is in close liaison with the T.F.D.A., CSIRO and University of Tasmania (Zoology Department) in relation to courses taught, extension work, short course programme development etc.

(4) Dissemination of data/research results:

Information is distributed direct to students (in college and short course programmes).

(5) Industry access to data/research results:

Being an educational institution, access is on application.

(6) Other research institutions access to data/research results:

As in (5) above.

(7) Inadequacies of Australian Maritime College:

Not applicable.

(8) Recommendation for solving inadequacies:

Not applicable.

SOUTH AUSTRALIA (S.A.)

Research Institutions relevant to Fishing Industry:

- South Australian Department of Fisheries
- The Flinders University of South Australia
- University of Adelaide
- South Australian Museum
- . South Australian Department of Engineering and Water Supply
- South Australian Marine Environment Advisory Committee (S.A.M.E.A.C.)

South Australian Department of Fisheries

FUNCTIONS:

The specific brief of this Department is to administer the "Fisheries Act 1982". The preamble to the Act states:-

'An Act to provide for the conservation, enhancement and management of fisheries, the regulation of fishing and the protection of certain fish; to provide for the protection of the aquatic habitat; to provide for the control of exotic fish and disease in fish, and the regulation of fish farming and fish processing; and for other purposes.'

This Department has a brief to liaise with and disseminate information to Industry.

(1) Data collected and areas of research:

Data is collected via research, log books, industry questionnaires, workshops etc. on all commercial species. This results in the following information available as:

- . Mathematics population dynamics
- . Benthic ecology of Upper Spencer Gulf
- . Ecological survey of the benthic communities of South Australia's aquatic reserves
- Recolonization of seagrasses in area disturbed by a seismorgraphic survey in Gulf St. Vincent
 - Study of gross incomes of commercial scale fishermen

- Survey of participation in recreational fishing activities
- Abalone production monitoring model
- Aspects of the population biology of *Fenaeus iatisulcatus* in northern Spencer Gulf and the implications to the management of the Spencer Gulf Fishery
- Aspects of the population biology of *Penaeus Latisulcatus* in the southern region of Spencer Gulf and the implications to the management of the Spencer Gulf Fishery
- Investigation of the Blue Swimming Crab (*Portunus pelagicus*) fishery in South Australia
- Monitoring the progress of feasibility and joint venture fishing for Gould's Squid (*Nototodarus gouldi*)
- South Australian marine scale fishery
- Stock-recuitment studies of abalone
- Studies of western population of Southern Rock Lobster (Jasus novaehollandiae)
- Survey of the by-catch associated with prawn trawling in South Australia
- The development potential of the Southern Calamary Squid (Sepioteuthis australis) fishery
- Census of commercial fishing vessels in South Australia
- Assessment of areas along the South Australian coast and recommendation of areas as future aquatic reserves
- Port Lincoln waste disposal study
- Baseline monitoring of selected metals, nutrients, petroleum and chlorinated hydrocarbons
- Port Adelaide sewage treatment works sludge outfall effect of discharge on the adjacent marine environment
- Port Augusta East sewage treatment works discharge to Spencer Gulf
- Readers are referred to a "Research Index" shortly to be published by S.A. Fisheries which outlines all research projects undertaken by the Department.
- (2) Industry input into (1) above:
 - . This occurs via the strong liaison between the Department and AFIC.
 - . Management liaison committees comprising specific fishery representatives and Department representatives
 - . Department/Industry workshops and seminars
 - . Personal contact

(3) Other research institutions input into (1) above:

- This occurs on a State basis via the S.A. Marine Environment Advisory Committee (SAMEAC) which has as its role to co-ordinate marine research.
- On a Federal level this occurs via S.E.F.C.
- S.A. Fisheries is also represented on W.F.R.C.
- Personal contact

(4) Dissemination of results:

One of the terms of reference of the Industry Management Liaison Committees is to assist in the dissemination of research results. The Department publishes a bimonthly Department/Industry journal called SAFIC which is posted free to members of the S.A. fishing industry. Results of research projects etc are reported on to Government authorities at W.F.R.C., S.E.F.C. and S.A.M.E.A.C. meetings. Results are also published in other journals including:

- . Australian Fisheries
- . Australian Journal of Marine and Freshwater Research
- . Department "Situation Reports".
- . Aquaculture
 - Fisheries Bulletin US

(5) Industry access to data/research results:

Access is available on request to published data. Restriction of access applies to a few departmental data files.

(6) Other research institutions access to data/research results:

Access is available on request.

(7) Inadequacies of S.A. Fisheries Department:

This involves the lack of:

- a marine laboratory
- a research vessel and
- adequate staff to police the Act

Whilst successive Governments have committed themselves to a marine laboratory, none have provided the finance. Industry is of the opinion that the Department provides good service within the framework of the constraints imposed upon them. If the above facilities and staff were available the necessary amount of commercially orientated research could be obtained. Currently, pure research projects (whilst necessary in long term) are detracting from the time available to research necessary commercial short term projects which are applicable to the immediate operations of industry.

75.

76.

(8) Recommendations for solving inadequacies:

Industry and the Department must jointly make the State Government aware of the importance of the "fisheries dollar" to the S.A. economy and hence the need for adequate funding to ensure and increase the long term viability of the fish stocks and the short/long term viability of industry.

The Flinders University of South Australia

FUNCTIONS:

This is primarily a teaching university with research undertaken by staff outside the teaching commitment and by higher degree students.

(1) Data collected and areas of research:

The School of Biological Sciences instigated a number of industry related topics as Honours projects for graduate students. These include:

- . Mercury contamination in fish
- . Transportation of live lobster
- Control of Staphylococial food poisoning
- Source of spoilage organisms in fish processing
- . Feeding and Growth in Abalone
- Transportation of live Squid
- . Spoilage of frozen fish during storage

Other research by School of Earth Sciences:

- South Australian Gulfs as "inverse estuaries"
- Tides and mean sea level laboratory
- Exploratory experimental physical oceanography on the continental shelf
- Long-waves and Gulf St. Vincent
- Coastal monitoring of Long-waves
- (2) Industry input into (1) above:
 - . personal contact
 - via S.A. Fisheries

(3) Other research institutions input into (1) above:

This occurs via:

South Australian Marine Environment Advisory Committee (S.A.M.E.A.C.)

personal contact

(4) Dissemination of results:

The industry projects (School of Biological Sciences) are internally published as Honours thesis. Oceanographic research papers are published as reports or papers for journals including:-

- Flinders Institute for Atmospheric and Marine Sciences (F.I.A.M.S.)
- Transactions of the Royal Society of South Australia
- Proceedings of the 5th Aust. Conference on Coastal & Ocean Engineering Int. of Engineers.

(5) Industry access to data/research results:

The Honours thesis are disseminated to the industry organisation requesting such research and to others on request to the project supervisor.

Access to the oceanographic papers is on request.

(6) Other research institutions access to data/research results:

Access is available on request.

(7) Inadequacies of the Flinders University of South Australia:

Not applicable.

The extent and type of research that occurs depends on discretion and expertise of the staff member concerned.

(8) Recommendations for solving inadequacies:

Not applicable.

The University of Adelaide

FUNCTIONS:

This is primarily a teaching university, with research undertaken by staff and graduate students.

(1) Data collected and areas of research:

This includes:

Ecology of the razor fish (Pinna bicolor)

Dynamics of sessile communities on hard bottoms

- . Mutualism between scallops and epizoic sponges
 - Effects of power-station effluent on fish.

- 78. [·]
- Dynamics of rock lobsters in S.E. waters
- . Zooplankton and zoobenthos of the Coorong
- . Diet of European Carp (Cyprinus carpio) in Lake Alexandrina.
- . Biology of freshwater crayfish
- . Respiratory physiology of River Murray crayfish

(2) Industry input into (1) above:

There is no official avenue for industry input. Approaches by industry for research would be welcome.

(3) Other research institutions input into (1) above:

This occurs via:

South Australian Marine Environment Advisory Committee (S.A.M.E.A.C.)

. Personal contact

(4) Dissemination of results:

There is no avenue for direct dissemination of results to industry. "Popular edition" type papers can be obtained on request. Results are published as higher degree thesis or in scientific journals including:

- Australian Journal of Marine and Freshwater Research
- . Australian Journal of Zoology
- . Comparative Biochemistry and Physiology
- . Journal of Comparative Physiology
- . Oecologia (Berl.)
- Transactions of the Royal Society of South Australia

(5) Industry access to data/research results:

Access is on request.

(6) Other research institutions access to data/research results:

Access is on request.

(7) Inadequacies of University of Adelaide:

Not applicable.

The extent and type of research carried out depends on the discretion and experitse of the staff member concerned.

(8) Recommendations for solving inadequacies:

Not applicable.

South Australian Museum - Ichthyology Section

FUNCTIONS:

The functions of the Ichthyology Section (Fishes) are to provide:

- basic identification of specimens for the general public and government institutions.
- documentation of the States (S.A.) marine and freshwater fish fauna.

a library of fish fauna via a reference collection of specimens.

(1) Data collected and areas of research:

A 2 year programme to update the marine fish fauna in the reference collection has just finished. Taxonomic work on the various Groups of fish is occurring. This programme has as one of the aims to update the popular handbook "The Marine and Freshwater Fishes of South Australia".

(2) Industry input into (1) above:

Personal contact

(3) Other research institutions input into (1) above:

Personal contact

(4) Dissemination of results:

Information is disseminated to industry by publication in the journal SAFIC. Other publications include:

- . Transaction of the Royal Society of South Australia
- Australian Journal of Marine and Freshwater Research
- . Australian Journal of Zoology

(5) Industry access to data/research results:

Access is available on request to the Curator.

80.

(6) Other research institutions access to data/research results:

Access is available on request to the Curator.

(7) Inadequacies of Ichthyology Section, S.A. Museum:

Not applicable.

(8) Recommendations for solving inadequacies:

Not applicable.

South Australian Dept. of Engineering and Water Supply

FUNCTIONS:

This Department has the responsibility for water resources, supply of water and treatment of sewerage for South Australia. In the marine environment its' responsibility is limited to monitoring the impact of sewerage and sludge outfall in order to assess the environmental impact of marine discharge.

(1) Data collected and areas of research:

For the marine environment this includes:

Finger Point marine environment surveys

. Gulf St. Vincent pollution studies

- . Port Adelaide sewage treatment works sludge outfall effect of discharge on the adjacent marine environment
- . Port Augusta East sewage treatment works discharge to Spencer Gulf
- . Port Lincoln waste disposal study

(2) Industry input into (1) above:

This occurs via Industry's liaison with the S.A. Fisheries Department who in turn liaise with the Department of Engineering & Water Supply.

(3) Other research institutions input into (1) above:

This occurs via:

Interdepartmental Committee comprising representatives from:

- Department Engineering & Water Supply

- S.A. Fisheries Department

- Public Health Department

- Environment & Planning Department

South Australian Marine Environment Advisory Committee (S.A.M.E.A.C.)

(4) Dissemination of results:

Results are normally published as Departmental "Reports". Papers are also published in journals such as:

J. Aust. Water & Waste Water Assoc.

(5) Industry access to data/research results:

Access is available on request with requests denied depending on the sensitivity of the information. This is controlled by the relevant Minister.

(6) Other research institutions access to data/research results:

As per (5).

(7) Inadequacies of Dept. of Engineering & Water Supply:

- There is no direct avenue for industry input into the marine environment monitoring programme.
- The Reports of such programmes are not available to industry if considered "sensitive".

There is no avenue for informing members of the industry when a project has been completed and the report is available.

(8) Recommendations for solving inadequacies:

- Industry must have direct input into the marine environment monitoring programme.
- Regardless of the "sensitivity" of the report, Industry must be included on the mailing list and receive the report in a timely fashion.
- Information on the monitoring programme and availability of reports could be published in the South Australian journal SAFIC.

South Australian Marine Environment Advisory Committee (S.A.M.E.A.C.)

FUNCTIONS:

This committee is responsible to the Minister for Environment and Planning with a brief to advise Government on:

- any matters appertaining to the marine environment
- assess and co-ordinate investigations being undertaken in the marine environment in S.A.
- to create and maintain a register of all current and future investigations.
- (1) Data collected and areas of research:

This committee is not funded for research. Once SAMEAC assesses an area of concern leading to a research project it has 3 options:

- It requests the most suited member Department to place the project on their priority research list.
 - It requests the University Member(s) to research the project.
- It goes to the Government for funding to sub-contract the research project.
- (2) Industry input into (1) above:

There is no avenue for Industry input except for its' liaison with S.A. Fisheries, (a member of SAMEAC).

(3) Other research institutions input into (1) above:

This occurs via the membership of SAMEAC which is convened by the Department of Environment and Planning and has as its members:

- Coast Protection Board
- S.A. Fisheries Department
- . Engineering and Water Supply Department
- Marine & Harbours Department
- Department of State Development
- The Flinders University of South Australia - by invitation to recognized experts
- University of Adelaide - by invitation to recognized experts

(4) Dissemination of data/research results:

Dissemination of results is the concern of the SAMEAC "member" carrying out the research. There is no avenue for the dissemination of information to the general public.

(5) Industry access to data/research results:

Access is not available unless the "member" disseminates a report to Industry.

(6) Other research institutions access to data/research results:

Access is not available unless the "member" disseminates a report to fellow members. In the case of Engineering & Water Supply report on the "Finger Point marine environment survey" access was almost non-existent, even for members of the S.A.M.E.A.C.

(7) Inadequacies of South Australian Marine Environment Advisory Committee (S.A.M.E.A.C.)

Evidence suggests that the reasons behind the formation of the S.A.M.E.A.C. in 1975 are now in 1983 no longer applicable because areas of concern re pollution of the S.A. marine environment are now well defined. The membership and role of SAMEAC appears to need redefining. For SAMEAC to function properly it must be fully supported by and have the cooperation of its members. Evidence suggests this is not so. For example, research results are not automatically disseminated to fellow members. Due to the lack of cooperation the "register" of current and future marine investigations has not been compiled. The S.A. Fishing Industry is totally dependent on the S.A. marine environment being "pollution free" and "healthy". Yet the Industry is not a member of S.A.M.E.A.C.

There is no avenue for the dissemination of information to the general public.

(8) Recommendations for solving inadequacies:

It may be appropriate for the S.A.M.E.A.C. to meet and discuss the future requirements for such a committee, redefine its role and membership. Information/research results between members must be automatically disseminated.

WESTERN AUSTRALIA (W.A.)

Research Institutions relevant to Fishing Industry:

Department of Fisheries and Wildlife

C.S.I.R.O., Marmion Regional Laboratory

- Western Australian Museum
- . University of Western Australia
- . Murdoch University
- . Western Australian Institute of Technology (W.A.I.T.)
- . Department of Conservation and Environment Marine Studies Branch

Department of Fisheries and Wildlife

FUNCTIONS:

- This Department operates under the Fisheries Act No. 80 of 1905.

"An Act for the regulation of the fishing industry and fish farming and for the conservation and management of fisheries and aquatic animals and plant life and for the purpose connected therewith."

The Research Section programmes are reviewed annually by the Western Fisheries Research Committee (W.F.R.C.)

This Department has a brief to liaise with and disseminate information to Industry.

(1) Data collected and areas of research:

Data is collected via research, log books, industry questionnaires, workshops, etc. on all commercial species in W.A. This results in such information available as:

- . life cycles of fish and crustacea (biology)
- habitat/environmental parameters (coastal and estuarine fisheries)
 - State of the Fisheries
 - Rock lobster
 - Prawns
 - Salmon

– Tuna

- Estuarine fisheries
- Cockburn Sound Fishery
- Shark Bay Scale Fishery
- Fisheries Development
- Research
- Inspection

Production Statistics

- commercial Fish
- Prawns Exmouth Gulf, Ashburton area (Onslow) and Nickol Bay and associated areas
- Salmon

*

- Southern Bluefin Tuna
- Major Estuaries
- Cockburn Sound
- Shark Bay Scale Fish
- Shark Bay Whiting
- Readers are directed to the publications "State of the Fisheries of Western Australia 1981" and "Western Fisheries Research Committee (23rd Annual meeting report 1982)" for indepth information on the above - Enquiries to the Extension and Publicity Office. W.A. Fisheries and Wildlife.
- (2) Industry input into (1) above:

Industry input occurs in several ways:

- via the excellent relationship which exists between the Department and the Australian Fishing Industry Council (AFIC WA Branch)
- Department, Industry management committees e.g. Rocklobster Advisory Committee.
- Department, Industry workshops
- . Industry input to the Western Fisheries Research Committee (W.F.R.C.)
- . Department, Industry personal contact.

(3) Other research institutions input into (1) above:

This occurs via:

- Western Fisheries Research Committee
- Personal contact

(4) Dissemination of research results:

Information is disseminated to industry via the Department journal "FINS". (Published 3 times a year, it is posted free to every licenced member) Similar articles are also published in the Commonwealth monthly journal "Australian Fisheries (subscribers only). Data is also available as Department Reports and seminar/workshop papers. Research staff also publish in such scientific journals as:

- Australian Journal of Marine and Freshwater Research
- . Oceanography and Marine Biology Annual Review
- , Fisheries Bulletin
- . Biometrics
- . Marine Ecology Progress Series

Video films are also being used to illustrate various fishing techniques and industry practices. Reports and papers are automatically disseminated to other State and Commonwealth Fishery Authorities.

(5) Industry access to data/research results:

Access is available except for where confidentialities need to be maintained. Controlling factor may be time required by the Department to access data from own files prior to handing to Industry.

Requests for information are handled by the Extension and Publicity Officer (E.&P.O.).

The role of the E.&P.O. is to develop the W.A. fishing industry by informing industry (via FINS, personal contact, etc.) of:

- latest management laws and regulations
- progress to the industry and new developments within each fishery
 - research progress of the Waterman laboratory and how this can assist the progress of industry.

All enquiries for information should be directed to the Extension and Publicity Officer.

(6) Inadequacies of the Department Fisheries and Wildlife:

It would appear that in a year of research, much more information is available than the amount which is published via FINS.

As well, the gazetting of new management laws and regulations can occur with a lag period of 4 months before all of industry is informed via FINS. Industry can be unwittingly fishing illegally during this period.

(7) Recommendations for solving inadequacies:

It may be appropriate for the Department of Fisheries and Wildlife to consider increasing the number of publications per year to 5 or 6 instead of 3.

An alternative would be for Industry to accept the role of publication and dissemination.

CSIRO - Division of Fisheries Research, Marmion Laboratory

FUNCTIONS:

This laboratory was originally established to research into biology of larvae and juvenilestages of the Western rock lobster. Whilst rock lobster biology is still examined, the research programme priority since 1979 is one of examining the "total coastal ecology". The research aim is to understand the distribution, abundance, growth and interactions of important coastal marine organisms and the influences of water circulation, nutrient dynamics and various environmental perturbations on them.

(1) Data collected and areas of research include:

- microbial processes
- . reef ecology
- . biological productivity cycles
- algal nutrition
- . reef ecology
- . coastal shelf circulation
- rocklobster ecology
- . marine chemistry
 - seagrass and seaweed biology

The major research efforts have centred on the nearshore, coastal reef and lagoonal ecosystems which occur between Perth and Geraldton and the coral reefs of the Abrolhos Islands. These environments are economically important habitats for larval and juvenile rock lobsters and many commercial and sports fishes. As well these areas possess unique characteristics which make them of interest scientifically in their own right.

(2) Industry input in (1) above:

This occurs in several ways:

- via industry participation on W.F.R.C.
- . CSIRO/Industry seminars, workshops.
- . open panel "program revue"

(3) Other research institutions input into (1) above:

This occurs via:

- . Western Fisheries Research Committee
- . Personal contact
 - open panel "program revue"

(4) Dissemination of research results:

Information is disseminated to Industry via the journals Australian Fisheries and FINS as well as W.F.R.C. and CSIRO Reports (available on request). CSIRO/Industry workshops are used to disseminate information to Industry. Research staff also publish in:

- . Australian Journal of Marine and Freshwater Research
- . Oceanography and Marine Biology Annual Review
- . Fisheries Bulletin
- . Biometrics
- . Marine Ecology Progress Series
- . Limnology and Oceanography
- Journal of Experimental Marine Biology and Ecology

(5) Industry access to data/research results:

Access is available except for where confidentialities need to be maintained. Access is upon request (written/verbal) to the individual scientist.

(6) Inadequacies of CSIRO, Division of Fisheries Research, Marmion Laboratory:

This involves the absence of an Extension Officer who could act as an initial contact point for industry and ensure research results were readily disseminated as bimonthly "information notes".

(7) Recommendations for solving inadequacies:

It may be appropriate for the Division of Fisheries Research to consider funding of an Extension Officer, even if only on a part-time basis similar to the Extension Officer to the Northern Prawn Fishery who is based in the CSIRO Cleveland Laboratory in Queensland.

Western Australian Museum (Ichthyology (Fishes) & Crustacean Section)

FUNCTIONS:

The functions of the above two sections is to provide:

- basic identification for the general public and government institutions
- . documentation of the States (W.A.) total fish and crustacean fauna (marine & fresh water)
 - a library of fish and crustacean fauna via a reference collection of specimens

(1) Data collected and areas of research:

These include:

- taxonomy of the Nephrops (or Scampi lobster) recently trawled on the North West Shelf of CSIRO
- Systematics and phylogenetic studies of Ghost Crabs (*Ocypode*)
- Systematics of butterfly lobsters (Ibacus)
- Taxonomy of the Panulirus longipes group of rock lobsters
- Monitoring developments in research of *Panulirus cygnus* George 1962 (Western rock lobster)
- Preliminary assessment of standing stock of benthic suspension feeders and grazers in the Pinaroo Point area
- Studies of the marine invertebrate fauna of Shark Bay
- Systematic studies of Monocanthidae and other Indo-west Pacific marine fishes
- . Biogeographic and community studies of temperate Australian marine fish
- Regular updating of the fish reference collection
- Survey of tropical reefs of Western Australia, particularly in the Abrolhos Islands, The Nigaloo Reef Tract and the Rowley Shoals.
- (2) Industry input into (1) above:

This occurs via:

- Industry involvement to the W.F.R.C.
- Personal contact
- (3) Other research institutions input into (1) above:

This occurs via:

- Western Fisheries Research Committee
- Personal contact

(4) Dissemination of research results:

There is no specific avenue for disseminating information to industry. Whilst information in the form of "reports" are available on request, only the occasional paper relating to industry is published in FINS.

Normally research results from the Museum are published in "Records of the Western Australian Museum" (Rec. West. Aust. Mus.) a quarterly publication. As well, papers are published in: Journal Royal Society of W.A.

Your Museum

Australian Natural History

(5) Industry access to data/research results:

Access is available upon request to the Curator of each section. Information relating to the fish reference collection is on computer and can be retrieved in almost any combination.

* Readers are advised to contact the W.A. Museum librarian for the full publication list of available research papers.

(6) Inadequacies of W.A. Museum:

Not applicable.

(7) Recommendations for solving inadequacies:

Not applicable.

University of Western Australia

FUNCTIONS:

This is primarily a teaching university with staff engaging in research outside the teaching commitment.

(1) Data collected and areas of research:

This includes:

Shark Bay program - "To understand the biology, chemistry, physics and geology of material delivery to, cycling within, and export from, a large coastal embayment. In particular, looking at salt and water budgets and at the cycles of carbon, nitrogen, and phosphorus in the system."

- Nutrient release by marine animals.
- Cycling of nutrients through particulate matter.
- Fauna associated with the coral *Pocillopora damicornis* at Rottnest Island and Point Quobba.
- . Dynamics of the North West Shelf.

(2) Industry input into (1) above:

This occurs via:

. Western Fisheries Research Committee

. Personal contact.

(3) Other research institutions input into (1) above:

This occurs via:

Western Fisheries Research Committee

Personal contact

(4) Dissemination of results:

Information is not directly disseminated to industry. Research reports are published in various scientific journals including:

Science

. Limnology and Oceanography

. Australian Journal of Marine and Freshwater Research

Journal of Experimental Marine Biology and Ecology

(5) Industry access to data/research results:

Access is available on request. A university spokesperson has suggested more related University/Industry research could occur if direct liaison occurred as an ongoing relationship between an industry person and a university person.

(6) Other research institutions access to data/research results:

Research results are not directly disseminated to other State/ Commonwealth Fishery authorities. Dissemination is via W.F.R.C. reports, scientific journals and on application.

(7) Inadequacies of the University of Western Australia:

This concerns the University's lack of a designated contact person with whom a designated industry person could liaise.

(8) Recommendations for solving inadequacies:

It may be appropriate for the University to consider nominating a staff member for industry (Executive Officer) to liaise with.

Murdoch University

FUNCTIONS:

This is primarily a teaching university with research being undertaken by staff members outside the teaching commitment. (1) Data collected and areas of research: (School of Environmental and Life Sciences - "Murdoch Fish Group")

> Studies on the ecology of the fish fauna of the Peel-Harvey estuarine system include:

- A checklist of the elasmobranchs and teleosts
- Investigate the seasonal distribution and abundance of the different fishes
- Monitor the effect of *Nodularia* on the abundance and distribution of fish fauna

Studies on the ecology of the fishes and the prawn *Metapenaeus* dalli in the Swan-Harvey River system to include:

- Continued sampling particularly during periods following high fresh water discharge rates and when such species as Perth herring, gobble guts and the school prawn are known to breed.
- To study in detail the fish fauna of the Canning River part of the Swan-Avon system.
- To initiate a programme whereby data collected over the last few years on the fish and environmental condition can be prepared for computer manipulation.
- The biology of the Western school prawn, Metapenaeus dalli
- The biology of the Perth herring, Nematalosa vlaminghi
- A study of the cause of mortality in the pearl oyster *Pinctada maxima*
- Computing methodology in estuarine fish research
- The life cycles and ecology of the lamprey *Geotria australis*.
- (2) Industry input into (1) above:

This occurs via:

Western Fisheries Research Committee

(3) Other research institutions input into (1) above:

This occurs via:

- Western Fisheries Research Committee
- Personal contact

(* The Western Australian Fisheries and Wildlife is represented on the Murdoch Fish Group) (4) Dissemination of research results:

There is no avenue for direct dissemination to Industry except for sporadic publications in the journal FINS which occurs as a consequence of W.F.R.C. Reports.

Research results are published in such journals as:

- . Australian Journal of Marine and Freshwater Research
- . Australian Zoology
- . Department of Conservation and Environment Report

(5) Industry access to data/research results:

Access is upon request.

(6) Inadequcies of Murdoch University:

Not applicable.

(7) Recommendations for solving inadequacies:

Not applicable.

Western Australian Institute of Technology (W.A.I.T.)

FUNCTIONS:

This is an Institute for the teaching of applied sciences. Research occurs by staff outside the teaching commitment.

(1) Data collected and areas of research:

This includes:

- Studies in acoustical oceanography
- Application of satellite real-time sea surface temperature (SST) to the tuna, salmon and pilchard fisheries
- "Aussie" submersible
- . Electronics in marine applications
- . Growth studies of the freshwater crayfish of the genus Cherax.
- Analysis of trace metals in seawater by atomic absorption spectrophotometry, electrochemical techniques, isotropic dilution - marsspectrometr and x-ray fluorescence.

(2) Industry input into (1) above:

There is no direct avenue for input by industry. Whilst industry assists with log book data for some of the projects, industry input is through the Western Fisheries Research Committee.

(3) Other research institutions input into (1) above:

This occurs via:

Western Fisheries Research Committee

Personal contact

(CSIRO and Department of Environment and Conservation are working with W.A.I.T. on the Satellite Sea Surface Temp. Program)

(4) Dissemination of results:

Information is not directly disseminated to industry except for sporadic reports in FINS or Australian Fisheries. Research papers are published in such journals as:

- . Limnology and Oceanography
- . Australian Journal of Marine and Freshwater Research
- W.F.R.C. reports

(5) Industry access to data/research results:

Access is on application. Data is stored on computer and files of individual researchers.

(6) Other research institutions access to data/research results:

As per (5) above.

(7) Inadequacies of W.A.I.T.:

This involves the lack of an effective W.A.I.T. - Industry liaison for discussion of research projects and dissemination of results.

(8) Recommendations for solving inadequacies:

It may be appropriate for Industry to establish an ongoing liaison with an elected representative of W.A.I.T.

Department of Conservation and Environment, Marine Studies Branch

FUNCTIONS:

The Marine Studies Branch role is to carry out or integrate other studies on coastal environments or resources whenever increasing pressure from human development could have an effect. 95.

(1) Data collected and areas of research:

Areas of research includes any major human development along the W.A. coast irrespective of whether commercial fisheries are under threat.

- e.g . the Laporte Effluent Study
 - . the Ocean Pipeline Study
 - . the Peel-Harvey Inlet Study
 - . the N.W. Shelf Gas Development Study
 - . the S.E.C. Bunbury Power Station Study
 - . the Dampier Arch pelags Marine Study
 - the Mitchell Plateau Bauxite Study

(2) Industry input into (1) above:

There is no direct avenue for input by Industry. The Department of Fisheries and Wildlife and the Marine Studies Branch work together on projects where commercial fisheries are involved. Industry has input through the Department of Fisheries and Wildlife.

(3) Other research institutions input into (1) above:

This occurs via:

Western Fisheries Research Committee

Personal contact

(4) Dissemination of results:

Information is not directly disseminated to Industry. The Department of Conservation and Environment publish their own "Report Series" and "Bulletin Series". These are distributed to the library of the Department of Home Affairs, member groups of the Western Fisheries Research Committee and DPI as well as similar State agencies.

(5) Industry access to data/research results:

Data is stored on computer and in files of individual researchers. Access is available on application. Normally technical reports relating to Industrial proposals are confidential. However, these reports in part or whole can be "viewed" by interested parties in the "reading room".

(6) Other research institutions access to data/research results:

As per (4) and (5) above.

(7) Inadequacies of Marine Studies Branch:

It would appear that the Environmental Protection Act under which this Department operates needs revising. Apparently the Act places much responsibility on the Department but little authority to ensure its proposals are carried out.

(8) Recommendations for solving inadequacies:

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Information gained suggests the Act is now under revision by the new Labor Government.

CHAPTER TWO

Results - Fuel

The availability, cost, distribution, storage and usage patterns of diesel fuel as these relate to the commercial fishing industry were investigated. (See Appendix I).

The bulk purchase of fuel by industry was researched into with the following results:-

- a. Findings:
 - 1. Only a few of the Oil Companies have the capacity to tender on a national basis.
 - A total fuel package including ADO, Motor Spirit and and Lubricants would be more attractive to some of the Companies than ADO only.
 - 3. Tenders should be called to supply fuel to nominated ports on a State basis, i.e., call for tenders to supply X, Y, Z, litres of ADO, Motor Spirit and lubricant (marine and non marine) delivered in the following amounts to the ports nominated.
 - 4. Storage and pump facilities could be either purchased by the industry on a port basis or supplied by the Oil Company if the fuel contract is large enough. (Volume of contract not known, and depends on Oil Company concerned.
 - 5. Groups of perhaps 20 fishermen could form and collectively pay their fuel bill to a central figure within a port.
 - Similarly, fleet owners could group purchase, and pay for fuel.
 - 7. It would be possible for both individuals (as a group) and co-operatives, or fleet owners to collectively bargain for fuel but pay per their respective group. This would give the industry more bargaining power as more fuel would be involved.
 - 8. A method of payment as in (b)4. could be an integral part of the requirements when calling for tenders.
- b. Attitude of Oil Companies:
 - 1. The response from Oil Companies to bulk purchase of fuel was encouraging.
 - 2. All Companies are keen to know the amount and type of fuel required and very willing to quote.

3. The Company representatives believe that fishing co-operatives or large companies may be looked upon as better credit risks than individual fishermen.

- 4. Esso have an accounts system which would enable a bulk order of fuel to be delivered to several ports, with each port paying direct to Esso.
- c. Possible benefit to the Fishing Industry:
 - Depending on location, existing storage facilities and what companies are already servicing a port, the following saving may apply (information from Esso).
 - (i) Yearly contract to supply 1 2 million litres of ADO: at least 4¢ per litre discount
 - (ii) Yearly contract to supply 5 10 million litres of ADO: between 4¢ - 5¢ per litre discount
 - (iii) Ampol suggest that 5¢ rebate is almost the maximum possible rebate, contracts larger than 10 million litres would attract perhaps a discount of 5¢ + 0.003 cents. B.P. however would look at a contract over 10 million litres differently with the industry receiving a larger discount.
 - (iv) As in (a)3., a joint tender for ADO, Motor Spirit and lubricants would appeal to the Oil Companies.
- d. Possible Problems:
 - 1. Legal Problems:
 - a) Who is responsible for payment of the fuel supplied?
 (1) the person calling for tenders; or,
 (2) the person signing the contract.
 - b) Who signs the contract on behalf of the Port/State?
 - c) Is this method of obtaining fuel legal?
 - d) There may be other legal problems not known at this stage.

Alternative sources of fuel energy were considered, taking into account Australia's and industry's geographic location. It became obvious that industry needs a source of energy which is relatively cheap, easily accessible and controlled by Australia rather than foreign governments. To this end Natural Gas (methane) appears to meet all the requirements. It is a fuel which is fast becoming a household name, being safely used for cooking and heating in many Australian homes. Its use in vehicles is increasing. In New Zealand some 40,000 road vehicles use Compressed Natural Gas (CNG) as an alternative to petrol or diesel.

Industry, situated around the coast and being predominantly day boats, is ideally situated in respect of Australia's natural gas deposits, e.g., the W.A. rock lobster fishery or N.S.W. trawl fishery.

Extensive research has revealed that AFIC has access to the technical expertise situated in Sydney for the trial conversion of a day trawler. AFIC has applied to FIRTA for funding of a CNG:ADO conversion project. The savings for the Australian fishing industry are immense if CNG is used as an alternative fuel source. It is reliably estimated that savings in fuel costs with the use of CNG can be in excess of half the present cost of diesel fuel oil and still retain the required safety (see table (I))

Table (I)

Fishing period - 250 days/year - 14 hours/day

	Fuel Used	\$ Day	\$ Year
ADO	950 1.	332.50	83,125
CNG:ADO (80:20)	CNG 760 1. ADO 190 1.	98.80 66.50	41,325
	950 1.	165.30	

ADO = 35¢/1. - Savings per year possible - at least \$42,000 CNG = 13¢/1.

On average, the investment needed to convert a vessel to a CNG:ADO dual fuel system can be recuperated in fuel savings well within the first year of using dual fuel.

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CHAPTER THREE

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Fisheries Council/Committees

•	Australian Fisheries Council (AFC)
•	Standing Committee on Fisheries (SCF)
•	Australian Fishing Zone Committee (AFZC)
•	Fishing Industry Research Committee (FIRC)
	 South Eastern Fisheries Committee (SEFC) Tuna Task Force (TTF) Demersal and Pelagic Fish Research Group (D&PFRG) Demersal Mollusc Research Group (DMRG)
•	 Squid Research Group (SkG) Northern Fisheries Committee (NFC) Northern Prawn Advisory Committee (NORPAC) Technical Working Group
•	Western Fisheries Research Committee (WFRC)
•	Australian Marine Sciences and Technology Advisory Committee (AMSTAC)
•	Australian Society for Fish Biology
•	Interim Fishing Industry Consultative Panel (IFICP)

Function of: AUSTRALIAN FISHERIES COUNCIL (A.F.C.)

This Council provides a basis for continuous consultation between the Commonwealth Government and State Governments as an advisory body on all aspects of the administration and management of Australian fisheries. The functions of the A.F.C. are to generally promote the welfare and development of the Australian fishing industry.

Members:

Commonwealth	-	Minister fo	or	Primary Industry
		Minister fo	or	Science and Technology
N.S.W.		Minister fo	or	Agriculture
Victoria		Minister fo	or	Conservation
Queensland	-	Minister fo	or	Primary Industries
ŝ.a.		Minister fo	or	Fisheries
W.A.		Minister fo	or	Primary Industry, Agriculture
		and Fishe	erie	es and Wildlife
Tasmania	-	Minister f	or	Primary Industry
N.T.	-	Minister f	or	Primary Production
Secretariat	-	D.P.I.		

Function of: STANDING COMMITTEE ON FISHERIES (S.C.F.)

This Committee is the permanent technical committee to the Australian Fisheries Council and aims at securing the co-operation of governments (Commonwealth and States) and the industry in relation to research and development of the industry.

Members:

Dr.	D.	D.	Francois	N.S.W.
Mr.	J.(C.F.	Wharton	Victoria
Dr.	G.	I.	Alexander	Queensland
Mr.	R.	Α.	Stevens	South Australia
Mr.	в.	к.	Bowen	Western Australia
Mr.	R.	т.	МасКау	Tasmania
Dr.	с.	н.	Gurd	Northern Territory
Dr.	R.	Α.	Bain	D.P.I.
Dr.	s.	W.	Jeffrey	C.S.I.R.C.
Mr.	J.	R.	Rae	Department of Finance

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The Standing Committee on Fisheries is advised by eight permanent sub-committees:

- Advisory Committee on Endangered Species and Import and Export of Live Fish
- Co-ordinating Committee on Fisheries Applications of Remote Sensing
- Co-ordinating Committee on Metals in Fish and Fish Products
- Fisheries Pollution Committee
- Joint Technical Working Group on Marine Pollution
- Northern Fisheries Committee
- South Eastern Fisheries Committee
- Western Fisheries Research Committee

Secretariat - D.P.I.

Function of: AUSTRALIAN FISHING ZONE COMMITTEE (A.F.Z. Committee)

The A.F.Z. Committee reviews and reports to the Australian Fisheries Council, through the Standing Committee on Fisheries, on guidelines for foreign fishing vessels and crew participation in the Australian fishing industry. It also reviews the effect of foreign participation in the Australian 200 mile zone on the Australian fishing industry.

Chairman:

Dr. R. A. Bain Commonwealth Dept. of Primary Industry Members: Representing the Commonwealth Government -- Dr. G.Murphy Representing the State Governments - A.J. Harrison, R.J. Slack-Smith

Representing primary and secondary sections of the fishing industry

- F.A.L. Connel A.M., K. Tierney

Secretariat - D.P.I.

Function of: FISHING INDUSTRY RESEARCH COMMITTEE (F.I.R.C.)

This Committee considers proposals for the expenditure of moneys from the Trust Account and makes recommendations to the Minister for Primary Industry with respect to the proposals.

Current projects funded by the Fishing Industry Research Trust Account (F.I.R.T.A.) include:

Department of Primary Industry -Study of the southern bluefin tuna recruitment

Department of Primary Industry on behalf of the Norfolk Island Legislative Assembly -

Assessment of the Norfolk Island domestic fishery with a study of the major species Lethrinus chrysostomus

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Bureau of Agricultural Economics - Assessment of the economic impact of boat replacement policies in limited entry regimes
CSIRO - Division of Fisheries Research - Tagging of southern bluefin tuna off the coast of Australia
Data and information service to the northern prawn fishery
CSIRO and New South Wales Health Commission - The occurrence and significance of pathogenic vibrios in oysters
CSIRO and Western Australian Institute of Technology - Application of satellite real-time sea surface temperature (SST) data to the tuna, salmon and pilchard fisheries
New South Wales State Fisheries - Fish attracting system
Clarence River pilot prawn farming project
Queensland Department of Primary Industries - Assessment of Queensland inshore net fisheries
Population biology of spanner crab in south Queensland
Studies of toxic dinoflagellates responsible for formation of ciguatoxin
South Australian Department of Fisheries - Recruitment and stock density studies of the greenlip abalone
Western Australian Department of Fisheries and Wildlife - Feasibility studies on the artificial propagation of pearl oyster seed
National Fishing Industry Training Committee - Provision of scholarships for an associate diploma course in food technology majoring in seafood control
Australian Maritime College - Scholarships for trainee fishermen at the AMC
University of New South Wales - Composition and processing of Australian jellyfish
Macquarie University - Does selenium and vitamin E protect an animal against methyl mercury toxicity? A biochemical, pathological and behavioural study
Latrobe University - Determination of optimal management for the southern bluefin tuna fishery in the context of the Australian Fishing Zone
University of Melbourne - Investigation of growth, feeding and mortality of Victorian abalone
University of Queensland - Marine parasites and diseases important to the fishing industry (QX disease of oysters and syndrome in abalone)

A study of ciguatera poisoning in Queensland

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An investigation of the toxicity of fish containing mercury at concentrations in excess of present health regulations.

A study of the movement and behaviour of the sand crab Portunus pelagicus using ultrasonic tags

James Cook University North Queensland -Consumption patterns of fish and shellfish

University of Tasmania -

Bacterial pathogens of oyster larvae and spat

Biology and ecology of the blacklip abalone, with particular reference to the juvenile stage

- Royal Melbourne Institute of Technology -Fish canning-quality control and new product development
- Department of Primary Industry -Australian participation in tuna handline pole fishery
- Department of Primary Industry and SA Department of Fisheries -South Australian deepwater line fishing development

Bureau of Agricultural Economics -Economic study of the northern NSW and southern Queensland prawn fisheries

CSIRO - Division of Fisheries Research -Northern pelagic fish stock research

Measuring the feeding range of western rock lobster and the effective fishing area of a baited pot

Stock identity of northern fish species

- CSIRO Division of Food Research -Investigation of key factors in the maintenance of quality from catching to consumer
- New South Wales State Fisheries -Echo sounder, sonar, radar operators and navigation course.

Victorian Ministry of Conservation -Port Phillip Bay scallop research

Queensland Department of Primary Industries -Identification of stocks and migration routes of Torres Strait and Gulf of Carpentaria narrow barred spanish mackerel

- South Australian Department of Fisheries -Investigation of post-larval and juvenile western king prawn population in Spencer Gulf
- Tasmanian Fisheries Development Authority -Feasibility assessment of commercial production of two important shellfish (abalone and scallops)

Northern Territory Department of Primary Production -Mercury content of tropical sharks

University of New South Wales -Stock identification and discrimination of commercially important whitings in Australian waters using genetic criteria

University of Queensland -Pharmacology and pathology of ciguatoxin poisoning in mammals and studies on the possible effects of ciguatoxin on fish
- Royal Melbourne Institute of Technology -
 - Water content of scallops

the AMC flume tank

- Queensland Museum -Systematic revision of the Australian fishes of the family Pomadasyidae
- Sea Hatcheries, Queensland -Development of barramundi hatchery and farming techniques
- Fortuna Fishing, New South Wales -Longlining tuna for export quality sashimi
- Borserino Pty. Ltd., Queensland -Survey of deepwater prawn resources offshore off Queensland between 22°S and 24°30'S
- A.L. Vickers, Queensland -Potential of offshore gillnetting in the Gulf of Carpentaria
- Smithsonian Institute, United States of America -Illustration of manuscript entitled 'Revision of the Flatheads (Platycephalidae) of Australia'

Chairman:

Dr. R. A. Bain, Commonwealth Dept. of Primary Industry

Members:

F.A.L. Connell, A.M. (Australian Fishing Industry Council) N.M. Haysom (Australian Fisheries Council) A.W. Charles (C.S.I.R.O.)

Secretariat:

D.P.I.

Function of: SOUTH EASTERN FISHERIES COMMITTEE (SEFC)

Terms of reference:

Research

- To provide a forum for fisheries scientists to discuss their work
- b) To aid in co-ordination of all fisheries research in the area
- c) To advise the fisheries management authorities on problems in the area and to supply answers to questions referred to it by management

Management

- a) To provide a platform for discussion of fisheries management problems faced by any members
- b) To provide a mechanism for co-ordinating the management of fisheries extending into more than one State

Membership:

Commonwealth Dept. of Primary Industry	- Dr. R. A. Bain
C.S.I.R.O.	- Dr. S. W. Jeffrey
New South Wales	- Dr. D. D. Francois
Victoria	- Mr. J. C. F. Wharton
South Australia	- Mr. R. A. Stevens
Tasmania	- Mr. A. J. Harrison
Secretariat	- D.P.I.

Currently the SEFC is advised by four sub-committees:

I TUNA TASK FORCE

Terms of reference:

- a) Define the objective(s) to be achieved by any management regime for the fishery
- b) Define the fishery itself in terms of -
 - . method(s) of fishing
 - . area(s) within which the fishery should be managed; and
 - . the species to be managed, i.e. only Southern Bluefin Tuna or other tunas as well;
- c) Consider the need for expansion into other tuna fisheries and how to achieve this;
- d) Determine whether the fishery should develop as a specialist tuna fishery or as part of a multi-species fishery;
- e) Determine the possible effects of international management and the likely consequences for domestic fisheries;
- f) Advise as to how to maximise benefits from the resource; and
- g) Bear in mind the national policy of fuel conservation in formulating its proposals.

Membership

Mr.	Α.	J. Harrison (Chairman)	Tasmanian Fisheries Development Authority
Mr.	c.	Smith	President, NSW AFIC
Mr.	М.	Thomas	President, SA Tuna Boat Owners
			Association
Mr.	G.	Stewart	Executive Officer, WA AFIC
Dr.	D.	D. Francois	Director, NSW State Fisheries
Mr.	R.	A. Stevens	Director of Fisheries, S.A.
Dr.	G.	I. Murphy	CSIRO
Dr.	R.	A. Bain	Fisheries Div., DPI
Sec	reta	ariat	Fisheries Div., DPI

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DEMERSAL AND PELAGIC FISH RESEARCH GROUP

Terms of reference:

- a) To establish the identity and extent of all existing or proposed fishing programmes whether government, industry or joint government/industry supported.
- b) To co-ordinate exploratory and research programmes to promote rational development of the fisheries.
- c) To report direct to South Eastern Fisheries Committee

Chairman:

Mr. P. Lorimer Fisheries Div., D.P.I.

Members:

Dr. K. Jones	S.A. Dept. of Fisheries
Vacant	CSIRO
Dr. T. Gorman	NSW State Fisheries
Dr. Wankowski	Div. of Fisheries & Wildlife - Vic.
Mr. M. Wilson	Tasmanian Fisheries Development Authority
Secretariat:	D.P.I.

III DEMERSAL MOLLUSC RESEARCH GROUP

Terms of reference:

- a) To establish the identity and extent of all existing or proposed fishing programmes whether government, industry or joint government/industry supported.
- b) To co-ordinate exploratory and research programmes to promote rational development of the fisheries.
- c) To report direct to South Eastern Fisheries Committee.

Chairman:

Dr. T. Dix Tasmanian Fisheries Development A
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Members:

Dr.	Gwyther	Division of Fisheries & Wildlife - Vic.
Mr.	A. Caton	Fisheries Div., D.P.I.
Dr.	G. Hamer	NSW State Fisheries
Dr.	S. A. Shepherd	SA Dept. of Fisheries
Seci	retariat	Fisheries Div., D.P.I.

IV SQUID RESEARCH GROUP

Terms of reference:

a) To establish the identity and extent of all existing or proposed fishing programmes whether government, industry or joint government/industry supported.

- b) To co-ordinate exploratory and research programmes to promote rational development of the fisheries.
- c) To report direct to South Eastern Fisheries Committee

Chairman:

Mr. A. J. Harrison Tasmanian Fisheries Development Authority

Members:

Mr.	Α.	Caton	Fisheries Div., D.P.I.
Mr.	P.	Roberts	Ministry of Conservation - Vic.
Mr.	н.	Smith	S.A. Dept. of Fisheries
Dr.	т.	Gorman	NSW State Fisheries
Mr.	М.	Dunning	CSIRO

Function of: NORTHERN FISHERIES COMMITTEE (N.F.C.)

Terms of Reference:

Within the water adjacent to Western Australia, north of 18°S, the Northern Territory and Queensland to the border of NSW.

- a) To provide a platform for discussion of fisheries management problems faced by any of its members.
- b) To provide a mechanism for co-ordinating management of fisheries extending into more than one State or Territory within its area.
- c) To report to Standing Committee on Fisheries on the planning and implementation of research programmes;
 - . the methods of co-ordinating the research work being undertaken;
 - . the results of research undertaken; and
 - . the exploitation of the fishery resources.

Membership:

Commonwealth Department of Primary Industry	Dr. R. A. Bain (Permanent Chairman)
CSIRO	Dr. W. Dall
Northern Territory Department of Primary Production	Mr. R. J. Slack-Smith
Queensland Department of Primary Industries	Mr. W. D. Mitchell
Western Australian Department of Fisheries and Wildlife	Mr. B. K. Bowen
Secretariat	D.P.I.

Currently the NFC is advised by two sub-committees.

I. NORTHERN PRAWN ADVISORY COMMITTEE (NORPAC)

Terms of reference:

- (i) Advise the NFC on any matter referred to it by NFC
 in relation to the management, control, protection, regulation and development of the Northern Prawn
 Fishery;
- (ii) Advise the NFC on matters relating to the northern prawn fishery, which have been referred by Industry to NORPAC and which, in NORPAC's view, NFC should consider;
- Provide an opportunity for industry to discuss management proposals and obtain clarification of administrative decisions (or criteria) not clear to industry; and
- (iv) Receive situation reports from the NFC on research programs being undertaken and provide advice relating to these programs.

Membership:

- Queensland Department of Primary Industries
- Commonwealth Department of Primary Industry
- Northern Territory AFIC
- Northern Territory Independent Prawn Fishermen
- Northern Fishing Companies Association
- United Prawn Trawler Operators Association
- Queensland Independent Prawn Fishermen
- Queensland Commercial Fishermens Association.
- N.T. Department of Primary Production

Secretariat - Fisheries Division, D.P.I.

II. TECHNICAL WORKING GROUP (TWG)

Terms of reference:

- (i) Provide a mechanism for the co-ordination of research into and monitoring of, the NPF.
- (ii) Provide NFC with scientific advice on the optimum utilisation of the prawn resources of the northern prawn fishery
- (iii) Provide analyses of current data collection procedures and make recommendations on future needs and procedures for monitoring the resources and evaluation of any management systems that are implemented.
 - (iv) Make recommendations to NFC on existing and new biological and economic research that may be necessary to monitor the utilization of the resources and to improve management advice.

Membership:

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- Queensland Department of Primary Industries
- . Commonwealth Department of Primary Industry
- (Fisheries Div. and Fisheries Research Section B.A.E.)
- Northern Territory Department of Primary Production
- . C.S.I.R.O.
 - Industry representative(s) with relevant expertise "sit in"

Secretariat - Fisheries Div. DPI

WESTERN FISHERIES RESEARCH COMMITTEE (W.F.R.C.)

Terms of Reference:

i)	To guide, review and co-ordinate research programmes to			
	determine priorities in relation to manpower and equipment.			
11)	To accept responsibility for recommending the introduction			
4 4 4 3	or modification of management and development measures.			
111)	fight studiog in Western Australian Waters			
)	Tisheries studies in western Australian waters.			
10)	To appoint sub-committees, of working groups, as required.			
Members:				
-	Dept. of Fisheries and Wildlife - Div. of Fisheries			
	Research - W.A. (Chair)			
-	The C.S.I.R.O.			
-	Murdoch University			
-	University of W.A.			
-	Western Australian Institute of Technology			
-	The Department of Environment and Conservation			
-	The W.A. Museum			
-	The Commonwealth Department of Primary Industry			
-	The S.A. Department of Fisheries			
-	Australian Fishing Industry Council (W.A. Branch)			
Secre	tariat: W.A. Dept. of Fisheries and Wildlife			
`				
Curre	nt areas of co-operative studies include:-			
	the rocklobster and Australian salmon programmes			
-	the Laporte Effluent Study			
_	the Ocean pipeline Study			
-	the Peel-Harvey Inlet Study			
-	the N.W. Shelf Gas Development Study			
_	the S.E.C. Bunbury Power Station Study			
-	the Swan River and Peel inlet Studies			
_	the pearl oyster research programme			
-	the A.F.Z. observer scheme			

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Readers must realise this committee which is convened by the Department of Fisheries and Wildlife has been in existence for some 23 years. Consequently a large amount of co-operative research has occurred under this umbrella. For full details of projects to date readers need to consult past W.F.R.C. annual meeting conference papers (available from Department of Fisheries and Wildlife.)

Possibly one of the most important aspects of the W.F.R.C. is the frank discussion and sharing of research information (published and unpublished) that occurs between members.

This prevents a duplication of research and allows an integrated programme of research.

Access to data/research results between members is a matter of personal contact.

Evidence suggests this committee is the best example of discussion and co-operation between research institutions in Australia. A major consequence of this is the economic/biological well being of the W.A. fisheries.

Function of: AUSTRALIAN MARINE SCIENCES AND TECHNOLOGY ADVISORY COMMITTEE (AMSTAC)

This committee considers proposals for the expenditure of monies from the Trust Account and makes recommendations to the Minister for Science and Technology with respect to proposals.

Terms of Reference:

- To advise the Government through the Minister for Science and Technology on all aspects of marine sciences and technologies, including the provision of an effective, balanced and co-ordinated programme of research and development.
- 2. In addressing these Terms of Reference, AMSTAC should regard its major responsibility as being to:
 - Define the main elements of a marine sciences and technology programme that will contribute to Australia's economic growth and social well-being.
 - ii) Review and assess existing and proposed areas of activity taking account of national needs, international obligations, current Government policies and economic circumstances.
 - iii) Identify priority areas for research development and demonstration.
 - iv) Consider the needs and priorities for supportive facilities and training programmes, grants and fellowships.
 - v) Examine the financing of recommended programmes and associated support facilities
 - vi) Propose organisational arrangements appropriate to an evolving and expanding programme of marine research, development and demonstration in Australia.

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3. AMSTAC should, in discharging these responsibilities, continue to give careful attention to developing ongoing liaison arrangements with appropriate operational and advisory bodies.

Membership:

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Chairman - Prof. J. M. Swan, FAA Dean, Faculty of Science, Monash University

Members -

Dr. J. T. Baker, OBE Director, Sir George Fisher Centre for Tropical Marine Studies, James Cook University of North Queensland

Mr. B. K. Bowen, FTS Director, Dept. of Fisheries and Wildlife, W.A.

Mr. R. J. Foster, Marketing Manager, B.H.P. Oil and Gas Division

Mr. R. J. Smith, Director, Hardcastle and Richards Pty. Ltd.

Dr. D. J. Tranter, Senior Principal Research Scientist, CSIRO Division of Fisheries Research

Prof. J. S. Turner, FRS, FAA Professor of Geophysical Fluid Dynamics, Research School of Earth Sciences, Australian National University

Dr. J. W. Zillman, FTS Director, Bureau of Meteorology, Department of Science and Technology, Melbourne Function of: AUSTRALIAN SOCIETY FOR FISH BIOLOGY

The objects of the Society are to promote the study of fish and fisheries in Australia, particularly research and educational activities, and to provide a medium for the interchange of information between Australians studying fishes. Students of fishes are defined in the broadest sense as people working in any field of research on fishes. The Society is a non-profit, non-commercial organisation.

Secretariat - N.S.W. Division of State Fisheries

Membership of this Society includes most scientists engaged in marine fisheries research in Australia. The Newsletter includes a list of all members, research interests and contact numbers.

Function of: INTERIM FISHING INDUSTRY CONSULTATIVE PANEL (IFICP)

Convened by the Minister for Primary Industry, Mr. John Kerin, the panel has as its functions to -

"serve as an interim body to advise the Commonwealth on a range of current issues affecting the fishing industry and on the long-term arrangements for Government/industry consultations".

"The panel is a significant first step in improving communication between the fishery industries and the Government. Its membership is a good balance between an Australia-wide geographical spread and coverage of the main fish producing and marketing sectors and will be able to look at issues from a diverse range of view points."

Membership:

Chairman - The Hon. J. Kerin, Minister for Primary Industry

Rodney Hunt, Perth, nominated by the W.A. Branch of the Australian Fishing Industry Council (AFIC) and the Australian Fish Canners Assoc.

Murray France, Mt. Hawthorn, W.A., nominated by Northern Fishing Companies Association.

Mike Vandepeer, Blackwood, nominated by AFIC (S.A.) and the Australian Abalone Producers Association, Federal President, AFIC.

Michael Thomas, Port Lincoln, nominated by AFIC (S.A.) and the Tuna Boat Owners Association (S.A.)

Norman Clarke, Lakes Entrance, nominated by Victorian Fishing Industry Council

Ms. J. Schuhkraft, Melbourne, nominated by Victorian Fish and Food Marketing Association, of which she is President.

Geoffrey Stackhouse, Orford, nominated by AFIC (Tas), of which he is chairman.

Wayne Baker, Taroona, nominated by Professional Fishermen's Association of Tasmania, of which he is President, and AFIC (Tas)

David Bateman, Eden, nominated by AFIC (NSW), of which he is Deputy Chairman, and the Australian Fish Canners Association

Robert Lamb, Crowdy Head, nominated by the N.S.W. Association of Professional Fishermen

Dale Bryan, Brisbane, nominated by Queensland Commercial Fishermen's Organisation of which he is Chairman and Executive Officer

Jon Graham, Gladstone, nominated by Queensland Commercial Fishermen's Organisation

Fred Connell, A.M., Geraldton, W.A., as a member with special qualifications. Immediate past President of Federal AFIC

David Townsend, Melbourne, as member with special qualifications. Former Director of the Commonwealth's Fish Export Inspection Service and a specialist advisor to the recent inquiry into the Australian fishing industry by the Senate Standing Committee on Trade and Commerce.

Dr. R. A. Bain, First Assistant Secretary, Fisheries Division, Department of Primary Industry, Canberra.

Ludwig Schwinning, Darwin, nominated by the N.T. Branch of AFIC.

Secretariat:

Fisheries Division, D.P.I.

CHAPTER FOUR

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Data Bases of Relevance to Industry

These include -

AMRIP:- Compendium of Australian marine research in progress. Source - CSIRONET, updated anually, also available in soft cover (contact Department of Science and Technology, Canberra)

CSIRO Index: Covering CSIRO published work: Source - CSIRONET, also available on Microfiche

REEF: Great Barrier Reef Marine Park Authority Bibliography This lists recent publications about the Great Barrier Reef. Held on CSIRONET, a soft cover monthly update "REEF Current Awareness Bulletin" is available on application to the G.B.R.M.P.A., Townsville.

<u>VIMSIS</u>: Bass Strait Bibliography - a guide to the literature on Bass Strait covering scientific and non-scientific material. Source - CSIRONET, also available in soft cover (contact Victorian Institute of Marine Sciences)

Australian Science Index: covering articles published in Australian scientific and technical serial literature. Source AUSINET, also available on microfiche.

Inventory of Marine Sciences and Technologies Data Bases held by or for Australian Government Agencies (available in soft cover from Department of Science and Technology, Canberra). This inventory lists the following:

> ANTARCTIC DIVISION: Australian FIBEX Cruise Data International Antarctic Glaciology Project (IAGP) Microclimate studies of Mawson in the Australian Antarctic Territory Southern Ocean Drifting buoy data

AUSTRALIAN BIOLOGICAL RESOURCES STUDY Australian Museum Taxonomic Data Bank Western Australian Museum Taxonomic Data Bank

AUSTRALIAN GOVERNMENT ANALYTICAL LABORATORIES Mercury Levels in Imported Fish Products

AUSTRALIAN INSTITUTE OF MARINE SCIENCE

QUEEN'S FELLOWSHIP AND MARINE RESEARCH ALLOCATIONS ADVISORY COMMITTEE (QFMRAAC) Assessors File (Confidential) Awards File (Confidential) Grant Applications (Confidential)

AUSTRALIAN OCEANOGRAPHIC DATA CENTRE Bathythermal Data Bank Catalogues of International/National Marine Science Data Banks Integrated Global Ocean Station System (IGOSS) Ocean Station Data Report of Observations/Samples Collected by Oceanographic Programmes (ROSCOP)

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BUREAU OF METEROROLOGY Coastal and Island Data (land based) Drifting Buoy Data Marine Environmental Data Information Referral System (MEDI) Real Time Meteorological Data Sea Surface Temperature Data Ship Based Meteorological Observations Wave Data Archival

BUREAU OF MINERAL RESOURCES Great Barrier Reef Water and Sediment Flux Data Marine Geophysical Survey Data Files Marine Sediment Samples Index

CSIRO MARINE LABORATORIES Hydrological Data Estuarine Data Base CSIRO Fisheries Research Vessel Data Base Southern Bluefin Tuna Data Base Other Data Systems

DEPARTMENT OF HOME AFFAIRS AND ENVIRONMENT INFOTERRA Marine Pollution Data on Ocean Dumping Sites On-Scene Oil Spill Model (OSSM)

DEPARTMENT OF HOUSING AND CONSTRUCTION Catalogue of Instrumentally Measured Wave Data Maritime Works Branch Data Base

DEPARTMENT OF NATIONAL DEVELOPMENT AND ENERGY Bathymetric Mapping Program Hourly Tide Recorder Data

DEPARTMENT OF PRIMARY INDUSTRY Australian Fishing Zone Information System Fish Market Prices Northern Prawn Data Base Pearling and Cultured Pearl Data Prawn Buyers Returns

DEPARTMENT OF TRANSPORT Minor Oil Pollution Incidents Report

CHAPTER FIVE

Discussion

This discussion is not meant to be an in depth analysis of the material in the results section. It is considered the results are very much self explanatory, and should be read per organisation or State by State.

A. Fisheries Data Availability

Whilst the basic "<u>functions of</u>" each State fishery authority are similar (i.e. conservation, protection of existing fisheries and development of new fisheries) there are marked differences in the overall "briefs" of these authorities. For example, the Tasmanian Fisheries Development Authority is the only State body involved in "the giving or the arranging for the giving of financial assistance to persons engaging in the fishing industry of the State."

Each State authority interprets its relationship and consultation with the fishing industry a little differently. Evidence suggests that in States where industry is held in high esteem and fully consulted, more economical and biologically viable fisheries exist. It is interesting to note that where this occurs, the industry is a State-wide strong unified representative body, i.e. AFIC. One advantage from this situation is the availability of finance for industry from banks and other financial institutions.

Of the Commonwealth Authorities, the Fisheries Division, DPI, has a number of roles including the management of national fisheries (e.g. SBT and NPF) and assisting in the management of fisheries which transcend State boundaries (e.g. S.E. Trawl fishery and the S.E. Shark fishery.) The Fisheries Division, DPI, is also involved with the political obligations of the Government in fisheries and international fishing in the Australian Fishing Zone (AFZ) as is the CSIRO. The CSIRO Division of Fisheries Research has a number of roles within its brief with industry requirements being only one of them.

The Bureau of Agricultural Economics (BAE) has as part of its brief, responsibility for economic research and policy analysis for the fishing industry. Evidence suggests that industry is well consulted by the BAE. The BAE are collating a fisheries data base.

The Australian Institute for Marine Sciences (AIMS) whilst not having a brief to liaise or consult with industry specifically, has the staff, expertise and willingness to assist industry anywhere in Australia if invited to assist. The data and information held by AIMS is available on request.

The universities in Australia are a repository of knowledge and scientific expertise which are almost totally unutilized by industry. Personnel within these institutions are extremely willing to undertake fishing industry related projects/research. There is a growing attitude within the universities that researchers in these institutions should not only consider knowledge for knowledge's sake, but apply their skills to solving technical problems of Industry. The fishing industry related projects initiated between the Flinders University in South Australia and S.A.F.C.O.L. are an example of this. The Food Technology Unit of RMIT and the Parasitology Unit of Queensland University have become "centres of excellence" relative to research which directly assists industry. The "original research" mandatory requirement of a higher degree thesis precludes postgraduate students from tackling many of the technical problems .../118 of industry. However such problems are most attractive to research staff, expecially when grant money (e.g. FIRTA) can assist with travel or equipment.

From the results one can obtain an understanding of the types of data collected and areas of research undertaken by the Fisheries Authorities in Australia and importantly what input industry has (if any) into this research. It is interesting to note that the Commonwealth authorities have a variety of sectional interests which they are obliged to consider, including conservationists. On a State basis, these sectional interests include the very powerful recreational and tourism industries.

With such effective sectional interests vying for increased access to or ultra conservation of the fisheries, the fishing industry must become more united so that it represents "one voice" to Government. Evidence suggests that in some instances, Fisheries Authorities can assist industry but are restricted from doing so if a non-unified approach is made. Similarly where an Authority can assist more but decides to interpret its brief differently, representation from a unified industry body can achieve remarkable success in changing the Authority's attitude. The establishment of the Interim Fishing Industry Consultative Panel (IFICP) by the new Federal Minister for Primary Industry offers a "forum for total national fishing industry representation to Government on current issues affecting the industry, and on the long term arrangements for Government/industry consultations."

The type of data collected and areas of research by State and Commonwealth authorities ranges from log book catch and effort data to the life history and biology of an animal, to aquaculture research to improving catching methods. There would appear to be sufficient committees with representatives from respective Authorities to discuss and co-ordinate research objectives, priorities and dissemination of results amongst committee members, ensuring costly overlaps of research effort do not occur, e.g. Western Fisheries Research Committee, South Eastern Fisheries Committee, Northern Differences in attitudes between some committee Fisheries Committee. members can at times impede the flow of co-operation and information Unfortunately none of these regional committees have sharing. Industry has some input representatives from industry as members. as members of sub-committees which report to these regional committees. The value of industry input in these circumstances can, through The industry in W.A. however is well attenuation, become limited. represented to W.F.R.C. through the attitude of the W.A. Fisheries and Wildlife (convenor of W.F.R.C.) to AFIC requirements.

Industry "access to data and information" and "dissemination of information" changes almost from State to State. All fisheries authorities are concerned that "confidentialities" may be breached if direct access to raw data is made available to industry. In many cases confidentialities are ensured by an Act. CSIRO Division of Fisheries Research is also concerned that raw data can be misinterpreted by industry personnal untrained in analysis of data which can lead to major confrontations relating to management policies. It must be noted that confidentialities can be maintained with appropriate programming in the first instance, and still allow industry direct access. It must be noted also that industry does not want access to confidential information which links fishermen/ processors with raw data. Information on who catches what and where is more or less common knowledge in any particular fishery, and is obtained from hearsay, bar talk, presence at the processing factory during unloading, simply listening on the radio or observations at sea.

As to unskilled interpretation of raw data, industry members are fast becoming technically qualified and many processors and representative bodies are employing scientifically trained personnel for just such analyses. It is rather incongruous for a fisherman who has perhaps borrowed and spent a million dollars or so on a vessel to be told he cannot have access to the raw data etc. on which a management policy has been formulated which may severely restrict his access to the fishery, and economically could destroy him.

It is no longer appropriate for the bureaucracy to say to industry "tell us what fisheries data/information you want and we'll tell you if we have it, and if it is appropriate to release it." Industry must be fully informed of all the data and information currently held.

Each authority has its own method of disseminating information This ranges from free postal blanket coverage, e.g. to industry. "as available cruise reports" and "monthly or quarterly fishermen journals" to sending a copy/copies to the relative representative body and hoping they will distribute to and inform their members. Thus from State to State the fishermen (industry) are relatively well informed of the research and information "state of the art" or almost completely ignorant of it. One problem with journal dissemination e.g. FINS or Australian Fisheries is that there is much more information on different subjects to publish than there is space per publication. The "office" of "industry liaison officer" or "extension and publicity officer" is a most successful link between research and industry for Evidence suggests industry makes the dissemination of information. very good use of the brief of these officers.

Industry must be fully informed of all the data/information held on respective fisheries in Australia before it can comment on the value and use of the knowledge as it relates to any specific fishery.

Industry's access to data/information as held by fisheries authorities in Australia ranges from extremely good to extremely poor.

The technology, availability and cheapness of home computers gives industry the capacity to obtain and utilize much of the fisheries data held by authorities. The free, postal blanket coverage to industry of current research projects and results is the most effective method of ensuring each fisherman or member of industry is informed of the state of the art. Once a member is aware that an interim/final

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report or specific data is available, then that member (or representative body) can apply for copies if so required. Obviously members of the NPF will not be as interested in SBT data as a tuna fisherman is. However, the NPF member should be informed as to the availability of "information" and have the option of access.

A computer terminal located in major export processing factories and linked to CSIRONET could be used by Fish Export Inspectors filing reports etc., and also used by industry for exchanging data and information with government. Considering the geographic spread of Australia's fishing industry, ADP communication would be extremely efficient and time saving.

Evidence suggests that having paid for the research via taxes, fishing industry research funds and licence fees, industry should not have to pay to receive information resulting from the expenditure of this money via the Australian Fisheries Journal. Australian Fisheries is the official journal for disseminating information from Fisheries Division DPI and CSIRO Division of Fisheries Research to industry.

The Regional Laboratories of the CSIRO Division of Fisheries Research and Division of Food Technology appear to be less restricted in allowing access to and in dissemination of information to industry and relating to industry research requirements compared with the Divisional Headquarters.

The "inadequacies of" any particular fisheries authority or institution relating to the brief of this report are adequately addressed in the results sections. Action on solving these should be seriously considered, be it action by a department or industry body.

B) Fuel:

The Commercial Fishing Industry is totally dependent on diesel fuel oil for its operations. Currently, approximately 240 million litres of diesel fuel oil is used per year in fishing operations, costing in excess of \$85 million. Figures on fuel usage per State and fishery were obtained. (More up to date figures were not available but usage patterns, availability etc., are obvious.)

The AFIC, as a member of the National Petroleum Advisory Committee, is concerned with ensuring fuel supplies for industry in the event of a national emergency. Evidence suggests that adequate fuel supplies would be available to industry in the event of an emergency.

The amount of fuel used by industry and its ever-increasing cost, heavily affects the economic well-being of any particular fishery. Fuel can account for some 47 percent of operating costs in the Northern Prawn Fishery. The dependence on such a high cost fuel affects all sections of the industry in different ways, including:

- Catching the cost of fuel is prohibiting fishermen from carrying out "exploratory fishing" for new grounds etc., and causes the fishermen to concentrate on known grounds only, thereby increasing the fishing pressure on known stock.
 - Shipbuilding whilst having some effect on this section of industry and forcing engine manufacturers to research into more fuel efficient engines, the fisherman is still faced with needing a specific size vessel for a particular fishery and using an engine(s) which are powerful enough for the task and still ensure safety of crew and vessel. Rock lobster fishermen are turning more towards light aluminium vessels with powerful motors which may cost more in fuel, but save on time spent in travelling to The increased speed also increases the safety grounds. factor in this fishery. In many respects, a vessel designed for fuel efficiency can be lacking in work ability, fish holding/freezing capacity and safety of operations.

Processing and Marketing - the effects of fuel costs have to some extent increased tensions and arguments between fishermen and processors relating to the prices paid for fish. The cost of fuel is unable to be passed on to the consumer (local and export markets). Australian processors and marketers of prawns and rock lobsters have to compete on international markets with competitors whose country offers subsidized fuel to its fishing industry. These subsidies can be up to 2/3 the price of Australian fuel, resulting in those fishermen paying l2¢/litre.

Unfortunately, the Government of the day is still subscribing to the world import parity prices for diesel fuel without due consideration for our export markets. The implications of import parity pricing and export and internal market conditions are not necessarily considered by the fisheries authorities when developing fishery management programmes.

This is another avenue where input by industry would help to ensure that any management proposal takes into account <u>all</u> factors affecting the economic well-being of industry.

In the short term, industry may obtain fuel a little cheaper by forming "fuel and marine lubricants" buying groups of perhaps 20 - 30 individuals. Evidence suggests that oil companies are very interested to supply a total package on a port by port, or State basis.

One of the outcomes of this report is a recommendation by AFIC (for an "alternative fuel" source) that FIRTA should fund a research and trial project to convert an existing diesel fired vessel

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to fire on a dual fuel mix of Compressed Natural Gas (CNG) and diesel (ADO) in a 80:20 ratio (CNG:ADO). Evidence suggests that a trawler working 14 hours/day (250 days/year) and currently using \$83,000 of diesel per year, would have a total fuel bill of \$41,000 per year if converted to use a dual fuel mix of CNG:ADO. CNG (Methane) is a safe, non toxic lighter than air natural gas, currently being used in many Australian homes for cooking and heating. A research proposal for this is currently under consideration by the Fishing Industry Research Committee.

Evidence suggests that the use of CNG by the fishing industry could result in the annual fuel bill of \$85 million reducing to almost half or less.

Recommendations - see page 2.

APPENDIX I

AFIC Statistical Register

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B Statement

Statistics which provide an insight into some aspects of the fishing industry.

STATE:	N.S.W.	VICTORIA	SOUTH AUSTRALIA	WESTERN AUSTRALIA
Number of Licensed Fishing Boats (LFBs)	824	1000 2	1725	1971
Estimated value	\$75 million	\$30 million	\$65 million	\$96 million
LFB Type of fuel used differentiation	A.D.O. 640 Motor Spirit 184	A.D.O. 750 3 Motor Sprit 250	A.D.O. 500 Motor Spirit 1225	A.D.O. 1098 Motor Spirit 447 Other 426
Product for Export for Domestic	1 742 LFBs Export 82 LFBs Domestic	214 LFBs Export 780 LFBs Domestic	540 LFBs Export 1185 LFBs Domestic	983 LFBs Export 988 LFBs Domestic
Value of Catch	Total \$40 million	Total \$18 million	Total \$21 3/4 million	Total \$89 million
(a) Export Percentage	17.4% Export	30% Export		93.01% Export
(b) Domestic Percentage	82.5% Domestic	70% Domestic		6.99% Domestic
(a) Name of Port	SEE	SEE	SEE	SEE
(b) Size of Storage	ATTACHMENT	ATTACHMENT	ATTACHMENT	ATTACHMENT
(c) Owned By	"A"	"C" "E"		"G"
(a) Major fish Species caught	SEE	SEE	SEE	SEE
(b) % of total State catch	ATTACHMENT	ATTACHMENT	ATTACHMENT	ATTACHMENT
(c) Season	"B"	"D"	uE u	"H"
Total Litres A.D.O. used	16,780,000 6	6,500,000 (less Port Philip Bay, which could be as much)	5 14,855,000 ⁶	30,000,000 ⁶

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TASMANIA	QUEENSLAND	NORTHERN TERRITORY	TOTALS "
7.27	3909	132	9561 (less Tasmania)
\$19,712,000	\$106 million	\$26½ million 4	3981 million (less Tasmania)
A.D.O. 645 Motor Spirit 73 (Abalone)	A.D.O. 1643 Motor Spirit 1756 Kerosene 4 Unpowered 506	A.D.O. 80	A.D.O. 4711 (less Tasmania) Motor Spirit 3892 (less Tasmania) Kerosene 4 Unpowered 506 Other 426
56 LFBs Export 71 LFBs Domestic	947 LFBs Export 2962 LFBs Domestic	52 LFBs Export ⁵ 80 LFBs Domestic	3478 LFBs Export 6007 LFBs Domestic
	Total 39 1/7 million	Total 16 1/3 million	Total \$224 1/10 million
Export & Domestic figures	61.5% Export	74.2% Export	55.22% Export
1978/79 not available	38.5% Domestic	25.8% Domestic	44.78% Domestic
SEE	SEE	SEE	
APPENDIX	APPENDIX	APPENDIX	
"I"	"K"	"M"	
SEE	SEE	SEE	
APPENDIX	APPENDIX	APPENDIX	
иди 1	"L"	"N "	
3,900,000 6	121,260,000 6	N/AVAIL	Litres: 193,295,000 ⁶ (less Northern Territories and Port Philip Bay)

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ATTACHMENT A

NEW SOUTH WALES

On Shore Storage

	Name of Port	Size of S	Storage	Days Supply	Owned by
1.	Coffs Harbour	200,000	litres	140	20,000/owner 180,000/oil companies
2.	Clarence River	180,000	litres	56	120,000/owner 60,000/oil cooperative
3.	Eden	10,000,000	litres	42	Owner/oil companies
4.	Evans Head	40,000	litres	14	Owner/cooperative
5.	Ballina	40,000	litres	14	Owner/cooperative
6.	Byron Bay	40,000	litres	14	Owner/cooperative
7.	Ulladulla	150,000	litres	7	83,000/owner 67,000/oil company agents
8.	Tweed Heads	63,000	litres	14	54,000/owner 9,000/private
9.	Laurieton	20,000	litres	70	Owner/cooperative
10.	Bermagui	73,000	litres	21	Oil company
11.	Greenwell Point	32,000	litres	42	Owner/cooperative/ Fishermen

NOTE:

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Figures for Sydney, Newcastle, Wollongong, MacLean, Iluka, Yamba are not available. However, distillate usage for these areas (1979) as follows:

Sydney (includes Hawkesbury) nearest 50,000 litres	2,100,000
Newcastle	550,000
Wollongong	1,150,000
MacLean, Iluka, Yamba	2,200,000
TOTAL DISTILLATE USAGE, 1979 (LITRES)	16,780,000

NEW SOUTH WALES

Species	Percentages	Season
Gemfish	18%	May/October
Tuna/S.B.	17%	Nov/March
Mullet	10%	Feb/May
Redfish	12%	All Year
Shark	4%	All Year
Snapper	4%	All Year
Mowong	6%	All Year
Flathead	6%	All Year
Prawns	15%	All Year

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VICTORIA

128.

On Shore Storage

Name of Port	Size of Storage	Days Supply	Owned by
l. Port Fairy	4,500 litres	2	Fishbrooks
2. Apollo Bay	18,000 litres	5	Cooperative
3. Lorne	10,000 litres	30-60	Cooperative
4. Queenscliffe	25,000 litres	7	Cooperative
5. San Remo	27,000 litres	20	Cooperative
6. Port Albert	9,000 litres	20	Private Company
7. Port Welshpool	9,000 litres	2	Fishermen's Association
8. Lakes Entrance	60,000 litres 32,000 litres	3 2	Cooperative Shell Oil

NOTE:

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Port Philip Bay - information not available. Would be very large figure. Portland - No storage - supply by truck to boat. Warrambool - No storage - supply by truck to boat. Port Franklin - Storage by individual fishermen. ~

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ATTACHMENT D

VICTORIA

Species	Percentages (1977/78)	Season
Shark	17%	All Year
Scallops	31%	February/November
Abalone	7%	All Year
Rocklobster	1.8%	September/April
Whiting	48	February/November
Flathead	3.5%	December/February
Snapper	1.2%	September/April
Bream	1%	All Year
Morwong	1.5%	March/May
Aust. Salmon	1.4%	All Year

ATTACHMENT E

130.

SOUTH AUSTRALIA

On Shore Storage

No details of storage available at individual fishing ports.

Facilities are mostly located in remote areas, are oil company owned, and limited to 2/3 weeks supply at the height of the season.

The following table shows the usage (to nearest 50,000 litres) of A.D.O. in South Australia, 1979/80.

Port Lincoln & West Coast	Litres	Total
Tuna Fleet Prawn Fleet Rock Lobster Fleet	4,000,000 3,400,000 595,000	8,095,000
Port MacDonnell - Kingston		
Rock Lobster Fleet	3,960,000	3,960,000
Port Adelaide & Adjacent Ports		
Prawn & Rock Lobster Fleets	2,000,000	2,000,000
St. Vincent & Spencer Gulf Ports		
Scale Fishery	800,000	800,000

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TOTAL LITRES: 14,855,000

ATTACHMENT F

SOUTH AUSTRALIA

Species

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Percentages

Season

As of 15 July 1980, no details available from South Australia.

ATTACHMENT G

WESTERN AUSTRALIA

On Shore Storage

Nan	ne of Port	Size of St	orage	Days Supply	Owned by
1.	Esperance	900,000	litres	4	Oil Company
2.	Albany	136,000	litres	3	Agent
3.	Bunbury	9,080	litres	2	Oil Company
4.	Mandurah	59 , 000	litres	6	Fish Co./Agent
5.	Fremantle	209,000	litres	2	Coops/Fish Co. Oil Company
6.	Two Rocks	817,720	litres	5	Agent
7.	Ledge Point	45,400	litres	7	Fish Co./Coop
8.	Lancelin	90,800	litres	7	Fish Co./Coop
9.	Cervantes	90,800	litres	8	Fish Co./Coop
10.	Jurien Bay	69 , 240	litres	4	Fish Co./Coop
11.	Freshwater Point	54,600	litres	б	Fuel Company
12.	Dongara	40,860	litres	2	Agent
13.	Geraldton	165,000	litres	3	Fuel Company
14.	Kalbarri	50,000	litres	20	Cooperative
15.	Carnarvon	354 , 000	litres	13	Fish Co./Agent
16.	Exmouth	217,920	litres	10	Fish Companies

NOTES:

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Total West Australian fuel usage (1978/79) is 30,000,000 litres.

Albany will soon be supplying fuel to 9 feasibility fishing vessels. Estimated additional fuel requirements to above usage rate should be in the order of 3,917,160 litres per year.

ATTACHMENT H

WESTERN AUSTRALIA

SpeciesPercentageRock Lobster57.2%Prawn19.2%Pearl14.6%Southern Bluefin Tuna1.0%Abalone0.7%Pilchard0.7%Snapper9.5%

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<u>Season</u> November/June March/November March/October January/April Not applicable April/June May/July

ATTACHMENT I

TASMANIA

On Shore Storage

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There are not facilities for bulk storage at Tasmanian fishing ports. All supplies are dispensed direct from Hobart. The following table shows the usage rate for 1979.

Margate	40,000 litres
Hobart	40,000 litres
St. Helens	25,000 litres
Dover	20,000 litres
Dunalley	20,000 litres
Triabunna	25,000 litres
Bicheno	20,000 litres
Southport	20,000 litres
Strahan	30,000 litres
Smithton	20,000 litres
Stanley	30,000 litres
Bridport	20,000 litres
Nubeena	10,000 litres
Tamar	10,000 litres
Kettering	20,000 litres
Flinders Island	20,000 litres
King Island	20,000 litres

TOTAL:

3,900,000 litres ANNUAL USAGE

ATTACHMENT J

TASMANIA

Species

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Percentage

Season

As of 15 July 1980, no details available from Tasmania.

ATTACHMENT K

QUEENSLAND

On Shore Storage

	Nan	ne of Port	Size of S (tonne	Storage es)	Days Supply	Owned	l by
	1.	Karumba	7,970)	90	Private Company	60% 40%
	2.	Weipa	265	5	30	Company	Agent
	3.	Thursday Islan	.d 300)	30	Company	Agent
	4.	Cooktown	12	2	7	Company	Agent
	5.	Port Douglas	30)	30	Company	Agent
	6.	Cairns	15,000)	45	Company	Agents
	7.	Innisfail/Mour	ilyan 60)	10	Road Ta Company	nker/ Agent
	8.	Lucinda/Halifa	.x 30)	10	Road Ta Company	nker/ Agent
	9.	Townsville	708	3	40		
נ	LO.	Bowen	20)	10	Road Ta Company	nker/ Agent
נ	11.	Mackay	(seaboard T	erminal)	Undefined	Company	Agent
	12.	Yepoon/Rossly	n Bay 20		10	Rosslyn	Bay Kiosk
	13.	Gladstone	15		10	Queensl Board (and Fish QFB)
	14.	Bundaberg	37		10	QFB/Mar Company	well Fisheries Agents
	15.	Torquay	8		20	• Company	Agent
	16.	Boonooroo	Stock in Uran	gan	Not Know	m Road Ta Company	nnker/ Agent
	17.	Tin Can Bay	39		20	QFB/CO	. Agent
	18.	Mooloolaba	90				
	19.	Caloundra	Stocks in Nam	bour			
	20.	Scarborough	25		15	Company	y Agent
	21.	Woody Point	Not Known	L.	Not Knowr	n Road Ta Company	anker/ 7 Agent
	22.	Sandgate	114		62	Fish Co Private	o-op/QFB e
	23.	Colinslie	20			QFB	
	24.	Wynnum	18		30	Company	y Agent
	25.	. Southport	25		35	Energy	Enterprises
•	സപ	al fuel usage	in 1979 for (ueensland	including the	Northern	

NOTE: Total fuel usage in 1979 for Quee Fishing Zone: 121,260,328 litres.

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QUEENSLAND

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SPECIES		PERCENTAGE	SEASON
Bream		4.82	All Year
Butterfish		0.59	All Year
Coral Trou	t	3.16	June/January
Emperor		2.19	June/January
Flathead		1.56	All Year
Garfish		0.79	April/July
Barramundi		9.84	March/November
Luderick		2.25	January/December
Mullet		27.44	May/November
Mulloway		0.98	May/November
Snapper		2.80	June/September
Tailor		2.32	All Year
Threadfin		5.39	All Year
Whiting		6.32	June/September
Unspecifie	ed	9.80	March/November
Mackeral:	School Spanish	1.02 18.10	All Year All Year

ATTACHMENT M

NORTHERN TERRITORY

ON SHORE STORAGE

NAME OF PORT	SIZE OF STORAGE	DAYS SUPPLY	OWNED BY
Darwin	24,000 litres	Not Known	Oil Companies
Gove	8,400 litres	Not Known	Oil Co's/Mining Agents
Groote Eylandt	12,000 litres	Not Known	Oil Co's/Mining Agents/Kailis Fishing Company

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NORTHERN TERRITORY

SPECIES	PERCENTAGE	SEASON
Prawn	65	All year
Barramundi	20	February/September
Salmon	11	February/September
Mackeral/Others	4	September/January

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APPENDIX II

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Addresses of relevant Research Institutions.

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- . Australian Capital Territory
- . New South Wales
- . Victoria
- . Queensland
- . South Australia
- . Western Australia
- . Tasmania
- . Northern Territory
AUSTRALIAN CAPITAL TERRITORY

Fisheries Division, Department of Primary Industry, Edmund Barton Building, Broughton Street, BARTON A.C.T. 2600

Ph: 062-723933

Fisheries Research Division, Bureau of Agricultural Economics, Macarthur House, Northbourne Avenue, LYNEHAM A.C.T. 2601

Ph: 062-490211

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NEW SOUTH WALES (N.S.W.)

Division of State Fisheries, Department of Agriculture, 211 Kent Street, SYDNEY N.S.W. 2000

Ph: 02-2376500

University of Sydney, Parramatta Road, GLEBE, N.S.W. 2037

Ph: 02-6922222

University of New South Wales, Anzac Parade, <u>KENSINGTON</u>, N.S.W. 2033

Ph: 02-6630351

Macquarie University, Balaclava Road, NORTH RYDE, N.S.W. 2113

Ph: 02-8888000

University of New England, ARMIDALE N.S.W. 2351

Ph: 067-733333

University of Newcastle, Rankin Drive, NEWCASTLE N.S.W. 2308

Ph: 049-680401

The Australian Museum, 6 College Street, SYDNEY N.S.W. 2000

Ph: 02-3398111

C.S.I.R.O., Division of Fisheries Research, 202 Nicholson Parade, CRONULLA, N.S.W. 2230

Ph: 02-5226222

VICTORIA

Commercial Fisheries Section, Fisheries and Wildlife Division, Ministry for Conservation, 25 Victoria Parade, EAST MELBOURNE Vic. 3002

Ph: 03-6514011

National Museum of Victoria, 285 Russell Street, <u>MELBOURNE</u> Vic. 3000

Ph: 03-6699888

Warrnambool Institute of Advanced Education, WARRNAMBOOL Vic. 3280

Ph: 055-640111

Royal Melbourne Institute of Technology, 124 LaTrobe Street, MELBOURNE Vic. 3000

Ph: 03-3452822

Melbourne University, Grattan Street, PARKVILLE Qld. 3052

Ph: 03-3451844

La Trobe University, BUNDOORA, Vic. 3083

Ph: 03-4783122

Victorian Institute of Marine Science, 14 Parliament Place, MELBOURNE, Vic. 3002

Ph: 03-6511998

144.

QUEENSLAND

Queensland Fisheries Research Branch, Department of Primary Industries, Comalco House, 50 Ann Street, BRISBANE Qld. 4000

Ph: 07-2277111

Australian Institute of Marine Science, Cape Ferguson, PNM No. 3, TOWNSVILLE M.S.O. Qld. 4810

Ph: 077-789211

Great Barrier Reef Marine Park Authority, P.O. Box 1379, TOWNSVILLE Qld. 4810

Ph: 077-712191

Division of Fisheries Research, C.S.I.R.O., 233 Middle Street, CLEVELAND, Qld. 4163

Ph: 07-2862022

Queensland Museum, Gregory Terrace, BRISBANE Qld. 4000

Ph: 07-528477

University of Queensland, ST. LUCIA, Qld. 4067

Ph: 07-3771111

James Cook University, TOWNSVILLE Qld. 4810

Ph: 077-814111

Griffith University, Kessels Road NATHAN, Qld. 4111

Ph: 07-2757111

Queensland Fish Management Authority, P.O. Box 344, FORTITUDE VALLEY, Qld. 4006

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Ph: 07-2244300

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SOUTH AUSTRALIA

Department of Fisheries, Grenfell Centre, 25 Grenfell Street, ADELAIDE S.A. 5000

Ph: 08-2279911

Flinders University of South Australia, Sturt Road, BEDFORD PARK S.A. 5042

Ph: 08-2753911

University of Adelaide, North Terrace, ADELAIDE S.A. 5000

Ph: 08-2285333

South Australian Museum, North Terrace, ADELAIDE S.A. 5000

Ph: 08-2238911

Department of Engineering and Water Supply, State Administration Centre, Victoria Square, ADELAIDE S.A. 5000

Ph: 08-2279911

Marine Environment Advisory Committee, Department of Environment and Planning, 55 Grenfell Street, ADELAIDE S.A. 5000

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Ph: 08-2167777

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WESTERN AUSTRALIA

Department of Fisheries and Wildlife, 108 Adelaide Terrace, PERTH_W.A. 6000

Ph: 09-3255988

C.S.I.R.O., Fisheries and Oceanography, Leach Street, MARMION W.A. 6020

Ph: 09-4471388

Western Australian Museum, Francis Street, PERTH W.A. 6000

Ph: 09-3284411

University of Western Australia, Mounts Bay Road, CRAWLEY, W.A. 6009

Ph: 09-3803838

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Murdoch University, South Street, MURDOCH W.A. 6150

Ph: 09-3322211

Western Australian Institute of Technology, Kent Street, BENTLEY W.A. 6102

Ph: 09-3507700

TASMANIA

-

Tasmanian Fisheries Development Authority, 23 Old Wharf Street, HOBART Tas. 7000

Ph: 002-308022

Division of Food Research, C.S.I.R.O., Stowell Avenue, BATTERY POINT, Tas. 7000

Ph: 002-235555

University of Tasmania, Churchill Avenue, SANDY BAY, Tas. 7005

Ph: 002-202101

Australian Maritime College, P.O. Box 986, LAUNCESTON, Tas. 7250

Ph: 003-260711

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NORTHERN TERRITORY

N.T. Fisheries Division, Department of Primary Production, Harry Chan Avenue, DARWIN N.T. 5790

Ph: 089-895511

Museums and Art Galleries of the N.T., DARWIN N.T. 5790

Ph: 089-824211

Northern Fisheries Committee, Department of Primary Industry, Edmund Barton Building, CANBERRA A.C.T. 2601

Ph: 062-725220