Final Report
FRDC Project no 94/146

FISHERIES RESEARCH & DEVELOPMENT CORPORATION

Determination of Australian fisheries statistics 1994-95 to 1996-97

ABARE Project no 1241

ABARE

Innovation in Economic Research

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ii. Summary

See attached publication

iii. Background

This project was undertaken to maintain and develop the collection of industry production, value of production and trade data. These are the only collated, published source of information on commercial industry catches and are used for a wide range of purposes , including determination of Commonwealth allocations for fisheries research funding, industry levies and for addressing a wide range of the information needs of both Government and industry.

Since the project's commencement in 1995 there has been an increased focus on developing the statistics to better meet the information needs of all users. In February 1997, the Fisheries Research and Development Corporation convened the Australian Fisheries Economic Statistics Workshop in Canberra to review the best means of addressing these needs. At this Workshop there was strong support for the approaches adopted in *Australian Fisheries Statistics* and the form in which it was published. However, there was agreement on the need to address a number of areas where statistics were either not available or were not of the robustness required.

iv. Need

In the original application, the principal users of fisheries economic data were identified as

- the fishing industry
- providers of services to the fishing industry, such as banks, airlines, shipping companies and, more recently, the providers of inputs to aquaculture
- governments, particularly in the determination of research funding and in promotion of the importance of the fisheries sector to regional and national economies
- in meeting Australia's international obligations to organisations, such as to FAO and the OECD.

Over the three years of the project, other major users of the data have become apparent, including the research and student communities, foreign delegations and other organisations, both government and commercial, who require broad information on the seafood industry.

At the 1997 Australian Fisheries Economic Statistics Workshop the user needs were examined in detail and the suitability of *Australian Fisheries Statistics* to meet those

needs was also examined (these are reviewed in the attached Workshop Proceedings). The participants recognised a range of needs that were not being met and formed a steering committee (the Fisheries Economic Statistics Steering Committee) to review the best means of addressing these needs and to develop a program to implement improvements. This Committee has met and developed projects to address a range of deficiencies. It was also determined that the production of *Australian Fisheries Statistics* should take account of these developments.

v. Objectives

To develop and maintain a data base of production, value and trade statistics for the Australian fishing industry, including aquaculture.

The objective was achieved. The project has resulted in annual preparation and publication of *Australian Fisheries Statistics* in 1995, 1996 and 1997.

vi. Methods

The key element of *Australian Fisheries Statistics* is the development of gross value of production estimates. National gross value of production (GVP) is the total value of Australian wild caught and aquacultural product on the basis of price received by fishers and aquaculturalists according to the 'beach' or 'farm gate' price, after all marketing and transport costs have been deducted.

Two definitions of Australian fish product are used, depending on the purpose and source of product identification and valuation:

(a) Product of Australian fishers:

This includes all fish caught by Australian fishers in Australian waters for which they receive payment. For the purpose of this definition, an Australian vessel includes all foreign based vessels operating under an Australian joint venture or exploratory fishing agreement in the Australian Fishing Zone. This means that any product caught by joint venture, exploratory fishing, or Australian licensed vessel that is transhipped or directly shipped overseas, is included as Australian product.

Production data used in GVP estimation is provided by state and Commonwealth fisheries management agencies. Responsibilities for the accuracy of the data lies with the fisheries management agency and for its consistency with the Fisheries Statistics Working Group, a subcommittee of the Standing Committee of Fisheries and Aquaculture. This Group addresses problems in relation to methods of data collection (generally logbooks), consistency of data processing protocols, standardisation of the

species names used and issues such as the impact of overlapping fisheries management jurisdictions on catch data.

All production volumes recorded are in landed live weight of the fish product. No account is taken of the by catch and discarded species, although efforts are being made to address the recording of catches of non target species.

(b) Aquaculture production

In general, commercial aquaculture production data is provided by state fisheries authorities. While systems similar to those used to collect wild catch statistics are in place in some states to collect aquaculture production and value data from producers, this is not universal. In these circumstances estimates are provided by state authorities, who rely either on surveys or estimates provided by extension services to develop reliable estimates. Unlike wild caught fisheries, the production of many farmed products may be undertaken without the use of public resources. As such, there is reduced justification to provide public information. Moreover, in several sectors the production levels (and farm gate prices) are closely protected by operators.

In 1997 ABARE undertook a more detailed assessment of the aquaculture industry (published as *A Profile of Australian Aquaculture* ABARE Research Report 97.3) which has provided an improved basis for monitoring the aquaculture sector. However, monitoring of a range of smaller products from emerging industries is expected to remain a problem.

Value of product

The price used in GVP estimation is based on the estimated 'beach' or 'farm gate' price received by fishers and aquaculturalists. Values are derived from a range of sources, including Sydney and Melbourne Markets, seafood buyers and processors. For some states, the values are collected by the fisheries management authority while for others they depend on information provided by a relatively small sample of buyers.

As most fish is actually sold on a market away from the point of landing or aquaculture farm gate, marketing and transport costs need to be subtracted from the price received at the point of sale. Such costs can include administration, holding, agent fees including those to the fish market and coop, bin hiring charges, ice and transport costs. In the case of product sold on the Melbourne and Sydney markets, marketing costs are accounted for by deducting 21 per cent of the market floor price — based on ABARE survey data. The 21 per cent marketing cost is applied regardless of the market floor price.

Intermediate product

It often happens that live product from one fishery or aquaculture operation is transferred for use in another fishery or aquacultural operation. For example, wild caught southern bluefin tuna (SBT) are taken in the Commonwealth SBT fishery and used for ongrowing in cages off Port Lincoln in South Australia.

The question is whether such intermediate product should be included in the GVP estimates. The criterion used in *Australian Fisheries Statistics* is whether live product is transferred to another management jurisdiction. If product is transferred to another jurisdiction, it is included in the GVP estimates for the jurisdiction in which the product was originally produced (in this case the SBT fishery).

Such product is then treated as any other input used by the second producer and no 'correction' is made to the value of product from the second jurisdiction (the tuna farming operation) because the estimates are of gross value of production. If, however, live product is transferred from one operator to another within the same fishery/aquacultural jurisdiction for growing on, this product is not included in the GVP estimates. However, in developing national estimates, summing the values at the jurisdiction level would result in double counting so the value of the intermediate product is subtracted.

Fish fry and post larval prawns are grown in fish nurseries for ongrowing. If this product is grown on or transferred to another aquaculture operation in the same state the value of the hatchery production is not included at this stage. It is only if the product is sold interstate or is used for restocking (recreational and commercial) that the value of hatchery product is relevant.

Unless data on the sale of product to another jurisdiction is available, it is assumed the product from nurseries will remain in the existing jurisdiction. For example, all post larval product from a Queensland prawn hatchery will be assumed to be sold on to another Queensland prawn grower, unless there is specific data that shows the quantity of prawns released into the wild or sold on to a prawn farmer in another state.

As for SBT, some pearl oyster goes from a wild caught fishery to an aquaculture fishery either in the same or another political jurisdiction. In the case of Western Australia, wild caught product value needs to be included in the pearl oyster wild caught fishery and total Western Australian pearl aquaculture production is included in the Western Australian GVP estimates. However, when summing these values for the total estimated

Western Australian GVP, the value of the wild caught product that goes to Western Australian aquaculture production needs to be deducted.

In the case of the Northern Territory, no allowance is made for the value of the Western Australian oyster pearl used in Northern Territory pearl production either in estimating Northern Territory pearl production or when summing to find the estimated total Northern Territory GVP. However, wild caught oyster pearl taken in Northern Territory waters, while being listed in the wild caught production, would need to be excluded from the total Northern Territory GVP estimates.

The value of Western Australian wild caught pearl oyster transferred to the Northern Territory is included in the Northern Territory values but excluded from the total national GVP estimates.

Examples of intermediate products include:

Wild caught pearl oysters:

- Western Australia, Northern Territory and Queensland take pearl oyster from the wild for seeding to produce pearl within the respective states. The value of product for each of the fisheries would be included

Wild caught pacific oyster spat

- Product from Tasmania is sold for growing out in South Australia

Wild caught kuruma prawn

- Product from the wild caught fishery is used for stocking prawn aquacultural operations in Queensland and New South Wales.

Pearl

There is a need to separate the value of wild caught value from grow out value.

- In Northern Territory in 1993-94, the estimated value on basis of cost of recovery was approximately $25-30 per pearl oyster,

- In Torres Strait, 20 000 shells are sold to growers in Queensland for $11 per shell,

- Information is not available for Western Australian wild caught pearl oyster.

Wild caught abalone

- Wild caught abalone are sold to aquaculturalists for spawning. Most likely occurs in Tasmania, Victoria and South Australia.

Aquaculture fish fry and post larval prawns

- While nursery production is usually for growing out in the same fishery, it may also be for growing out in another fishery. When this occurs, the product value of fry or post larval prawns should be included in the estimated GVP for that aquaculture operation.

- Production of juvenile fish for seeding recreational fisheries needs to be included. At the present time, this product does not appear to be included in aquaculture production.

Scallop spat

- Tasmania produces scallop and abalone spat for seeding in commercial waters to maintain wild caught product. The spat is aquacultured product.

Trade Data

Details on fisheries trade is sourced from Australian Bureau of Statistics tape service on the basis of the Harmoised System tariff codes and is amalgamated to provide a summary of trade by product form and by country.

vii. Detailed results

See attached publication *Australian Fisheries Statistics.*

viii. Benefits

The benefits of the project are widespread and have a substantial public good component. While in general the benefits are non market in nature there are significant components of realisable benefits, including as an input to decision making for fisheries management and investment decisions, research allocation decisions and similar issues.

The extent of benefits of the project have probably been understated. A user survey conducted in conjunction with the Australian Fisheries Economic Statistics Workshop found that two thirds of respondents conduct searches for fisheries statistics on average once a month. ABARE was the initial contact point and the eventual source of the information sought and the data quality and perceived level of service was rated as high to moderate.

ix. Intellectual property

Not applicable

x. Further development

The objective of the Australian Fisheries Statistics project was to establish a framework for a low cost publication that covered fisheries production and trade. While ABARE collates and publishes the data, it is a collaborative effort, involving a number of different organisations at the Commonwealth, State, and individual company level.

The most fundamental problems in relation to Australian Fisheries Statistics reflect the general problems in relation to the national statistical base for the seafood and related industries. It is a low resolution publication that included only summary information on commercial production, value of production and industry structure, but provides the basis to monitor longer term changes.

It is now used for a range of purposes for which it was never intended and the information requirements of both industry and government have become more demanding, both in terms of the coverage and the level of resolution needed and in terms of when it is needed.

The series is now used as the official value of the industry and is used to set the allocation and disbursement of research funds to the industry and in some areas, to set industry levies. More importantly it is used for a wide range of decisionmaking purposes in terms of identifying opportunities and constraints on the industry.

These problems reflect those of fisheries statistics generally. They are geared to the production sector and make no pretence at assessment of the processing, wholesaling and retailing sectors, interstate trade or seafood consumption. It does not cover related marine industries, such as charter and recreational fishing. It uses a particular definition of what is included and excluded. Marine reptiles, flora, and aquarium fish are excluded as are inland commercial fish. It generally does not include foreign fishing.

The problems which impact on *Australian Fisheries Statistics* include:

1. Production statistics

(a) Data currency

Australian Fisheries Statistics provide 3 years data, with an estimate of the current financial year's production and complete estimates of the two previous years.

- There are significant lags involved in processing logbook returns in relation to some fisheries.

- To use these statistics as the basis for current catch statistics requires that all fisheries statistics meet a common set of milestones. To achieve these milestones imposes an additional workload on those collating state statistics as they have a different timetable. Compensation for the marginal costs involved may assist in collation.

- It is impractical to expect complete enumeration of current year data within such a short time frame. For current year statistics it should be feasible to develop accurate estimates based on a proportion of the returns. However, it should be feasible to ensure that the previous year is complete.

(b) Data coverage

- Some of the catch statistics are not inclusive, but only focus on target species. For example, northern prawn logbooks only record prawn catches (although this is being rectified).

- While species are recorded, there is no information on sizes. This information is important as there are as many differences in value based on size distribution as there are on species.

(c) Locational detail

- There is no information on where the product is landed. One of the most commonly asked questions is what is the production from a particular region. In the 1997 *Australian Fisheries Statistics* landings from Commonwealth fisheries were disagregated according to state to provide better state resolution. However the inclusion of regional information needs to be considered in terms of the benefits in relation to the significantly increased costs of doing so.

(d) Accuracy

There is potential for various distortions to the accuracy of catch statistics. These include:

- The impact of different management regimes within a geographic region. With ITQ in one fishery and no ITQ in an adjacent fishery there are incentives to record catches in the adjacent fishery.

- The misreporting of catches. There is a range of reasons for misreporting which require examination to establish the causes and corrective action to address them.

(e) Aquaculture statistics

- In some states there are no reliable estimates of production as no collections are made. There is currently no organisation overseeing the development and maintenance of aquaculture statistics.

(f) Confidentiality.

- A requirement for national statistical collections is that there have to be a minimum number of operators within a category before it can be published. This becomes a problem in relation to fisheries where there are a small number of operators.

- The right of confidentiality has to be balanced against the public's right to know how a public resource is used.

(g) Year base

- *Australian Fisheries Statistics* presents information on a financial year base. Much of the information it uses is collected on either a calender year or a fishing season. There is no standard in the industry.

- Some of the applications of *Australian Fisheries Statistics* require different year bases. For example, FAO requires annual data on a calendar year base.

2. Valuation of catches

- The general principle is that value of production should be the ex vessel value (or in the case of aquaculture, the farm gate value). This is applied by using the most proximate market less the costs involved in getting it there. Problems include:

– Establishing the appropriate markets to use may create problems. There is a large number of marketing channels used in all sectors of the industry. Very often there is no dominant market which sets the prices.

– Even when there is a dominant market some problems emerge in using those prices. For example, the most obvious dominant markets in relation to the south east fishery are the Sydney and Melbourne Fish Markets. For some species, the volume sold at the markets is only minor and other channels dictate the price. For example, the prices paid by Tasmanian processors are crucial for obtaining valuation of some species.

– The distribution of products can change significantly in a short period of time. Without monitoring, this can lead to major errors in the basis for valuation.

– There is the implicit assumption that all fish of the same species has the same value. This is not generally the case. Source of fish, fishing method and size has an impact. In the absence of standard grades it is not feasible to assess the basis for price changes – whether a change in returns is due to market demand and supply or due to changes in supply composition.

– There are differences between the methods of valuing fish sold at the two markets. At the Sydney Fish Market the average price is used while in Melbourne the modal price is used. In Melbourne not all product is sold at open auction as a fair proportion is pre sold.

– It assumes there is no difference according to fishing method, that is no difference between the prices received for the south east trawl fishery and product from adjacent fisheries caught by longlining.

– There is a large dispersion of prices around the mean, so the price used can misrepresent prices for some operators. This can be reduced with standard size grading.

- For some species the most proximate market is overseas (eg yellowfin and bluefin tunas, kuruma prawns). Trade statistics are generally amalgamated, reducing the feasibility of identifying exports or export values from this source.

- Identifying marketing costs depends on information from surveys or other studies.

Trade Statistics

- The Harmonised System framework prevents identification of trade in most individual species.

- There may be a large amount of classification error involved. This is supported by the wide variation in unit values within the cells.

Structure statistics

- The seafood industry is very diverse and it is very difficult to give a summary of industry structure by fishery. Key problems include:

– The base for management varies widely throughout Australia. In some states the individual fisher is the base, in others it is the boat.

– Operators are often licensed for multiple fisheries so there are major problems in establishing the overlaps in assessing employment, boat numbers etc

xi. Staff

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xiii Distribution

Over the three years of the contract, *Australian Fisheries Statistics* have been printed are distributed by ABARE as follows:

1995	900 printed	235 sold	554 were distributed without charge
1996	1000 printed	215 sold	467 were distributed without charge
1997	834 printed	263 sold	446 were distributed without charge

Summaries have also been published in other ABARE output, including Australian Commodity Statistics, Australian Commodities, and trade magazines including Australian Fisheries and Queensland Commercial Fisherman.

In 1998, *Australian Fisheries Statistics 1997* was put onto the ABARE Web site. The site address is www.abare. gov.au