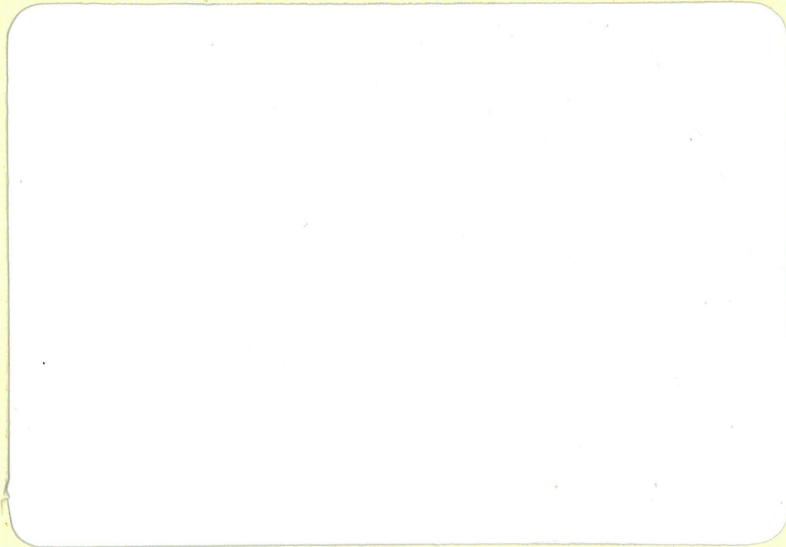


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THE ECONOMICS OF FISHING IN THE CAPRICORNIA
SECTION OF THE GREAT BARRIER REEF: PART A.
A BASELINE STUDY OF THE ACTIVITY AND RESOURCES
OF THE SECTOR.

BY: A.K. DRAGUN, S.M. DRIML AND S.W. LACK

I.A.S.R. RESEARCH REPORT

OCTOBER, 1979.

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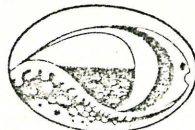
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THE COMMISSIONER OF FISHERIES IN THE PARLIAMENTS
SECTION OF THE GREAT BARRIER REEF (PART A)
A DETAILED STATE OF THE ACTIVITIES AND RESEARCH
PROGRAMME

BY W. M. DEAN, CHIEF OF FISHERIES AND MARINE PARKS

THE GREAT BARRIER REEF MARINE PARK AUTHORITY
PERTH



GBRMPA REPORT STATUS

TITLE: The Economics of Fishing in the Capricornia Section of the Great Barrier Reef: Part A A Baseline Study of Activities and Resources of the Sector

AUTHOR: A.K. Dragan, S.M. Driml, S.W. Lack

AUTHORITY ACCEPTANCE OF REPORT: MPA:

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Name of Project Officer: Tor Hundloe, Wendy Craik

FOREWORD

This two part report -- focussing on the economic aspects of recreational and commercial fishing within the Capricornia Section of the Great Barrier Reef -- is prepared by the Institute of Applied Social Research as the first contractual requirement to the Great Barrier Reef Marine Park Authority.

INTRODUCTION

The essential theme of this report is to investigate the economic structure of fishing activities within the Capricornia Section of the Great Barrier Reef. The focus on the Capricornia Section is significant in that this Section of the Great Barrier Reef is the first to be declared a Marine Park and it is within this context that the Federal Government requires a management plan to be developed to better utilize the nation's resources within the Section. It is evident that the existing economic characteristics of the dominant human activities within the Section recreational and commercial fishing, will be of considerable import to the initiation of such a marine park management program, and it is to this end that this report is motivated.

In terms of economic structure, the issues of prime concern to this report include:

- (i) the costs and benefits associated with both recreational and commercial fishing;
- (ii) the characteristics of fish catch and sales by both fishing categories and;
- (iii) types and location of fishing expenditures and subsequently, the recognition of infrastructure associated with the fishing activities.

Further investigation of such questions will form the basis of the second major report in this project.

The objectives of this report are twofold: firstly, to co-ordinate and appraise relevant economic information and data on fishing activities

(iii)

within the Capricornia Section and; secondly, to develop a methodology to obtain additional data on fishing activities within the Section where such data is presently not available.

Accordingly, this report is presented in two phases, the first concentrating on the currently available information on both commercial and recreational fishing within the Section and the second phase, which appears as a separate report, which focusses on methodological issues and subsequently the development of a survey design to better appraise the economic structure of fishing within the Capricornia Section.

The actual material to be considered in each phase of this report will be outlined in the introduction to each phase and no further detail is provided here. However, to establish the locational characteristics of the area to which this project is directed the relevant regional distinctions need to be defined.

According to the Great Barrier Reef Marine Park Authority the Capricornia Section of the Reef is that area which

- encloses the southern most coral cays and reefs of the Great Barrier Reef Region;
- is located east of the coastal towns of Rockhampton, Yeppoon, and Gladstone;
- is bounded by the co-ordinates:
 - (i) 22°30'S; 151°30'E
 - (ii) 23°10'S; 152°10'E
 - (iii) 24°15'S; 153°05'E
 - (iv) 24°15'S; 152°55'E
 - (v) 23°45'S; 151°55'E
 - (vi) 23°45'S; 151°30'E

(iv)

- encloses an area of 11,800 sq kms (D.N.M. mathematical calculation) which is less than 3% of the entire region.
- contains 13 cays, 8 emergent reefs, one non-emergent reef, 12 shoals and banks;
- has an area of all emergent reefs: 200 sq kms (DNM 1: 250,000 maps)*

The Wide Bay-Fitzroy Region, (hereafter the Region) is comprised of the Capricornia Section plus the adjacent mainland areas. The mainland section of the Wide Bay-Fitzroy Region is constructed by combining the Australian Bureau of Statistics Wide Bay-Burnett and Fitzroy Statistical Divisions. The major economic activity within this region is centered on the coastal towns from Bundaberg to Yeppoon.

Finally, the Marine Area may be defined as that area in which fish which pass through the Queensland Fish Board agencies within the Wide Bay-Fitzroy Region, are caught. The Marine Area therefore is comprised of areas including the Swain Reefs, the Capricorn Channel, the Capricornia Section and inshore areas.

* SOURCE: Great Barrier Reef Marine Park Authority.

OUTLINE OF REPORT

PART A: The Economics of Fishing in the Capricornia Section of the Great Barrier Reef: Part A. A Baseline Study of the Activity and Resources of the Sector.

APPENDIX I: Fish and Other Seafood Receipts, Queensland Fish Board Agencies, Bundaberg, Gladstone, Rockhampton, Rosslyn Bay, Yeppoon, 1976, 1977, 1978.

APPENDIX II: Amateur Fishing Survey, Capricornia Section. Results of Initial Survey undertaken by Great Barrier Reef Marine Park Authority, with assistance from the Institute of Applied Social Research. 1979.

PART B: The Economics of Fishing in the Capricornia Section of the Great Barrier Reef: Part B. A Methodological Statement of Further Economic Investigation.

Charter Boat Owner Survey

Commercial Fishing Survey

Amateur Fishing Survey

Bibliography for Parts A and B.

PART A.

A BASELINE STUDY OF THE ACTIVITY AND
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1.0 INTRODUCTION TO PART A.

The purpose of Part A of this report is to fulfill contractual requirements with respect to compiling presently available information on commercial and recreational fisheries within the Capricornia Section. Specifically, this part of the report fulfills the requirements to -

"collect and assess currently held information on the costs of recreational fishing, the costs of commercial fishing enterprises, and also the source and production of fish in the following categories:

demersal fish, pelagic fish, molluscs, crustaceans. "

Information on the Capricornia Section is held in several reports prepared for the Great Barrier Reef Marine Park Authority and in records held by government departments.

There is considerably more information available about commercial fishing activities than is available concerning recreational fishing, and consequently the bulk of Part One of the report consists of information on commercial fishing and associated activities. Commercial fisheries are first discussed with relation to the type of fisheries existing in the Capricornia Section and the volume and value of catch from these fisheries (Section 2.0). The economic structure of commercial fisheries is examined in Section 3.0 of the report. That section canvasses the available information on the number of fishing boats using the Capricornia Section, persons employed, costs and returns involved in the commercial fishing operations and shore based infrastructure associated with commercial fishing.

The characteristics of recreational fishing are discussed in Section 4.0. That section presents information on recreational fishing undertaken from private motor boats and from charter boats; information concerning the numbers of private motor boats and charter boats; the costs and returns to recreational fishermen and charter boat owners; and shore based infrastructure associated with recreational fishing.

Section 5.0 contains a brief outline of the current Commonwealth and Queensland legislation relating to commercial and recreational fishing within the Capricornia Section.

Part A of this first report has a dual purpose in presenting available information and identifying gaps in this available information. It is the purpose of Stage Two of the research project being undertaken by the Institute of Applied Social Research to attempt to fill the important data gaps in order to present an accurate analysis of the economic structure of recreational and commercial fishing in the Capricornia Section.

2.0 COMMERCIAL FISHERIES WITHIN THE CAPRICORNIA SECTION

One may define a fishery in terms of the resource stock, that is, a fishery may be based on one species of seafood resource or on a group of species which may inhabit the same area and exhibit the same behaviour. Within the Capricornia Section of the Great Barrier Reef, there are three definable commercial fisheries; the demersal fishery, the pelagic fishery and the scallop fishery.¹ Of minor importance are the prawn fishery, the net fishery and the aquarium fishery.

As a first element in the description of each particular commercial fishery it is relevant to present data on the yield of the respective commercial fisheries in the area of the Great Barrier Reef in which the Capricornia Section is situated. The tables (A-L) presented in Appendix I were compiled from Queensland Fish Board (Q.F.B.) data for seafood received at the five mainland Q.F.B. agencies which handle seafood from the Capricornia Section and surrounding Marine Areas for the years 1976, 1977 and 1978.² The five agencies are located at Bundaberg, Gladstone, Rockhampton, Rosslyn Bay and Yeppoon.³

Two points must be made about the data published by the Q.F.B. Firstly, it must be noted that this data represents the total amount of seafoods handled by the five Q.F.B. agencies -- that is, the figures include seafood caught from inshore areas, the Capricorn Channel, sections of the Swain Reefs as well as from the Capricornia Section. It is not known what proportion of this volume comes from the waters within the actual boundaries of the Capricornia Section. Some attempts have been made to disaggregate the data and obtain an estimate of catches originating from within the Capricornia Section and these

attempts are discussed later in this report.

The second point which must be noted is that the Q.F.B. data does not record the total seafood catches for the Marine Area. By law, all seafoods marketed in the state must be marketed through the Q.F.B.⁴ However, due to the possibility that certain "black markets" may exist in the Region the relation of the actual total catch to the reported catch is not known. Attempts have been made by some authors to account for such discrepancies, particularly in the demersal fishery, and these attempts are discussed further later in this report.

A summary of the data presented in Appendix I is contained in Table 1. Here data pertaining to the total receivals of fish and other seafoods at the five Q.F.B. agencies adjacent to the Capricornia Section are presented according to the different categories of catch. Thus data are presented on the catch of demersal fish, pelagic fish, other fish, scallops and prawns. The Q.F.B. receivals at the five agencies are also compared with the totals for Queensland in the respective categories. Several points emerge from examination of this table. The (whole) demersal fish receivals from this region forms a relatively high percentage of the total (whole) demersal fish receivals in Queensland, ranging from one quarter to one third of the Queensland total.⁵ In general, the percentages of the total Q.F.B. receivals of fish for Queensland which actually passed through the five agencies examined remained fairly comparable for all categories of fish. On the other hand, the catches expressed both as a volume and a percentage of the Queensland total for scallops and prawns was non-comparable. This Marine Area is dominant as a scallop fishery with up to 94% of Queensland's catch coming from this area while the prawn fishery shows wide

TABLE 1 CATCH, VARIOUS CLASSIFICATIONS SEAFOOD, RECEIVED AT 5 QUEENSLAND FISH BOARD AGENCIES (BUNDABERG, GLADSTONE, ROCKHAMPTON, ROSSLYN BAY, YEPPON) COMPARED WITH TOTAL RECEIVALS ALL QUEENSLAND FISH BOARD AGENCIES FOR YEARS ENDING 30 APRIL 1976, 1977, 1978.

YEAR	CLASSIFICATION OF CATCH	TOTAL 5 AGENCIES KG	TOTAL QUEENSLAND* KG	TOTAL 5 AGENCIES AS % TOTAL QLD
1976	**Demersal Fish:Whole	62,412	183,266	34
	:Fillets	18,920	105,672	18
	***Pelagic Fish:Whole	93,335	426,566	22
	:Fillets	13,232	155,748	8
	Other Fish: Whole	178,691	2,297,122	7
	: Fillets	12,582	171,720	7
	Total Fish: Whole	334,438	2,906,945	12
	: Fillets	44,734	433,140	10
Scallops	96,816	130,851	74	
Prawns	207,218	1,335,328	15	
1977	Demersal Fish:Whole	70,287	212,443	33
	:Fillets	19,115	123,095	15
	Pelagic Fish:Whole	97,023	516,132	19
	:Fillets	15,612	211,395	7
	Other Fish:Whole	278,467	2,829,289	10
	:Fillets	21,010	242,318	9
	Total Fish: Whole	445,777	3,557,864	13
	: Fillets	55,737	576,808	10
Scallops	14,679	25,404	58	
Prawns	1,500,229	1,960,930	77	
1978	Demersal Fish: Whole	47,947	182,187	26
	: Fillets	11,767	65,072	18
	Pelagic Fish: Whole	80,071	474,684	17
	: Fillets	8,870	234,138	4
	Other Fish: Whole	230,139	3,005,187	8
	: Fillets	23,566	272,539	9
	Total Fish: Whole	358,157	3,662,058	10
	: Fillets	44,203	571,749	8
Scallops	253,417	269,042	94	
Prawns	469,589	1,692,724	28	

* Including Northern Rivers N.S.W.

** Fish Species included: Cod, Emperor, Parrot, Snapper, Sweetlip, Coral Trout.

*** Fish Species included: King, Mackerel, School Mackerel, Pike, Trevalli, Tuna.

(SOURCE: Queensland Fish Board, Annual Reports 1976, 1977, 1978)

fluctuations in importance, contributing 15% and 77% of the State's catch in two successive years.

The Queensland Fish Board does not publish data on the value of fish received at its agencies. Table 2 contains data obtained from the Queensland Fisheries Service concerning the volume and value of demersal and pelagic fish passing through the Q.F.B. agencies at Bundaberg, Gladstone, Rockhampton, Rosslyn Bay and Yeppoon. The "value" of fish is expressed in terms of payments by the Q.F.B. to fishermen for their catch. The data on the table indicate that the value of the demersal fish catch is \$144,640 while the pelagic fish catch is worth \$121,117, making a total of \$265,757. Again, it must be pointed out that this is the value of fish catch from the larger Marine Area, not only from the Capricornia Section. As the figures are derived from Q.F.B. records, they pertain only to fish which pass through Q.F.B. agencies.

TABLE 2: Quantity and Value of Demersal^(a) and Pelagic^(b) fish received at Queensland Fish Board Agencies at Bundaberg, Gladstone, Rockhampton, Rossllyn Bay and Yeppoon for the year 1978 - 1979.

<u>Fish Type</u>	<u>Quantity^(c) kg.</u>	<u>Value (\$)</u>
Demersal	87,231	144,640
Pelagic	86,864	121,117
TOTAL	175,095	265,757

- (a) Fish Species Included: Cod, Emperor, Parrot, Snapper, Sweetlip, Coral Trout.
- (b) Fish Species Included: King, Mackerel, School Mackerel, Pike, Trevalli, Tuna.
- (c) Quantities of Fish Fillets were converted to whole fish equivalents by multiplying by a factor of 2. The Q.F.S. have adopted a general conversion factor of 2 based on tests of several fish species.

2.1 The Demersal Fishery

The demersal fishery has been described by the Fisheries Division, D.P.I., Canberra, et al., (1977 pp. 14-17), by Environment, Science and Services (1979 a, p. 17, 66) by Hamilton (1979, p. 3) and by Jensen (1979, p.23). The demersal fishery centres on reef-dwelling fish, the principal species caught being cod, emperor, parrot, snapper, sweetlip and coral trout. In 1976, the species composition of demersal fish catches were as outlined in Table 3.

TABLE 3: Percentage Species Composition of Demersal Fish Landings, 1976.

<u>Species</u>	<u>% Composition</u>
Coral Trout	35.0
Sweetlip	34.4
Emperor	8.0
Snapper	7.3
Cod	5.2
Parrot	1.9
Mixed Fish	8.2
TOTAL	100.0

(SOURCE: Fisheries Division, Department of Primary Industries, Canberra; Queensland Fisheries Service; Queensland Commercial Fishermen's Organisations. The Commercial Fishing Industry in the Capricorn-Bunker Area, 1977, p. 14).

It is noted that coral trout and sweetlip together made up 70% of the total demersal fish catch while the (whole) demersal fish receivals by the five Q.F.B. agencies in the Region account for 26% to 34% of the Queensland total from 1976 to 1978.

Within the Capricornia Section, the demersal fishery is exploited by both amateur and commercial fishermen. Commercial fishing areas have been delineated as "the northern reefal sides and the windward side of the eastern reefs" (Environment, Science and Services 1979a, p. 67). Amateur fishermen tend to fish those areas most easily accessible from their home ports and there is some evidence that overfishing has resulted in a reduction of the size and quality of fish stocks on reefs nearest to the mainland (Hamilton, 1979, p. 3).

The annual demersal fish catch in the marine area may be derived from Q.F.B. statistics. Table 4 shows the annual receivals of demersal fish at the Q.F.B. agencies from Bundaberg to Yeppoon for the years 1973 to 1978. It is noted that these figures account for all demersal fish received at these agencies, not only fish caught within the Capricornia Section. These figures give no indication of total demersal fish catch in relation to fish caught by amateur fishermen or those sold through unrecorded channels.

TABLE 4 Demersal Fish (Whole and Fillets) by Weight received by the Queensland Fish Board at selected agencies for the years 1973 to 1978.

	DEMERSAL ⁽¹⁾ (REEF) <u>WHOLE</u> KG.					
	1973	1974	1975	1976 ⁽²⁾	1977	1978
Bundaberg	136,487	51,268	45,885	39,018	39,131	21,611
Gladstone	38,539	15,138	16,799	10,018	22,680	21,346
Rockhampton	2,439	2,109	2,472	374	3,275	1,635
Rossllyn Bay	0	0	407	329	1,322	0
Yeppoon	7,879	5,081	6,874	12,673	3,879	3,355
TOTAL	185,344	73,596	72,437	62,412	70,287	47,947
				<u>FILLETS</u> KG.		
Bundaberg	115	24	13	0	57	5
Gladstone	6,811	5,643	4,528	5,917	10,872	5,663
Rockhampton	21,488	5,079	9,012	8,424	2,043	1,515
Rossllyn Bay	0	0	0	0	50	0
Yeppoon	4,354	1,591	3,339	4,579	6,093	4,584
TOTAL	32,768	12,337	16,892	18,920	19,115	11,767

(1) Fish species included: Cod, Emperor, Parrot, Snapper, Sweetlip, Coral Trout.

(2) 10 months.

(SOURCE: Queensland Fish Board, Annual Report, 1973-1978)

On investigating Table 4, it is seen that there was a large catch in 1973 in comparison to the following years. The annual catch during the years 1974 to 1977 was generally constant, taking into account that the figure for 1976 represents only 10 months' catch. A marked drop-off in fish catch may be noted in 1978.

It is often suggested that a large proportion of the demersal fish caught by amateur and commercial fishermen do not pass through the Q.F.B. but are sold through illicit channels. This means of disposing of fish includes the selling of fish directly to hotels and restaurants in the area, transporting fish to southern outlets and also probably includes a fishermen selling or giving fish to friends and relatives. Hamilton (1979, p. 8) reports that discussions with Q.F.B. personnel and fishermen in the area led to the impression that between 50% and 90% of demersal fish caught passed through black market channels.

The figures contained in Table 2 give a quantity of 87,231kg of demersal fish caught in the Marine Area and passing through Q.F.B. agencies for the year 1978-79, having a value of \$144,640.

Two recent reports have attempted to take account of the fact that Q.F.B. data does not give adequate information on the actual fish catch within the Capricornia Section. In his 1979 report, Jensen attempted to estimate the volume of demersal fish caught annually within the Capricornia Section. Based on the data shown in Table 4, Jensen calculated that the Q.F.B. handles about 110,000 kg of demersal fish (whole fish equivalent) annually. When adjusted to account for the estimated proportion of this fish volume caught within the boundaries of the Capricornia Section and adjusted to account for

the estimated proportion of fish sold on the black market, a figure of 250,000 kg was obtained for fish caught annually in the Capricornia Section and which pass through commercial or black market channels. Based on an estimated average price of \$2.00 per kg, Jensen calculated the catch to have an average annual value of \$500,000. Jensen added a further \$50,000 to this amount to take account of the value added to the catch through shore based processing. Thus a value of \$550,000 per annum was attributed to the demersal fishery in the Capricornia Section. Unfortunately, Jensen gave no detail about the bases on which he adjusted Q.F.B. data for use in his analysis.

Environment, Science and Services (1979, p. 66) estimated the demersal fish catch within the Capricornia Section as totalling 225,000 kg per annum (see Table 5). The authors of that study also failed to specify the assumptions adopted in reaching that figure.

TABLE 5 Estimated Demersal Fish Catch from the Capricornia Section.

<u>Port</u>	<u>Catch(kg)</u>
Rockhampton/Yeppoon/ Roslyn Bay	nil
Gladstone	125,000
Bundaberg	<u>100,000</u>
	<u>225,000</u>

(SOURCE: Environment, Science and Services, Zoning Strategy Study Phase 1, Draft Report, 1979 p. 66).

2.2 The Pelagic Fishery

The commercial pelagic fishery in the Capricornia Section centers on mackerel species along with smaller numbers of kingfish, pike, trevalli and tuna. The characteristics of this fishery have been described by the Fisheries Division, D.P.I., Canberra et al., (1977, p. 11-14) by Environment, Science and Services (1979, p.66) by Hamilton (1979) and by Jensen (1979, p. 25). The mackerel fishery in the Capricornia Section exists during the time in which mackerel pass through this Section on their annual migration to northern breeding grounds. The season for mackerel in the Capricornia Section extends from May to August. Fishing areas vary from season to season as the migration path is determined by the availability of food. Fishing is carried out using trolling lines and up to half the fish caught are taken within half a mile from reef rims when exposed at low tide (Fisheries Division, D.P.I., Canberra, et al., 1977, p. 13).

The Q.F.B. data showing pelagic fish received by the five Q.F.B. agencies in the region from the years 1973 to 1978 is contained in Table 6. This table records fluctuations in the volume of catch from year to year, there being a marked drop off in catches handled by the Q.F.B. from a high in 1973, with the low catch recorded in 1978. Q.F.B. receipts of whole fish and fillets follow the same trend.

The figures in Table 2 contain the records of fish receipts at Q.F.B. agencies for the year 1978-79. The catch of pelagic fish was 86,864kg with a value of \$121,117 for the marine area.

The Q.F.B. figures must be adjusted in order to allow estimation of the pelagic fish catch originating within the Capricornia Section. Jensen (1979, p. 27) estimated that, taking into consideration the

TABLE 6: Pelagic Fish (Whole and Fillets) by weight received by the Queensland Fish Board at selected agencies for the years 1973 to 1978.

	PELAGIC ⁽¹⁾ (MACKEREL) <u>WHOLE</u> KG.					
	1973	1974	1975	1976 ⁽²⁾	1977	1978
Bundaberg	94,088	43,202	66,027	49,256	54,184	44,864
Gladstone	56,637	26,880	28,552	10,913	14,492	6,766
Rockhampton	32,033	3,985	4,866	1,073	971	1,862
Rossllyn Bay	0	0	3	830	2,893	920
Yeppoon	95,663	35,629	36,431	31,263	24,483	25,659
TOTAL	278,410	109,696	135,879	93,335	97,023	80,071
				<u>FILLETS</u> KG.		
Bundaberg	111	191	235	465	1,149	497
Gladstone	8,962	4,221	6,616	6,346	7,063	2,331
Rockhampton	18,018	1,614	3,006	1,198	3,406	2,904
Rossllyn Bay	0	0	0	400	99	120
Yeppoon	3,219	1,309	1,582	4,823	3,895	3,018
TOTAL	30,310	7,335	11,439	13,232	15,612	8,870

(1) Fish species included: King, Mackerel, School Mackerel, Pike, Trevalli, Tuna).

(2) 10 months.

(SOURCE: Queensland Fish Board, Annual Reports, 1973-1978)

volume of pelagic fish sold on the black market, (he uses a figure of 33% of total catch) there would be about 150,000 kg of pelagic fish moving annually through the ports from Bundaberg to Yeppoon. Of this volume, it was estimated that 100,000 kg annually originates within the boundaries of the Capricornia Section. Given an average price of \$1.50 per kg, the returns to fishermen would be in the region of \$150,000. By adding a figure of \$25,000 to cover shore-based processing and marketing, Jensen estimated that the pelagic fishery within the Capricornia Section is worth \$175,000 per annum.

Environment, Science and Services (1979 a, p.66) gave the following estimate for the annual pelagic fish catch from within the Capricornia Section (see Table 7).

TABLE 7: Estimated Pelagic Fish Catch from the Capricornia Section.

<u>Port</u>	<u>Catch(kg)</u>
Rockhampton/Yeppoon/ Rosslyn Bay	20,000
Gladstone	16,000
Bundaberg	<u>64,000</u>
	<u>100,000</u>

(SOURCE: Environment, Science and Services, Zoning Strategy Study, Phase 1, Draft Report, 1979, p. 66).

While both the above-mentioned studies arrive at the same dimensions for pelagic fish catch originating from the Capricornia Section, the figures are however only estimates based on limited research and further research is needed to confirm or adjust these estimates with any precision.

2.3 The Scallop Fishery

Exploitation of the scallop fishery is confined to commercial operations. This fishery has been an important fishery for vessels working out of the ports from Bundaberg to Yeppoon. Prior to 1978, however, there have not been substantial scallop catches within the Capricornia Section. During the months August to October in 1978 there were substantial scallop catches in an area south of Lady Musgrave Island and falling partly within the Capricornia Section. Hamilton (1979, p. 9) reports that up to 40 boats were working in this area and that 230,000 kg of scallop meat was harvested in this time. It is unknown at this time whether these newly found scallop grounds will continue to yield at this rate in the future. The Q.F.S. are currently undertaking research into scallop biology and populations in the region to establish performance. It has been reported by Jensen (1979, p. 21) that a number of trawlers are under construction or have recently been launched from Bundaberg in order to exploit this scallop resource in anticipation of continued productivity in this fishery.

Scallop meat receivals at Q.F.B. agencies from 1973 to 1978 are recorded on Table 8. Yields were very high in 1973 in comparison to subsequent years but receivals rose again in 1978, probably due to the newly exploited scallop grounds south of Lady Musgrave Island. Table 8 also records the value of scallop catches (in terms of money paid to

TABLE 8: Scallops by weight and value received by the Queensland Fish Board at selected agencies for the years 1973 to 1978.

	SCALLOPS <u>WEIGHT</u> KG.					
	1973	1974	1975	1976 ⁽¹⁾	1977	1978
Bundaberg	241,676	44,890	64,323	72,216	11,360	81,861
Gladstone	328,745	39,188	5,711	8,365	634	53,990
Rockhampton	1,171	828	1,528	644	1,223	1,106
Rossllyn Bay	0	38,209	31,988	9,382	936	112,413
Yeppoon	1,265	4,037	3,869	2,209	526	4,047
TOTAL	572,857	127,152	107,419	96,816	14,679	253,417
			<u>VALUE</u> \$			
Bundaberg	189,908	63,905	133,615	182,755	46,279	195,592
Gladstone	178,244	46,405	15,496	23,028	3,779	109,592
Rockhampton	1,372	1,823	4,121	2,083	4,300	5,146
Rossllyn Bay	0	38,052	34,652	22,158	4,439	242,840
Yeppoon	1,258	8,150	8,927	6,613	2,463	13,715
TOTAL	370,782	158,335	196,811	236,637	61,260	566,885

(1) 10 months

(SOURCE: Queensland Fish Board, Annual Reports, 1973-1978)

fishermen by the Q.F.B.) for the years 1973 to 1978.

The price per kilogram for scallops has increased steadily over the years so that the value of the catch in 1978 exceeds the value of the larger 1973 catch. These figures are however, not adjusted to take account of inflation.

In his 1979 study, Jensen adopted a figure of 100,000 kg per annum for scallop meat harvested from within the Capricornia Section. This figure was based on the assumption that of the 230,000 kg of scallop meat harvested south of Lady Musgrave Island in 1978, 100,000 kg of this came from within the Capricornia Section. It was assumed by Jensen that this new scallop fishery would continue to yield at that rate. Environment, Science and Services, in their study also adopted a yield of 100,000 kg per annum (1979a, p. 66). Jensen adopted an average price of \$2.50 per kg paid to fishermen for scallop meat, yielding an average annual value of \$250,000 paid to fishermen. Adding a further \$150,000 for the processing and packaging which is undertaken locally, the value of the scallop fishery within the Capricornia Section was estimated at \$400,000 per annum.

2.4 The Prawn Fishery

According to the 1977 report by the Fisheries Division, D.P.I., Canberra et al., the prawn fishery is the largest and most valuable fishery exploited by commercial fishing vessels working out of the ports from Bundaberg to Yeppoon. The prawn fishery extends in a band up to 10 miles wide out from the mainland from south of Bundaberg to north of Yeppoon. Only a small proportion (less than 1%) of this area falls within the boundaries of the Capricornia Section, however Jensen (1979) noted that the Q.F.S. sees a prospect for the future development of a prawn fishery

outside Lady Musgrave and Lady Elliot Island, within the boundaries of the Capricornia Section. As no significant prawn catches are currently obtained from within the Capricornia Section, this fishery must be considered to be of minor importance as a commercial fishery within the Capricornia Section.

2.5 The Net Fishery

It has been noted by the Fisheries Division, D.P.I., Canberra, et al., (1977, p. 18) that a small net fishery operated in some areas within the Capricornia Section. The operators of this fishery work with seine nets to catch whiting, sea mullet, wrasse and queenfish. Netting is carried out on sandy flats on Mast Head Island, North West Island and One Tree Island. The Fisheries Division, D.P.I., Canberra et al., state that this fishery forms a very minor portion of the fisheries within the Capricornia Section, but that it may contribute to commercial fishermen's income when other fisheries are not producing.

3.0 THE COMMERCIAL FISHING INDUSTRY WITHIN THE CAPRICORNIA SECTION.

This section of the report presents available information on the structure of the commercial fishing industry within the Capricornia Section and on immediately related shore-based infrastructure. Gaps exist in many places in the data due to the fact that little research has been undertaken within the Capricornia Section up to this point. It is the object of Stage Two of this study to undertake research to collect much of the data which is currently unavailable.

3.1 Commercial Fishing Boat Numbers

The total number of fishing boats operating out of the ports of Bundaberg, Gladstone and Rockhampton for the years 1970 to 1977, are given in Table 9⁶. These figures, published by the Australian Bureau of Statistics (A.B.S.) are derived from commercial fishing licence records. In 1977 there were a total of 327 commercial fishing boats registered at the above mentioned ports. Table 10 gives a more detailed analysis of commercial fishing boat numbers, length class and value, from the years 1973 to 1977. The value of the fishing fleet of 327 boats in 1977 was \$5,895,000 or an average of \$18,027 each. Environment, Science and Services have made estimates as to the number of boats which operate within the boundaries of the Capricornia Section. Table 11 shows that a total of 90 fishing boats are assumed to operate intermittently within the Capricornia Section, making a full time equivalent of only 18 boats. This estimate was based on discussion with commercial fishermen and Q.F.B. staff in the area. It must be assumed therefore, that of the

TABLE 9: Change in Total Number Commercial Fishing Boat Registrations, 3 Ports (Bundaberg, Gladstone, Rockhampton)^(a) for years 1970 - 1977.

YEAR	NUMBER BOATS 3 PORTS	% CHANGE OVER PREVIOUS YEAR
1970	220	n.a.
1971	266	+ 20
1972	309	+ 16
1973	369	+ 19
1974	419	+ 14
1975	346	- 17
1976	310	- 10
1977	327	+ 5

(a) Includes Rosslyn Bay and Yeppoon.

(SOURCE: Australian Bureau of Statistics, Fisheries Statistics, Queensland, 1970 - 71 to 1977 - 78).

TABLE 10 Commercial Fishing Boat Registration Numbers and Value of Boats by Home Port and Length Class 1973 to 1977.

YEAR (ENDED DECEMBER)	HOME PORT	BOAT LENGTH								TOTAL No. \$'000	
		Less than 6m		6m to 9m		9m to 15m		15m and over			
		No.	\$'000	No.	\$'000	No.	\$'000	No.	\$'000		
1973	Bundaberg	73	67	20	60	53	932	14	844	160	1,903
	Gladstone	40	57	22	105	15	216	3	80	80	459
	Rockhampton	71	59	29	119	23	282	6	171	129	631
	TOTAL	184	183	71	284	91	1,430	23	1,095	369	2,993
1974	Bundaberg	71	58	22	76	48	871	12	651	153	1,656
	Gladstone	50	72	23	126	14	300	5	200	92	698
	Rockhampton	88	97	32	161	35	594	9	335	164	1,188
	TOTAL	209	227	77	363	97	1,765	26	1,186	419	3,442
1975	Bundaberg	59	51	16	75	40	1,879	14	994	129	2,998
	Gladstone	34	62	16	115	22 ^(a)	485 ^(a)	(b)	(b)	72	662
	Rockhampton	67	86	28	155	41	733	9	350	145	1,323
	TOTAL	160	199	50	345	103	3,097	23	1,344	346	4,983
1976	Bundaberg	55	51	17	94	32	995)				
	Gladstone	32	68	13	105	18	428)	9 ^(c)	712 ^(c)	176 ^(c)	2,452
	Rockhampton	61	119	27	254	36	834	10	594	134	1,800
	TOTAL	148	238	57	359	86	2,257	19	1,306	310	4,252
1977	Bundaberg	52	55	15	93	37	1,210)				
	Gladstone	27	61	14	122	16	408)	16 ^(c)	1,120 ^(c)	177 ^(c)	3,069
	Rockhampton	61	127	28	285	46	1,383	15	1,031	150	2,826
	TOTAL	140	243	57	500	99	3,001	31	1,151	327	5,895

(a) Including a small number of boats over 15 metres in length for which separate details are not available.

(b) Included with Length Class 9m to 15m.

(c) Separate details not available.

(SOURCE: Australian Bureau of Statistics, Fisheries Statistics, Queensland, 1973-74 to 1977-78)

TABLE 11: Estimated Usage of Capricornia Section by Commercial Fishing Boats

	COMMERCIAL FISHING BOATS			
	Scallops Trawling	Pelagic Fishing	Demersal Fishing	TOTAL
Maximum number boats working intermittently in Section	40	20	30	90
Full-time equivalent boats	4	5	9	18

(SOURCE: Environment, Science and Services, Zoning Strategy Study, Phase 1 - Draft Report, p. 51).

potential number of boats that may fish in reef and other offshore waters (327 in 1977) less than one third of these boats will use the waters of the Capricornia Section. Survey work to be undertaken in Stage Two of this project should either confirm or adjust this estimate.

3.2 Expenditure in Commercial Fishing Operations

Because of similarities in fishing methods, and therefore expenditure, demersal and pelagic fishing operations are described together as are scallop and prawn fishing operations. This section also includes a presentation of Jensen's estimates of expenditure in the commercial fishing industry as a whole.

3.2.1 Demersal and Pelagic Fishing Operations

A number of fishing boats pursue both demersal and pelagic fishing as this allows the fishermen to be less dependent on particular seasons. Thus expenditure levels for demersal and pelagic fishing are often combined in the one operation. Where boats exclusively pursue either demersal or pelagic fish, expenses are however very similar.

3.2.1.1 Boat Characteristics and Capitalization

The types of boat used in the pelagic fishery have been described by Hamilton (1979, p. 2) as follows:

" Small one man boats are common, perhaps 30ft (<10m). These may land 6,000lb of fish in May-August season. Larger boats with 2-3 man crew may also fish from dorries. These may land 30,000lb of fish in a season ... many of the boats are owner-built and have a value of between \$30,000 to \$50,000".

In demersal fishing, the boats are usually used in conjunction with dorries which allow greater maneuverability around reefs and bommies.

The value of licensed commercial fishing boats registered in Bundaberg, Gladstone and Rockhampton from 1973 to 1977 is given in Table 12.

TABLE 12: Value of Commercial Fishing Boats, Bundaberg, Gladstone and Rockhampton^(a), 1973 to 1977.

Year	Number of Boats	Total Value (\$'000)	Average Value per Boat (\$)
1973	369	2,993	8,111
1974	419	3,442	8,214
1975	346	4,983	14,401
1976	310	4,252	13,716
1977	327	5,895	18,027

(a) Includes Rossllyn Bay and Yeppoon

(SOURCE: Australian Bureau of Statistics, Fisheries Statistics Queensland, 1973-74 to 1977-78.)

The table shows that the average value of fishing boats has increased over the years from 1973, with substantial increases in the years 1975 and 1977. largely due to inflation.

3.2.1.2 Variable Costs in relation to Demersal and Pelagic Fishing Operations

Jensen (1979, p.25) gave the main items of expenditure in demersal fishing as labour, fuel, repairs and maintenance, insurance and interest, and provisions. Refrigeration may be used on larger boats which fish the outer reefs of the Capricornia Section and the Swain Reefs. Fishermen dependent on ice for refrigeration must limit trips to about a week.

Hamilton (1979, p.3) notes that some of the bait used is caught on the reef while other bait is squid imported from California.

The expenses involved in pelagic fishing "parallel quite closely the patterns found for the demersal fishery" (Jensen, 1979, p.28). All bait is caught on the reef. Larger boats have refrigeration whilst smaller boats rely on ice.

3.2.2 Scallop and Prawn Fishing Operations.

It has been noted by the Fisheries Division, D.P.I., Canberra et.al. (1977,p.10), that boats engaged in the scallop fishery work it on a part-time basis with prawn fishing. Hamilton (1979, p.4) reports that prawn fishing is a preferred activity to scallop fishing, as the potential returns are higher. It is therefore the case that those trawlers which work the scallop fishery within the Capricornia Section also work the prawn fishery outside the Capricornia Section. It will be necessary in future studies to apportion the investment in boat and equipment between use in the two fisheries.

3.2.2.1 Boat Characteristics and Capitalization.

The previously mentioned A.B.S. figures giving the average value of boats in the Region apply also to boats operating out of the ports of Bundaberg, Gladstone, and Rockhampton, and which trawl for scallops and prawns. The Fisheries Division, D.P.I., Canberra et.al. (1977,p.7) note that scallop/prawn trawlers vary in length with some being over 20 metres in length. Hamilton (1979,p.10) reports that both wood and steel hulled trawlers are built in Bundaberg.

3.2.2.2 Variable Costs in relation to Scallop and Prawn Fishing Operations.

Jensen (1979, p. 23) reports that the main items of expenditure in the scallop fishery are: labour, petrol, repairs and maintenance, insurance and interest, and provisions for crew. As with the demersal and pelagic fishery, larger boats have refrigeration

whilst smaller boats rely on ice.

3.2.3 Expenditure Patterns on a State and Regional Basis

Table 13 (from Jensen, 1979, p. 26) records the estimated expenditure patterns for the commercial scallop, demersal and pelagic fisheries. The data is presented in a form useful for input-output analysis and therefore expenditure is categorized according to the industrial sector from where items of expenditure originated, rather than according to each particular item. Jensen gave no details on how he estimated these expenditure patterns apart from stating that the information was based on field investigations. It must be emphasized that Jensen's data contain the estimated gross output and expenditure involved in shore-based processing in addition to those involved in actual fishing.

The data indicate how expenditure is distributed amongst the various sectors of the economy. Expenditure in the demersal fishery is highest, followed by expenditure in the scallop and pelagic fisheries;

TABLE 13: ESTIMATED EXPENDITURE PATTERNS, CAPRICORNIA SECTION

SECTOR	EXPENDITURE PATTERNS (\$)							
	TOTAL EXPENDITURE			Total Commercial Fishing	Percent Spent in Queensland	Queensland Expenditure	Percent Spent Locally	Local Regional Expenditure
	Scallop	Demersal	Pelagic					
1 Animal industries	-	-	-	-	-	-	-	-
2a Other agriculture	-	-	-	-	-	-	-	-
2b Forestry, fishing	-	-	-	-	-	-	-	-
3a Coal and crude petroleum mining	-	-	-	-	-	-	-	-
3b Other mining	-	-	-	-	-	-	-	-
4a Food manufacturing	10,000	30,000	10,000	50,000	80	40,000	25	12,500
4b Wood and paper manufacturing	2,000	3,000	1,000	6,000	50	3,000	-	-
4c Machinery, appliances, equipment	38,000	55,000	22,000	115,000	80	92,000	60	69,000
4d Metals, metal products	-	-	-	-	-	-	-	-
4e Non-metallic mineral products	-	-	-	-	-	-	-	-
4f Other manufacturing	50,000	65,000	20,000	135,000	80	108,000	-	-
5 Electricity, gas and water	3,000	4,000	2,000	9,000	100	9,000	100	9,000
6 Building and construction	5,000	5,000	2,000	12,000	100	12,000	100	12,000
7 Trade	28,000	45,000	17,000	90,000	90	81,000	75	67,500
8 Transport and communication	5,000	7,000	3,000	15,000	90	13,500	75	11,250
9 Finance	50,000	60,000	20,000	130,000	80	104,000	30	39,000

TABLE 13 CONTINUED

SECTOR	EXPENDITURE PATTERNS (\$)							
	TOTAL EXPENDITURE			Total Commercial Fishing	Percent Spent in Queensland	Queensland Expenditure	Percent Spent Locally	Local Regional Expenditure
	Scallop	Demersal	Pelagic					
10 Public administration and defence	5,000	5,000	2,000	12,000	90	10,800	50	6,000
11a Community services	-	-	-	-	-	-	-	-
11b Entertainment etc.	-	-	-	-	-	-	-	-
Imports	-	-	-	-	-	100,700	-	347,750
Purchases from region	196,000	279,000	99,000	574,000	-	473,300	-	226,250
Wages and Salaries	175,000	180,000	57,000	412,000	-	412,000	-	412,000
Other Value added	29,000	91,000	19,000	139,000	-	139,000	-	139,000
Gross Output	400,000	550,000	175,000	1,125,000	-	1,125,000	-	1,125,000

(SOURCE: Jensen, R.C. An assessment of the Economic Impact of Selected Activities Associated with the Capricornia Section of the Reef, on the Coastal Region and the State of Queensland, 1979).

therefore based on Jensen's estimates of gross output of the fisheries the expenditure patterns are consistent with gross output values. The major expenditure of scallop fishing operations is on "wages and salaries" (\$175,000) followed by "other manufacturing" and "finance" (both \$50,000). For demersal fishing, "wages and salaries" (\$180,000) is the major expenditure item, followed by "other manufacturing" (\$65,000) and "finance" (\$60,000). Pelagic fishing involves major expenditure on "wages and salaries" (\$57,000), "machinery appliances and equipment" (\$22,000), "other manufacturing" (\$20,000), and finance (\$20,000). The category of "other value added", though ranking second or third as an expenditure in Jensen's table was not included in the above ranking because of the diverse categories of expenditure included in this sector.

Examination of the right-hand side of Table 13 allows an appreciation of where money is spent in relation to the Queensland and local Regional (Wide Bay-Fitzroy) economies. Of the sectors where some expenditure occurred, the sectors of "food manufacturing", "finance" and "public administration and defence" attract a low level of expenditure at a Regional level while "wood and paper manufacturing" and "other manufacturing" attract no Regional expenditure. On the other hand, all other sectors which attract expenditure exhibit over 60% of total expenditure within the Wide Bay-Fitzroy Region. Apart from the "wood and paper manufacturing" sector, the major proportion of expenditure in sectors where expenditure occurred is spent in Queensland.

3.3 Employment and Earnings in the Commercial Fishing Industry.

3.3.1 Employment

Information is not readily available on the number of people directly engaged in fishing within the boundaries of the Capricornia Section. Commercial fishing boat licence records contain information about the total crew

employed on each boat - including master fishermen. Table 14 contains information about crew numbers on commercial fishing boats operating out of Bundaberg, Gladstone, Rockhampton and Yeppoon.

TABLE 14: Crew Records (including Master Fishermen) 1978

<u>Home Port District</u>	<u>Total Crew</u>
Bundaberg	306
Gladstone	160
Rockhampton	269
Yeppoon	178
TOTAL	913

(SOURCE: Australian Bureau of Statistics, Analysis of Commercial Fishing Boat Licences)

Australian Bureau of Statistics records for the 1976 census give the figures shown in Table 15 for people who gave their occupation as "fishermen" for the Census.

TABLE 15: Occupation Classification "Fishermen" 1976 Census

<u>Statistical Division</u>	<u>Males</u>	<u>Females</u>	<u>Total</u>
Bundaberg	40	5	45
Wide Bay-Burnett	139	7	146
Gladstone	17	2	19
Rockhampton	13	2	15
Fitzroy	78	8	86
TOTAL	287	24	311

The anomaly in the figures presented in Tables 14 and 15 raises some questions about the accuracy of the tables. Table 14 was derived from Commercial Fishing Boat Licence records.

Table 16 shows the average number of crew employed per boat in Queensland for the years 1972 to 1978. The figures show that crew per boat averages about 2 persons, including proprietors. This ratio may be higher in the Capricornia Section as there are 327 commercial fishing boats registered in the ports from Bundaberg to Yeppoon, and 913 fishermen operating from these ports, a ratio of 2.7.

Less than half the number of people recorded on commercial fishing boat licences as being engaged in commercial fishing, gave their occupation as "fishermen" at the 1976 Census. This may be an indication of the part time or seasonal nature of work involved in the fishing industry. It is probable that many of the people who crew fishing boats at certain times, also participate in other part-time or seasonal work (for instance, as farm hands or sugar mill workers). Too little is known at present about the nature of employment in the fishing industry to allow a satisfactory estimate to be made of the full-time equivalent employment generated by fishing boats that operate out of the ports of the Wide Bay-Fitzroy Region.

TABLE 16: Commercial Fisheries, Queensland. Boats and Employment

<u>Year</u>	<u>Number of Boats</u>	<u>Crew</u> ^(a)	<u>Crew/Boat</u>
1972	2,204	4,346	1.9
1973	2,314	4,674	2.0
1974	2,627	5,417	2.0
1975	2,318	4,633	1.9
1976	2,081	4,901	2.3
1977	2,209	4,285	1.9

(a) Including part-time crews and proprietors

(SOURCE: Australian Bureau of Statistics, Fisheries Statistics,

Queensland, 1972-73 to 1977-78)

The employment figures quoted above refer to all commercial fishing operations originating from the mainland ports Bundaberg to Yeppoon and it should be noted that only a proportion of the total fishing vessels in the Region actually work within the boundaries of the Capricornia Section. Estimates made by Environment, Science and Services suggest that 90 commercial fishing boats operate within the Capricornia Section and that the actual time spent within the Section approximates full-time use by only 18 boats. Based on this estimate and a ratio of 2 to 2.7 crew per boat, 180-243 individuals are occupied at some time in fishing within the Capricornia Section with the actual time spent by these individuals approximating the equivalent of 36 to 48 people full-time.

3.3.2 Earnings

The A.B.S. statistics on earnings gives the following figures (Table 17), for 1978.

TABLE 17: Mean Weekly Earnings, August, 1978.

<u>Category</u>	<u>Mean Weekly Earnings</u>
Farmers, Fishermen, Hunters, Timbergetters and related workers (Males) }	\$162
All Occupations (Males)	\$210

(SOURCE: Australian Bureau of Statistics, Weekly Earnings of Employees (Distribution) August, 1978).

Earnings within the fishing industry are known to vary with seasons and with catch levels. The fisheries operating within the Capricornia Section involve payment to employees on a catch basis. Hamilton (1979, p. 2,3) notes that on demersal and pelagic fishing operations, crew are paid between 10% and 25% the value of the catch.

Jensen has estimated the total wages and salaries paid in the scallop, demersal and pelagic fisheries as \$175,000, \$180,000 and \$57,000 respectively, giving a total of \$412,000. These figures contain values for the wages and salaries paid to people involved in shore based processing, as well as those actually engaged in fishing.

3.4 Infrastructure Associated with Expenditure in the Commercial Fishing Industry.

There are a number of wholesale, retail and service outlets located in the major urban areas in the Wide Bay-Fitzroy region, which provide goods and services for commercial and recreational boating and fishing. Table 18 contains a listing of such outlets as recorded in the district telephone books.

TABLE 18: Retail and Service Outlets Associated with Commercial and Recreational Fishing and Boating, 1979.

<u>Retail and Service Outlets</u>	<u>Bundaberg</u>	<u>Gladstone</u>	<u>Rockhampton and Yeppoon</u>
Boat and equipment retailers	10	1	11
Boat, builders and repairers	4	1	1
Marine engineers/contractors	1	1	1
Bait, tackle and gear retailers	8	3	8

(SOURCE: Telephone books: Bundaberg and District, Rockhampton and Districts).

3.5 Other Infrastructure Associated with Commercial Fisheries

This section of the report documents the infrastructure associated with processing and marketing fish and other seafood products.

3.5.1 Processing

The majority of the catch from the Capricornia Section undergoes some processing at facilities located at the main ports within the Region. The main agency for this processing is the Q.F.B., however, other processing establishments operating under Section 92 of the Constitution (requiring free trade between States) prevent the Q.F.B. from having a legally enforced monopoly over processing of fish.

The Fisheries Division, D.P.I. Canberra et al (1977) documents the infrastructure associated with fish and other seafood processing as follows:

A. Queensland Fish Board:

- (i) Location of agencies: Bundaberg, Gladstone, Rockhampton, Rosslyn Bay, Yeppoon.
- (ii) Replacement cost of infrastructure: \$1.75 million.
- (iii) Employment
 - 15 permanent staff,
 - 50 casual staff during the scallop season at Bundaberg.
- (iv) Comments: The Q.F.B. was established under the Fish Supply Management Act 1972 and is a state government controlled marketing authority. The aims of the Q.F.B. are to provide a service to the producer, by stabilising fish prices and operating assistance schemes, and to provide a service to the consumer by ensuring the year-round availability of seafoods. The Q.F.B. processes a percentage of the fish and other seafoods which pass through the agencies from Bundaberg to Yeppoon. The Q.F.B. markets the processed and unprocessed seafoods through local outlets and through outlets in Brisbane. The Q.F.B. adopts a wholesale markup of 10% on fish fillets and 12½% on whole fish. A markup of 32% on average is applied to retail sales (Hamilton, 1979, p. 6).

B. Markwell Fisheries Pty. Ltd.

- (i) Location of Agencies: Bundaberg, Rosslyn Bay (receival depot only).
- (ii) Replacement cost of infrastructure: no estimate of this value is available.
- (iii) Employment: 1977 scallop season at Bundaberg, employed over 100 persons, mostly casuals.

- (iv) Comments: Markwell Fisheries Pty. Ltd. handle over 85,000 kg of prawns, scallops, lobster, pelagic and demersal fish annually to the value of approximately \$2.5 to \$3 million.

C. Wales Carpentaria Pty. Ltd.

- (i) Location of Agencies: 3 processing establishments at Bundaberg.
- (ii) Replacement cost of infrastructure: \$500,000.
- (iii) Employment: 45 persons annually, including casuals.
- (iv) Comments: Wales Carpentaria Pty. Ltd. service a fleet of approximately 14 licensed fishing vessels in the 12-18m size range, plus a large number of "recreational vessels" (possibly pro-amateur fishermen). About 350 to 400 fishermen are involved. The annual turnover of this company is approximately \$630,000.

It must be noted that some of the infrastructure costs and employment pertains to the marketing functions of these establishments and also that the fish and other seafood produce originating from within the Capricornia Section does not constitute the entire volume of seafood handled by these establishments. It is a matter for further research to determine what proportion of the produce handled by these processors originates from within the Capricornia Section.

3.5.2 Marketing

In his 1979 study, Jensen gave the figures shown in Table 19 as estimates of the sales patterns of the fish and scallop catch from the Capricornia Section. The figures given by Jensen contain an estimate for black market disposals of seafood as well as an estimate of Capricornia Section seafood passing through legal channels.

TABLE 19: Sales Patterns, Capricornia Section.

SECTOR	SALES PATTERNS (\$)							
	LOCAL SALES (REGIONAL)				STATE SALES (QUEENSLAND)			
	Scallop	Demersal	Pelagic	Total	Scallop	Demersal	Pelagic	Total
1 Animal industries	-	-	-	-	-	-	-	-
2a Other agriculture	-	-	-	-	-	-	-	-
2b Forestry, fishing	-	-	-	-	-	-	-	-
3a Coal and crude petroleum mining	-	-	-	-	-	-	-	-
3b Other mining	-	-	-	-	-	-	-	-
4a Food manufacturing	-	-	-	-	150,000	25,000	10,000	185,000
4b Wood and paper manufacturing	-	-	-	-	-	-	-	-
4c Machinery, appliances, equipment	-	-	-	-	-	-	-	-
4d Metals, metal products	-	-	-	-	-	-	-	-
4e Non-metallic mineral products	-	-	-	-	-	-	-	-
4f Other manufacturing	-	-	-	-	-	-	-	-
5 Electricity, gas and water	-	-	-	-	-	-	-	-
6 Building and construction	-	-	-	-	-	-	-	-
7 Trade	-	-	-	-	-	-	-	-
8 Transport and communication	-	-	-	-	-	-	-	-

TABLE 19 CONTINUED

SECTOR	SALES PATTERNS (\$)							
	LOCAL SALES (REGIONAL)				STATE SALES (QUEENSLAND)			
	Scallop	Demersal	Pelagic	Total	Scallop	Demersal	Pelagic	Total
9 Finance	-	-	-	-	-	-	-	-
10 Public administration and defence	-	-	-	-	-	-	-	-
11a Community services	-	-	-	-	-	-	-	-
11b Entertainment etc.	30,000	100,000	40,000	170,000	50,000	200,000	60,000	310,000
Exports	340,000	300,000	95,000	735,000	150,000	100,000	40,000	290,000
Consumption	30,000	150,000	40,000	220,000	50,000	225,000	65,000	340,000
Total Sales	400,000	550,000	175,000	1,125,000	400,000	550,000	175,000	1,125,000

(SOURCE: Jensen, R.C. An assessment of the Economic Impact of Selected Activities Associated with the Capricornia Section of the Reef, on the Coastal Region and the State of Queensland. 1979).

The following Table, Table 20, is constructed from Jensen's estimates and shows exports on a percentage basis.

TABLE 20: A. Local Sales (Wide Bay-Fitzroy Region) - Percentage Basis

Sales To	Scallop	Demersal	Pelagic	Total
<u>Sector 11b</u> ^(a)				
Entertainment etcetera	7.5	18	23	15
Household consumption	7.5	27	23	20
Exports	85	55	54	65
TOTAL	100	100	100	100

(a) This sector includes hotels and restaurants, see Note 7 for a description of sectors.

B. State Sales (Queensland) - Percentage Basis

Sales To	Scallop	Demersal	Pelagic	Total
<u>Sector 4b</u>				
Food Manufactur- ing	37.5	4.5	6	16
<u>Sector 11b.</u>				
Entertainment etcetera	12.5	36.5	34	28
Household consumption	12.5	18	37	30
Exports	37.5	41	23	26
TOTAL	100	100	100	100

(SOURCE: After Jensen, R.C. An Assessment of the Economic Impact of Selected Activities Associated with the Capricornia Section of the Reef, on the Coastal region and the State of Queensland, 1979).

According to Jensen's estimates, the majority of fish and other seafood caught within the Capricornia Section is exported from the Wide Bay-Fitzroy Region to other parts of Queensland and interstate. Of the proportion sold to section 11b and household consumption it is possible that a significant percentage of this moves through black market channels.

Jensen estimates that fish and other seafood to the value of \$735,000 is exported from the region whilst \$290,000 of that value is actually exported from the state each year. In addition it is expected that some undefined amount of the produce from sector 4a (food manufacturing) would be exported, placing the value of exports of produce of the Capricornia Section from Queensland at over \$290,000 per annum. Table 21 shows the exports of fish and fish products from Queensland in 1977-78. The exports from the Capricornia Section make up a little over 1% of total Queensland exports of fish and fish products.

3.5.3 Wholesale

The Q.F.B. and the other firms engaged in processing fish and other seafood are also active in wholesale marketing of the product. In the case of the Q.F.B. and Markwells Fisheries Pty. Ltd. the product of the Capricornia Section is moved through a chain of outlets in Queensland, and also through N.S.W.

Of marginal importance is the data obtained in the most recent survey of wholesale establishments in Queensland, conducted by the A.B.S. for 1968-69. This data, available only for Queensland as a whole is contained in Table 22 and Table 23.

TABLE 21A: Exports of Fish and Fish Products, from Queensland, 1977-78.

Classification	Overseas		Interstate		Total	
	kg.	\$'000	kg.	\$'000	kg.	\$'000
Fish, Crustaceans and Molluscs (fresh and simply preserved)	2,607,276	17,743	951,626	5,695	3,558,852	23,438
Fish, Crustaceans and Molluscs (prepared or preserved)	41,162	207	17,513	25	58,675	232
TOTAL \$'000		17,950		5,720		23,660

TABLE 21B: Imports of Fish and Fish Products into Queensland, 1977-78.

Fish (canned or bottled and fish preparations) including Crustaceans and Molluscs	Total (from overseas and interstate)
	\$
	5,376,543 kg
	15,192,000

(SOURCE: Australian Bureau of Statistics, Overseas and Interstate Trade, 1977 - 1978)

TABLE 22: Fish Wholesale Establishments, Queensland, 1968-69.Fish Wholesalers 1968-69.

Number of establishments	47
Persons employed end June 1969	576
Wages and Salaries	\$ 1,480,000
Turnover	\$15,792,000
Stocks at 30 June 1968	\$ 746,000
Stocks at 30 June 1969	\$ 908,000
Purchases, Transfers and Selected Expenses	\$12,223,000
Value Added	\$ 3,731,000
Sales or purchases on commission	\$ 1,850,000
Fixed Capital Expenditure	\$ 2,015,000

TABLE 23: Value of Wholesale Sales of Fish, Queensland 1968-69.

<u>Fish Sold By:</u>	<u>Value, \$'000</u>
Fish Wholesalers	11,515
Grocery and food, poultry, dairy and smallgoods wholesalers	1,462
Other wholesale establishments	313
TOTAL	13,290

(SOURCE: Commonwealth Bureau of Census and Statistics, Wholesale Establishments, Australia; States and Territories, 1968-69.)

3.5.4 Retail

In addition to the Q.F.B. and the other large fish processing firms, there are other retail outlets for fish. Such outlets may be classified as those institutions which sell fresh or cooked seafood (including seafood meals) to the public. In the Wide Bay-Fitzroy Region's urban areas, there are a number of seafood outlets where fresh and cooked seafood may be obtained, and in addition there are numerous hotels and restaurants where fish meals may be sold. Table 24 contains a listing of the number of wholesale and retail fish and seafood outlets, excluding hotels and restaurants, situated in Bundaberg, Gladstone and Rockhampton.

It is not known what value of turnover in wholesale and retail establishments in the region may be attributed to seafood from the Capricornia Section. This will be the subject of additional research in order to produce input-output vectors for Stage Two of this project. A survey by the A.B.S. in 1973-74 of retail establishments in Queensland gave the data shown in Table 25. This data is of marginal import due to the level of aggregation and the vintage of the survey -- the A.B.S. will however, be undertaking a similar survey in 1980 with results available by July, 1980.

3.5.5 Government Expenditure

Government expenditure in the form of administration and research is undertaken in relation to fishing activities in the Capricornia Section. Such expenditure is required at three levels of government as follows.

Local Government: Local government is responsible for the installation and maintenance of mooring facilities, boat ramps and car parks.

Administration is undertaken by local Harbour Authorities. It is intended to obtain information on the costs to local authorities in Stage Two of this research.

State Government:

- (i) The Queensland Fisheries Service is responsible for administering commercial fishing licenses. The Q.F.S. also undertakes research into fisheries and at present the Q.F.S. is studying scallop biology in the Capricornia Scallop Fishery.
- (ii) Queensland Fish Board: The Queensland Fish Board is responsible for receiving, processing and marketing fish and other seafood. As detailed in previous sections there are five Q.F.B. agencies (at Bundaberg, Gladstone, Rockhampton, Rossllyn Bay and Yeppoon) which service catch from the Capricornia Section. The replacement cost of the infrastructure involved is \$1.75 million. The Q.F.B. agencies employ 15 permanent and 50 casual staff per annum. Not all of this investment is employed in handling fish and other seafood from within the Capricornia Section.
- (iii) Queensland Fishing and Boating Patrol (Department of Harbours and Marine). This patrol is responsible for regulating the activities of both commercial and recreational fishermen. The Fisheries Division, D.P.I., Canberra, et al (1977) note that in 1977 there were seven (7) officers plus support staff stationed in offices at Bundaberg, Gladstone and Rockhampton.

Commonwealth Government:

The Commonwealth Government has less direct involvement in the Region than has Local and State Government and therefore contributes less direct expenditure in relation to administration of and facilities for fishing in the Capricornia Section. The Commonwealth Government does however, expend funds on fisheries research through the Fisheries Division, Department of Primary Industries, Canberra. The Great Barrier Reef Marine Park Authority has the responsibility of researching and planning uses of the Capricornia Section of the Marine Park.

TABLE 24 : Wholesale and Retail Fish Outlets, Bundaberg,
Gladstone, Rockhampton and Yeppoon, 1979.

	<u>Bundaberg</u>	<u>Gladstone</u>	<u>Rockhampton & Yeppoon</u>
Fish Wholesale	3	1	3
Fish Retail	9	1	15

(SOURCE: Telephone Books, Bundaberg and District, Rockhampton and District)

TABLE 25 : Value of Retail Sales, Fish and Other Food^(a)
Wide Bay-Fitzroy Region 1973-74

<u>Statistical Division</u>	<u>Number of Establishments</u>	<u>Value of Sales \$'000</u>
Wide Bay-Burnett	455	7,347
Fitzroy	358	7,304
TOTAL	813	14,651

(a) Includes fresh fruit and vegetables, bread, cakes, fish (fresh and cooked), hamburgers, chips, cooked chicken.

(SOURCE: Australian Bureau of Statistics, Census of Retail Establishments and Selected Service Establishments, 1973-74)

4.0 RECREATIONAL FISHING WITHIN THE CAPRICORNIA SECTION

Recreational fishermen active within the Capricornia Section concentrate their efforts on species of demersal and pelagic fish. Fishing may be carried out from boats using lines and tackle or underwater using spearguns. The former method is the most popular, to the extent that spearfishing is thought to be a very minor component of recreational fishing -- accordingly this section concentrates on recreational fishing from boats. Very little is currently known about recreational fishing in the Capricornia Section, hence the need for the survey which will be undertaken in Stage Two of this research project. The purpose of this section is to report on available information on recreational fishing within the Capricornia Section.

4.1 Method of Fishing Activity

Recreational fishing within the Capricornia Section is carried out both from privately owned boats and from charter boats. These two very different methods of recreational fishing will be investigated separately.

4.1.1 Private Motor Boats

The Queensland Marine Board requires that all boats with motors over 4 BHP be registered. Table 26 shows the number of private motor boats registered at the ports of Bundaberg, Gladstone and Rockhampton for the years 1977, 1978 and 1979. The table shows that the number of registrations increased by about 5% from 1977 to 1978 and by 4% from 1978 to 1979. This is consistent with the overall trend in motor boat registrations in these years as shown on Table 27. The figures in Table 27 show that the rate of growth in boat registrations in Queensland has dropped steadily since 1972.

TABLE 26 : Private Motor Boat Registrations^(a) for 3 Ports,
(Bundaberg, Gladstone, Rockhampton) and Queensland
1977 to 1979^(b).

YEAR	NUMBER PRIVATE MOTOR BOATS REGISTERED			TOTAL THREE PORTS	% INCREASE FROM PREVIOUS YEAR	TOTAL QUEENSLAND	TOTAL 3 PORTS AS % TOTAL QUEENSLAND
	BUNDABERG	GLADSTONE	ROCKHAMPTON				
1977	2,905	1,541	2,446	6,892	n.a. (c)	66,559	10.4
1978	3,115	1,547	2,568	7,230	4.9	70,125	10.3
1979	3,234	1,570	2,741	7,545	4.3	72,796	10.3

(a) All boats/vessels powered by a motor of 4 B.H.P. and over are required to be registered. This does not include boats for which a commercial fishing licence is held.

(b) For the year ended June.

(c) Not available

(SOURCE: Queensland Marine Board, published statistics)

TABLE 27: Increase in Private Motor Boat Registrations Queensland 1968-1979

DATE	TOTAL NUMBER OF REGISTRATIONS			
	SPEED BOATS	MOTOR BOATS	TOTAL	INCREASE
As at 30.6.68	14,981	5,747	20,638	
As at 30.6.69	18,504	6,136	25,640	24%
As at 30.6.70	21,849	6,711	28,560	11%
As at 30.6.71	24,840	7,284	32,124	12%
As at 30.6.72	29,015	8,354	37,269	16%
As at 30.6.73	33,355	9,223	42,578	14%
As at 30.6.74	38,467	9,979	48,446	14%
As at 30.6.75	44,058	10,752	54,810	13%
As at 30.6.76	49,879	11,267	61,146	11½%
As at 30.6.77	55,222	11,341	66,563	9%
As at 30.6.78	58,687	11,442	70,129	5%
As at 30.6.79	60,865	11,936	72,801	4%

(SOURCE: Queensland Marine Board, published statistics)

Table 29 was constructed for the ports in the Wide Bay-Fitzroy Region based on the figures in Table 28. Table 28 contains data on the distribution of boat numbers into length classes for Queensland as a whole. Environment, Science and Services have reported that only boats over 4.5 m in length will travel to the reef from Gladstone and Turkey and only boats over 5.5m in length will travel to the reef from other ports in the Wide Bay-Fitzroy region (1979a, p. 55).

Based on the data contained in Table 29, there are 2,300 boats over 4.5 m in length and less than 1,048 boats over 5.5m in length registered at the ports of Bundaberg, Gladstone and Rockhampton. These numbers constitute the potential private motor boat use of the Capricornia Section. The actual number of private motor boats which travel to the Capricornia Section is to be the subject of further research in Stage Two of this project. It is likely however, that the number of boats actually travelling to the Capricorn Section is only a fraction of the total number of boats over 4.5m registered at the above ports (see Capricornia pretest results).

The intensity of use of the Capricornia Section has been estimated by Environment, Science and Services (1979a, p. 28) - See Table 30. The authors of this report claim that weather conditions, particularly wind, are the prime determinant of recreation trip numbers and the duration of trips.

TABLE 28: Boat Length Break-up^(a), Private Motor Boats, Queensland - Number of Boats in Length Class as a % of Boats in Queensland, 1977 to 1979.

Year	Number of Boats Length Class as % of Total Private Motor Boat Registration					
	Less than 4.5m	4.5m to 5m	5m to 6m	6m to 9m	over 9m	Total
1977	69.5	17	8	4	1.5	100
1978	69.5	17	8	4	1.5	100
1979	69.5	17	8	4	1.5	100

(a) Length class based on Modifications of Queensland Marine Board Length Classes, some errors may exist.

TABLE 29: Imputed Length Break Up^(a). Private Motor Boats Registered at Bundaberg, Gladstone and Rockhampton, 1977 to 1979

Year	Number of Boats by Length Class					Total
	Less than 4.5m	4.5m to 5m	5m to 6m	6m to 9m	Over 9m	
1977	4,791	1,171	551	276	102	6,892
1978	5,025	1,229	578	289	109	7,230
1979	5,245	1,282	603	301	114	7,545

(a) Imputed Length Class based on Length Class as a Percentage of Total Queensland Registration, as derived in Table 31.

4.1.2 Charter Boat Users

Boats are available for charter by groups of people interested in fishing or other reef-based activity. Table 31 includes a description of some of the charter boats operating within the Capricornia Section. The boats vary in length, facilities and the number of persons carried, with changes per person varying according to such above-mentioned criteria.

Environment, Science and Services (1979a, p.54) have investigated charter boat use within the Capricornia Section and their results are shown in Table 32. According to this data, fishing comprises only 29% of the annual person-days per year generated by charter boat users in the Capricornia Section.

4.2 Type of Fishing Activity

4.2.1 Pro-am Fishing

Many recreational fishermen are not strictly amateur with a component of the fishermen who use the reef being classified as "professional-amateur" or "pro-am". These fishermen do not have a commercial license to catch

TABLE 30: Estimated usage of Capricornia Section by Speed Boats
(not necessarily engaging in fishing)

ORIGIN	BOAT TRIPS per year	ANNUAL USE PRESSURE ^(a) person-days/year
Capricornia Coast	50	360
Gladstone	1,260	8,820
Turkey	210	1,480
Round Hill Head- Seventeen Seventy	320	2,240
Bundaberg	500	3,500
TOTAL	2,340	16,400

- (a) Estimate based on:
- 30% of boats stay one day
 - 60% of boats stay two days
 - 10% of boats stay five days

(SOURCE: Environment, Science and Services, Zoning Strategy Study,
Phase 1 - Draft Report p. 57)

TABLE 31: Selected Launches available for day or extended charter, operating from ports within or adjacent to the Capricornia Section.

VESSEL	OPERATING PORT	DETAILS	CHARTER RATES
T.S.M.V. "Coralita" (under Commonwealth Survey)	Rossllyn Bay via Yeppoon	Length - 24 metres Beam - 5.94 metres Draught - 1.95 metres Cruising Speed - 22km hr Sleeping Accommodation - 16 persons	Weekend or extended charters daily - \$600.00
M.V. "Fiesta"	Rossllyn Bay via Yeppoon	Length - 24 metres Beam - 7 metres Draught - 2 metres Cruising Speed - 22.3km/hr Carries 170 persons on day charters	Minimum - \$200.00 Full details on application
M.V. "Oceanus"	Rossllyn Bay via Yeppoon	Length - 23 metres Beam - 6 metres Draught - 2 metres Cruising Speed - 19km/hr Carries 186 persons on day charters	Minimum of \$120.00 or \$2.00 per head plus \$2.50 per person per day for catering
M.V. "Sea Hunt"	Gladstone	Length - 13.10 metres Beam - 4.26 metres Draught - 1.06 metres Cruising Speed - 16.65km/hr Sleeping Accommodation - 8 persons	\$35.00 per person daily inclusive of catering. *N.B. Minimum charge \$170.00 per day. * based on 6 persons
M.V. "Escape"	Gladstone	Length - 16.45 metres Beam - 4.57 metres Draught - 1.82 metres Cruising Speed - 14.8km/hr Sleeping Accommodation - 10 persons	\$300.00 per day for up to 10 persons
"Noddy Tern"	Heron Is. Tourist Resort	Length - 7.92 metres	All rates on application
M.V. "Christine"	Heron Is. Tourist Resort	Length - 10.66 metres	All rates on application
T.S.M.V. "Attunga"	Heron Is. Tourist Resort	Length - 19.81 metres	All rates on application

TABLE 32:

Estimated Usage Generated by Charter Boats in Capricornia Section.

ORIGIN	NO. OPERATING	ANNUAL USE PRESSURE (PERSON-DAYS PER YEAR)							FISHING AS A % OF TOTAL ANNUAL USE PRESSURE
		FISHING	DIVING	CAMPING	SHELL COLLECTORS	TOURISTS	OTHER ^(a)	TOTAL	
Capricorn Coast (Rossllyn Bay)	4	1,000	400	1,100	50	310	-	3,360	45%
Gladstone	13 ^(b)	2,400	1,420	4,500	50	410	500	9,380	26%
Bundaberg	6 ^(c)	1,800	1,800	2,500	50	470	200	6,820	26%
TOTAL	23	5,700	3,720	8,100	150	1,190	700	19,560	29%

(a) Includes government charters, professional photographers.

(b) Six operate regularly and seven only occasionally.

(c) Three operate regularly and only three occasionally.

(SOURCE: Environment, Science and Services, Zoning Strategy Study Phase 1 - Draft Report p. 54, 1979)

and sell fish and yet they may engage in commercial activity at times. It is possible to purchase a 28 day "amateur licence" and sell fish to the Q.F.B. but it may be the case that many of the pro-am fishermen dispose of their catch through black market channels.

As mentioned above little is known of pro-am fishing activities within the Capricornia Section. It is not known what proportion of catches by pro-am fishermen pass through black market channels, what the volume or value of this catch is, or what fish species are favoured. Hamilton (1979, p.4) presents descriptive information about the pro-am fishermen based on discussions with people in the area. Hamilton suggests that pro-am fishermen catch mostly demersal fish and that the majority of the fish catch passes through black market channels.

Pro-am fishermen may fish by private motor boat with one essential reason for participating in pro-am fishing being to defray the costs of actually owning and running a private motor boat. Another reason for pro-am fishing is to generate additional income on top of covering trip costs. Hamilton reports that to some fishermen, pro-am fishing is almost a second occupation and that these fishermen fish regularly on weekends. Another element of pro-am fishing is related to charter boats. Hamilton (1979, p. 4) reports that fishermen on charter boats may sell fish directly or through their club - alternatively, it has been alleged that charter boat operators buy fish at low prices from the fishermen and sell through the black market.

4.3 Fish Catch

As amateur catches are not recorded and the pro-am catch is subject to black market possibilities, no reliable data are available on recreational catch volumes. It is possible that such catches are significant as there is friction existing between recreational and commercial fishermen over

fishing pressure. Craik (1979, p.1) reports that:

"There is a great deal of resentment towards amateur fishermen. The commercial men feel the amateurs are catching far more than they (the commercial fishermen) do, and that the amateurs will keep fishing a reef long after commercial fishermen, because the livelihood of the commercial fishermen depends on the continued productivity of that reef".

4.4 Economic Characteristics of Recreational Fisheries

There is currently little known about important aspects of recreational fishing within the Capricornia Section. Some initial economic data has been collected in a recent survey undertaken by the Great Barrier Reef Marine Park Authority (G.B.R.M.P.A.) with assistance from the Institute of Applied Social Research (I.A.S.R.) over three weeks from late July to early August, 1979. The survey was conducted by interviewing recreational fishermen at boat ramps when the fishermen returned from a fishing trip. The questionnaire used in this survey contained questions relating to the fisherman's catch for the trip, as well as questions aimed at recording his expenditure on boat, equipment and trip costs. A preliminary finding of this survey was that a very small percentage of all users of boat ramps in the Wide Bay-Fitzroy Region actually ventured to the Capricornia Section of the Great Barrier Reef. Of over 400 fishermen interviewed over the survey period, only 14 were found to have fished within the Capricornia Section, (of these interviews only 12 were valid.) Six of these 12 fishermen lived in Bundaberg and six lived in Gladstone.

4.4.1 Expenditure Associated with Recreational Fishing

4.4.1.1 Private Motor Boats

The little information which is available about expenditure by private motor boat owners was gathered during the G.B.R.M.P.A. - I.A.S.R. survey mentioned above. Appendix II contains a full record of the questionnaire

responses to questions on expenditure on boat, equipment and trip (excluding accomodation) costs, for the 12 valid interviews. Only preliminary analysis of the results has been undertaken. Analysis was hampered by the fact that there was no provision in the questionnaire to distinguish between the case where no expenditure was entered for an item because no expenditure took place and the case where the respondent could not or did not wish to estimate an expenditure figure for a particular item, and therefore no figure was entered for that item. Table 33 contains the results of preliminary analysis. The results show the average investment in boat, equipment and storage facilities and the average annual expenditure on other items, for those interviewees who responded.

Jensen (1979, p. 38) reports that the major items of expenditure for speed boat owners is fuel, repairs and maintenance and interest and insurance. For fishermen, the cost of tackle, and, in cases refrigeration or ice must be added. Jensen estimated the total spending on amateur fishing in the Capricornia Section at \$120,000 (1979, p. 40). This estimate includes an allocation for fishing equipment, travel to and from the coastal ports, and food and other provisions. Jensen made a separate estimate of \$225,000 for expenditure on recreational speedboats using the Capricornia Section (1979, p. 38).

4.4.1.2 Charter Boats

Expenditure on recreation fishing from charter boats has two components; (a) costs for charterers and (b) costs to charter boat owners.

(a) Cost to individuals chartering a boat for fishing activities includes the costs of travel to the point of departure, possibly accommodation costs, plus the actual charter cost. Jensen reports that the average cost of chartering a vessel is between \$30 and \$45

TABLE 33: Expenditure Involved in Recreational Fishing -
Items of Expenditure.

Item	No. of Responses	Expenditure (\$)	Average Expenditure ^(a) per No. of Responses (\$)	Nature of Expenditure
Boat, motor and trailer	12	105,800	8,816	total investment
Equipment (radio and sounder)	9	6,240	693	total investment
Fish and bait storage	9	1,382	154	total investment
Boat fuel	12	5,000	416	annual expenditure
Bait	9	690	77	annual expenditure
Gear	12	1,725	144	annual expenditure
Fishing magazines	3	61	20	annual expenditure
Club membership	8	193	24	annual expenditure
Travel	11	520	47	annual expenditure
Camping gear	2	220	111	annual expenditure
Insurance	5	1,150	230	annual expenditure
Trailer registration	3	57	19	annual expenditure
Boat licence	2	50	25	annual expenditure

(a) Average expenditure per number of responses, rather than average expenditure for 12 responses (there were 12 valid interviews) was calculated because of the large number of non-responses recorded.

(SOURCE: Great Barrier Reef Marine Park Authority - Institute of Applied Social Research Recreational Fishing Survey - see Appendix II).

per head per day (1979, p. 36). Surveys to be undertaken in the near future by the G.B.R.M.P.A. should produce a more detailed breakdown of the costs incurred by charter boat users.

(b) Charter boat owners incur the normal costs associated with boat ownership, namely fuel, repair and maintenance, interest and insurance. The nature of charter boat operations involves additional expenditure on labour and on food and drink required for catering. Research to be undertaken in Stage Two of this project will provide information on expenditure involved in charter boat operation.

4.4.2 Returns from Recreational Fishing

Returns from recreational fishing fall into three categories: returns to purely amateur fishermen, returns to pro-am fishermen and returns to charter boat owners.

Amateur fishermen accrue the market value of the fish they catch and this may be a substantial value at times. A major component of the returns to amateur fishermen however, must be the intangible benefits gained from recreating in a pleasing environment. These benefits are not easily directly measured in monetary terms as the reef environment is freely entered by everyone - it is a public open space. Some indirect indication of the monetary value of benefits from reef recreation may be gained by measuring the cost and time spent in reaching the Capricornia Section.

Pro-am fishermen receive a monetary value for fish they sell through the Q.F.B. or through black market channels. It is presently not known what volume and therefore what value of fish originates from this group of fishermen. Given that there is also a recreational aspect to pro-am fishing these fishermen must gain some intangible

recreational benefits from fishing in the reef environment.

Returns to charter boat owners include the returns from running the actual charter business but they may also include some component of fish sales through either the Q.F.B. or black market channels. The magnitude of returns in either component of earnings are not presently known for the Capricornia Section.

4.5 Associated Infrastructure

A large component of the infrastructure in the Wide Bay-Fitzroy Region which serves commercial fishing also serves recreational fishing. This infrastructure includes government agencies and commercial establishments.

4.5.1 Government Services

A large proportion of government services described with relation to commercial fishing, also pertains to recreational fishing. For instance, recreational fishermen also use facilities provided by local Harbour Boards and services provided by the Queensland Fishing and Boating Patrol, Q.F.S. and the Q.F.B.

4.5.2 Commercial Establishments

Commercial establishments within the Wide Bay-Fitzroy Region provide the goods and services required by recreational fishermen. The discussion in Section 3.4 of this report and the data contained in Table 18 which describe retail and service establishments providing fishing and boating requirements are relevant here, as these establishments serve both commercial and recreational fishing requirements.

4.5.3 Private Organizations

Domm (1974, p. 101) notes that the Capricornia section is used by fishing clubs and individuals from Brisbane to Rockhampton, but the most

active users are from Gladstone and Bundaberg. Fishing clubs may use either private motor boats or charter boats to gain access to the reef. There are five fishing clubs in Bundaberg and districts - the largest of these being the Bundaberg Blue Water Club which has over 300 members, many of whom own a motor boat (M.S.J. Keys Young Pty. Ltd. 1977). There are two fishing clubs in Gladstone, (including the Queensland Alumina Club) and one club in Maryborough (Sandy Cape Deep Sea Fishing Club) which make regular trips to the Capricornia Section. Fishing clubs in Rockhampton make occasional trips to the Capricornia Section (Domm, 1974, p. 101).

Volunteer rescue organisations exist at the major launching sites and provide an important service to recreational fishermen.

5.0 INSTITUTIONAL FRAMEWORK PERTAINING TO FISHING IN THE CAPRICORNIA SECTION

Fishing activities in the Capricornia Section fall under both Commonwealth and Queensland jurisdiction. The most important Commonwealth Act affecting the commercial fishing industry is the Fisheries Act 1952 to 1975 and Fisheries Amendment Act 1978. This Act covers all waters outside of the Queensland State limits, to 200 nautical miles. This Act requires that licenses must be obtained for master fishermen and fishing vessels to operate in Commonwealth waters. The Act allows the Minister to place conditions on the methods of taking and processing fish in Commonwealth waters as well as allowing the Minister to prohibit the taking of specified fish in Commonwealth waters. Traditional and amateur fishing is allowed in Commonwealth waters.

The Commonwealth Continental Shelf (Living Natural Resources) Act 1968-1973 and Continental Shelf (Living Natural Resources) Amendment Act 1978 covers activity in relation to sedentary organisms of the Australian Continental Shelf. There are several notices issued under the Act prohibiting the taking of certain sedentary organisms in Commonwealth and Queensland waters. Scallops are currently excluded from the provisions of this Act.

The Queensland Fisheries Act 1976 covers fishing in all State waters, including all rivers and waters offshore to the State's 3 nautical mile limit. The Minister may issue the following licences required for commercial fishing: Master Fisherman's Licence, Assistant Fisherman's Licence, and Commercial Fishing Vessel Licence. The Queensland Fisheries Service administers the issue of the above licences, concurrently with the issuing of Commonwealth licences on behalf of the Commonwealth Department of Primary Industries. The licences are all valid for a 12 month period. Both Commonwealth and State licences are required where a vessel fishes in Commonwealth waters but uses port facilities in State waters.

The Queensland Fisheries Act contains provisions for the Minister to place conditions on the taking of certain species of fish or other marine products and on the method of fishing allowed. The Act also covers the establishment of processing operations both on a fishing vessel and on the mainland. The Queensland Commercial Fishermen's State Council has been established under this Act to foster co-operation within the industry and between fishermen and State and Commonwealth agencies.

Amateur fishing does not require a license, however, where amateur fishermen wish to sell fish surplus to their own needs, they are required under the Act to obtain a permit.

The Queensland Fish Supply Management Act 1972 provides for the establishment of the Queensland Fish Board and regulation of the buying, processing, selling and distribution of fish throughout the State. The Act requires that all commercial fish catch be handled through the Queensland Fish Board except where the fish is destined for interstate trade (where exemptions exist under Section 96 of the Australian Constitution).

FOOTNOTES

1. See the definition of the Capricornia Section in the Introduction.
2. Similar data is also available from 1973, however, data for 1979 will not be available until the Queensland Fish Board Annual Report is presented to the Legislative Assembly in October of this year.
3. It has been suggested that the Mackay Fish Board agency may handle some seafoods caught within the Capricornia Section (Hundloe, T.J. "Capricornia Region Briefing" Minute Paper, Great Barrier Reef Marine Park Authority, 1979). It was assumed that such receivals would be only a small proportion of Mackay Fish Board receivals and therefore figures for Mackay were not included in the tables for this Report. This proportion however, will be investigated during the ongoing study.
4. All commercial fishermen are required to sell their catch to the Q.F.B. Amateur fishermen wishing to sell a portion of their catch are required to purchase a 28 day amateur licence and also sell their catch to the Q.F.B.
5. The Q.F.B. receive fish in the form of whole fish as well as in the form of fillets. Receivals of whole fish make up the bulk of all fish receivals.
6. These figures include commercial fishing boats registered in Yeppoon.
7. The 19 "sectors" used by Jensen are 19 groupings of industries derived by aggregating 108 industries as classified under the Australian Bureau of Statistics system of classifying national industrial sectors (ASIC)

(a)

APPENDIX I.

Fish and Other Seafood receivals,
Queensland Fish Board Agencies;
Bundaberg, Gladstone, Rockhampton,
Rosslyn Bay, Yeppoon.

1976, 1977, 1978.

(b)

TABLE A WHOLE FINNED FISH BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 10 MONTHS TO APRIL, 1976.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPON KG.	TOTAL
Barramundi	2,232	3,263	8,238	125	4,828	18,686
Bream	1,887	771	6	--	763	3,427
Bream(Black)	298	--	--	--	120	409
Cod	2,053	594	97	--	1,978	4,722
Dart	706	172	496	--	946	2,320
Emperor	2,415	1,461	171	225	2,416	6,688
Flathead	1,279	279	130	--	890	2,578
Gar	616	987	--	--	41	1,644
John Dory	340	--	--	--	3	343
Jew	849	728	1,097	--	3,502	5,726
King	1,999	320	20	--	7,174	4,513
Mackerel	36,872	10,477	756	830	18,522	67,457
School Mackerel	9,623	86	148	--	3,371	13,228
Morwong	100	12	--	--	--	112
Mullet	65,630	7,133	1,053	--	9,648	83,464
Nanygai	84	54	--	--	35	173
Parrot	1,369	482	--	--	103	1,981
Pike	51	19	--	--	193	263
Ray	2,963	1,213	--	49	1,811	6,036
Salmon	2,617	3,294	14,455	8	4,184	24,558
Sampson	42	--	--	--	29	71
Shark	3,046	491	--	--	95	3,632
Snapper	6,566	213	--	--	1,205	7,984
Squire	838	--	--	--	2	840
Sweetlip	15,633	5,963	100	77	5,019	26,792
Tailor	1,681	29	--	--	3	1,713
Trevalli	469	11	149	--	2,003	2,632
Coral Trout	10,982	1,305	6	27	1,952	14,182
Trumpeter	332	404	--	--	--	736
Tuna	242	--	--	--	--	242
Whiting	1,115	553	8	325	179	2,980
Yellow Tail	48	73	--	--	--	121
Mixed Fish	4,539	760	215	--	1,698	7,212
Other Species	6,520	2,335	433	181	2,304	11,773
TOTAL	186,036	43,482	27,578	1,847	75,017	333,438

TABLE B FISH FILLETS BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 10 MONTHS ENDED APRIL, 1976.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPON KG.	TOTAL
Barramundi	81	259	920	--	903	2,163
Bream	8	2	--	--	4	14
Bream(Black)	--	--	--	--	--	--
Cod	--	263	29	--	180	472
Dart	--	41	78	--	156	275
Emperor	--	782	4	--	256	1,042
Flathead	19	62	5	--	2	88
Gar	--	--	--	--	--	--
John Dory	88	--	--	--	--	88
Jew	--	66	51	--	122	239
King	10	321	46	--	1,932	2,309
Long Toms	--	--	--	--	--	--
Mackerel	453	5,867	932	390	2,695	10,337
School Mackerel	120	7	663	--	8	798
Morwong	--	--	--	--	--	--
Mullet	1,238	363	185	--	66	1,852
Nanygai	--	--	--	--	1	1
Parrot	--	101	--	--	--	101
Pike	--	28	70	--	--	98
Ray	--	34	--	--	32	66
Salmon	67	1,353	1,808	--	265	4,913
Sampson	--	--	--	--	--	--
Snapper	--	17	--	--	--	17
Squire	--	--	--	--	--	--
Sweetlip	--	2,332	1,395	--	1,664	5,391
Tailor	46	--	--	--	--	46
Trevalli	2	9	150	--	196	337
Coral Trout	--	2,523	6,996	--	2,478	11,997
Trumpeter	--	17	--	--	--	17
Tuna	--	48	90	10	--	148
Whiting	740	23	--	--	--	763
Yellow Tail	--	--	--	--	--	--
Mixed Fish	83	91	108	--	477	459
Other Species	25	94	19	--	565	703
Shark	--	--	--	--	--	--
TOTAL	2,980	14,703	13,529	400	12,002	44,734

(SOURCE: Queensland Fish Board, Fourth Annual Report, 1976).

(d)

TABLE C OTHER SEAFOODS BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 10 MONTHS ENDED APRIL, 1976.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPOON KG.	TOTAL
Prawns	88,218	51,138	1,086	42,007	24,769	207,218
Mud Crabs: Bodies	3,480	12,112	2,973	--	5,688	24,253
Sand Crabs: Bodies	4,301	58	15	--	271	4,645
Squid	1,318	464	--	--	227	2,009
Moreton Bay Lobsters	12,283	4,579	--	336	8,569	25,767
Sand Crabs: Meat	123	58	--	--	--	181
Mud Crabs: Meat	6	38	--	--	9	53
Oysters: Bottles	--	--	--	--	--	--
Oysters: Bags	--	--	--	--	--	--
Scallops	76,216	8,365	644	9,382	2,209	96,816
Crayfish	4,725	2	--	--	--	4,727
Lobster Meat	255	7	--	13	--	275

(SOURCE: Queensland Fish Board, Fourth Annual Report, 1976)

(e)

TABLE D OTHER SEAFOODS BY VALUE RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 10 MONTHS ENDED APRIL, 1976.

VARIETY	BUNDABERG \$	GLADSTONE \$	ROCKHAMPTON \$	ROSSLYN BAY \$	YEPPON \$	TOTAL
Prawns	162,748	106,411	1,756	84,965	57,729	413,609
Mud Crabs: Bodies	24,803	21,702	5,399	--	11,334	63,238
Sand Crabs: Bodies	2,475	31	11	--	361	2,878
Squid	1,318	464	--	--	199	1,981
Moreton Bay Lobsters	25,325	8,382	--	754	13,883	48,344
Sand Crabs: Meat	939	353	--	--	--	1,292
Mud Crabs: Meat	45	170	--	--	43	258
Oysters: Bottles	--	--	--	--	--	--
Oysters: Bags	--	--	--	--	--	--
Scallops	182,754	23,028	2,083	22,158	6,613	236,636
Crayfish	16	5	--	--	--	21
Lobster Meat	353	27	--	40	--	420
TOTAL	400,776	160,573	9,249	107,917	90,162	768,677

(SOURCE: Queensland Fish Board, Fourth Annual Report, 1976).

(f)

TABLE E
WHOLE FINNED FISH BY WEIGHT RECEIVED BY THE QUEENSLAND
FISH BOARD AT SELECTED AGENCIES FOR THE 12 MONTHS ENDED
APRIL 1977.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPOON KG.	TOTAL
Barramundi	1,919	6,599	11,472	328	6,869	27,187
Bream	8,288	554	306	327	302	16,344
Bream (Black)	114	19	27	-	91	251
Cod	4,291	1,523	117	459	1,426	7,816
Dart	1,512	71	119	360	734	2,796
Emperor	2,548	3,403	741	265	809	7,766
Flathead	1,933	550	138	128	565	3,314
Gar	594	792	11	-	91	1,488
John Dory	1,274	-	136	-	9	1,419
Jew	1,148	2,490	631	2,244	6,045	12,558
King	2,684	319	295	61	6,521	9,880
Mackerel	44,705	13,658	297	2,748	11,614	73,022
School Mackerel	3,187	121	294	2	4,627	8,231
Morwong	47	27	77	3	-	184
Mullet	98,923	10,955	5,285	7	3,995	119,165
Nanygai	338	241	33	31	303	946
Parrot	2,159	553	13	-	81	2,806
Pike	267	216	-	30	159	672
Ray	5,236	2,326	104	727	2,260	10,653
Salmon	7,461	5,580	14,989	172	6,991	35,193
Sampson	37	152	-	-	-	189
Shark	3,185	1,869	37	40	658	5,789
Snapper	6,529	1,672	53	41	333	8,628
Squire	440	77	-	-	67	584
Sweetlip	17,422	12,865	478	551	980	32,296
Tailor	969	41	46	-	5	1,061
Trevalli	3,096	157	78	52	1,562	4,945
Coral Trout	6,182	2,664	1,873	6	250	10,975
Trumpeter	356	176	46	-	-	578
Tuna	245	21	7	-	-	273
Whiting	5,521	1,335	104	-	191	7,151
Yellow Tail	72	119	-	-	5	196
Mixed Fish	7,831	1,470	545	-	739	10,585
Other Species	18,205	3,499	591	628	4,510	27,433
TOTAL	258,718	76,114	38,943	9,210	62,792	445,777

(SOURCE: Queensland Fish Board, Fifth Annual Report, 1977)

(g)

TABLE F FISH FILLETS BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD AT
SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL, 1977.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPON KG.	TOTAL
Barramundi	6	414	2,220	-	448	3,088
Bream	61	-	34	-	1	96
Bream(Black)	-	-	-	-	-	-
Cod	18	318	97	-	240	673
Dart	-	38	59	-	59	156
Emperor	-	1,244	332	-	270	1,846
Flathead	2	95	1	-	13	111
Gar	-	-	-	-	-	-
John Dory	12	208	-	-	-	220
Jew	-	109	189	-	188	486
King	160	22	-	-	227	409
Mackerel	989	6,263	2,547	96	3,103	12,998
School Mackerel	-	204	789	-	134	1,127
Morwong	-	-	-	-	15	15
Mullet	468	1,006	302	-	183	1,959
Nanygai	-	-	-	-	15	15
Parrot	6	21	11	-	-	38
Pike	-	412	-	-	13	425
Ray	-	82	3	-	137	222
Salmon	234	2,844	6,260	-	861	10,199
Sampson	-	440	4	-	-	444
Shark	-	46	9	-	62	117
Snapper	-	6	11	-	19	36
Squire	-	-	-	-	-	-
Sweetlip	-	4,681	273	50	961	5,965
Tailor	-	-	16	-	-	16
Trevalli	-	125	70	3	418	616
Coral Trout	23	4,602	1,319	-	4,603	10,547
Trumpeter	-	-	-	-	-	-
Tuna	-	37	-	-	-	37
Whiting	1,915	21	108	-	-	2,044
Yellow Tail	-	-	-	-	-	-
Mixed Fish	129	270	52	-	223	647
Other Species	145	714	3	-	296	1,158
TOTAL	4,168	24,222	14,709	149	12,489	55,737

(h)

TABLE G OTHER SEAFOODS BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL 1977.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPOON KG.	TOTAL KG.
Prawns	177,033	70,920	16,716	309,361	21,275	598,275
Mud Crabs: Bodies	2,762	16,945	3,548	644	4,285	28,184
Sand Crabs: Bodies	6,750	64	1,138	-	406	8,358
Squid	3,794	836	172	12	350	5,164
Moreton Bay Lobsters	2,318	229	63	166	753	3,529
Sand Crabs: Meat	51	-	29	-	3	83
Mud Crabs: Meat	-	55	15	-	-	69
Oysters: Bottles	3	-	-	-	-	3
Oysters: Bags	-	-	-	-	-	-
Scallops	11,360	634	1,223	936	526	14,679
Crayfish	14	-	-	-	-	14
Lobster Meat	89	182	8	42	4	325

(SOURCE: Queensland Fish Board, Fifth Annual Report, 1977).

(i)

TABLE H OTHER SEAFOODS BY VALUE RECEIVED BY THE QUEENSLAND FISH BOARD AT
SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL, 1977.

VARIETY	BUNDABERG \$	GLADSTONE \$	ROCKHAMPTON \$	ROSSLYN BAY \$	YEPPOON \$	TOTAL \$
Prawns	432,525	188,025	40,765	778,032	60,882	1,500,229
Mud Crabs: Bodies	5,590	40,823	9,083	1,760	8,896	66,152
Sand Crabs: Bodies	5,117	59	711	-	643	6,530
Squid	4,741	859	211	11	345	6,167
Moreton Bay Lobsters	5,731	476	174	403	3,087	9,871
Sand Crabs: Meat	353	-	231	-	17	601
Mud Crabs: Meat	-	471	102	-	-	573
Oysters: Bottles	2	-	-	-	-	2
Oysters: Bags	-	-	-	-	-	-
Scallops	46,279	3,779	4,300	4,439	2,463	61,260
Cray Fish	50	-	-	-	-	50
Lobster Meat	227	393	17	134	13	784
TOTAL	500,615	234,885	55,594	784,779	76,346	1,652,219

(SOURCE: Queensland Fish Board, Fifth Annual Report, 1977).

TABLE I WHOLE FINNED FISH BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL 1978.

VARIETY	BUNDEBERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPOON KG.	TOTAL
Barramundi	1,042	7,395	13,218	8	6,452	28,115
Bream	2,404	234	50	--	174	2,862
Bream(Black)	201	--	33	--	54	288
Cod	2,740	1,406	234	--	1,047	5,427
Dart	334	51	106	--	634	1,125
Emperor	2,146	3,143	873	--	356	6,518
Flathead	2,274	255	207	--	556	3,292
Gar	490	1,033	104	--	60	1,687
John Dory	150	--	--	--	19	169
Jew	783	1,633	3,089	1,115	3,953	10,573
King	2,393	133	30	--	2,502	5,058
Mackerel	34,495	6,369	1,707	815	16,794	60,180
School Mackerel	5,661	92	--	105	4,335	10,193
Morwong	59	81	8	--	--	148
Mullet	89,485	7,182	4,367	--	2,842	103,876
Nanygai	473	--	2	--	117	592
Parrot	2,718	1,200	25	--	61	4,004
Pike	195	19	11	--	88	313
Ray	2,146	2,588	133	--	413	5,280
Salmon	7,302	1,944	15,847	--	9,397	34,490
Sampson	31	--	333	--	--	364
Shark	1,958	667	170	--	10	2,805
Snapper	3,189	173	12	--	163	3,537
Squire	797	27	--	--	34	858
Sweetlip	6,408	12,669	319	--	607	20,003
Tailor	859	30	3	--	50	942
Trevalli	2,025	153	114	--	1,924	4,216
Coral Trout	4,410	2,755	172	--	1,121	8,458
Trumpeter	302	16	--	--	--	318
Tuna	95	--	--	--	16	111
Whiting	1,914	1,694	4	608	112	4,332
Yellow Tail	292	--	--	--	--	292
Mixed Fish	5,898	785	492	428	925	8,528
Other Species	10,379	4,355	2,493	--	1,976	19,203
TOTAL	196,048	58,082	44,156	3,079	56,792	358,157

(SOURCE: Queensland Fish Board, Sixth Annual Report, 1978)

(k)

TABLE J FISH FILLETS BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL, 1978

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPOON KG.	TOTAL
Barramundi	96	1,705	2,416	--	680	4,267
Bream	--	26	119	--	5	150
Bream (Black)	--	--	--	--	--	--
Cod	5	333	123	--	61	522
Dart	--	5	5	--	--	10
Emperor	--	254	408	--	259	921
Flathead	--	63	--	--	--	63
Gar	--	--	--	--	--	--
John Dory	--	--	--	--	--	--
Jew	--	186	156	--	78	420
King	10	18	--	--	816	844
Mackerel	472	2,091	2,635	120	726	8,044
School Mackerel	15	--	179	--	110	304
Morwong	--	--	9	--	--	9
Mullet	288	2,213	468	--	72	3,041
Nanygai	--	--	--	--	--	--
Parrot	--	113	19	--	--	132
Pike	--	29	6	--	--	35
Ray	--	116	--	--	--	116
Salmon	267	5,228	4,528	--	1,046	11,069
Sampson	--	51	--	--	--	51
Shark	13	500	--	--	32	545
Snapper	--	--	8	--	--	8
Squire	--	--	--	--	--	--
Sweetlip	--	2,425	602	--	236	3,263
Tailor	--	--	27	--	--	27
Trevalli	5	193	84	--	1,236	1,518
Coral Trout	--	2,533	355	--	4,028	6,921
Trumpeter	--	--	--	--	--	--
Tuna	--	--	--	--	130	130
Whiting	1,084	3	374	--	--	1,461
Yellow Tail	--	--	--	--	--	--
Mixed Fish	72	373	25	--	119	589
Other Species	49	845	263	--	586	1,743
TOTAL	2,376	19,308	12,809	120	10,220	44,203

(SOURCE: Queensland Fish Board, Sixth Annual Report, 1978)

TABLE K OTHER SEAFOODS BY WEIGHT RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL, 1978.

VARIETY	BUNDABERG KG.	GLADSTONE KG.	ROCKHAMPTON KG.	ROSSLYN BAY KG.	YEPPOON KG.	TOTAL
Prawns	89,444	84,789	20,901	251,238	23,226	469,598
Mud Crabs: Bodies	7,232	37,972	7,016	29	8,148	60,397
Sand Crabs: Bodies	6,950	1,005	183	138	1,322	9,589
Squid	2,134	798	--	84	216	3,232
Moreton Bay Lobsters	6,080	3,868	2,114	623	3,070	15,755
Sand Crabs: Meat	--	100	21	--	--	121
Mud Crabs: Meat	--	119	107	--	--	226
Oysters: Bottles	234	--	6,166	--	544	6,944
Oysters: Bags	--	--	--	--	--	--
Scallops	81,861	53,990	1,106	112,413	4,047	253,417
Crayfish	38	--	132	9	67	246
Lobster Meat	--	--	--	--	--	--

(SOURCE: Queensland Fish Board, Sixth Annual Report, 1978)

(m)

TABLE L OTHER SEAFOODS BY VALUE RECEIVED BY THE QUEENSLAND FISH BOARD
AT SELECTED AGENCIES FOR THE 12 MONTHS ENDED APRIL, 1978.

VARIETY	BUNDABERG \$	GLADSTONE \$	ROCKHAMPTON \$	ROSSLYN BAY \$	YEPPOON \$	TOTAL
Prawns	260,652	202,399	60,443	715,917	69,614	1,309,025
Mud Crabs: Bodies	17,335	96,369	19,121	87	22,550	155,462
Sand Crabs: Bodies	5,596	553	90	108	767	7,114
Squid	2,176	921	--	84	217	3,398
Moreton Bay Lobsters	16,693	8,364	5,584	1,778	7,866	40,285
Sand Crabs: Meat	--	858	185	--	--	1,043
Mud Crabs: Meat	--	952	966	--	--	1,918
Oysters: Bottles	236	--	6,568	--	610	7,404
Oysters: Bags	--	--	--	--	--	--
Scallops	195,592	109,592	5,145	242,840	13,715	566,884
Crayfish	148	--	902	48	462	1,560
Lobster Meat	--	--	--	--	--	--
TOTAL	498,428	420,008	98,994	960,862	115,801	2,094,093

(SOURCE: Queensland Fish Board, Sixth Annual Report, 1978)

APPENDIX II. Amateur Fishing Survey,
Capricornia Section. Results of Initial
Survey undertaken by Great Barrier Reef
Marine Park Authority, with assistance
from the Institute of Applied Social
Research. 1979.

TABLE 2A. INITIAL SURVEY RESULTS - FIXED COSTS

Interview No.	BOAT, MOTOR AND TRAILER			EQUIPMENT (RADIO, SOUNDERS)			FISH AND BAIT STORAGE			
	Length	Purchase Price	Year Purchased	Place Purchased	Purchase Price	Year Purchased	Place Purchased	Purchase Price	Year Purchased	Place Purchased
1001	5.8m	2,500	1976	Brisbane	460	1976	Bundeberg	72	1976	Bundaberg
1002	5.8m	8,000	1979	Brisbane	1,100	1979	Bundaberg	250	1979	n.a. (a)
1003	6.0m	15,000	1978	Bundaberg	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1004	6.0m	4,500	1977	Bundaberg	700	n.a.	Bundaberg	75	n.a.	Bundaberg
1005	n.a.	5,800	1979	Gladstone	n.a.	n.a.	n.a.	120	1978	Gladstone
1006	5.2m	10,000	1978	Gladstone	650	1978	Gladstone	250	1975	Gladstone
1007	n.a.	4,500	1975	Gladstone	n.a.	n.a.	n.a.	10	1975	Gladstone
1008	n.a.	5,000	1977	Brisbane	980	1977	Gladstone	n.a.	n.a.	n.a.
1009	4.8m	4,500	1979	Gladstone	450	1979	Gladstone	5	1979	Gladstone
1010	6.0m	15,000	1977	Bundaberg	700	1977	Bundaberg	100	1977	Bundaberg
1011	5.5m	13,500	1978	Bundaberg	700	1978	Bundaberg	500	1978	Bundaberg
1012	n.a.	7,500	1979	Gladstone	500	1979	Gladstone	n.a.	n.a.	n.a.

n.a. - no answer was recorded

(o)



Year	Month	Day	Time	Location	Activity	Remarks
1980	Jan	1	08:00	Point A	Survey	Established
1980	Jan	2	08:00	Point B	Survey	Established
1980	Jan	3	08:00	Point C	Survey	Established
1980	Jan	4	08:00	Point D	Survey	Established
1980	Jan	5	08:00	Point E	Survey	Established
1980	Jan	6	08:00	Point F	Survey	Established
1980	Jan	7	08:00	Point G	Survey	Established
1980	Jan	8	08:00	Point H	Survey	Established
1980	Jan	9	08:00	Point I	Survey	Established
1980	Jan	10	08:00	Point J	Survey	Established
1980	Jan	11	08:00	Point K	Survey	Established
1980	Jan	12	08:00	Point L	Survey	Established
1980	Jan	13	08:00	Point M	Survey	Established
1980	Jan	14	08:00	Point N	Survey	Established
1980	Jan	15	08:00	Point O	Survey	Established
1980	Jan	16	08:00	Point P	Survey	Established
1980	Jan	17	08:00	Point Q	Survey	Established
1980	Jan	18	08:00	Point R	Survey	Established
1980	Jan	19	08:00	Point S	Survey	Established
1980	Jan	20	08:00	Point T	Survey	Established
1980	Jan	21	08:00	Point U	Survey	Established
1980	Jan	22	08:00	Point V	Survey	Established
1980	Jan	23	08:00	Point W	Survey	Established
1980	Jan	24	08:00	Point X	Survey	Established
1980	Jan	25	08:00	Point Y	Survey	Established
1980	Jan	26	08:00	Point Z	Survey	Established
1980	Jan	27	08:00	Point AA	Survey	Established
1980	Jan	28	08:00	Point AB	Survey	Established
1980	Jan	29	08:00	Point AC	Survey	Established
1980	Jan	30	08:00	Point AD	Survey	Established
1980	Jan	31	08:00	Point AE	Survey	Established