

THE NORTHERN PRAWN FISHERY

A Report of an Economic Survey

FISHERIES REPORT NO. 32

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Foreword

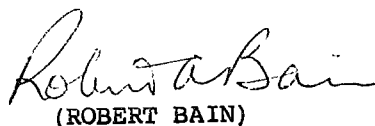
The introduction, in 1977, of an interim management regime for the northern prawn fishery was based on considerations relating to the possible over-capitalisation in this fishery. The period of the interim regime was to be used to allow economic and biological research to be carried out prior to the introduction of a long-term management plan to apply from 1980.

Initial field work on the economic survey was undertaken in March and April 1977, and information was obtained from prawn processing companies, owners and skippers of prawn trawlers and accountants. Without the cooperation of these people, the survey would not have been possible.

Subsequent field work was carried out in March and April 1979 to update information already obtained and extend coverage of the survey both in terms of vessels included and period studied.

Information generated by this study has been already reported in two papers prepared by officers of the Economic Analysis Section. Economic Considerations - Northern Prawn Fishery was presented by Mr P.G. Franklin at the Northern Prawn Fishery Workshop which was held in Canberra from 7 to 9 June 1978. Limited Entry Management for the Northern Prawn Fishery: A Review Essay on its Development was presented by Mr N.D. Macleod at the Seminar on Economic Aspects of Limited Entry and Associated Fisheries Management Measures held at the University of Melbourne from 6 to 8 February 1980. Papers from that seminar are currently being prepared for publication.

Preparation of this report was carried out by Mr P.J. Ryan.


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Introduction

This report updates the economic information available on the northern prawn fishery. It follows a previous report (Fisheries Report No. 8) entitled Costs and Earnings of Trawlers published in 1973, which investigated the economic viability of the northern prawn fishery for the period 1968/69 to 1970/71. This survey covered the period 1974/75 to 1977/78 over a slightly more restricted fishery which extended from Cape Ford in N.T. to Slade Point in Queensland. The previous survey covered the area from Broome in Western Australia to Bowen in Queensland (see Figure 1).

This survey was designed to obtain information which would provide a guide for the future management of the fishery; investigate the economics of the operation of trawlers in the fishery; and survey the effects of previous management decisions on the fishery.

Summary of Findings

The total catch recorded in 1979 was 12,400 tonnes, which almost equalled the record catch of 1974 (13,000 tonnes). Of greater significance, however, was the change in the composition of the catch. In 1979 the catch consisted of 40% banana prawns and 50% tiger prawns whereas in 1974 banana prawns constituted 90% of the total catch and tiger prawns 4%.

There has been a considerable increase in the number of vessels operating in the fishery. In addition, vessels have become more sophisticated in design and equipment thus effectively increasing the catching capacity of individual boats.

Fluctuations in catches are still of major importance, although the increasing development of the tiger prawn fishery may reduce the magnitude of these fluctuations.

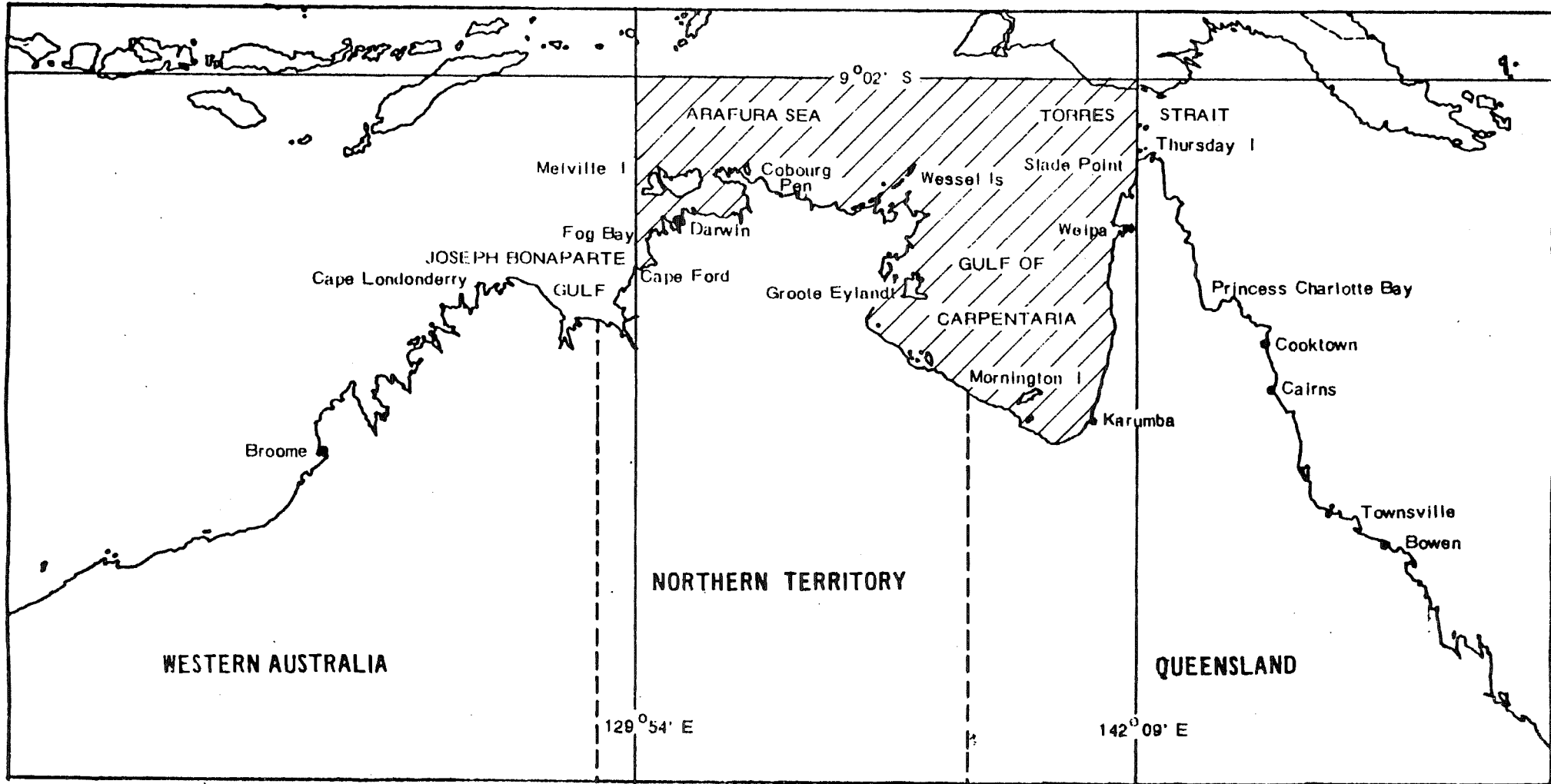
Gross income increased with vessel size and tended to increase over the period. In real terms, income declined in the final year of the survey period.

Repairs and maintenance constituted approximately half the operating expenses of vessels. This proportion increased throughout the period although not for all strata. Fuel and oil was the second most important operating expense, accounting for some 25 per cent of operating expenses.

In 1974/75 and 1975/76 all strata recorded negative returns to capital. Positive returns to capital were recorded in 1976/77 by all surveyed strata. In 1977/78 three out of the five strata showed positive returns. Increased catches and improved prices received for prawns were the major reasons for the improved economic performance.

Figure 1

Managed Area of the Northern Prawn Fishery
= Proclaimed Waters within Shaded Region



As a consequence of the cost structure of the larger vessels, there was considerable scope for large profits or losses. Although the average loss for vessels 21 metres and over was \$65,803 in 1974/75, the situation had altered by 1976/77 to a return to capital of \$97,304. This reversal was even more dramatic in the 19 metre and less than 21 metre stratum, with a loss of \$47,285 being recorded in 1975/76, a return to capital of \$34,592 in 1976/77 and a loss of \$37,467 in 1977/78.

Break-even analysis indicated that, at 1977/78 costs and prices, a catch of 12,000 tonnes would have been sufficient for the fleet operating in March 1979 to break-even. At the same level of costs and prices, the fleet as currently constituted would require a break-even catch of 16,000 tonnes. If full advantage were taken of the provisions of the replacement policy announced in July 1980 this figure would rise to 20,000 tonnes.

This report indicates that in average or above average years the fishery was able to support the fleet operating at the time of the survey. There is every indication that the present level of production will not be capable of sustaining the present fleet at current price levels for prawns.

There has been a trend towards company ownership of fishing effort. It would appear that this trend will continue.

Development of the Fishery

Development of a prawn fishery in the Gulf of Carpentaria began in 1963. A 26 month exploratory survey of prawn resources of the south-east region of the Gulf resulted in commercial trawling operations being undertaken on a trial basis in 1965 and 1966.

In 1967 the first prawn processing plant in the Gulf was established as Karumba by Craig, Mostyn and Co. Pty Ltd. In that year it was determined that commercial quantities of prawns existed in a number of locations in northern waters. By the end of 1969 operations had extended to waters offshore from Karumba, Weipa, Groote Eylandt, Mornington Island, Thursday Island and Darwin. At that time, vessels also operated off Papua New Guinea.

By 1971 concern existed regarding the effects on prawn stocks of the taking of small banana prawns. The application of pre-season closures was initially justified on biological grounds, but maintained because of the economic benefits accruing to processing companies from their existence.

The system of closures involved the prohibition on the taking of prawns in a particular area of the fishery from the beginning of the year to the declared starting date for the banana prawn season. In most years this prohibition applied to all species of prawns on the 24 hours per day basis, although, as detailed below, the closures were sometimes restricted to banana prawns or to only particular hours of the day.

In 1971 closures were applied to small areas around Weipa and Karumba. The closures applied only to the taking of banana prawns. In 1972 a complete closure was applied to the eastern side of the Gulf and a closure from sunrise to sunset was applied to the area south of 16°S. A closure from sunrise to sunset applied to both areas in 1973.

The 1974 closure had the same commencement point in the north-east as the two previous closures but, for the first time, extended into waters off the Northern Territory, ending at the mouth of the Calvert River. This area of closure was maintained for the next two years.

In 1977, although the same basic closure was maintained, it was supplemented by three closures in Northern Territory waters, covering Fog Bay, Cobourg Peninsula and Boucout and Castlereagh Bays, and a prohibition on the taking of banana prawns within the Gulf. The 1978 closure was the same as that applying in 1977 with the exception that the closure off the Cobourg Peninsula was abandoned and the area around Hawknest Island was closed.

Although the 1979 closure covered the same region of coastline as the basic closure which had applied since 1974, attempts were made to more closely define the area covered and the closure was extended north of Mornington Island. The closures around Fog Bay and Hawknest Island were also maintained. The 1980 closure was simplified and restricted so that waters north of Mornington Island were no longer closed. The closure around Hawknest Island was lifted and the one around Fog Bay altered slightly. The 1981 closure was the same as that for 1980.

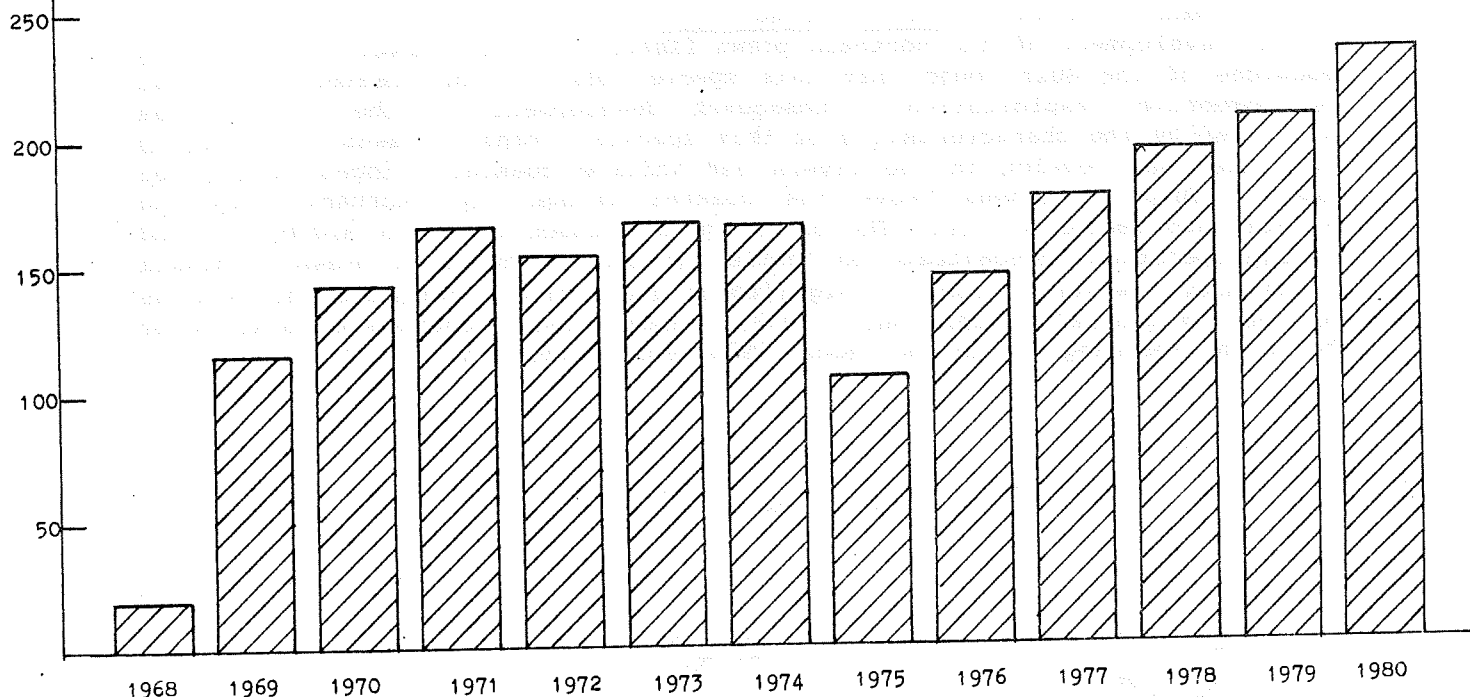
The important point to note about the closures is that they were instigated and maintained at the request of industry. Companies were concerned about the profitability of processing the small prawns that were being landed early in the year and wanted to be able to gear up for a set starting date for the season. Since 1977 this has been midnight on 15 March.

Since 1968 there has been a considerable increase in the number of vessels fishing for banana prawns in the managed area of the northern prawn fishery. 19 vessels operated in 1968 and this figure rose to 115 in 1969 and 165 vessels in 1971. After a slight drop in 1972, vessel numbers remained steady for the next two years before falling to 105 in 1975. Since then, vessel numbers have risen steadily, with 231 vessels operating in 1980.

There has been a significant increase in the number of vessels fishing for banana prawns in the managed area since the introduction of the "freeze" in 1977 (see Figure 2). This has resulted from the taking up of unused endorsements. The closure of the east coast fishery to these vessels will further encourage concentration on the managed area. It should be noted that the figures quoted above refer only to vessels landing banana prawns. In addition, there has been an increasing reliance on tiger prawns over the last few years. For example, in 1980, while only 231 vessels landed banana prawns, a total of 277 vessels operated in the managed area.

Figure 2
No. of
Vessels

Number of Vessels Catching Banana Prawns in the Managed Area of the
Northern Prawn Fishery
1968 to 1980



The introduction of a "freeze" on the number of vessels permitted to operate in the managed area was a consequence of the increase in fishing pressure being put on the resource. There was considerable concern about the number of large, purpose-built trawlers entering the fishery at the time, and the three year "freeze" was designed to allow for the continued economic and biological research necessary to formulate a long-term management programme. The "freeze" took effect from 1 January 1977. Notable features of the "freeze" were: the specification of a managed area from Cape Ford, N.T. to Slade Point, Qld; the establishment of five criteria for entry to the area; the institution of a boat replacement policy which allowed for the replacement of a vessel, on a one-for-one basis, by a vessel of not more than equivalent characteristics; and the requirement that all prawns taken in the managed area be landed between Broome, W.A. and Townsville, Qld. Details of the operations of the "freeze" are provided in Appendix G.

In November 1979, the Minister for Primary Industry announced details of a new management plan to operate from 1 January 1980. The plan involved a continuation of many of the measures applied during the period of the "freeze". It also involved increased licence fees and changes in the policy in relation to carrier boats, as well as reconsideration of the vessel replacement policy for the fishery. A replacement policy was finalised in July 1980 which allowed replacement of vessels up to subsidy length by vessels of that length or less and the replacement of larger vessels on a one-for-one basis. A more detailed consideration of the new management regime is provided elsewhere.

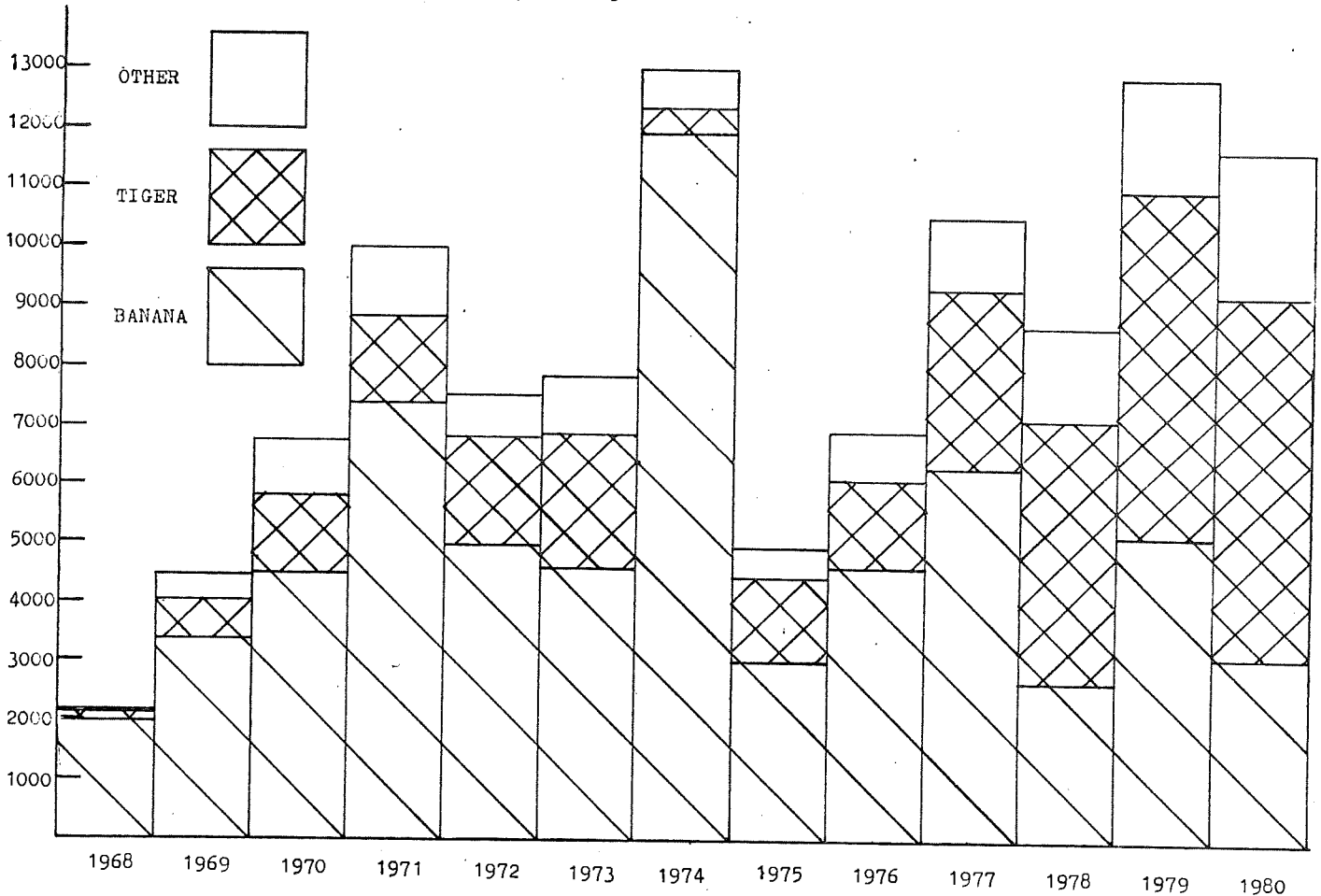
The Resource

The northern prawn fishery is based on the exploitation of a number of major prawn species.

Banana prawns (*Penaeus merguensis*) have provided the impetus for initial development of the northern prawn fishery. Early surveys of the prawn resources of the Gulf found that this species offered the greatest potential for commercial exploitation. Subsequent development of the fishery was influenced by the characteristics of this species. Banana prawns breed during the winter and develop in the rivers and shallow coastal fringes during the summer. Juvenile prawns leave the coastal fringes by February/March and migrate into deeper waters. The banana prawn season opens in mid-March, and fishing operations concentrate on "boils" or dense schools of prawns. Banana prawns are, however, caught in significant quantities throughout the year as part of the general catch. Until 1978, banana prawns provided a majority of the catch, reaching 90% in the record 1974 season (see Figure 3).

Figure 3
Tonnes

Total Landings by Species for the Northern Prawn Fishery
1968 to 1980



Tiger prawns (Penaeus esculentus) have formed the basis of the east coast fishery in northern waters. Tiger prawns are caught mostly at night, although they may be caught in smaller quantities during the day. As tiger prawns do not form "boils", the fishing operation is less hectic and opportunistic than fishing for banana prawns. With increasing fishing pressure and a shortening banana prawn season, there has been an increasing reliance on the tiger prawn fishery. In 1978, 1979 and 1980 tiger prawns were more important than banana prawns in quantity terms. In 1978, 52 per cent of landings in the northern prawn fishery were tiger prawns and 31 per cent were banana prawns. In 1979, 45 per cent were tiger prawns and 40 per cent were banana prawns. In 1980, catches of tiger prawns were double those of banana prawns. The increasing relative importance of tiger prawns reflects not only the need for trawlers to work longer periods in the Gulf of Carpentaria to remain profitable but also the growth of the east coast fishery in which boats with endorsements for the limited entry area also operate. Tiger prawns are the highest priced species caught in the fishery.

Since 1974 landings of endeavour prawns (Metopenaeus endeavouri) have more than tripled to some 1667 tonnes in 1979 which represented 13 per cent of total prawn landings for the fishery. The 1980 catch of 2123 tonnes constituted 18 per cent of total landings. Endeavour prawns are normally an incidental catch taken when fishing for tiger prawns.

King prawns (Penaeus plebejus) comprised some 2 per cent of the 1980 total. They have a similar distribution to tiger and endeavour prawns.

Very small quantities of other species of prawns are also caught. Species caught include the leader prawn (Penaeus mododon), the northern greentail prawn (Metopenaeus bennettiae) and the york prawn (Metopenaeus eboracensis). Catches of these and other lesser species totalled some 38 tonnes in 1980.

Trends in Catch

Statistics on the northern prawn fishery have, since 1968, been compiled on a calendar year basis for a fishery extending from Bowen in Queensland to Cape Londonderry in Western Australia. Two notable trends apparent from Figure 3 are the fluctuations in total catch which are largely due to the unpredictable nature of the banana prawn resource and the increasing importance of the tiger prawn fishery.

Vessel numbers throughout the total fishery have tended to follow the pattern described in Figure 2 for the management area. Vessel numbers have, however, grown more rapidly in recent years due to the development of the east coast fishery north of Townsville (See App. Tab. F-1).

Average annual catch per vessel has remained stable, although a slight decline is evident over the last three years. This is attributable to the relative failure of the banana prawn season in recent years (characterised by the lack of a peak in average catch in the period from March to May as detailed in App. Tab. F-2) and to the increasing importance of the east coast fishery which generates a much lower average catch per vessel (App. Tab. F-3).

The uneven distribution of catch between vessels which is described in App. Tab. F-4 has been emphasised by the influx of large purpose-built trawlers. In 1980, for example, while 70 percent of vessels of less than 14 metres caught less than 5 tonnes of prawns, 65 percent of vessels 22 metres and over caught over 40 tonnes of prawns (and 20 percent caught over 80 tonnes). This meant that while vessels 22 metres and over constituted 18.9 per cent of the fleet operating in the northern prawn fishery, they accounted for 53.8 per cent of the total catch, whereas vessels of less than 14 metres in length which comprised 27.6 per cent of the fleet took 6.2 per cent of the catch. This disparity was caused not only by the greater fishing power of the larger vessels but also by their greater commitment to the fishery as demonstrated in App. Tab. F-5.

Although most statistics on the fishery are compiled on a calendar year basis, such a method of analysis does not suit the format adopted for economic surveys. Accordingly, a number of tables have been constructed on a financial year basis. App. Tab. F-6 details monthly receipts for the survey period and the two succeeding financial years. Such treatment tends to minimise the size of the fluctuations in total catch. App. Tab. F-7 provides a species break-up of the same statistics covering the period from 1968/69 to 1979/80. The declining relative importance of banana prawns is again highlighted.

Until recently it has only been possible to obtain statistics for the northern prawn fishery as a whole. From 1977 onwards, however, it has been possible to provide a break-up by area of operation. In App. Tab. F-8, the areas referred to as Gulf and West effectively constitute the managed area. The contrast between the constant increase in catches of tiger and other (mostly endeavour) prawns and the fluctuations in banana prawn catches is apparent.

Survey Methodology

Initial fieldwork for the survey was carried out in March and April 1977. The population list, on which this fieldwork was based, was compiled using incomplete information on the structure of the fleet.

The sample drawn was based on a two-stage stratified random sample with vessel length as the primary variable and type of refrigeration as the secondary variable. There was also a selection criterion of at least one financial year's participation in the fishery.

As a result of problems encountered with the data gathered at that time, notably the absence of financial data for some vessels for particular years and discrepancies in physical characteristics as detailed in applications for endorsement and those disclosed during interviews, it was decided to carry out supplementary fieldwork in March and April 1979.

App. Tab. D-1 outlines the distribution of vessels by length for the sample and for the population at the time that it was drawn. The sampling at that time was designed to proportionally represent the then population of the fishery. The success of this activity can be gauged from the table. The under-representation of vessels 19 metres and less than 21 metres is a result of the mis-specification of vessel lengths by some companies in their applications for endorsement. The table also outlines the current population of the fishery and the current population of original vessels. As can be seen from the table only some 40 per cent of the fleet have remained in the fishery since obtaining endorsements. The replacement of vessels during the survey period was a factor in reducing the availability of financial information for all years of the survey.

Although many of the changes in the structure of the fleet have occurred since the survey period, 56 applications for replacements being received between the announcement of the new replacement policy and the compilation of these figures (a period of some three months), these changes have two major effects on the survey: they highlight the changing nature of the fleet which was one of the factors preventing the calculation of raising factors; and they affect the applicability of the results of the survey to the current fleet.

Figure 4 depicts the current structure of the fleet. An interesting pattern is the clustering of vessels in the 22-23 m range. App. Tab. D-2, which provides a within-stratum distribution of the sample, serves as a detailed comparison with Figure 4 to assess the representativeness of the sample.

Analysis of the economics of the fishery has been carried out using a sample of 93 vessels endorsed to operate in the "managed area" of the northern prawn fishery. The sample was stratified by length into five classes of vessel:

- Less than 15 metres
- 15 metres and less than 17 metres
- 17 metres and less than 19 metres
- 19 metres and less than 21 metres
- 21 metres and over.

Although these strata are somewhat different from those employed in the earlier survey, a comparison may still be drawn between the two surveys. (See "Comparison with Previous Survey".)

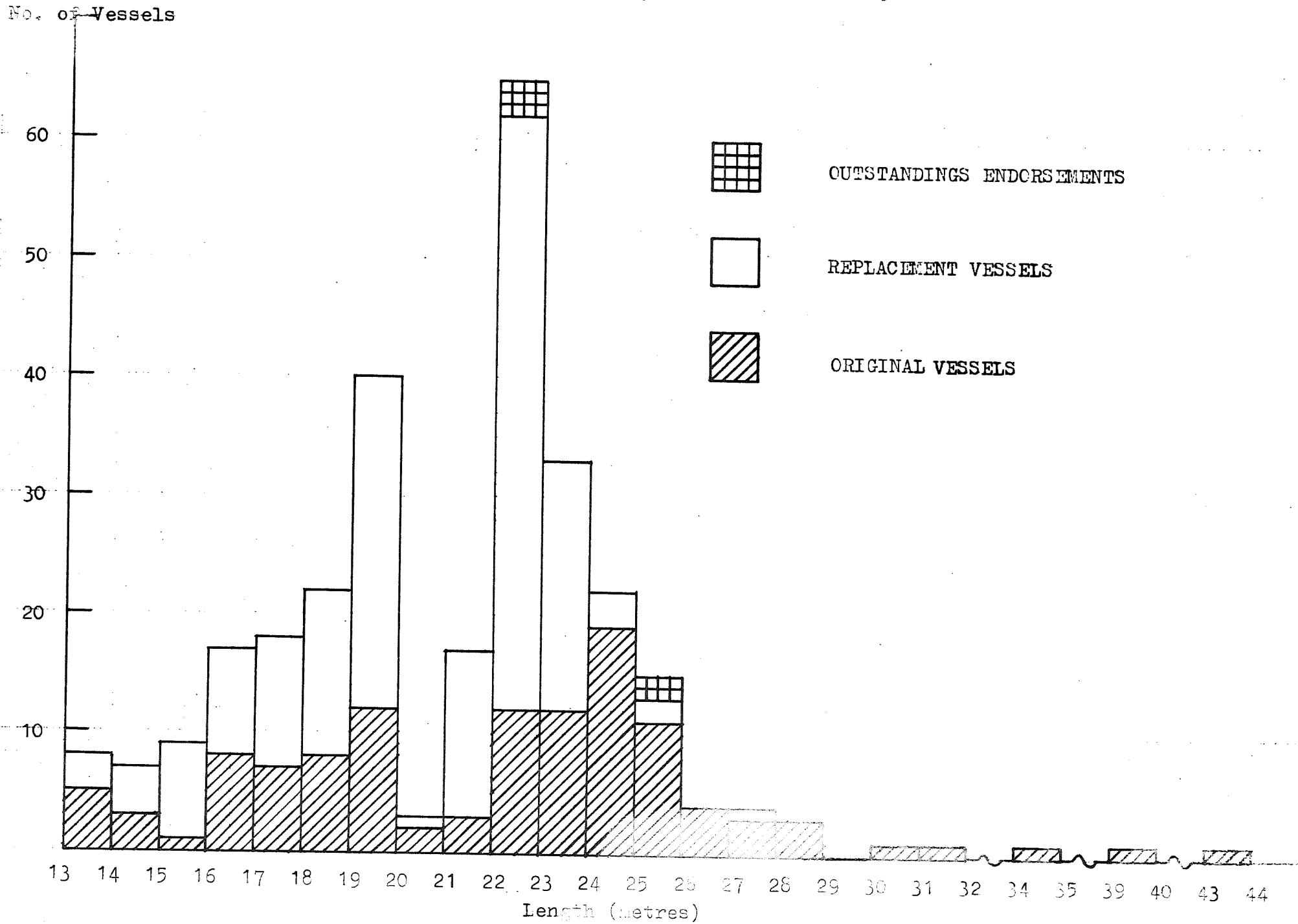
Average Annual Landings of Prawns

Both total catch and price received tended to increase with vessel size (see App. Tab. I-1). The increase in total catch resulted from the ability of the larger vessels to stay at sea longer, tow more and bigger nets and process and store more product. The economics of their operations also dictate that they spend more of the year fishing. The price advantage accruing to the larger vessels comes from their ability to dry-freeze product and the premium attracted by product delivered in this form.

The pattern of price received for prawns increasing with vessel length was not maintained throughout the period. Distortions in this pattern arose because of differential pricing policies amongst companies and throughout a year. Although it was necessary to impute prices for particular companies which paid only a nominal price for prawns received from their own vessels, variations in prices paid by companies to independent fishermen were maintained.

Figure 4

Number of Vessels Endorsed to Operate in the Managed Area of the Northern Prawn Fishery as at 16 October 1980



The average catch of vessels 21 metres and over was 5 to 6 times that of vessels less than 15 metres in length. This proportion was highest in 1975/76 (6.61) and lowest in 1976/77 (4.83). In 1976/77 the ratio between catches of banana prawns by the largest and smallest strata was 6.38:1, which was the lowest for the survey period. It appears that in good years the smaller boats are able to land the banana prawns which they are unable to compete for in other years, and this reduces the magnitude of their disadvantage in total catch.

Income, Expenditure and Returns

Income

Income has been defined as the gross returns from the sale of prawns and other fish incidental to the prawning operations plus other vessel income such as towage, salvage, private hire and freight. In the northern prawn fishery the catch is invariably sold direct to processors and no selling charges, eg commission and freight, are charged to fishermen. The price paid to fishermen allows for the fact that the processor meets transportation costs.

Average gross income is detailed in Table 1. Income increased with vessel length and tended to increase over time, although two strata recorded declines in average gross income in the last year of the survey period. In real terms all strata experienced declines in gross income in 1977/78.

Table 1

	<u>Average Gross Income</u>				
	<u>1974/75 to 1977/78</u>				
	Less than 15 m (\$)	15 m and less than 17 m (\$)	17 m and less than 19 m (\$)	19 m and less than 21 m (\$)	21 m and over (\$)
1974/75	19799	28736	35649	78799	102605
1975/76	26997	37472	43289	75861	193259
1976/77	58815	68587	110929	198965	330790
1977/78	58564	70206	116539	163938	361568

App. Tab. I-2 sets out the distribution of gross income for the period. Because of the variations in the composition of the fleet during the survey period and lack of information on the structure of the fleet prior to the "freeze" an average value for the whole fleet has not been calculated.

The "All Vessels" column therefore represents the average of all boats included in the study and not a weighted average for the whole fleet. The column has been included primarily to allow for comparison with the previous survey. As would be expected, the level of gross incomes tended to increase with length and over time.

Expenditure

Costs incurred in running a prawn trawler were subdivided into three categories: operating expenses, depreciation, and crew and skipper payments.

Operating expenditure consists of three parts: trip expenses, boat expenses and administration expenses.

Trip expenses relate to those costs incurred in "running" the vessel (but not the cost of wages which is considered a separate item) and include fuel and oil, ice, food for crew and general sea-going stores. They represent the cash outlay for each trip and thus vary with the extent and frequency of operations.

Boat expenses are semi-variable expenses incurred in operating the vessel, gear and equipment. They are generally only in part related to the extent of operations. Primarily they are concerned with the maintenance of capital and to a lesser extent with the operation of the vessel, such as repairs to the hull and fittings of the vessel, to the engine, and to the renewal of fishing gear, the servicing of fishing aids and navigational equipment, as well as slipping expenses. Theoretically, such items can be clearly differentiated from capital improvements which are depreciable. In practice, however, such a distinction becomes somewhat blurred because of the scale of repairs carried out in regular overhauls. Expense items listed on taxation returns have largely been accepted of being of a non-capital nature, and depreciation rates calculated to allow for the scope of the overhauls carried out.

Thirdly, administration expenses are those miscellaneous charges incurred by the fisherman in the course of his occupation. They are mainly shore costs and include insurance on boat and gear, vehicle expenses, telephone, postage, bank charges, harbour charges, licence fees and accountancy fees.

Table 2 provides information on the average operating expenses for vessels in the survey in each stratum for the years 1974/75 to 1977/78. Details of individual expense items are provided in Appendix I.

Table 2

Average Operating Expenses
1974/75 - 1977/78

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over
1974/75					
Trip Expenses	2953	4871	5859	9713	22242
Vessel Expenses	9064	6468	7484	32239	47480
Administration Expenses	1593	4026	3941	19524	18126
Operating Expenses	13610	15365	17284	61476	87848
1975/76					
Trip Expenses	4405	7783	9055	15487	32431
Vessel Expenses	8451	5763	12557	35658	56433
Administration Expenses	2152	3013	3402	17505	16410
Operating Expenses	15008	16559	25014	68650	105274
1976/77					
Trip Expenses	5904	7126	9753	22324	28065
Vessel Expenses	15492	11742	32918	42436	75123
Administration Expenses	3139	5617	6967	24483	18444
Operating Expenses	24535	24485	49638	89243	121632
1977/78					
Trip Expenses	5114	7769	11661	25877	45593
Vessel Expenses	18064	20234	28815	80315	103104
Administration Expenses	4601	5058	7376	28978	24536
Operating Expenses	27779	33061	47852	135170	173233

The sharp increase in operating expenses between the strata 17m to 19m and 19m to 21m highlights the movement from individually-owned wooden vessels designed for operations on the east coast fishery to company-owned steel vessels purpose-built to operate in the Gulf of Carpentaria. The increase in trip and vessel expenses relates to the additional costs involved in running and repairing larger vessels operating over longer periods, while the increase in administration expenses is attributable to companies' patterns of allocating expenses between shore-based and sea-going sectors of their operations.

The relative magnitude of these various expense items as a percentage of total operating expenses is given in Table 3 and presented in greater detail in Appendix I.

Table 3

Percentage Composition of Operating Expenses
1974/75 - 1977/78

	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
1974/75					
Trip Expenses	21.7	31.7	33.9	15.8	25.3
Vessel Expenses	66.6	42.1	43.3	52.4	54.0
Administrative Expenses	11.7	26.2	22.8	31.8	20.7
Operating Expenses	100.0	100.0	100.0	100.0	100.0
1975/76					
Trip Expenses	29.4	47.0	36.2	22.5	30.8
Vessel Expenses	56.3	34.8	50.2	51.9	53.6
Administration Expenses	14.3	18.2	13.6	25.6	15.6
Operating Expenses	100.0	100.0	100.0	100.0	100.0
1976/77					
Trip Expenses	24.1	29.1	19.6	25.0	23.1
Vessel Expenses	63.1	48.0	66.3	52.8	61.8
Administration Expenses	12.8	22.9	14.1	22.2	15.1
Operating Expenses	100.0	100.0	100.0	100.0	100.0
1977/78					
Trip Expenses	18.4	23.5	24.4	19.2	26.3
Vessel Expenses	65.0	61.2	60.2	59.4	59.5
Administration Expenses	16.6	15.3	15.4	21.4	14.2
Operating Expenses	100.0	100.0	100.0	100.0	100.0

A summary of the major operating expenses is given below.

Trip Expenses

Food for crew

Provisions for crew were ordinarily provided by the vessel owner. The diminished importance of this item for the larger vessels reflected acknowledgement in the accounts that crew members paid for their food out of their share of the catch.

Fuel and oil

The period covered by the survey involved the beginning of the escalation in fuel costs. In March 1974 the price of distillate (excluding freight) was 4.8 cents per litre. In October 1980 it had reached 26.2 cents per litre. For the actual period of the survey the increase was from 5.3 cents per litre (1 July 1974) to 11.5 cents per litre (1 July 1978). These prices are ex-refinery and considerably lower than those applying in the Gulf. For comparison, the October 1980 price for distillate at Karumba was 31.0 cents per litre.

Ice

In this fishery where all boats have some form of refrigeration, either brine or dry, this item has been expanded to include refrigerant such as R12.

Vessel Expenses

Repairs and maintenance

The fluctuation amongst vessels within a stratum in terms of expenditure on repairs and maintenance remarked upon in the earlier survey was again apparent as was the increase in the amount spent as length increased. The exception was vessels less than 15 m for which repairs and maintenance were more expensive, in all but the final year of the survey, than for the 15 m to 17 m stratum. This may be a function of the slightly greater age of the smaller boats and their greater susceptibility to damage by the elements. The deferring of major repairs in poor years did not appear to be a factor in the operations of the larger vessels, probably because of the need for the major fishing companies to maintain a program of overhauling the vessels in their fleets. The increase in these expenses for vessels of 19 metres and less than 21 metres in 1977/78 is due to a change in the sample in that year.

Gear Replacements

Gear replacement costs tended to increase with size of the vessel, although the two smallest strata exhibited a reversal of this pattern in two of the four years of the survey.

Administrative Expenses

Insurance

For the purposes of this survey, insurance has been restricted to vessel insurance. Nearly 90% of vessels were insured, the proportion insured being highest in the largest strata. Most vessels were comprehensively insured, although a significant minority (21%) were insured for total loss only. The cost of insurance shown in Table 4 has been calculated as an average for all vessels, whether insured or not. A more detailed discussion of insurance is provided in Appendix B.

Accountancy

Because of the number of large companies operating vessels, there were some difficulties experienced in separating administration costs of the catching and processing sectors of an integrated operation. There was also some difficulty experienced in allocating these administrative costs between accounting and other administrative functions. The relative sizes of accountancy and other expenses reflect this difficulty.

Returns to Vessels

A summary of average gross income, expenses and returns in the period 1974/75 to 1977/78 is given in Table 4 and App. Tab. I-5. Table 4 shows the actual average values of gross income, expenses and returns, while App. Tab. I-5 shows average expenses and returns as a percentage of gross income. Where returns are negative no percentage has been calculated as such a figure would have no significance.

An explanation of important items in Table 4 which have not, as yet, been discussed is given below.

Depreciation

A detailed description of the method by which rates of depreciation were obtained and a summary of the rates used are given in Appendix H. In summary, rates of depreciation were derived from respondents' estimates of the working life of capital items.

Return to labour and capital

This is the difference between gross income and the sum of operating expenses and depreciation. It represents cash receipts available to recompense the owners of capital for the risk taken in investing in the fishing enterprise and to remunerate the skipper and crew for their labour.

Crew payment

Most crew were paid on a share basis. Crew share payments depended on size and value of the catch as crew were either paid a percentage of the value of the catch or a set amount per kilogram. Under the latter system the rate per kilogram was dependent upon the level of prices being obtained in a particular season, although the rate of increase in crew payments tended to be less than that in price received. Total crew payments increased with vessel size. This was a result of both the greater catches and larger crews of the bigger vessels. Details of the size of crews are presented in Appendix E (iii).

Table 4

Average Gross Income, Expenses and Returns

	1974/75 to 1977/78				
	Less than 15 m (\$)	15 m and less than 17 m (\$)	17 m and less than 19 m (\$)	19 m and less than 21m (\$)	21m and over (\$)
<u>1974/75</u>					
Gross income	19799	28736	35649	78799	102605
Total operating expenses	13610	15365	17284	61476	87848
Surplus after operating expenses	6189	13371	18365	17323	14757
Depreciation	6561	9895	11670	27205	40481
Return to labour & capital	-372	3476	6695	-9882	-25724
Crew payment	3988	4439	6085	14465	22112
Return to skipper & capital	-4360	-963	610	-24347	-47837
Skipper allowance	3960	5458	7133	7379	17966
Return to capital	-8320	-6421	-6523	-31726	-65803
<u>1975/76</u>					
Gross income	26997	37472	43289	75861	193259
Total operating expenses	15008	16559	25014	68650	105274
Surplus after operating expenses	11989	20913	18275	7211	87985
Depreciation	6651	9762	13343	25977	40084
Return to labour & capital	5338	11151	4932	-18766	47901
Crew payment	4864	6541	8478	17960	34497
Return to skipper & capital	474	4610	-3546	-36726	13404
Skipper allowance	5399	7491	8658	10559	26628
Return to capital	-4925	-2881	-12204	-47285	-13224
<u>1976/77</u>					
Gross income	58815	68587	110929	198965	330790
Total operating expenses	24535	24485	49638	89243	121632
Surplus after operating expenses	34280	44102	61291	109722	209158
Depreciation	6605	10056	13923	27530	40247
Return to labour & capital	27675	34046	47368	82192	168911
Crew payment	10298	14058	20111	30564	39779
Return to skipper & capital	17377	19988	27257	51628	129132
Skipper allowance	10714	13717	22186	17036	31828
Return to capital	6663	6271	5071	34592	97304
<u>1977/78</u>					
Gross income	58564	70206	116539	163938	361568
Total operating expenses	27779	33061	47852	135170	173233
Surplus after operating expenses	30785	37145	68687	28768	188335
Depreciation	6617	9999	13874	29530	41737
Return to labour & capital	24168	27146	54813	-762	146598
Crew payment	9986	13512	22381	23974	47854
Return to skipper & capital	14182	13634	32432	-24736	98744
Skipper allowance	11007	14041	22059	12731	30039
Return to capital	3175	-407	10373	-37467	68705

Skipper allowance

Determination of a suitable allowance for the skipper's labour (especially an owner/skipper's) is usually difficult in economic surveys. Fortunately, there are a large number of employed skippers in the northern prawn fishery, so a representative selection of levels of remuneration is available in setting an allowance for owner/skippers. Details of ownership and skipper type are provided in Appendix E(ii). A problem arises, however, in the combining of crew and skipper payments in many accounts. This is often done because an employed skipper is responsible for recruiting and paying crew. Accordingly, some degree of arbitrariness was demanded in assigning a value to skipper allowance. An allowance of 20% of gross income was considered a reasonable payment for skippers of vessels in the three smallest strata, unless some other amount was specified in the accounts. Skippers of vessels in the two largest strata received considerably less than this percentage, a fact which was more than compensated for by the greater catches taken. Demographic information on skippers is provided in Appendix E(iii).

Return to capital

This item is the residual from gross income after the subtraction of operating expenses, depreciation, crew payment and skipper allowance. It is the monetary return accruing to the owners of capital employed in the fishing enterprise. Interest has not been included as a cost to the fishing enterprise since the use of actual interest repayments does not take into account the fact that various enterprises are financed from their own and outside sources to varying degrees. Appendix A provides details of the degree of indebtedness in the fishery.

Capital Structure of the Enterprise

The fishing vessel was by far the major asset of the fishing enterprise, although other items such as motor vehicles and gear storage sheds were also included. These other assets became less important, in both absolute and relative terms, as vessel size increased. This was due largely to the fact that the infrastructure for the operations of the larger vessels was provided for by the processing companies which owned the vessels. In these cases shore-based capital items were of a type that could not be allocated to a particular vessel.

Information on average valuation was obtained from the respondent's estimation of current value (with and without the endorsement to operate in the northern prawn fishery) and replacement cost and his recollection of the purchase price of the vessel. A detailed breakdown of replacement costs of the various capital items involved in the fishing enterprise was also obtained. This was used to crosscheck the estimate of replacement cost of the vessel and as a basis for calculating depreciation and depreciated capital values.

Table 5 summarises the average values of vessels by the various methods of valuation as at 30 June 1978.

Table 5

	<u>Vessel Characteristics</u>				
	<u>Average Valuation as at June 1978</u>				
	Less than 15 m (\$)	15 m and less than 17 m (\$)	17 m and less than 19 m (\$)	19 m and less than 21 m (\$)	21 m and over (\$)
Purchase Price	35806	53222	75115	131765	320196
Depreciated Capital Value	47114	65580	89337	140153	333733
Market Value (with Licence)	66569	91125	125417	244375	477813
Market Value (without Licence)	64546	90214	123000	244000	448727
Replacement Cost	104389	137500	193333	358750	657278
TOTAL VESSELS	18	18	13	8	36

App. Tab. I-6 outlines the average depreciated value of assets as at 30 June 1978. Two differences between the method of calculating these values in the current and earlier report merit noting. In the earlier survey, original cost was used as the basis for determining depreciation and the depreciated value. The figures quoted in this report are based on replacement cost. Consequently, part of the increased value of vessels from which depreciation is calculated is a result of this changed base, although inflationary pressures and newer boats are also important factors. A less fundamental change is the treatment of auxiliary boats. Previously treated as other assets, these are now treated as vessel equipment. It is considered that this represents a more rational description of their role in the fishing enterprise. App. Tab. I-7 shows the average replacement costs of the individual items of capital equipment. Appendix E (i) outlines the types of capital equipment employed.

Measures of Economic Performance

The various measures of economic performance of vessels operating in the fishery are dependent upon the information provided on income, expenses and returns in Table 4 and average capital invested as shown in Table 5.

Monetary returns to vessels

Table 6 summarises the major monetary returns to vessels as extracted from Table 4. App. Tab. I-8 expresses these returns as a percentage of gross income.

Table 6

<u>Average Monetary Returns</u>					
<u>1974/75 to 1977/78</u>					
	Less than 15 m (\$)	15 m and less than 17 m (\$)	17 m and less than 19 m (\$)	19 m and less than 21 m (\$)	21 m and over (\$)
<u>1974/75</u>					
Gross Income	19799	28736	35649	78799	102605
Return to Labour & Capital	-372	3476	6695	-9882	-25724
Return to Skipper & Capital	-4360	-963	610	-24347	-47837
Return to Capital	-8320	-6521	-6523	-37126	-65803
<u>1975/76</u>					
Gross Income	26997	37472	43289	75861	193259
Return to Labour & Capital	5338	11151	4932	-18766	47901
Return to Skipper & Capital	474	4610	-3546	-36726	13404
Return to Capital	-4925	-2881	-12204	-47285	-13224
<u>1976/77</u>					
Gross Income	58815	68587	110929	198965	330790
Return to Labour & Capital	27675	34046	47368	82192	168911
Return to Skipper & Capital	17377	19988	27257	51628	129132
Return to Capital	6663	6271	5071	34592	97304
<u>1977/78</u>					
Gross Income	58564	70206	116539	163938	361568
Return to Labour & Capital	24168	27146	54813	-762	146598
Return to Skipper & Capital	14182	13634	32432	-24736	98744
Return to Capital	3175	-407	10373	-37467	68705

The first two years of the survey were on average unprofitable for boats of all sizes. 1976/77 was the only season in which all strata recorded positive returns to capital. This is not surprising since the 1977 banana prawn season was characterised by high prices and good catches. In 1977/78, three of the five strata recorded positive returns to capital.

Appendix J outlines the distributions of the various returns summarised in Table 6. The greater spread of returns particularly in the largest stratum in the latter two years of the survey period is a notable aspect of these distributions. The influx of new boats and the availability of information on a greater number of vessels (related but not identical factors) go part of the way towards explaining this.

Rate of return on capital invested

Rate of return on capital is the monetary return on capital (Table 6) as a percentage of total capital invested in the fishery (Table 5).

A number of different bases are used in determining the capital invested in the fishing enterprise. Table 7 outlines the average rate of return on capital by stratum and year for each of the capital bases employed.

Table 7

Average Rate of Return on Capital

1974/75 to 1977/78

	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
<u>1974/75</u>					
Purchase Price	-ve	-ve	-ve	-ve	-ve
Depreciated Capital Value	-ve	-ve	-ve	-ve	-ve
Market Value (with licence)	-ve	-ve	-ve	-ve	-ve
Market Value (without licence)	-ve	-ve	-ve	-ve	-ve
Replacement Cost	-ve	-ve	-ve	-ve	-ve
<u>1975/76</u>					
Purchase Price	-ve	-ve	-ve	-ve	-ve
Depreciated Capital Value	-ve	-ve	-ve	-ve	-ve
Market Value (with licence)	-ve	-ve	-ve	-ve	-ve
Market Value (without licence)	-ve	-ve	-ve	-ve	-ve
Replacement Cost	-ve	-ve	-ve	-ve	-ve
<u>1976/77</u>					
Purchase Price	18.6	11.8	6.7	26.3	30.4
Depreciated Capital Value	14.6	9.7	5.7	24.8	30.4
Market Value (with licence)	10.0	6.9	4.0	14.2	20.4
Market Value (without licence)	10.3	7.0	4.1	14.2	21.7
Replacement Cost	6.4	4.6	2.6	9.6	14.8
<u>1977/78</u>					
Purchase Price	8.9	-ve	13.7	-ve	21.5
Depreciated Market Value	6.9	-ve	11.7	-ve	21.4
Market Value (with licence)	4.8	-ve	8.3	-ve	14.4
Market Value (without licence)	4.9	-ve	8.4	-ve	15.3
Replacement Cost	3.0	-ve	5.4	-ve	10.5

In view of the negative returns achieved by so many strata in a number of years, a more revealing statistic would be the distribution of rate of return of capital (Table 8). The capital base used in the table is market value (without licence). This measure has been chosen to allow comparison with the previous survey. In that survey only one estimate of market value was obtained since limited entry had not yet been introduced.

Factors to emerge from Table 8 are the very low rates of returns generated by all vessels in the first two years of the survey period, the spread of returns in later years and the persistence of losses by some vessels even in generally profitable years.

Table 8

Percentage Distribution of Vessels by
Rate of Return on Capital

1974/75 to 1977/78

Rate of Return (%)	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
<u>1974/75</u>					
Loss	86.7	93.3	83.3	83.3	100.0
0 and less than 10	6.7	-	16.7	16.7	-
10 and less than 20	6.7	6.7	-	-	-
20 and less than 30	-	-	-	-	-
30 and less than 50	-	-	-	-	-
50 and over	-	-	-	-	-
	100.0	100.0	100.0	100.0	100.0
<u>1975/76</u>					
Loss	61.1	66.7	80.0	75.0	64.0
0 and less than 10	38.9	20.0	20.0	25.0	28.0
10 and less than 20	-	6.7	-	-	8.0
20 and less than 30	-	-	-	-	-
30 and less than 50	-	6.7	-	-	-
50 and over	-	-	-	-	-
	100.0	100.0	100.0	100.0	100.0
<u>1976/77</u>					
Loss	33.3	37.5	33.3	28.6	12.0
0 and less than 10	6.7	18.8	33.3	28.6	8.0
10 and less than 20	6.7	18.8	-	28.6	12.0
20 and less than 30	20.0	18.8	33.3	-	32.0
30 and less than 50	33.3	6.3	-	14.3	32.0
50 and over	-	-	-	-	4.0
	100.0	100.0	100.0	100.0	100.0
<u>1977/78</u>					
Loss	28.6	55.6	42.9	83.3	35.0
0 and less than 10	35.7	11.1	14.3	-	15.0
10 and less than 20	14.3	22.2	14.3	-	10.0
20 and less than 30	-	-	14.3	16.7	10.0
30 and less than 50	7.1	11.1	14.3	-	25.0
50 and over	14.3	-	-	-	5.0
	100.0	100.0	100.0	100.0	100.0

Comparison with Previous Survey

This section draws a comparison between the costs and earnings position of the current fleet and that described in Fisheries Report No. 8 Costs and Earnings of Trawlers which related to the years 1968/69 to 1970/71.

Comparisons are made using the value of the dollar in 1968/69 as a base and deflating values in later years using the Consumer Price Index. App. Tab. I-9 gives the consumer price index numbers based on an "all groups" figure which is a weighted average of six State capital cities. The table covers the period 1968/69 to 1979/80 with 1968/69 taken as the base year.

Average gross income over the two survey periods is compared in Table 9. The strata used in the two surveys are somewhat different but may still be used for comparison. In determining the metric equivalent of lengths used in the first survey I have taken the midpoint between the extremes of adjoining strata to allow for the rounding that would have occurred in the initial stratification. Thus, for example, the strata "45' and under" and "46' to 55'" become "less than 13.9 m" and "13.9 m and less than 16.9 m". The two shortest strata of the initial survey compare readily with those in the later survey. The stratum "20 m and over" encompasses sections of the two largest strata of the later survey. Effectively, however, this stratum can be compared with the stratum "21 m and over" for the later survey, since no vessels in that survey had an overall length of between 20 m and 21 m (See Table D2). The stratum "16.9 m and less than 20 m" covers the two strata "17 m and less than 19 m" and "19 m and less than 21 m".

Table 9

Average Gross Income
1968/69 to 1970/71, 1974/75 to 1977/78
1968/69 dollars

	Less than 13.9 m \$	13.9 m and less than 16.9 m \$	16.9 m and less than 20 m \$	20 m and over \$
1968/69	15490	19025	38058	27564
1969/70	12922	17897	28855	54361
1970/71	18817	34838	46653	129526

	Less than 15 m \$	15 m and less than 17 m \$	17 m and less than 19 m \$	19 m and less than 21 m \$	21 m and over \$
1974/75	12267	17804	22087	48822	63572
1975/76	14801	20544	23733	41590	105953
1976/77	28345	33054	53460	95887	159417
1977/78	25754	30873	51248	72092	159001

Table 10 provides details of average gross income, expenses and returns for the two survey periods. 1968/69 dollars have again been used to facilitate comparisons between the two periods. Information has been provided for the stratum 16.9m and less than 20m, since a table detailing individual strata would be too unwieldy for inclusion in this report and the use of an "All Vessels" figure would be inaccurate because of the changing size structure of the fleet. The stratum used was chosen because of its comparability between surveys and its continuing relevance in the current fishery. As mentioned previously, no vessels in the present survey had a length of between 20 and 21 metres, so it was possible to amalgamate the strata "17m and less than 19m" and "19m and less than 21m". Although this size range is not as relevant to the current fleet as vessels 21 metres and over, there was such a variation within that stratum that it would have been unrealistic to use it for comparison.

Notable features of the table are the more than doubling of operating expenses and depreciation between the end of the first survey period and the beginning of the second. The major components of the increase in operating expenses were an 80 per cent increase in repairs and maintenance and a 100 per cent increase in fuel and oil. The latter increase was solely due to increased fuel usage since fuel costs stayed constant in real terms. The effect of the changed base used for calculating depreciation is obviously an important component of the increase in depreciation. It must be recalled that these increases have occurred in real terms at a time of rapid inflation. Obviously the costs of buying and operating a trawler in the northern prawn fishery were escalating at a rate much higher than the general rate of inflation.

Table 10
Average Gross Income, Expenses and Returns
1968/79 to 1970/71, 1974/75 to 1977/78
16.9m and less than 20m
1968/69 dollars

	1968/69	1969/70	1970/71	1974/75	1975/76	1976/77	1977/78
Gross income	38058	28855	46653	35713	31193	71734	61179
Total operating expenses	10216	9362	11974	24578	23980	32146	38963
Surplus after operating expenses	27842	19492	34679	11135	7213	39588	22216
Depreciation	4510	5087	4797	12130	10237	9541	9326
Return to labour and capital	23332	14405	29882	-995	-3024	30047	12890
Crew payment	8319	6460	9491	6411	6854	11988	10217
Return to skipper and capital	15013	7945	20390	-7406	-9878	18059	2673
Skipper allowance	4715	5136	9423	4528	5131	9589	7847
Return to capital	10298	2809	10968	-11934	-15009	8470	-5174

Table 11 provides a distribution of vessels by rate of return on capital. This provides the same information for the previous survey as Table 8 provides for the current one.

Table 11

Rate of Return (%)	<u>Percentage Distribution of Vessels by</u>			
	<u>Rate of Return on Capital</u>			
	<u>1968/69 to 1970/71</u>			
	Less than 13.9 m (%)	13.9 m and less than 16.9 m (%)	16.9 m and less than 20.0 m (%)	20.0 m and over (%)
<u>1968/69</u>				
Loss	42.9	36.3	-	71.4
0 and less than 10	14.2	31.8	57.2	28.6
10 and less than 20	-	18.4	14.3	-
20 and less than 30	-	4.5	-	-
30 and less than 50	-	4.5	28.5	-
50 and over	42.9	4.5	-	-
	100.0	100.0	100.0	100.0
<u>1969/70</u>				
Loss	58.4	39.0	33.4	28.6
0 and less than 10	10.4	33.3	33.4	42.8
10 and less than 20	10.4	14.8	25.0	14.3
20 and less than 30	10.4	9.2	8.2	14.3
30 and less than 50	-	-	-	-
50 and over	10.4	3.7	-	-
	100.0	100.0	100.0	100.0
<u>1970/71</u>				
Loss	50.0	10.0	18.2	-
0 and less than 10	-	15.0	27.3	25.0
10 and less than 20	12.5	25.0	9.1	-
20 and less than 30	12.5	10.0	-	25.0
30 and less than 50	-	25.0	36.3	-
50 and over	25.0	15.0	9.1	50.0
	100.0	100.0	100.0	100.0

Discussion

The period covered by the current survey is evenly distributed around the date of the implementation of a "freeze" on vessel numbers, with two banana prawn seasons falling within the open access regime and two in the "freeze". As previously mentioned, 1977 was a particularly good season, with total catch being exceeded only in 1974. The combination of good catches and high prices guaranteed a successful season. The effect of the "freeze" can, however, be seen in the prevention of the pattern of influx and outflow of vessels which characterised the 1974 and 1975 seasons. Thus, although the management regime prevents the dissipation of resource rent in good years, it also forces vessels to stay in the fishery in bad years. This second consequence, however, is not really accessible to solution within the management scheme for the fishery, being a result of the absence of alternative fisheries in which vessels can operate. The closure of the east coast to endorsed vessels is further restricting the operations of these vessels.

An important development has been the increasing importance of tiger prawns to the fishery. In 1977/78, the total catch of tiger prawns in the managed area was 3116 tonnes. This figure rose to 3403 tonnes in 1978/79 and 4465 tonnes in 1979/80. This continued a trend which had been in evidence before the "freeze" although the growth had not been as steady. The change that has occurred is that vessels have continued to fish for tiger prawns even after a successful banana prawn season.

Appendix D shows that there has been a considerable change in the structure of the fleet since the introduction of the freeze. Between March 1979 and October 1980, while the population of vessels of less than 15 metres fell from 58 to 15, the number of vessels 21 metres and over rose from 96 to 168. It is postulated (Appendix C) that for the current and likely future fleets to operate at even a break-even level the catch required given present prices would approach the maximum limit of the total prawn resource estimated by the working group established by Northern Fisheries Committee in November 1974 to examine the need for a review of management of the fishery. (Appendix G).

There is, however, evidence to suggest that the working group may have underestimated the size of the tiger and endeavour prawn resources. The catch of tiger prawns in 1980, for the managed area, approached the upper limit of the working group's estimate for the resource while the catch of endeavour prawns exceeded the estimated upper limit. This may indicate that new stocks of these prawns are now being exploited. It is outside the scope of this report to assess whether this is due to new grounds being discovered as a consequence of the competition between vessels or evidence that the tiger and endeavour prawns are replacing the heavily exploited banana prawns in the fishery. Some justification for this latter view comes from the failure since 1974 to even approach the lower limit of the estimated banana prawn resource, especially since the resource had been assumed to be fully exploited since 1971.

A feature of the northern prawn fishery since the "freeze" has been the increasing concentration of the ownership of vessels. Although there is no direct comparison possible on the change in degree of company ownership between the previous survey and the current one, it is possible to compare the proportion of vessels with employed skippers. In 1971 41 per cent of vessels had employed skippers. By the time of the second survey this had risen to 54 per cent. Company ownership of vessels accounted for 53 per cent of vessels for which such information was available. Since that time there have been a number of transfers of ownership. These have tended to be from owner/skippers to companies. It is difficult to specify the number of vessels currently owned by companies as many vessels have been purchased by companies especially created for the purpose but effectively controlled by other larger companies already involved in the fishery. This development highlights the growing tendency in this fishery, for larger, more integrated operations which have the capacity to spread risks over a total operation.

The boat replacement policy announced in July 1980 encouraged the trend towards larger boats as owners were able to replace small wooden vessels with purpose-built steel trawlers of 21 metres design load water-line.

In summary, the likely consequence of these developments in the northern prawn fishery is a fleet of vessels of 21 metres (dlwl) and above fully exploiting the banana resource in traditional areas in a few weeks then spreading throughout the fishery to fish for the tiger and endeavour prawns which are forming an increasingly important part of the catch. The concern, therefore, is how long the resource will be able to withstand the fishing pressure being applied by the large number of relatively sophisticated vessels committed to year-round operations in the fishery by the economics of their operations, the needs of the processing companies by which they are owned and the absence of alternative fisheries in which they can operate.

Conclusions

There is evidence that the biological limits initially set for the northern prawn fishery may have underestimated the quantity of tiger and endeavour prawns in the declared management zone.

The catching capacity of the fleet operating in the zone is increasing with the replacement of the smaller wooden vessels by more sophisticated, purpose-built 21 metres (dlwl) steel hulled vessel.

The costs of operating vessels of 21 metres and over are considerably higher than those involved in smaller vessels, and, consequently, these vessels require much greater catches to break even. The increase is most notable between the strata 17 to 19m and 19 to 21m.

Evidence suggests that there is a trend towards increased company ownership of vessels operating in the fishery.

Future viability of the developing fleet will largely depend upon the development of new tiger and endeavour prawn grounds, most probably in areas west of the Wessel Islands.

APPENDIX AINDEBTEDNESS

Some 40 per cent of the vessels in the northern prawn fishery had loans applying to their operations. App. Tab. A-1 outlines the number of loans per vessel. An unusual characteristic of the fishery is the large proportion (75 per cent) of vessels 21 metres and over which did not have loans. This is, no doubt, due to the fact that many of the company vessels are financed from within the organizational structure. Another interesting point is that very few vessels (5.4 per cent) have more than one loan.

App. Tab. A-2 sets out the distribution of loans by purpose. The major purposes for which loans were obtained were purchases of new and second-hand vessels.

The distribution of loans by source, as detailed in App. Tab. A-3, highlights the importance of trading banks and the Commonwealth Development Bank as sources of loans.

App. Tab. A-4 gives the average value of loans obtained, amount outstanding (at 30 June 1978) and term of loan.

A distribution of loans by size of initial borrowing is given in App. Tab. A-5.

An indication of the level of indebtedness in the fishery is given in App. Tab. A-6 which gives a distribution of vessels by the value of loans outstanding at 30 June 1978. As in App. Tab. A-1, the two vessels for which loan details were not available have been included with the debt-free vessels. App. Tab. A-7 also refers.

App. Tab. A-8 provides a distribution of loans by type. Most loans were term loans, with standing overdrafts being the next most commonly used method of financing.

In the distribution of loans by term, given in App. Tab. A-9, standing overdrafts, loans of no fixed term and other loans have been treated as being "on-call".

The high proportion of loans with reducing interest rates reflects the importance of trading banks and the Commonwealth Development Bank as sources of finance. App. Tab. A-10 refers.

A number of fishermen complained that they were required to mortgage their houses to obtain finance for their fishing operations. App. Tab. A-11 supports this assertion, with less than 20% of all loans being based on the vessel being the only security.

App. Tab. A-1IndebtednessDistribution of Vessels by Number of Loans

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Free of Debt	11	5	9	4	27	56
1 Loan Transaction	5	11	3	4	9	33
2 Loan Transactions	1	1	1	-	-	3
3 Loan Transactions	-	1	-	-	-	1
4 Loan Transactions	1	-	-	-	-	1
More than 4	-	-	-	-	-	-
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. A-2IndebtednessDistribution of Loans by Purpose*

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
New Boat	-	3	1	-	7	11
2nd Hand Boat	5	6	-	4	2	17
Refit of Boat	2	2	3	-	-	7
Purchase of Other Equip.	3	1	-	-	-	4
Running Costs	1	3	1	-	-	5
Other	-	1	-	-	-	1
Unspecified	-	-	-	-	2	2
TOTAL LOANS	11	16	5	4	11	47

* The figures refer to the number of loans of each type held by a size class. NOT the number of boats with a particular type of loan.

App. Tab. A-3

IndebtednessDistribution of Loans by Source*

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Development Bank	3	7	-	-	-	10
Trading Bank	5	3	5	4	9	26
Finance Company	3	1	-	-	-	4
Fish Buyers	-	1	-	-	-	1
Relations/Friends	-	2	-	-	-	2
Previous Owners	-	2	-	-	-	2
Unspecified	-	-	-	-	2	2
TOTAL LOANS	11	16	5	4	11	47

* The figures refer to the number of loans of each type held by a size class. NOT the number of boats with a particular type of loan.

App. Tab. A-4

IndebtednessAverage Amount Borrowed, Outstanding, Terms of Loan

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Amount Borrowed (\$)	17602	28953	31400	260000	226296	86456
Amount Outstanding (\$)	12264	22188	23000	260000	175741	7170
Term (Months)	48	37	38	n.a.	76	44
TOTAL LOANS	11	16	5	4	9	45 *

* The two unspecified loans have been excluded from the average calculations

App. Tab. A-5

IndebtednessDistribution of Loans by Amount Borrowed Per Loan

Loan Size	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Less than \$5000	3	2	-	-	-	5
\$5000 and less than \$10000	2	-	-	-	-	2
\$10000 and less than \$15000	-	4	1	-	-	5
\$15000 and less than \$20000	3	-	1	-	-	4
\$20000 and less than \$25000	-	1	-	-	-	1
\$25000 and less than \$30000	1	-	-	-	-	1
\$30000 and less than \$35000	1	2	-	-	-	3
\$35000 and less than \$40000	-	3	2	-	-	5
\$40000 and less than \$45000	-	2	1	-	-	3
\$45000 and less than \$50000	-	-	-	-	-	-
\$50000 and less than \$60000	1	2	-	-	-	3
\$60000 and less than \$150000	-	-	-	-	-	-
\$150000 and less than \$175000	-	-	-	-	5	5
\$175000 and less than \$200000	-	-	-	-	-	-
\$200000 and over	-	-	-	4	4	8
Unspecified	-	-	-	-	2	2
TOTAL LOANS	11	16	5	4	11	47

App. Tab. A-6

IndebtednessDistribution of Vessels byValue of Loans Outstanding as at 30 June 1978

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
No Loans	11	5	9	4	27	56
Less than \$10000	1	2	1	-	-	4
\$10000 and less than \$20000	4	3	2	-	-	9
\$20000 and less than \$30000	-	3	-	-	-	3
\$30000 and less than \$40000	1	2	-	-	-	3
\$40000 and less than \$50000	-	-	-	-	-	-
\$50000 and less than \$60000	1	2	-	-	-	3
\$60000 and less than \$70000	-	1	-	-	-	1
\$60000 and less than \$80000	-	-	-	-	2	2
\$80000 and less than \$90000	-	-	1	-	3	4
\$90000 and less than \$100000	-	-	-	-	-	-
\$100000 and less than \$150000	-	-	-	-	-	-
\$150000 and less than \$200000	-	-	-	-	-	-
\$250000 and less than \$300000	-	-	-	4	2	6
\$300000 and less than \$350000	-	-	-	-	2	2
Total Vessels	18	18	13	8	36	93

App. Tab. A-7IndebtednessDistribution of Vessels by Current Debt Status

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
No Debt	11	5	9	4	27	56
Debt	7	13	4	4	9	37
	18	18	13	8	36	93
	(%)	(%)	(%)	(%)	(%)	(%)
No Debt	61.1	27.7	69.2	50.0	75.0	60.2
Debt	38.9	72.3	30.8	50.0	25.0	39.8
	100.0	100.0	100.0	100.0	100.0	100.0

App. Tab. A-8IndebtednessDistribution of Loans by Type of Loan

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Term Loan	8	9	4	-	7	28
Overdraft (Fixed)	-	1	-	-	-	1
Overdraft (Standing)	1	3	1	4	2	11
Loan (No Fixed Term)	-	3	-	-	-	3
Other	2	-	-	-	-	2
Unspecified	-	-	-	-	2	2
TOTAL LOANS	11	16	5	4	11	47

App. Tab. A-9

Indebtedness
Distribution of Loans by Term of Loan

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Less than 1 year	1	6	1	4	4	16
1 year and less than 2 years	-	-	-	-	-	-
2 years and less than 3 years	-	-	-	-	-	-
3 years and less than 4 years	2	2	1	-	2	7
4 years and less than 5 years	2	-	2	-	-	4
5 years and over	6	8	1	-	3	18
Unspecified	-	-	-	-	2	2
TOTAL LOANS	11	16	5	4	11	47

App. Tab. A-10

Indebtedness
Distribution of Loans by Interest Category

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Flat	1	2	1	-	5	9
Reducing	8	14	4	4	4	34
Other	2	-	-	-	-	2
Unspecified	-	-	-	-	2	2
TOTAL LOANS	11	16	5	4	11	47

App. Tab. A-11

Indebtedness
Distribution of Loans by Type of Security

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Boat only	2	6	-	-	1	9
Boat and Other	4	6	4	-	6	20
Other	4	3	1	4	2	14
Unspecified	1	1	-	-	2	4
TOTAL LOANS	11	16	5	4	11	47

APPENDIX BINSURANCE

As would be expected in a fishery where capital costs are high, and risks not insubstantial, a large proportion (almost 90 per cent) of the vessels are insured. As shown in App. Tab. B-1, the proportion insured increases with length, until, in the two largest strata, all vessels for which information is available are insured.

App. Tab. B-2 shows the value for which the vessel is insured, the annual premium, the excess and the premium as a percentage of coverage, calculated as an average of the insured vessels in each stratum. Although the cost of the premium as a percentage of coverage declines with length, the much smaller percentage for the largest stratum is also a result of the high proportion (47 per cent of the vessels for which information was available) which were insured for total loss only. App. Tab. B-3 provides the relevant information. This also affects the size of the premium charged. In App. Tab. B-2 the premium increases with length until the last stratum where it drops sharply. This is the result of treating vessels insured for total loss only as not having provision for excess. App. Tab. B-4 refers.

App. Tab. B-5 details the reasons given for not insuring fishing vessels. In two-thirds of the cases the cost of insurance was cited as the reason for not taking out insurance.

App. Tab. B-1InsuranceDistribution of Vessels by Coverage

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Insured	14	15	11	8	34	82
Not Insured	4	3	2	-	-	9
Not Known	-	-	-	-	2	2
TOTAL	18	18	13	8	36	93
Percentage insured	78	83	85	100	94	88

App. Tab. B-2InsuranceAverage Value of Coverage, Premium and Excess*

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Insured Value (\$)	43221	67167	93982	237375	388883	216663
Premium (\$)	1557	2076	2723	6463	7107	4588
Excess (\$)	393	540	1441	3150	1087	1117
Premium/Coverage (%)	3.6	3.1	2.9	2.7	1.8	2.1
TOTAL VESSELS INSURED	14	15	11	8	34	82

* Includes Insured Vessels only

App. Tab. B-3InsuranceDistribution of Vessels by Type of Policy

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Total Loss	-	-	1	-	16	17
Full Cover (1)	5	14	8	8	18	53
Partial Cover (2)	9	1	2	-	-	12
TOTAL	14	15	11	8	34	82

(1) Insured for more than 3/4 of current value (without NPF endorsement).

(2) Insured for less than 3/4 of current value.

App. Tab. B-4InsuranceDistribution of Vessels by Excess Provision

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Excess Applies	13	14	10	8	12	57
No Excess Provision	1	1	1	-	16	19
Unspecified	-	-	-	-	6	6
	14	15	11	8	34	82

App. Tab. B-5InsuranceDistribution of Vessels Without Insurance by Reason

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Premium too Expensive	1	1	2	-	-	4
Lack of Funds	-	2	-	-	-	2
Not Necessary	1	-	-	-	-	1
Other	2	-	-	-	-	2
TOTAL	4	3	2	-	-	9

APPENDIX CBREAK-EVEN ANALYSIS

This section attempts to establish a minimum break-even catch for the northern prawn fishery given the most conservative assumptions. Break-even analysis has often been criticised as being unduly influenced by the arbitrary allocation of fixed and variable costs. To avoid this problem, all costs other than skipper and crew payments are treated as fixed. This results in a very conservative estimate if an increase in current catch is required to break even, but a somewhat inflated figure if a reduction is necessitated. Any analysis should be viewed in the light of these considerations.

Costs have been based on those for the 1977/78 financial year, with crew and skipper payments taken as those applying to a particular stratum in that year.

The first method of analysis assumes that vessels receive the same average price as they did in 1977/78. In this assumption not only the price for each species but also the proportion of each species is assumed to be fixed (or, theoretically, varying on these dimensions so as to maintain the same average price). Differences in prices between strata are maintained.

App. Tab. C-1 sets out the break-even catch requirements for average vessels in each stratum. It also sets out the break-even requirement for a vessel of 21 metres designed load waterline length. Figures for this sub-group are based on a very restricted sample and, as such, may not fully represent the operational characteristics of vessels of this length. However, given the increasing importance of vessels of this length as a result of the vessel replacement policy announced by the Minister for Primary Industry on 3 July 1980, it was decided to attempt some analysis despite these doubts.

App. Tab. C-2 sets out the total break-even requirement for endorsed vessels operating in the northern prawn fishery calculated at 1977/78 costs and prices. Two fleet structures have been discussed, the current fleet endorsed to operate in the managed area as at 16 October 1980 and the fleet from which the sample for the survey was drawn (that is, the fleet as at March 1979).

The total break-even catch requirement of 16 061 tonnes represents a very conservative estimate of the break-even requirement given 1977/78 figures. The period since 1977/78 has been characterised by rising costs, especially fuel costs, and the effect of this would be, given constant prices, to increase this figure.

App. Tab. C-3 sets out the total break-even catch requirement given differing assumptions about the rate at which current vessels will be replaced by vessels of 21 m (dlwl).

The new break-even catch requirement of 19 950 tonnes assumes that all vessels of below 21 metres are replaced by vessels of subsidy length, but that any vessels of length greater than 21 metres that are replaced are replaced on a one-for-one basis. In the unlikely event that all replacements were made with vessels of subsidy length, a break-even catch of 18 910 tonnes would suffice.

It could be argued that in a fishery which has been demonstrated to be overcapitalised, there is no incentive for continued investment in larger vessels. A number of factors contradict this view. Since the fishery is a common property resource of a finite nature, vessels will be increasingly competing for a share of the catch. The establishment of a level beyond which such competition cannot progress (subsidy length vessels) will lead to a congregation of vessels at this length. To maintain the same vessel or build a new vessel of less than subsidy length would be to handicap oneself in the competition for a share of the catch. Another motivation to invest in a larger vessel arises from the fact that catch is not evenly distributed between vessels, so that, even though most vessels may be losing money, some will continue to be very profitable. In such a situation there tends to be an identification effect whereby investors choose the most successful operation as a model rather than the average one. That such a distribution currently exists has already been demonstrated in this report and remarked upon elsewhere (Somers, 1977).

An alternative approach to that outlined above is to consider the break-even catches for the fleet given various price levels for prawns. App. Tab. C-4 outlines these break-even catches with the same assumptions in relation to costs and replacements as in the previous example, namely the replacement of all vessels of less than 21 m with vessels of subsidy length. App. Tab. C-5 gives a more detailed breakdown of the situation in regard to the current fleet.

App. Tab. C-6 and App. Tab. C-7 provide estimates of the catches required to generate a 10 per cent return on capital for the current fleet and the fleet that would be created by the replacement of all vessels of below 21 metres (dlwl) with vessels of that size. The basis of capital valuation for this exercise was market value without licence for existing vessels and replacement cost for new vessels.

App. Tab. C-8 and App. Tab. C-9 detail the results of a similar exercise assuming a 20 per cent return on capital.

App. Tab. C-10 gives details of the income and consequent catch requirements of a replacement fleet of 124 vessels of 21 metres (dlwl) assuming zero, 10 per cent and 20 per cent return on capital.

App. Tab. C-1Break-even Catch

Stratum	Operating Expenses + Depreciation		Crew Pay- ment (%)	Skipper Allow- ance (%)	Total Var- iable (%)	Gross Income (%)	Price (c/kg)	Break-even Catch (kg)
	(\$)	(%)						
Less than 15m	34396	64.1	17.1	18.8	35.9	53660	319	16821
15m and less than 17m	43060	60.7	19.3	20.0	39.3	70939	384	18474
17m and less than 19m	61726	61.9	19.2	18.9	38.1	99719	363	27471
19m and less than 21m	164700	77.6	14.6	7.8	22.4	212242	395	53732
21m and over	214970	78.5	13.2	8.3	21.5	273847	386	70945
21m (d.l.wl)*	196724	78.7	13.0	8.3	21.3	249967	386	64758

App. Tab. C-2Total Break-even Catch Requirement1977/78 Prices and Costs

Stratum	Average Breakeven Catch kg	Population Fleet (as at March 1979)		Current Fleet (as at 16 October 1980)	
		No. of Boats	Total Break-even Catch kg	No. of Boats	Total Break-even Catch kg
Less than 15m	16,821	58	975,618	15	252,315
15m & less than 17m	18,474	51	942,174	26	480,324
17m & less than 19m	27,471	51	1,401,021	40	1,098,840
19m & less than 21m	53,732	36	1,934,352	43	2,310,476
Less than 21m		196	5,253,165	124	4,141,955
21m and over	70,945	96	6,810,720	168	11,918,760
Total		292	12,063,885	292	16,060,715

App. Tab. C-3

Total Break-even Catch Requirement1977/78 Prices and Costs

	Average Break-even Catch	No. of Boats	Total Break-even Catch
Current fleet 21m and over	70,945	168	11,918,760
Replacement vessels 21m (dlwl)	64,758	124	8,029,992
Total Fleet	68,318	292	19,948,752
Current Total Fleet	55,002	292	16,060,715
Increase Required			3,888,037
Yearly increase if replaced over 3 years (current replacement rate)			1,296,012
Total increase if only 46 * original vessels replaced in period			1,513,721
Yearly increase			504,574

* Of the 292 vessels currently endorsed only 118 vessels are original vessels for which the endorsement to operate in the fishery was initially obtained, the other 174 vessels being replacements for vessels which had earlier been endorsed or vessels under construction. Of the 118 original vessels, 46 are less than 21 metres in length. These would appear to be the most likely to be replaced.

App. Tab. C-4

Break-even Catch Requirement
1977/78 Costs

Price (\$/kg)	Current Fleet (As at 16 October 1980)			Replacement of all Vessels below 21 m	
	Less than 21 m (tonnes)	21 m and over (tonnes)	Total (tonnes)	21 m DLWL (tonnes)	Total (tonnes)
	3.00	5,255	15,335	20,590	10,332
4.00	3,941	11,502	15,443	7,749	19,251
5.00	3,153	9,201	12,354	6,199	15,400
6.00	2,627	7,668	10,295	5,166	12,834
7.00	2,252	6,572	8,824	4,428	11,000
8.00	1,971	5,751	7,721	3,874	9,625

App. Tab. C-5

Total Break-even
Catch Requirement for
Current Fleet at 1977/78 Costs

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21 m and over
Average Break-even Income Requirement Price (\$/kg)	(\$) (kg)	(\$) (kg)	(\$) (kg)	(\$) (kg)	(\$) (kg)
	53,660	70,939	99,719	212,242	273,847
3.00	Av. 17,887 No. 15 Total 268,305	23,646 26 614,796	33,240 40 1,329,600	70,747 43 3,042,121	91,282 168 15,335,376
4.00	Av. 13,415 No. 15 Total 201,225	17,735 26 461,110	24,930 40 997,200	53,061 43 2,281,623	68,462 168 11,501,616
5.00	Av. 10,732 No. 15 Total 160,980	14,188 26 368,888	19,944 40 797,760	42,448 43 1,825,264	54,769 168 9,201,192
6.00	Av. 8,943 No. 15 Total 134,145	11,823 26 307,398	16,620 40 664,800	35,374 43 1,521,082	45,641 168 7,667,688
7.00	Av. 7,666 No. 15 Total 114,990	10,134 26 263,484	14,246 40 569,840	30,320 43 1,303,760	39,121 168 6,572,328
8.00	Av. 6,708 No. 15 Total 100,620	8,868 26 230,568	12,465 40 498,600	26,530 43 1,140,790	34,231 168 5,750,808

App. Tab. C-6

Catch Requirement to Generate 10 per cent
Return on Capital*
1977/78 Costs

Price (\$/kg)	Current Fleet) (As at 16 October 1980)			Replacement of all Vessels below 21 m	
	Less than 21 m (tonnes)	21 m and over (tonnes)	Total (tonnes)	21 m dlwl (tonnes)	Total (tonnes)
3.00	6150	18537	24686	12993	31530
4.00	4612	13903	18515	9745	23647
5.00	3690	11122	14812	7796	18918
6.00	3075	9268	12343	6496	15765
7.00	2636	7944	10580	5568	13513
8.00	2306	6951	9257	4872	11824

* Capital valuation taken as replacement cost for vessels of 21m (dlwl) and market value without licence for existing vessels.

App. Tab. C-7

Catch Requirement to Generate 10 per cent
Return on Capital
Current Fleet at 1977/78 Costs

Price (\$/kg)		Less than	15 m and	17 m and	19 m and	21 m
		15 m	less than 17 m	less than 19 m	less than 21 m	and over
		(\$)	(\$)	(\$)	(\$)	(\$)
Average		63730	85801	119590	243686	331010
Income requirement		(kg)	(kg)	(kg)	(kg)	(kg)
3.00	Av.	21,243	28,600	39,863	81,229	110,337
	No.	15	26	40	43	168
	Total	318,645	743,600	1,594,520	3,492,847	18,536,616
4.00	Av.	15,933	21,450	29,898	60,922	82,753
	No.	15	26	40	43	168
	Total	238,995	557,700	1,195,920	2,619,646	13,902,504
5.00	Av.	12,746	17,160	23,918	48,737	66,202
	No.	15	26	40	43	168
	Total	191,190	446,160	956,720	2,095,691	11,121,936
6.00	Av.	10,622	14,300	19,932	40,614	55,168
	No.	15	26	40	43	168
	Total	159,330	371,800	797,280	1,746,402	9,268,224
7.00	Av.	9,104	12,257	17,084	34,812	47,287
	No.	15	26	40	43	168
	Total	136,560	318,682	683,360	1,496,916	7,944,216
8.00	Av.	7,966	10,725	14,949	30,461	41,376
	No.	15	26	40	43	168
	Total	119,490	278,850	597,960	1,309,823	6,951,168

* Capital valuation taken as market value without licence.

App. Tab. C-8

Catch Requirement to Generate 20 per cent
Return on Capital*
1977/78 Costs

Price (\$/kg)	Current Fleet) (As at 16 October 1980)			Replacement of all Vessels below 21 m	
	Less than 21 m (tonnes)	21 m and over (tonnes)	Total (tonnes)	21 m dlwl (tonnes)	Total (tonnes)
3.00	7044	21738	28782	15654	37392
4.00	5283	16303	21587	11741	28044
5.00	4227	13043	17269	9392	22435
6.00	3522	10869	14391	7827	18696
7.00	3019	9316	12335	6709	16025
8.00	2642	8152	10793	5870	14022

* Capital valuation taken as replacement cost for vessels of 21m (dlwl) and market value without licence for existing vessels.

App. Tab. C-9

Catch Requirement to Generate 20 per cent
Return on Capital
Current Fleet at 1977/78 Costs

Price (\$/kg)		Less than	15 m and	17 m and	19 m and	21 m
		15 m	less than 17 m	less than 19 m	less than 21 m	and over
		(\$)	(\$)	(\$)	(\$)	(\$)
Average		73799	100664	139460	275129	388172
Income requirement						
Price (\$/kg)		(kg)	(kg)	(kg)	(kg)	(kg)
3.00	Av.	24,600	33,555	46,487	91,710	129,391
	No.	15	26	40	43	168
	Total	369,000	872,430	1,859,480	3,943,530	21,737,688
4.00	Av.	18,450	25,166	34,865	68,782	97,043
	No.	15	26	40	43	168
	Total	276,750	654,316	1,394,600	2,956,626	16,303,224
5.00	Av.	14,760	20,133	27,892	55,026	77,634
	No.	15	26	40	43	168
	Total	221,400	523,458	1,115,680	2,366,118	13,042,512
6.00	Av.	12,300	16,777	23,243	45,855	64,695
	No.	15	26	40	43	168
	Total	184,500	436,202	929,720	1,971,765	10,868,760
7.00	Av.	10,543	14,381	19,923	39,304	55,453
	No.	15	26	40	43	168
	Total	158,145	373,906	796,920	1,690,072	9,316,104
8.00	Av.	9,225	12,583	17,433	34,391	48,522
	No.	15	26	40	43	168
	Total	138,375	327,158	697,320	1,478,813	8,151,696

* Capital valuation taken as market value without licence.

App. Tab. C-10

Catch Requirement
Replacement Fleet of 124 Vessels 21 m (dlwl)

Break-even, 10 per cent and 20 per cent
Return on Capital*

1977/78 Costs

		Break-even (\$)	10 per cent (\$)	20 per cent (\$)
Average Income Requirement		249,967	314,347	378,726
Price (\$/kg)		(kg)	(kg)	(kg)
3.00	Av	83,322	104,782	126,242
	Total	10,331,969	12,992,968	15,654,008
4.00	Av	62,492	78,587	94,682
	Total	7,748,977	9,744,788	11,740,568
5.00	Av	49,993	62,689	75,745
	Total	6,199,182	7,795,756	9,392,380
6.00	Ave	41,661	52,391	63,121
	Total	5,165,985	6,496,484	7,827,004
7.00	Av	35,710	44,907	54,104
	Total	4,427,987	5,568,468	6,708,896
8.00	Av	31,246	39,293	47,341
	Total	3,874,489	4,872,332	5,870,284

* Capital valuation taken as replacement cost.

APPENDIX D
SURVEY METHODOLOGY

App. Tab. D-1

Distribution of Vessels by Length

	Less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over		Total
	(No)	(%)	(No)	(%)	(No)	(%)	(No)	(%)	(No)	(%)	(No)
Sample	18	19.35	18	19.35	13	13.98	8	8.60	36	38.71	93
Population at time second phase field- work undertaken (March 1979)	58	19.86	51	17.47	51	17.47	36	12.33	96	32.87	292
Current Population - Original Vessels (16 October 1980)	8	6.78	9	7.63	15	12.71	14	11.86	72	61.02	118
Current Population - Total Approved Vessels (16 October 1980)	15	5.14	26	8.90	40	13.70	43	14.73	168	57.53	292

App. Tab. D-2

Vessel CharacteristicsWithin-stratum DistributionLength by Length

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21 m and over	Total
Less than 7.5 m	-	-	-	-	-	-
7.5 m and less than 15 m	18	-	-	-	-	18
15 m and less than 16 m	-	10	-	-	-	10
16 m and less than 18 m	-	8	6	-	-	14
18 m and less than 20 m	-	-	7	8	-	15
20 m and less than 22 m	-	-	-	-	-	-
22 m and less than 23 m	-	-	-	-	7	7
23 m and less than 24 m	-	-	-	-	6	6
24 m and less than 25 m	-	-	-	-	11	11
25 m and less than 26 m	-	-	-	-	6	6
26 m and less than 27 m	-	-	-	-	-	-
27 m and less than 28 m	-	-	-	-	2	2
28 m and less than 29 m	-	-	-	-	3	3
29 m and less than 30 m	-	-	-	-	1	1
TOTAL	18	18	13	8	36	93

APPENDIX EGENERAL DESCRIPTION OF THE FISHERYi) Vessels and gear

The size composition of the fleet has been discussed elsewhere. The fleet appears to be increasingly standardised with fewer vessels being constructed in the extremes of the range of lengths since the survey period. Factors causing this trend have also been discussed elsewhere.

App. Tab. E-1 shows the average hull dimensions of vessels included in the survey.

App. Tab. E-2 outlines the distribution of vessels by material of hull construction. Smaller vessels tended to be of wooden construction with a steady trend towards steel construction with increased length. The changing nature of the fleet is illustrated by the fact that some 58 per cent of the current fleet is of steel construction as against 15 per cent in 1971.

As shown in App. Tab. E-3, age and length were inversely related. This is not surprising as more purpose-built vessels have come into the fishery, both as a natural part of the development of the fishery and as a consequence of the mode of introduction of limited entry. These purpose-built vessels tended to be of subsidy length or above. The average age of the fleet covered by the earlier survey was 8.3 years, only 6 months more than the current average. Since 7 years had passed between surveys this indicates that a large number of new and replacement vessels had entered the fishery.

Engine specifications obviously tended to vary with length. App. Tab. E-4 shows the distribution of vessels by main engine power. It also gives the average engine power for each stratum. The average engine power in 1971 was 130 kw. Of the current fleet 96 per cent of vessels also had auxiliary engines compared with 80 per cent of the fleet covered by the previous survey.

Refrigeration capacity, especially the facility to dry-freeze product, also increased with length. The very low figures for snap freezing capacity and freezer storage for the smaller vessels reflect the small numbers of these vessels possessing these facilities. App. Tab. E-5 refers. In 1971 only 10 per cent of vessels had dry refrigeration as against a current figure of 57 per cent.

An indication of the degree of technological sophistication of the current fleet can be gained by a consideration of the spread of major items of electronic equipment throughout the fleet. App. Tab. E-6 provides such an analysis providing the percentage of vessels in each stratum employing echo sounders, radio transceivers, radar, radio direction finders and automatic pilots. The table also shows the corresponding statistic for the previous survey for the "All Vessels" category.

App. Tab. E-1

Vessel Characteristics
Average Hull Dimensions (Metres)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Length	14.0	15.9	17.9	19.5	24.8	19.6
Beam	4.6	4.9	5.5	5.9	6.8	5.7
Draught	1.9	2.0	2.3	2.5	3.6	2.7
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-2

Vessel Characteristics
Distribution of Vessels by Hull Construction

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Planked Timber	16	13	8	1	-	38
Steel	1	5	5	7	36	54
Other	1	-	-	-	-	1
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-3

Vessel Characteristics
Distribution of Vessels by Age of Hull
(As at 30 June 1978)

(Years)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 3	-	-	-	-	2	2
3 and Less than 5	1	3	1	3	14	22
5 and Less than 10	8	7	10	4	19	48
10 and Less than 15	8	8	1	1	1	19
15 and Less than 20	1	-	1	-	-	2
20 and over	-	-	-	-	-	-
TOTAL VESSELS	18	18	13	8	36	93
Average	10	9	8	7	5	7.8

App. Tab. E-4Vessel CharacteristicsDistribution of Vessels by Main Engine Power (kw)

(kw)	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Less than 50	-	-	-	-	-	-
50 and less than 100	8	2	1	-	-	11
100 and less than 150	9	10	-	-	-	19
150 and less than 200	1	5	11	5	-	22
200 and less than 250	-	1	-	1	1	3
250 and less than 300	-	-	1	2	16	19
300 and over	-	-	-	-	19	19
TOTAL VESSELS	18	18	13	8	36	93
AVERAGE	113	139	175	208	314	213

App. Tab. E-5Vessel CharacteristicsRefrigeration Capacity (kgs)
Average per Vessel

(kw)	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	Total
Max Snap Freeze (per 24 hrs)	50	377	686	2434	5869	2660
Freezer Hold	176	1837	3332	11556	35715	15675
Brine Hold	4810	8054	12395	10082	5953	7394
TOTAL VESSELS	18	18	13	8	36	93
No. of Vessels with Dry Refrigeration	1	4	5	7	36	53

App. Tab. E-6

Vessel Characteristics
Percentage of Vessels with
Particular Items of Electronic Equipment

	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)	All Vessels (%)	All Vessels 1971 (%)
Echo Sounder	100.0	100.0	100.0	100.0	100.0	100.0	80.0
Radio Transceiver	94.4	100.0	100.0	100.0	100.0	98.9	80.0
Radar	83.3	77.8	92.3	87.5	100.0	90.3	12.0
Radio Direction Finder	0.0	0.0	0.0	0.0	33.3	12.9	n.a.
Automatic Pilot	83.3	100.0	100.0	100.0	100.0	98.9	60.0
No. of Vessels	18	18	13	8	36	93	58

ii) Ownership of vessels

The northern prawn fishery is characterised by a high level of company involvement in the ownership of fishing vessels. App. Tab. E-7 gives a distribution of vessels by ownership type. Company involvement is most pronounced in the largest stratum.

A consequence of this pattern of ownership is the high incidence of non-owner/skipper operations, particularly in the largest stratum. The distinction between employee, lessee and other (usually contractor) status of skipper is of no real significance for the purposes of the survey, since in all cases there is a separation of labour and capital. App. Tab. E-8 presents a distribution of vessels by skipper type. Employed skippers operated 54 per cent of the vessels as against 56 per cent in 1971.

The duration of present ownership also reflects the importance of company ownership of the larger, newer vessels. It also reflects a sampling bias in that continued ownership of a vessel for a significant proportion of the survey period was required for inclusion in the survey. The distribution of vessels by period of ownership by the current owner/s is given in App. Tab. E-9. Subsequent events, outlined elsewhere in the report, mean that the information presented therein no longer accurately represents the situation in the fishery.

App. Tab. E-7Vessel CharacteristicsDistribution of Vessels by Ownership Type

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Sole Owner	3	5	3	1	-	12
Husband/Wife Partnership	9	8	4	2	-	23
Other Family Partnership	-	1	2	-	-	3
Mixed Partnership	1	1	1	-	2	5
Reg. Pte Company	2	3	2	4	30	41
Public Company	2	-	-	1	3	6
Other	-	-	-	-	1	1
Unspecified	1	-	1	-	-	2
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-8Vessel CharacteristicsDistribution of Vessels by Skipper Type

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Sole Owner	3	5	2	1	-	11
Part Owner	12	10	6	2	2	32
Employee	1	3	5	4	4	17
Lessee	-	-	-	-	16	16
Other	2	-	-	1	14	17
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-9Vessel CharacteristicsDistribution of Vessels by Period of Present Ownership
(As at 30 June 1978)

Years	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 3	-	-	-	-	7	7
3 and less than 5	7	7	6	3	14	37
5 and less than 10	6	9	6	4	15	40
10 and less than 15	5	2	1	1	-	9
15 and less than 20	-	-	-	-	-	-
20 and over	-	-	-	-	-	-
TOTAL VESSELS	18	18	13	8	36	93

iii) Skipper and crew details

In view of the high proportion of employed (on whatever basis) skippers on the larger vessels, it is not surprising to note a reduction of experience both as a fisherman (App. Tab. E-10) and as skipper (App. Tab. E-11) for the largest stratum, since time spent as an employed skipper is often seen as a preparation for running one's own boat.

App. Tab. E-12 gives a distribution of vessels by experience of the skipper in running his current vessel. The greater mobility of skippers in the largest stratum is apparent.

App. Tab. E-13 outlines experience of the skippers at prawn trawling. Again, there is a trend discernible with the larger vessels, with skippers obtaining almost all their fishing experience in prawn trawling, whereas skippers of smaller boats were more likely to have tried other fisheries beforehand.

The lack of information available on employed skippers operating vessels in the largest stratum is reflected in the number of "unspecifieds" in App. Tab. E-14, App. Tab. E-15 and App. Tab. E-16 which refer to occupation prior to fishing, nationality at birth and educational background. This is, no doubt, due to the fact that information on the operations of company vessels was obtained from fleet masters rather than skippers. Use of this course may also have led to a higher estimate of skipper's age than was actually the case. App. Tab. E-17 refers.

Because of the high turnover of crew and the lack of knowledge about individual crew members on the part of fleet masters, no analysis of biographic data was attempted. Crew size limits (App. Tab. E-18) and the distribution of vessels by average crew size (App. Tab. E-19) were, however, calculated. The former table presents the average minimum, maximum and usual crew for a boat in a particular stratum rather than a range of possible values. The figures quoted in the latter table refer to the normal labour requirements of a trawler and, consequently, do not reflect the additional employment requirements for the duration of the banana prawn season. Standard practice is to employ at least one additional deckhand for this period.

App. Tab. E-10Skipper DetailsYears as Fisherman (Incl. Skipper)
(As at 30 June 1978)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 5 years	-	1	-	-	22	23
5 yrs and less than 10 yrs	6	2	1	5	6	20
10 yrs and less than 15 yrs	4	7	4	-	6	21
15 yrs and less than 20 yrs	3	2	5	1	-	11
20 yrs and over	5	6	3	2	2	18
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-11Skipper DetailsYears as Skipper
(As at 30 June 1978)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 5 years	3	4	2	4	26	39
5 yrs and less than 10 yrs	6	3	6	1	9	25
10 yrs and less than 15 yrs	2	5	3	-	-	10
5 yrs and less than 20 yrs	3	4	1	1	1	10
20 yrs and over	4	2	1	2	-	9
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-12

Skipper DetailsYears as Skipper of Present Vessel
(As at 30 June 1978)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 5 years	7	9	8	6	36	66
5 yrs and less than 10 yrs	7	7	5	1	-	20
10 yrs and less than 15 yrs	4	2	-	1	-	7
15 yrs and over	-	-	-	-	-	-
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-13

Skipper DetailsExperience of Skipper at Prawn Trawling
(As at 30 June 1978)

Years	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 5 years	1	1	2	4	24	32
5 yrs and LT 10 yrs	9	4	1	1	9	24
10 yrs and LT 15 yrs	3	7	5	1	2	18
15 yrs and LT 20 yrs	3	3	4	-	1	11
20 yrs and over	2	3	1	2	-	8
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-14Skipper DetailsOccupation Prior to Fishing

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
No Previous Occupation	4	6	7	3	2	22
Tradesman	5	5	2	2	3	17
Semi-skilled	2	-	2	2	1	7
Unskilled	2	3	1	-	-	6
White Collar Worker	1	1	-	-	-	2
Professional	1	1	-	-	-	2
Farmer	2	-	-	-	-	2
Armed Forces	-	2	1	-	2	5
Other	1	-	-	-	-	1
Unspecified	-	-	-	1	28	29
TOTAL	18	18	13	8	36	93

App. Tab. E-15Skipper DetailsNationality at Birth

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Australian	15	15	12	5	16	63
British	2	-	-	-	5	7
Scandinavian	-	1	1	-	-	2
Other European	1	2	-	2	1	6
Other	-	-	-	1	2	3
Unspecified	-	-	-	-	12	12
TOTAL	18	18	13	8	36	93

App. Tab. E-16Skipper DetailsEducational Background

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
No Formal Education	-	-	-	-	-	-
Primary	3	3	1	1	-	8
Secondary (Lower)	5	7	5	2	-	19
Secondary (Interm.)	7	3	6	1	2	19
Secondary (Matric.)	1	1	-	1	2	5
Tertiary	-	-	-	-	-	-
Technical	-	-	-	-	-	-
Unspecified	2	4	1	3	32	42
TOTAL	18	18	13	8	36	93

App. Tab. E-17Skipper DetailsAge
(As at 30 June 1978)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Less than 20	-	-	-	-	6	6
20 and less than 30	3	2	3	2	9	19
30 and less than 40	6	5	6	3	13	33
40 and less than 50	7	10	4	2	8	31
50 and less than 60	2	1	-	-	-	3
60 and over	-	-	-	1	-	1
TOTAL	18	18	13	8	36	93

App. Tab. E-18Crew DetailsCrew Size Limits (Incl. Skipper)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Average Crew	3	3	3	4	7	5
Maximum Crew	4	4	4	6	7	5
Minimum Crew	2	2	3	3	6	4
TOTAL VESSELS	18	18	13	8	36	93

App. Tab. E-19Crew DetailsDistribution of Vessels by Average Crew Size (Incl. Skipper)

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21m and over	All Vessels
Skipper only	-	-	-	-	-	14
2	8	5	1	-	-	27
3	6	12	8	1	-	10
4	3	1	2	4	-	10
5	1	-	2	2	5	5
6	-	-	-	1	4	5
6+	-	-	-	-	27	27
TOTAL VESSELS	18	18	13	8	36	93

APPENDIX F
TRENDS IN CATCH

App. Tab. F-1

Number of Vessels Operating in the Northern Prawn Fishery

By Month 1971 to 1980

Month	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
January	35	40	32	17	29	17	22	40	105	148
February	40	39	28	28	31	57	28	70	158	198
March	82	68	145	106	75	120	150	178	234	340
April	174	182	173	151	105	108	173	217	310	309
May	201	194	149	150	92	93	189	222	240	320
June	182	177	173	99	84	89	165	220	294	320
July	194	199	137	82	100	88	153	204	271	297
August	179	193	151	83	95	81	180	224	274	248
September	150	165	135	66	75	106	155	225	252	281
October	111	141	124	70	64	87	138	215	263	250
November	79	90	95	34	55	86	118	188	240	232
December	71	50	55	23	39	77	91	167	161	202
Annual Fleet Size	292	321	291	220*	184	192	301	389	545	604

* Eleven vessels included in total, however no monthly breakup is available.

App. Tab. F-2

Monthly Average Catch Per Vessel 1971 to 1980Kilograms

Month	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
January	3172	2012	2962	5198	3272	4496	3963	4093	2971	3021
February	1864	1585	4007	3395	3245	7496	6133	4260	4017	2308
March	6176	1542	5825	14528	8623	14788	12499	5657	5773	3500
April	12050	13314	9114	25348	11439	10366	14536	5097	7538	3569
May	8265	9415	7218	16712	6566	8882	7495	4845	4457	3467
June	11186	2990	4031	14160	3144	4186	3952	3825	3611	3272
July	6481	1894	3591	10276	6366	3890	3207	2891	2991	3628
August	4018	2446	4166	8914	4744	4679	5132	3338	3786	3430
September	1651	1957	3228	7040	3431	4618	3899	3425	4416	4493
October	2286	2206	3537	5292	4950	4807	5132	4373	4125	5330
November	2230	1906	3127	9881	3821	3861	5951	2754	3459	4034
December	1578	1836	3622	8541	3600	4602	3922	2852	2331	3981
Average Annual Catch	30028	20574	22790	59104	26758	35998	34530	21940	22050	19233

App. Tab. F-3Monthly Average Catch Per Vessel - 1979 & 1980

Month	<u>Kilograms</u>			
	1979	1979	1980	1980
	EAST	GULF	EAST	GULF
January	741	3949	878	5106
February	1115	6300	901	4244
March	1334	8589	1328	6720
April	3261	11644	1280	5630
May	1664	8541	1477	5720
June	1023	7939	1461	6205
July	1060	6313	1167	6469
August	1000	8000	1027	5234
September	786	8704	1390	6462
October	799	7014	1328	8044
November	658	5443	1062	6244
December	590	3631	1631	6298
Average Annual Catch	5062	41799	4998	33300

App. Tab. F-4

Distribution of Trawlers by Catch, Length of Vessel and Period of Fishing

Catch Liveweight	Under 14 m		14 m to 15.9 m		16 m to 17.9 m		18 m to 19.9 m		20 m to 21.9 m		22 m and over		All Vessels
	Less than 6 mths	6 mths and over	Less than 6 mths	6 mths and over	Less than 6 mths	6 mths and over	Less than 6 mths	6 mths and over	Less than 6 mths	6 mths and over	Less than 6 mths	6 mths and over	
1974													
0 - 5	17	-	10	-	6	-	4	-	1	-	1	-	39
5 - 10	4	-	6	-	1	-	-	-	1	-	3	-	15
10 - 20	4	4	7	1	3	-	4	-	1	-	5	1	30
20 - 40	6	3	4	5	4	3	3	1	-	1	4	-	34
40 - 60	1	-	3	3	1	-	2	4	-	1	8	-	23
60 - 80	-	-	-	5	-	1	3	4	-	1	1	2	17
Over 80	-	-	2	2	3	2	-	7	3	1	6	25	51
Total	32	7	32	16	18	6	16	16	6	4	28	28	209
TOTAL	39		48		24		32		10		56		209
1975													
0 - 5	20	1	13	1	14	1	3	1	-	-	3	-	57
5 - 10	6	3	4	5	3	3	3	-	1	-	-	-	28
10 - 20	3	2	2	3	2	1	1	-	-	-	3	1	18
20 - 40	-	1	3	4	-	6	5	4	-	2	10	1	36
40 - 60	-	-	-	-	-	-	1	4	-	1	4	5	22
60 - 80	-	-	-	-	-	-	-	-	-	-	4	9	10
Over 80	-	-	-	-	-	-	-	-	-	-	4	9	13
Total	29	7	22	13	19	11	13	9	1	5	34	21	184
TOTAL	36		35		30		22		6		55		184
1976													
0 - 5	5	3	10	1	4	1	5	-	3	-	-	-	32 (13)
5 - 10	2	2	4	1	3	2	3	-	-	-	3	-	20
10 - 20	3	5	3	6	5	4	3	2	1	-	2	4	38 (1)
20 - 40	2	1	-	3	3	6	2	7	1	1	3	-	29
40 - 60	-	-	1	2	-	-	-	2	-	2	4	5	16
60 - 80	-	1	-	-	-	1	1	4	-	1	3	6	17
Over 80	-	-	-	-	-	-	-	-	-	-	6	20	26
Total	12	12	18	13	15	14	14	15	5	4	21	35	178 (14)
TOTAL	24		31		29		29		9		56		192

* 14 vessels delivered product however their length is unknown.

App. Tab. F-4 (cont.)

Distribution of Trawlers by Catch, Length of Vessel and Period of Fishing

Catch Tonnes Liveweight 1977	Under 14 m		14 m to 15.9m		16 m to 17.9m		18 m to 19.9m		20 m to 21.9m		22 m and over		Other Vessels		Total
	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	
0 - 5	13	-	5	1	3	2	6	-	1	-	-	-	49	3	83
5 - 10	4	8	2	4	2	2	1	-	-	-	-	-	6	2	31
10 - 20	3	9	2	10	7	7	2	1	1	1	4	-	2	2	51
20 - 40	-	5	3	7	2	10	3	8	1	3	2	1	1	-	46
40 - 60	-	-	2	1	1	3	2	4	1	2	4	2	-	-	22
60 - 80	-	-	-	2	-	1	1	6	1	1	4	5	-	-	21
Over 80	-	-	-	-	-	-	1	8	2	7	11	17	-	-	46
Total	20	22	14	25	15	25	16	27	7	14	25	25	58	7	300
TOTAL	42		39		40		43		21		50		65		300
1978															
0 - 5	5	-	3	2	2	1	3	-	3	-	2	-	97	8	126
5 - 10	3	14	2	6	1	5	3	1	-	-	1	-	11	12	59
10 - 20	-	16	2	14	3	12	3	2	1	2	-	1	1	6	63
20 - 40	-	2	-	8	1	14	3	20	2	3	5	5	2	1	66
40 - 60	-	-	-	-	-	2	2	6	1	7	10	6	2	-	36
60 - 80	-	-	-	-	-	-	1	3	-	3	4	10	1	-	22
Over 80	-	-	-	-	-	-	-	-	-	-	1	16	-	-	17
Total	8	32	7	30	7	34	15	32	7	15	23	38	114	27	389
TOTAL	40		37		41		47		22		61		141		389

App. Tab. F-4 (cont.)

Distribution of Trawlers by Catch, Length of Vessel and Period of Fishing

Catch Tonnes Liveweight 1979	Under 14 m		14 m to 15.9m		16 m to 17.9m		18 m to 19.9m		20 m to 21.9m		22 m and over		Other Vessels		Total
	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	Less than 6 mths	and over	
0 - 5	4	1	8	-	4	1	3	-	-	-	2	-	187	20	230
5 - 10	4	5	3	8	2	4	3	1	1	-	2	-	18	41	92
10 - 20	2	5	1	5	2	5	1	3	1	1	7	1	4	25	63
20 - 40	-	2	-	8	2	20	1	9	-	3	5	4	1	3	58
40 - 60	-	1	-	-	-	4	-	10	-	2	4	5	1	-	27
60 - 80	-	-	-	-	-	1	-	3	1	3	2	11	-	-	21
Over 80	-	1	-	-	-	1	-	3	-	11	8	30	-	-	54
Total	10	15	12	21	10	36	8	29	3	20	30	51	211	89	545
TOTAL	25		33		46		37		23		81		300		545
1980															
0 - 5	104	12	42	6	20	2	3	-	3	-	2	-	47	5	246
5 - 10	4	26	8	19	7	9	6	2	3	-	3	-	2	2	91
10 - 20	1	17	2	22	4	13	5	5	-	-	14	2	-	1	86
20 - 40	1	2	-	9	2	15	1	22	4	1	12	7	1	-	77
40 - 60	-	-	-	-	-	3	-	10	-	4	5	25	-	-	47
60 - 80	-	-	-	-	-	1	1	-	1	4	5	16	-	-	28
Over 80	-	-	-	-	-	-	-	-	1	5	2	21	-	-	29
Total	110	57	52	56	33	43	16	39	12	14	43	71	50	8	604
TOTAL	167		108		76		55		26		114		58		604

App. Tab. F-5

Distribution of Trawlers by Length of Vessel
and Period of Operation
1979

No. of Months Operating	Under 14 m		14 m to 15.9 m		16 m to 17.9 m		18 m to 19.9 m		20 m to 21.9 m		22 m and over		Unspecified		Total	
		%		%		%		%		%		%		%		%
1	1	4	1	3	1	2	1	3	1	4	7	9	95	32	107	20
2	2	8	-	-	3	7	1	3	-	-	7	9	33	11	46	8
3	1	4	6	18	3	7	2	5	1	4	8	10	32	11	53	10
4	2	8	4	12	1	2	2	5	1	4	5	6	30	10	45	8
5	4	16	1	3	2	4	2	5	-	-	3	4	22	7	34	6
6	4	16	3	9	5	10	4	11	5	22	6	7	27	9	54	10
7	2	8	4	12	9	20	4	11	2	9	13	15	19	6	53	10
8	5	20	6	18	8	17	5	14	5	22	15	19	15	5	59	11
9	2	8	3	9	6	13	6	15	5	22	7	9	14	5	43	8
10	1	4	3	9	4	9	5	14	2	9	6	7	6	2	27	5
11	1	4	2	7	3	7	4	11	1	4	3	4	4	1	18	3
12	-	-	-	-	1	2	1	3	-	-	1	1	3	1	6	1
Total No. of Boats	25	100	33	100	46	100	37	100	23	100	81	100	300	100	545	100

App. Tab. F-5 (cont.)

1980

No. of Months Operating	Under 14 m		14 m to 15.9 m		16 m to 17.9 m		18 m to 19.9 m		20 m to 21.9 m		22 m and over		Unspecified		Total	
		%		%		%		%		%		%		%		%
1	36	22	10	9	8	11	2	4	2	8	9	8	32	55	99	16
2	27	16	17	16	9	12	1	1	5	19	4	4	8	13	71	12
3	16	10	14	13	4	5	4	7	-	-	7	6	3	5	48	8
4	18	11	4	4	7	9	2	4	4	15	6	5	4	7	45	7
5	13	8	7	6	5	6	7	13	1	3	17	15	3	5	53	9
6	9	5	10	9	10	13	10	18	2	8	18	16	4	7	63	11
7	14	8	5	5	5	7	4	7	5	19	16	14	3	2	50	8
8	13	8	11	10	9	12	7	13	1	4	22	19	-	-	63	11
9	14	8	14	13	8	11	9	16	3	12	8	7	1	2	57	9
10	4	2	10	9	8	11	5	9	3	12	5	4	1	2	36	6
11	2	1	4	4	2	2	2	4	-	-	2	2	-	-	12	2
12	1	1	2	2	1	1	2	4	-	-	-	-	1	2	7	1
Total No. of Boats	167	100	108	100	76	100	55	100	26	100	114	100	58	100	604	100

App. Tab. F-6

Receipts by Processing Establishments1974/75 to 1979/80

(tonnes estimated liveweight)

Month	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
July	842	637	342	491	590	875
August	740	451	379	924	748	1139
September	465	257	489	604	771	1218
October	370	317	418	708	940	1159
November	336	210	332	702	518	875
December	197	140	354	357	476	393
January	95	76	87	164	336	447
February	101	427	172	370	641	457
March	647	1775	1875	1045	1417	1190
April	1201	1120	2515	1106	2418	1103
May	604	826	1417	1076	1235	1110
June	264	373	652	846	1173	1047
Total	5862	6609	9032	8393	11263	11013

App. Tab. F-7

Monthly Catch of Prawns by Species
1968/69 to 1979/80

Financial Year	Tonnes			Monthly Total	% Monthly Catch			Monthly Total
	Banana	Tiger	Other		Banana	Tiger	Other	
<u>1968/69</u>								
July	197	46	2	245	80	19	1	100
August	124	19	1	144	86	13	1	100
September	51	18	2	71	72	25	3	100
October	6	16	1	23	26	70	4	100
November	27	24	13	64	42	38	20	100
December	660	97	28	785	84	12	4	100
January	22	17	21	60	37	28	35	100
February	3	-	2	5	61	7	32	100
March	278	13	13	304	91	4	5	100
April	460	45	23	528	87	9	4	100
May	380	57	38	475	80	12	8	100
June	218	121	55	394	55	31	14	100
Total	2426	473	199	3098	78	15	7	100
<u>1969/70</u>								
July	392	110	61	563	70	19	11	100
August	361	87	75	523	69	17	14	100
September	552	103	102	757	73	14	13	100
October	514	111	79	704	73	16	11	100
November	362	54	7	423	86	13	1	100
December	226	43	22	291	78	15	7	100
January	41	32	31	104	39	31	30	100
February	98	21	43	162	60	13	27	100
March	575	21	38	634	91	3	6	100
April	696	58	16	770	90	8	2	100
May	592	66	21	679	87	10	3	100
June	451	104	59	614	73	17	10	100
Total	4860	810	554	6224	78	13	9	100
<u>1970/71</u>								
July	433	198	92	723	60	27	13	100
August	398	195	178	771	52	25	23	100
September	456	225	134	815	56	28	16	100
October	464	178	96	738	63	24	13	100
November	239	109	150	498	48	22	30	100
December	36	140	65	241	15	58	27	100
January	3	124	23	150	2	83	15	100
February	3	91	21	115	3	79	18	100
March	410	100	46	556	74	18	8	100
April	1762	87	56	1905	92	5	3	100
May	1494	118	68	1680	89	7	4	100
June	1789	121	177	2087	86	6	8	100
Total	7487	1686	1106	10279	73	16	11	100

App. Tab. F-7 (cont.)

Financial Year	Tonnes			Monthly Total	% Monthly Catch			
	Banana	Tiger	Other		Banana	Tiger	Other	Monthly Total
<u>1971/72</u>								
July	1161	142	41	1344	86	11	3	100
August	511	72	307	890	57	8	35	100
September	79	140	201	420	19	33	48	100
October	118	166	78	362	33	46	21	100
November	46	159	70	275	17	58	25	100
December	10	126	64	200	5	63	32	100
January	7	88	32	127	6	69	25	100
February	11	71	11	93	12	76	12	100
March	54	89	15	158	34	56	10	100
April	2358	54	27	2439	97	2	1	100
May	1732	87	21	1840	94	5	1	100
June	360	193	37	590	61	33	6	100
Total	6447	1387	904	8738	74	16	10	100
<u>1972/73</u>								
July	92	275	111	478	19	58	23	100
August	144	329	169	642	22	51	27	100
September	80	195	98	373	21	52	27	100
October	59	275	121	455	13	60	27	100
November	57	109	65	231	25	47	28	100
December	14	87	33	134	10	65	25	100
January	14	80	47	141	10	57	33	100
February	-	85	33	118	-	72	28	100
March	814	71	19	904	90	8	2	100
April	1685	88	22	1795	94	5	1	100
May	967	193	73	1233	78	16	6	100
June	418	322	95	835	50	39	11	100
Total	4344	2109	886	7339	59	29	12	100
<u>1973/74</u>								
July	216	293	94	603	36	48	16	100
August	194	362	153	709	27	51	22	100
September	75	285	121	481	16	59	25	100
October	105	250	154	509	21	49	30	100
November	49	168	90	307	16	55	29	100
December	34	121	50	205	17	59	24	100
January	11	56	21	88	13	63	24	100
February	48	31	16	95	50	33	17	100
March	1502	28	10	1540	97	2	1	100
April	3813	10	5	3828	99+	-	-	100
May	2504	2	1	2507	99+	-	-	100
June	1394	6	2	1402	99+	-	-	100
*	593			593				
Total	10538	1612	717	12867	82	12	6	100

* An extra 593 tonnes of Banana prawns were taken for which no monthly breakup is available.

App. Tab. F-7 (cont.)

Financial Year	Tonnes				% Monthly Catch			
	Banana	Tiger	Other	Monthly Total	Banana	Tiger	Other	Monthly Total
<u>1974/75</u>								
July	759	66	17	842	90	8	2	100
August	628	83	29	740	85	11	4	100
September	247	140	78	465	53	30	17	100
October	102	128	140	370	28	35	37	100
November	75	132	129	336	22	40	38	100
December	35	77	85	197	18	39	43	100
January	6	49	40	95	6	52	42	100
February	20	54	27	101	20	53	27	100
March	595	39	13	647	92	6	2	100
April	1147	38	16	1201	96	3	1	100
May	530	57	16	603	88	9	3	100
June	132	108	24	264	50	41	9	100
Total	4276	971	614	5861	73	17	10	100
<u>1975/76</u>								
July	399	180	58	637	63	28	9	100
August	215	182	54	451	48	40	12	100
September	40	167	50	257	16	65	19	100
October	29	199	89	317	9	63	28	100
November	4	127	79	210	2	60	38	100
December	-	87	53	140	-	62	38	100
January	2	54	20	76	3	71	26	100
February	339	72	16	427	79	17	4	100
March	1755	15	5	1775	99	1	-	100
April	1098	17	3	1120	98	2	-	100
May	712	71	43	826	86	9	5	100
June	184	152	37	373	49	41	10	100
Total	4777	1322	509	6608	72	20	8	100
<u>1976/77</u>								
July	201	117	24	342	59	34	7	100
August	164	150	65	379	43	40	17	100
September	63	260	167	490	13	53	34	100
October	69	199	150	418	16	48	36	100
November	16	182	134	332	5	55	40	100
December	3	215	136	354	1	61	38	100
January	1	51	35	87	1	59	40	100
February	4	107	60	171	2	63	35	100
March	1491	295	89	1875	80	16	4	100
April	2442	57	16	2515	97	2	1	100
May	1246	138	33	1417	88	10	2	100
June	412	199	41	652	63	31	6	100
Total	6112	1970	950	9032	68	22	10	100

App. Tab. F-7 (cont.)

Financial Year	Tonnes				% Monthly Catch			
	Banana	Tiger	Other	Monthly Total	Banana	Tiger	Other	Monthly Total
<u>1977/78</u>								
July	165	272	54	491	34	55	11	100
August	252	538	134	924	27	58	15	100
September	88	379	137	604	14	63	23	100
October	104	423	181	708	15	60	25	100
November	65	411	226	702	9	59	32	100
December	15	181	161	357	4	51	45	100
January	2	106	56	164	1	65	34	100
February	15	258	96	369	4	70	26	100
March	574	378	93	1045	55	36	9	100
April	810	244	52	1106	73	22	5	100
May	624	385	67	1076	58	36	6	100
June	267	473	106	846	32	56	12	100
Total	2981	4048	1362	8391	36	48	16	100
<u>1978/79</u>								
July	213	292	85	590	36	50	14	100
August	59	465	224	748	8	62	30	100
September	40	528	202	770	5	69	26	100
October	50	647	243	940	5	69	26	100
November	6	368	144	518	1	71	28	100
December	11	346	119	476	2	73	25	100
January	10	230	95	335	4	68	28	100
February	293	279	70	642	46	44	10	100
March	1209	145	64	1418	85	10	5	100
April	2007	325	86	2418	83	13	4	100
May	666	473	96	1235	54	38	8	100
June	478	523	171	1172	41	45	14	100
Total	5042	4621	1599	11262	45	41	14	100
<u>1979/80</u>								
July	248	471	156	875	28	54	18	100
August	99	713	327	1139	9	63	28	100
September	72	847	299	1218	6	70	24	100
October	43	882	234	1159	4	76	20	100
November	18	612	245	875	2	70	28	100
December	11	287	95	393	3	73	24	100
January	27	319	101	447	6	71	23	100
February	16	347	94	457	3	76	21	100
March	792	306	92	1190	66	26	8	100
April	797	257	49	1103	72	23	5	100
May	545	448	117	1110	49	40	11	100
June	362	504	181	1047	35	48	17	100
Total	3030	5993	1990	11013	28	54	18	100

App. Tab. F-8

Catch by Area of OperationBy Month - 1977/78

		<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>Total</u>
		(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)
Banana	East	2691	33953	8280	7153	10716	192	-	1605	15246	63549	16359	39228	198972
	Gulf	127654	216146	75741	78243	52907	13544	1890	8549	451699	706216	518342	169400	2420331
	West	34751	1827	4050	18454	1483	1055	134	5251	107528	39735	88929	58813	362010
	Total	165096	251926	88071	103850	65106	14791	2024	15405	574473	809500	623630	267441	2981313
Tiger	East	85883	123666	51994	64609	109902	25071	2376	27128	50953	121334	90701	178141	931758
	Gulf	185600	397726	320138	288459	274882	142919	78763	135771	298346	122381	284620	287366	2816971
	West	47	16530	7257	69873	25836	13334	25296	95323	28380	-	10127	7026	299029
	Total	271530	537922	379389	422941	410620	181324	106435	258222	377679	243715	385448	472533	4047758
Other	East	20557	37920	13760	18636	13255	16053	196	5434	8931	25391	13310	29757	203200
	Gulf	33444	94286	123150	121993	202504	128648	50245	48229	77762	27508	50525	69001	1027295
	West	46	1647	-	40773	10736	16087	4831	42261	5704	-	2768	6852	131705
	Total	54047	133853	136910	181402	226495	160788	55272	95924	92397	52899	66603	105610	1362200
Total	East	109131	195539	74034	90398	133873	41316	2572	34167	75130	210274	120370	247126	1333930
	Gulf	346698	708158	519029	488695	530293	285111	130898	192549	827807	856105	853487	525767	6264597
	West	34844	20004	11307	129100	38055	30476	30261	142835	141612	39735	101824	72691	792744
	Total	490673	923701	604370	708193	702221	356903	163731	369551	1044549	1106114	1075681	845584	8391271

App. Tab. F-8 (cont.)Catch by Area of OperationBy Month - 1978/79

		<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>Total</u>
		(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)
Banana	East	5679	6906	7161	9967	41	529	372	15387	76345	160811	96189	45938	425325
	Gulf	191696	38726	21855	27561	4219	2779	5456	228746	1054188	1641312	439122	288512	3944172
	West	15277	13508	10834	12189	1482	8042	4662	49018	78332	205058	130554	144015	672971
	Total	212652	59140	39850	49717	5742	11350	10490	293151	1208865	2007181	665865	478465	5042468
Tiger	East	70767	50860	64258	74407	39263	72029	37811	56723	50683	215790	259942	226101	1218634
	Gulf	213420	385289	447806	452734	220877	178987	172922	203206	89248	109139	190891	284810	2949329
	West	7879	28605	15549	120208	108208	94586	19677	18723	4848	36	22522	12564	453405
	Total	292066	464754	527613	647349	368348	345602	230410	278652	144779	324965	473355	523475	4621368
Other	East	11215	6053	17241	41481	26642	18631	9191	14917	40255	62428	53274	39162	340490
	Gulf	71110	188149	177152	164018	82734	67064	69035	46437	21507	23535	38458	126705	1075904
	West	2812	29623	8669	37663	34369	33602	16551	8303	1762	-	4250	5571	183175
	Total	85137	223825	203062	243162	143745	119297	94777	69657	63524	85963	95982	171438	1599569
Total	East	87661	63819	88660	125855	65946	91189	47374	87027	167283	439029	409405	311201	1984449
	Gulf	476226	612164	646813	644313	307830	248830	247413	478389	1164943	1773986	668471	700027	7969405
	West	25968	71736	35052	170060	144059	136230	40890	76044	84942	205094	157326	162150	1309551
	Total	589855	747719	770525	940228	517835	476249	335677	641460	1417168	2418109	1235202	1173378	11263405

App. Tab. F-8 (cont.)Catch by Area of OperationBy Month - 1979/80

		<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>Total</u>
		(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)
Banana	East	9513	23988	9282	5628	309	303	3640	4301	69530	56410	48474	21435	252813
	Gulf	199467	53480	30546	18908	11807	10839	11042	11245	650485	581226	301465	193286	2073796
	West	39020	21820	31880	18367	6218	351	12405	-	71991	159355	194723	147464	703594
	Total	248000	99288	71708	42903	18334	11493	27087	15546	792006	796991	544662	362185	3030203
Tiger	East	191168	173963	136478	116492	75743	43085	43322	69033	157258	123803	180154	213679	1524178
	Gulf	255767	496645	685795	745259	521813	230267	258151	275129	148491	132582	267276	278352	4295527
	West	24297	42187	24800	20092	14746	13213	17450	3012	-	386	127	11908	172218
	Total	471232	712795	847073	881843	612302	286565	318923	347174	305749	256771	447557	503939	5991923
Other	East	55836	76810	70905	55892	49830	19249	17164	30640	56101	32270	62276	67351	594324
	Gulf	84785	212614	199150	166436	184522	70960	66992	61317	36263	16656	54545	100282	1254522
	West	15407	37617	28828	11677	10983	4812	16896	2346	-	59	331	13259	142215
	Total	156028	327041	298883	234005	245335	95021	101052	94303	92364	48985	117152	180892	1991061
Total	East	256517	274761	216665	178012	125882	62637	64126	109001	282889	212483	290904	302465	2371315
	Gulf	540019	762739	915491	930603	718142	312066	336185	348022	757911	672412	546421	488408	7623845
	West	78724	101624	85508	50136	31947	18376	46751	-	149319	217852	272046	256143	1018027
	Total	875260	1139124	1217664	1158751	875971	393079	447062	457023	1190119	1102747	1109371	1047016	11013187

APPENDIX GMANAGEMENT OF THE NORTHERN PRAWN FISHERY

Initial management of the northern prawn fishery was distinctly laissez faire. The first positive management measure was the introduction of closed areas prior to the 1971 season. A similar closure operated prior to the 1972 season, while a single closed area encompassing the individual closures of the previous year operated from 1 January 1973 to 15 March 1973.

The increase in numbers of large freezer trawlers operating in the fishery in 1973 and 1974 caused concern in both industry and government about the future economic viability of the fishery. In November 1974, the first meeting of Northern Fisheries Committee appointed a working group to assemble and examine the results of available biological and economic research on the fishery and define the need, if any, for a review of the existing policy of unrestricted entry of trawlers and limitations on local processing.

In its report to the second meeting of Northern Fisheries Committee in April 1975, the first working group came to the following conclusions:

1. Estimated limits to the northern prawn resource
(from the best available data)
 - (a) Banana prawns
 - (i) between 7.5 to 17.5 million kg per annum
 - (ii) strong indication that the Gulf of Carpentaria sector involving between 5.0 to 10.0 million kg per annum has been fully exploited since 1971
 - (iii) there was a potential for an expansion in the order of 2.5 to 7.5 million kg per annum in the western sector.
 - (b) Tiger prawns
 - (i) between 3.0 to 5.0 million kg per annum
 - (ii) present level of exploitation between 1.5 to 2.5 million kg per annum
 - (iii) this resource is under exploited.
 - (c) Endeavour prawns
 - (i) between 1.0 to 1.5 million kg per annum.
 - (d) Total prawn resource available ranges between 11.5 to 24.0 million kg per annum.

2. Processing capacity available to the northern prawn fishery
(based on the estimated limits to the northern prawn resource - see 1. above)

(a) Eastern Sector

- (i) capacity available is in excess of the estimated available resource
- (ii) although the high seasonality of landings places a strain on refrigerated storage capacity at the points of landing, improvement to storage and transport facilities during the next few years are expected to overcome major dumping problems.

(b) Western Sector

- (i) capacity available in excess of the estimated available resource
- (ii) however, if the peak of the season in the Gulf of Carpentaria and the potential resource in the western area coincide, additional processing facilities may be necessary.

3. Catching capacity available to the northern prawn fishery

- (a) at low prices, the catch requirements for economic viability of the total existing fleet approximately equalled the estimated maximum available resource
- (b) at high prices, the catch requirements exceeded the available resources in a poor season but were below the available resources in a good season
- (c) although no evidence was found to suggest that the level of fishing effort was affecting the level of recruitment of stocks, there was a real danger of heavy over-capitalisation
- (d) the danger of over-capitalisation increased with the continued entry of large freezer trawlers which require a catch of at least five times the catch of smaller trawlers for viability.

As a result of this report, Northern Fisheries Committee appointed a working group to investigate methods of stabilising future investment in the catching sector. The working group was directed to seek the views of appropriate government and industry organizations during the course of its deliberations.

In the course of these deliberations a number of management alternatives were considered but rejected after discussions with industry. These included limitations on the size of new vessel entrants, gear restrictions, higher licence fees, a voluntary two year freeze on entry and the declaration of a "northern fishing zone" requiring year-round commitment to the area.

The management regime recommended in the report of the second working group provided for:

- . the implementation of a limited entry policy on all sizes of trawlers accompanied with some degree of commitment to the fishery
- . that the limited entry policy be implemented initially for a two year period, during which time Northern Fisheries Committee could give consideration to a comprehensive management regime, if necessary incorporating both the catching and processing sectors
- . that the limited entry policy apply to proclaimed waters between the meridian of Cape Londonderry in Western Australia and 142° 09'E (near Slade Point on the north-western corner of Cape York Peninsula).

In submitting its recommendations to Standing Committee on Fisheries and the Australian Fisheries Council, the Northern Fisheries Committee concluded that:

- (i) current available fishing power was sufficient to take almost any season's catch, with the exception of an abnormally high catch
- (ii) there was a potential for increase in fishing power because of the interest shown by fishermen in increasing vessel sizes
- (iii) the necessity for recognition of the need for protection of the Queensland owner/skipper vessels which traditionally fished the area
- (iv) the industry recognition of over-capitalisation in the fishery.

The Northern Fisheries Committee agreed that management should be introduced to the fishery on the basis of the reasons given above, prohibiting entry of further vessels to the fishery for a period of three years during which it could commission research to develop a data base on which it could formulate a long term management policy for the fishery.

On considering these recommendations, Australian Fisheries Council on 29 October 1976 agreed that a three year interim management regime be implemented in the northern prawn fishery as:

(a) Managed Area -

all territorial and proclaimed waters between the meridian at Cape Ford (129°54'E) in the NT and 142°09'E (near Slade Point on the north-west corner of Cape York Peninsula, Qld.)

(b) Criteria for Vessel Entry -

entry to the northern prawn fishery zone should be permitted to Australian boats meeting one or more of the following criteria:

- (i) existing prawn trawlers that have at any time prior to 21 July 1976 operated in the northern prawn fishery zone and that within the time specified in the announcement that entry will be limited, notify intention of seeking a licence;
- (ii) prawn trawlers which a joint venture company has a contractual obligation to a Government to construct for the fishery;
- (iii) prawn trawlers contracted for or with keels laid on or before 15 May 1975 with a specific, independently demonstrated (by supporting documents, etc.) intention that they are to be used exclusively in the fishery; evidence of an initial payment before that date to support a claim based on a contract;
- (iv) prawn trawlers existing at the time of the announcement that entry will be limited, which have not yet worked in the fishery, but are owned and operated by persons able to demonstrate a past and continuing commitment to the fishery by having worked in it as skippers or deckhands;
- (v) replacement on a one-for-one equivalent tonnage basis for prawn trawlers previously engaged in the fishery, but lost or destroyed after 1/7/74. This criterion shall cease to operate on and after 31/3/77.

(c) Additional continuing requirements -

to be imposed on boats meeting the criteria (2(b)(i)-(v) above:

- (i) prawn trawler to be in survey for its class under the survey rules of a State or Territory;
- (ii) skipper to hold the appropriate grade of ticket where applicable or be exempt from such a requirement;
- (iii) licensee or skipper not to be a person under cancellation or suspension of a fishery or boat licence under the law of Australia, any State or any Territory;

- (iv) provision of statistical data through a log book system introduced by the management committee.

(d) Boat Replacement Policy -

the following rules should apply during the trial management period:

- (i) prawn trawlers may be replaced on a one-for-one basis by a vessel of not more than equivalent characteristics, provided that an owner who wishes to replace a vessel of less than 12 metres in length may apply to the management committee for permission to replace it with a larger vessel not exceeding 12 metres in length;
- (ii) even though a replaced boat might meet entry criterion (c)(i) and even though it had been constructed specifically for the fishery, it should lose all rights to a future entitlement unless a management decision is later taken to increase participation in the fishery, in which case it would have equal rights to selection.

(e) Landing Zone -

all prawns taken in the managed area be landed between Broome and Townsville, so as to encourage prawn processing in the north.

(f) Research -

during the interim management period research will be undertaken to provide a data base to formulate a long-term management policy for the fishery.

This interim management regime took effect from 1 January 1977. During the operation of this management regime discussions were held to develop a permanent management policy for the fishery.

On 23 November 1979, the Minister for Primary Industry announced details of the management plan for the northern prawn fishery from 1 January 1980. It covered the following areas:

(a) Managed area -

the same area as covered by the interim regime, namely, from Cape Ford to Slade Point.

(b) Access to Fishery and Scope of Operations -

only those vessels currently entitled to operate during the interim regime will be entitled to apply to operate after 1979

- all currently entitled operators will be given a once-only opportunity to apply to operate in the area

- owners of vessels entitled to operate in the managed area during the interim regime, which have not operated during that period, may be required to show cause why their entitlement should not lapse after 1979.

(c) Licence fees -

fees will be on a sliding scale reflecting the size and fishing power of the vessel

- the maximum fee initially will be \$1000 for an average size vessel.

(d) Commitment to the fishery -

currently entitled operators will not be required to spend any specified period of time operating in the fishery.

(e) Vessel replacement -

a permanent replacement policy will be developed

- in the interim, replacement of vessels exceeding 20 metres length overall will be permitted provided that the length overall of the replacement vessel does not exceed that of the vessel being replaced
- the current owner of a vessel of less than 19 metres length overall will be permitted to replace with a vessel of up to 19 metres length overall
- interim replacements will be allowed subject to the period of any interim replacement being of not less than 10 weeks duration and to the replacement vessel being no larger than the vessel being replaced.

(f) Landing zone -

the existing landing zone requirement, covering the region Broome to Townsville, will continue.

(g) Last load out concept -

a vessel leaving the managed area at the conclusion of its annual operations, upon application at the appropriate time, will be permitted to carry one load out of the zone in any one calendar year.

(h) Pre-season closures -

pre-season closures similar to those which have operated in past years will continue

- areas and timing of such closures will be reviewed annually.

(i) Carrier Boat licences -

Commonwealth Carrier Boat licences will be issued only to vessels registered under the Exports (Fish) Regulations and holding an entitlement to fish in the fishery

- vessels currently holding carrier boat licences, but not meeting the requirements of holding an entitlement, will be permitted to continue their operations as carrier boats, at this time, but may not be replaced by another vessel
- applications will be considered from operators of shore-based processing plants in the zone to place a vessel, not holding a fishing entitlement, in the fishery to operate only as a carrier boat.

(j) Freighter vessels -

the use of temporarily-imported foreign freighter vessels by shore-based processing plants to carry fish and other goods will be allowed to continue subject to their compliance with certain fisheries requirements and conditions imposed by the Minister for Transport, as well as an annual review of their operations.

(k) Log book program -

obligation to fill in a log book will continue as a licence condition.

(l) Revision of management -

a working group of officers from the Departments and Authorities concerned with the fishery will be formed to:

- provide a mechanism for the co-ordination of research into and monitoring of the northern prawn fishery;
- provide scientific advice on the optimum utilisation of the prawn resources of the northern prawn fishery;
- provide analyses of current data collection procedures and make recommendations on future needs and procedures for monitoring the resources and evaluation of any management systems that are implemented; and
- make recommendations on existing and new biological and economic research that may be necessary to monitor the utilisation of the resources and to improve management advice.

The vessel replacement policy referred to in the November 1979 announcement was announced by the Minister for Primary Industry on 3 July 1980 following a meeting in Canberra of the Commonwealth and State Ministers responsible for the fishery.

Under the new policy, the following rules will apply:

- (A) An entitled vessel of less than, or equal to, 21 metres design load waterline length (DLWL) may be replaced by a vessel (new or existing) of 21 metres DLWL or less, provided that the replacement vessel does not exceed 180 gross construction tons.
- (B) Where it is proposed to replace a vessel of 21 metres DLWL or less, which has a gross construction tonnage of greater than 180, the vessel may be replaced by a vessel which does not exceed the gross construction tonnage of the existing vessel and DLWL of 21 metres.
- (C) An entitled vessel of greater than 21 metres DLWL may be replaced by a vessel not exceeding the DLWL of the vessel being replaced.
- (D) Where a vessel exceeding 21 metres DLWL is replaced by a vessel of lesser DLWL, the excess DLWL above 21 metres DLWL is lost to the fishery.
- (E) If a vessel greater than 21 metres DLWL is replaced by a vessel of less than 21 metres DLWL, and replacement of the latter vessel is subsequently sought, such a proposal will only be permitted as per (A) or (B) above.

APPENDIX HDEPRECIATION

Depreciation rates were calculated from owners' estimates of residual life of capital equipment. The rate of depreciation was calculated on a straight-line basis over the total life of capital items.

App. Tab. H-1 details the estimated total life of capital items.

In computing depreciation rates, results of this survey were compared with those from the earlier survey of the northern prawn fishery and other surveys carried out by the Economic Analysis Section to determine how closely they correlated. Accordingly, the depreciation rates used do not, for all items, necessarily cover the same period as estimated by owners. App. Tab. H-2 sets out depreciation rates employed and the corresponding estimated life. A number of points should be noted. Compressors have been included with refrigeration, as separate estimates of cost were not always available. Radio receivers have been included with radio transceivers because so few of the former were in use.

For two items, radar and motor vehicles, estimates of working life were obtained from sources outside the fishery. In regard to motor vehicles, 100% of depreciation was allowed on trucks, utilities and four-wheel drives, 66.7% on station sedans and 33.3% on sedans. The same rates were applied to all vessels, the only exception being the distinction between wooden and steel hulls.

App. Tab. H-1

DepreciationEstimated Life of Equipment*

	Less than 15 m	15 m and less than 17 m	17 m and less than 19 m	19 m and less than 21 m	21 m and over	All Vessels
Hull	22	31	20	20	19	22
Main Engine	11	9	8	8	9	10
Aux. Engine	6	9	8	5	6	7
Refrigeration	10	11	9	10	9	10
Compressor	6	8	6	5	5	6
Trawl Winch	8	14	9	7	7	10
Echo Sounder	5	10	3	6	9	8
Radio Receiver	7	9	5	5	9	8
Radio Transceiver	8	6	3	5	9	8
Auto Pilot	10	10	6	20	19	15
Aux. Boat	8	8	8	7	6	7
Outboard Motor	4	7	3	2	2	4

* Estimate provided by owner at time of interview

App. Tab. H-2

DepreciationDepreciation Rates and Estimated Life
As at 30 June 1978

	Depreciation Rate %	Estimated Life Years
Hull - Wood	3.3	30
- Steel	5.0	20
Main Engine	12.5	8
Auxiliary Engine	16.7	6
Refrigeration	12.5	8
Winch	10.0	10
Echo Sounder	16.7	6
Radio Transceiver	16.7	6
Auto Pilot	10.0	10
Auxiliary Boat	12.5	8
Outboard Motor	16.7	6
Radar	16.7	6
Motor Vehicle	10.0	10

APPENDIX I
INCOME AND EXPENDITURE

App. Tab. I-1

Average Catch and Value of Catch per Vessel
1974/75 - 1977/78

	Banana			Tiger			Endeavour			Total ^a		
	Catch	Price	Value	Catch	Price	Value	Catch	Price	Value	Catch	Price	Value
1974/75	kg	c/kg	\$	kg	c/kg	\$	kg	c/kg	\$	kg	c/kg	\$
Less than 15m	9611	77	7400	5017	163	8178	965	115	1107	18504	107	19799
15m and less than 17m	17658	80	14126	7341	155	11379	2164	108	2341	27899	103	28736
17m and less than 19m	30065	81	24353	5643	163	9198	1615	117	1885	37525	95	35649
19m and less than 21m	39784	106	42171	13324	140	18654	1260	118	1483	67930	116	78799
21m and over	75149	99	74398	11953	155	18527	10283	91	9352	97719	105	102605
1975/76												
Less than 15m	13199	119	15707	4014	242	9714	1100	120	1320	18491	146	26997
15m and less than 17m	15639	150	23459	5456	236	12876	947	120	1137	22042	170	37472
17m and less than 19m	30460	105	31983	4760	216	10281	854	120	1025	36074	120	43289
19m and less than 21m	36315	135	49025	9139	189	17273	7969	120	9563	53423	142	75861
21m and over	94388	155	146301	21124	183	38657	6804	122	8301	122316	158	198259
1976/77												
Less than 15m	11463	219	25104	6272	418	26217	2858	224	6402	21156	278	58815
15m and less than 17m	13157	235	30919	7233	419	30306	2062	228	4701	23981	286	68586
17m and less than 19m	25991	212	55101	7541	539	40646	3666	209	7662	42178	263	110929
19m and less than 21m	59624	236	140713	10764	432	46500	6569	174	11430	77118	258	198965
21m and over	73094	318	232439	15428	416	64180	11961	240	28706	102096	324	330789
1977/78												
Less than 15m	5030	255	12826	8776	404	35455	4433	220	9753	18403	319	58564
15m and less than 17m	3791	293	11108	10842	471	51066	3536	217	7673	18283	384	70206
17m and less than 19m	9252	261	24148	17311	445	77034	5501	277	15238	32104	363	116539
19m and less than 21m	8610	311	26777	25510	460	117346	7218	267	19272	41503	395	163938
21m and over	46573	307	142979	37831	506	191425	8963	292	26172	93670	386	361567

(a) Includes small catches of king and other prawn species

App. Tab. I-2

Distribution of Vessels by Gross Income
1974/75 to 1977/78

	Less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over		All vessels	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<u>1974/75</u>												
9999	2	13	-	-	-	-	-	-	-	-	2	3
10000- 19999	9	60	2	13	1	17	1	17	-	-	13	20
20000- 29999	2	13	7	47	-	-	-	-	-	-	9	14
30000- 39999	1	7	5	33	3	50	-	-	-	-	9	14
40000- 49999	-	-	-	-	2	33	-	-	2	9	4	6
50000- 99999	1	7	1	7	-	-	3	50	11	48	16	25
100000- 149999	-	-	-	-	-	-	2	33	7	30	9	14
150000- 199999	-	-	-	-	-	-	-	-	2	9	2	3
200000- 249999	-	-	-	-	-	-	-	-	-	-	-	-
450000- 499999	-	-	-	-	-	-	-	-	1	4	1	2
500000- 999999	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	15	100	15	100	6	100	6	100	23	100	65	100
<u>1975/76</u>												
0- 9999	-	-	-	-	-	-	-	-	-	-	-	-
10000- 19999	5	28	4	27	1	10	-	-	-	-	10	13
20000- 29999	4	22	2	13	3	30	1	13	-	-	10	13
30000- 39999	8	44	4	27	1	10	-	-	-	-	13	17
40000- 49999	1	6	-	-	1	10	-	-	-	-	2	3
50000- 99999	-	-	5	33	4	40	5	63	3	12	17	22
100000- 149999	-	-	-	-	-	-	2	25	2	8	4	5
150000- 199999	-	-	-	-	-	-	-	-	8	32	8	11
200000- 249999	-	-	-	-	-	-	-	-	8	32	8	11
250000- 499999	-	-	-	-	-	-	-	-	4	16	4	5
500000- 999999	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	18	100	15	100	10	100	8	100	25	100	76	100
<u>1976/77</u>												
0- 9999	-	-	1	6	-	-	-	-	-	-	1	1
10000- 19999	-	-	-	-	-	-	-	-	-	-	-	-
20000- 29999	1	7	2	13	-	-	1	14	-	-	4	6
30000- 39999	1	7	1	6	-	-	-	-	-	-	2	3
40000- 49999	2	13	1	6	-	-	-	-	-	-	3	4
50000- 99999	11	73	8	50	5	56	-	-	-	-	24	33
100000- 149999	-	-	2	13	2	22	-	-	2	8	6	8
150000- 199999	-	-	1	6	2	22	2	29	-	-	5	7
200000- 249999	-	-	-	-	-	-	3	43	5	20	8	11
250000- 499999	-	-	-	-	-	-	1	14	17	68	18	25
500000- 999999	-	-	-	-	-	-	-	-	1	4	1	1
TOTAL	15	100	16	100	9	100	7	100	25	100	72	100
<u>1977/78</u>												
0- 9999	-	-	-	-	-	-	-	-	-	-	-	-
10000- 19999	-	-	-	-	-	-	-	-	-	-	-	-
20000- 29999	1	7	-	-	-	-	-	-	-	-	1	2
30000- 39999	1	7	2	22	-	-	-	-	-	-	3	5
40000- 49999	4	29	-	-	1	14	-	-	-	-	5	9
50000- 99999	7	50	6	67	3	43	-	-	-	-	16	29
100000- 149999	1	7	1	11	1	14	2	33	-	-	5	9
150000- 199999	-	-	-	-	1	14	3	50	2	10	6	11
200000- 249999	-	-	-	-	1	14	1	17	4	20	6	11
250000- 499999	-	-	-	-	-	-	-	-	11	55	11	20
500000- 999999	-	-	-	-	-	-	-	-	3	15	3	5
TOTAL	14	100	9	100	7	100	6	100	20	100	56	100

App. Tab. I-3

Average Gross Income and Operating Expenses
1974/75

	Less than 15 m \$	15 m and less than 17 m \$	17 m and less than 19 m \$	19 m and less than 21 m \$	21 m and over \$
Banana	7,400	14,126	24,353	42,171	74,398
Tiger	8,178	11,379	9,198	18,654	18,527
Endeavour	1,107	2,341	1,885	1,483	9,352
King and Other	3,114	890	213	16,491	328
Gross Income	19,799	28,736	35,649	78,799	102,605
Food for Crew	381	891	933	941	-
Fuel & Oil	2518	3934	4442	8772	20104
Ice	54	46	484	-	2138
Trip Expenses	2953	4871	5859	9713	22242
Repairs & Maintenance	7717	4855	5635	27576	37882
Gear Replacements	1347	1613	1849	4663	9598
Vessel Expenses	9064	6468	7484	32239	47480
Insurance	599	2013	2368	6153	5104
Accountancy	96	215	277	1177	300
Travel Expenses	163	446	277	1525	1519
Vehicle Expenses	109	184	207	129	180
Other Expenses	626	1168	812	10540	11023
Admin. Expenses	1593	4026	3941	19524	18126
Operating Expenses	13610	15365	17284	61476	87848

App. Tab. I-3 (cont.)

Average Gross Income and Operating Expenses
1975/76

	Less than 15 m \$	15 m and less than 17 m \$	17 m and less than 19 m \$	19 m and less than 21 m \$	21 m and over \$
Banana	15,707	23,459	31,983	49,025	146,301
Tiger	9,714	12,876	10,281	17,273	38,657
Endeavour	1,320	1,137	1,025	9,563	8,301
King and Other	256	-	-	-	-
Gross Income	26,997	37,472	43,289	75,861	193,259
Food for Crew	659	1225	1476	921	-
Fuel & Oil	3629	5796	7329	14566	30695
Ice	117	765	250	-	1736
Trip Expenses	4405	7783	9055	15487	32431
Repairs & Maintenance	6719	4372	10681	31213	46540
Gear Replacements	1732	1391	1876	4445	9893
Vessel Expenses	8451	5763	12557	35658	56433
Insurance	883	1292	1751	5290	5637
Accountancy	104	281	200	1684	598
Travel Expenses	280	414	300	2242	1664
Vehicle Expenses	200	182	325	194	117
Other Expenses	685	844	826	8095	8394
Admin. Expenses	2152	3013	3402	17505	16410
Operating Expenses	15008	16559	25014	68650	105274

App. Tab. I-3 (cont.)

Average Gross Income and Operating Expenses
1976/77

	Less than 15 m \$	15 m and less than 17 m \$	17 m and less than 19 m \$	19 m and less than 21 m \$	21 m and over \$
Banana	25,104	30,919	55,101	140,713	232,439
Tiger	26,217	30,306	40,646	46,500	64,180
Endeavour	6,402	4,701	7,662	11,430	28,706
King and Other	1,092	2,660	7,520	322	5,464
Gross Income	58,815	68,586	110,929	198,965	330,789
Food for Crew	833	988	2162	968	818
Fuel & Oil	4844	6020	6901	21356	26370
Ice	227	118	690	-	877
Trip Expenses	5904	7126	9753	22324	28065
Repairs & Maintenance	12820	9282	28384	35698	63709
Gear Replacements	2672	2460	4534	6738	11414
Vessel Expenses	15492	11742	32918	42436	75123
Insurance	1205	2130	3292	6879	6303
Accountancy	335	286	602	2415	696
Travel Expenses	348	696	850	3269	2437
Vehicle Expenses	316	532	780	186	105
Other Expenses	935	1973	1443	11734	8903
Admin. Expenses	3139	5617	6967	24483	18444
Operating Expenses	24535	24485	49638	89243	121632

App. Tab. I-3 (cont.)

Average Gross Income and Operating Expenses
1977/78

	Less than 15 m \$	15 m and less than 17 m \$	17 m and less than 19 m \$	19 m and less than 21 m \$	21 m and over \$
Banana	12,826	11,108	24,148	26,777	142,979
Tiger	35,455	51,066	77,034	117,346	191,425
Endeavour	9,753	7,673	15,238	19,272	26,172
King and Other	530	359	119	543	991
Gross Income	58,564	70,206	116,539	163,938	361,567
Food for Crew	969	1025	1978	1651	1605
Fuel & Oil	3920	6612	9040	24226	43988
Ice	225	132	643	-	-
Trip Expenses	5114	7769	11661	25877	45593
Repairs & Maintenance	16118	17292	25561	69983	93256
Gear Replacements	1946	2942	3254	10332	9848
Vessel Expenses	18064	20234	28815	80315	103104
Insurance	1576	2083	2417	9061	9939
Accountancy	212	231	419	2835	1746
Travel Expenses	567	364	1082	144	3570
Vehicle Expenses	520	496	650	148	436
Other Expenses	1726	1884	2808	16790	8845
Admin. Expenses	4601	5058	7376	28978	24536
Operating Expenses	27779	33061	47852	135170	173233

App. Tab. I-4

Percentage Composition of Operating Costs for Vessels
1974/75-1977/78

1974/75	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
Food for Crew	2.8	5.8	5.4	1.5	-
Fuel & Oil	18.5	25.6	25.7	14.3	22.9
Ice	0.4	0.3	2.8	-	2.4
Trip Expenses	21.7	31.7	33.9	15.8	25.3
Repairs & Maintenance	56.7	31.6	32.6	44.9	43.1
Gear Replacements	9.9	10.5	10.7	7.5	10.9
Vessel Expenses	66.6	42.1	43.3	52.4	54.0
Insurance	4.4	13.1	13.7	10.0	5.8
Accountancy	0.7	1.4	1.6	1.9	0.4
Travel Expenses	1.2	2.9	1.6	2.5	1.7
Vehicle Expenses	0.8	1.2	1.2	0.2	0.3
Other Expenses	4.6	7.6	4.7	17.2	12.5
Admin. Expenses	11.7	26.2	22.8	31.8	20.7
Operating Expenses	100.0	100.0	100.0	100.0	100.0
1975/76					
Food for Crew	4.4	7.4	5.9	1.3	-
Fuel & Oil	24.2	35.0	29.3	21.2	29.2
Ice	0.8	4.6	1.0	-	1.6
Trip Expenses	29.4	47.0	36.2	22.5	30.8
Repairs & Maintenance	44.8	26.4	42.7	45.5	44.2
Gear Replacements	11.5	8.4	7.5	6.4	9.4
Vessel Expenses	56.3	34.8	50.2	51.9	53.6
Insurance	5.9	7.8	7.0	7.7	5.3
Accountancy	0.7	1.7	0.8	2.5	0.6
Travel Expenses	1.9	2.5	1.2	3.3	1.6
Vehicle Expenses	1.3	1.1	1.3	0.3	0.1
Other Expenses	4.5	5.1	3.3	11.8	8.0
Admin. Expenses	14.3	18.2	13.6	25.6	15.6
Operating Expenses	100.0	100.0	100.0	100.0	100.0

App. Tab. I-4 (cont.)

	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
1976/77					
Food for Crew	3.4	4.0	4.4	1.1	0.7
Fuel & Oil	19.7	24.6	13.9	23.9	21.7
Ice	1.0	0.5	1.3	-	0.7
Trip Expenses	24.1	29.1	19.6	25.0	23.1
Repairs & Maintenance	52.3	37.9	57.2	40.0	52.4
Gear Replacements	10.8	10.1	9.1	12.8	9.4
Vessel Expenses	63.1	48.0	66.3	52.8	61.8
Insurance	4.9	8.7	6.6	7.1	5.2
Accountancy	1.4	1.2	1.2	0.8	0.6
Travel Expenses	1.4	2.8	1.8	2.7	2.0
Vehicle Expenses	1.3	2.2	1.6	0.1	0.1
Other Expenses	3.8	8.0	2.9	11.5	7.2
Admin. Expenses	12.8	22.9	14.1	22.2	15.1
Operating Expenses	100.0	100.0	100.0	100.0	100.0
1977/78					
Food for Crew	3.5	3.1	4.1	1.2	0.9
Fuel & Oil	14.1	20.0	18.9	17.9	25.4
Ice	0.8	0.4	1.4	-	-
Trip Expenses	18.4	23.5	24.4	19.1	26.3
Repairs & Maintenance	58.0	52.3	53.4	51.8	53.8
Gear Replacements	7.0	8.9	6.8	7.6	5.7
Vessel Expenses	65.0	61.2	60.2	59.4	59.5
Insurance	5.7	6.3	5.1	6.7	5.7
Accountancy	0.8	0.7	0.9	2.1	1.0
Travel Expenses	2.0	1.1	2.3	0.1	2.1
Vehicle Expenses	1.9	1.5	1.4	0.1	0.3
Other Expenses	6.2	5.7	5.9	12.4	5.1
Admin. Expenses	16.6	15.3	15.4	21.4	14.2
Operating Expenses	100.0	100.0	100.0	100.0	100.0

App. Tab. I-5

Costs and Returns as a Percentage of Gross Income
1974/75 to 1977/78

	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
<u>1974/75</u>					
Trip expenses	14.9	17.0	16.4	12.3	21.7
Vessel expenses	45.8	22.5	21.0	40.9	46.3
Administration expenses	8.0	14.0	11.1	24.8	17.6
Total operating expenses	68.7	53.5	48.5	78.0	85.6
Surplus after operating expenses	31.3	46.5	51.5	22.0	14.4
Depreciation	33.1	34.4	32.7	34.5	39.5
Return to labour & capital	-ve	12.1	18.8	-ve	-ve
Crew payment	20.1	15.4	17.1	18.4	21.6
Return to skipper & capital	-ve	-ve	1.7	-ve	-ve
Skipper allowance	20.0	19.0	20.0	9.4	17.5
Return to capital	-ve	-ve	-ve	-ve	-ve
<u>1975/76</u>					
Trip expenses	16.3	20.8	20.9	20.4	16.8
Vessel expenses	31.3	15.4	29.0	47.0	29.2
Administration expenses	8.0	8.0	7.9	23.1	8.5
Total operating expenses	55.6	44.2	57.8	90.5	54.5
Surplus after operating expenses	44.4	55.8	42.2	9.5	45.5
Depreciation	24.6	26.0	30.8	34.2	20.7
Return to labour & capital	19.8	29.8	11.4	-ve	24.8
Crew payment	18.0	17.5	19.6	23.7	17.9
Return to skipper & capital	1.8	12.3	-ve	-ve	-ve
Skipper allowance	20.0	20.0	20.0	13.9	13.8
Return to capital	-ve	-ve	-ve	-ve	-ve
<u>1976/77</u>					
Trip expenses	10.0	10.4	8.8	11.2	8.5
Vessel expenses	26.3	17.1	29.7	21.4	22.7
Administration expenses	5.3	8.2	6.3	12.3	5.6
Total operating expenses	41.7	35.7	44.7	44.9	36.8
Surplus after operating expenses	58.3	64.3	55.3	55.1	63.2
Depreciation	11.3	14.7	12.6	13.8	12.2
Return to labour & capital	47.0	49.6	42.7	41.3	51.0
Crew payment	17.5	20.5	18.1	15.4	12.0
Return to skipper & capital	29.5	29.1	24.6	25.9	39.0
Skipper allowance	18.2	20.0	20.0	8.6	9.6
Return to capital	11.3	9.1	4.6	17.4	29.4
<u>1977/78</u>					
Trip expenses	8.7	11.1	10.0	15.8	12.6
Vessel expenses	30.8	28.8	24.7	49.0	28.5
Administration expenses	7.9	7.2	6.4	17.7	6.8
Total operating expenses	47.4	47.1	41.1	82.5	47.9
Surplus after operating expenses	52.6	52.9	58.9	17.5	52.1
Depreciation	11.3	14.2	11.9	18.0	11.6
Return to labour & capital	41.3	38.7	47.0	-ve	40.5
Crew payment	17.1	19.3	19.2	14.6	13.2
Return to skipper & capital	24.2	19.4	27.8	-ve	27.3
Skipper allowance	18.8	20.0	18.9	7.8	8.3
Return to capital	5.4	-ve	8.9	-ve	19.0

App. Tab. I-6

Average Depreciated Value of Assets
(As at 30 June 1978)

	Less than 15 m (\$)	15 m and less than 17 m (\$)	17 m and less than 19 m (\$)	19 m and less than 21 m (\$)	21 m and over (\$)
Hull	33089	48204	66317	112038	263858
Main Engine	3327	4498	5289	4469	17813
Auxiliary Engine	521	771	1281	859	5203
Refrigeration	3558	5918	9051	13449	31521
Vessel Equipment	5262	5103	6381	8559	15241
Other	1358	1086	1019	780	97
TOTAL	47114	65580	89337	140153	333733

App. Tab. I-7

Average Replacement Cost of Assets
(As at 30 June 1978)

	Less than 15 m (\$)	15 m and less than 17 m (\$)	17 m and less than 19 m (\$)	19 m and less than 21 m (\$)	21 m and over (\$)
Hull	59133	78582	115291	230802	429400
Main Engine	15056	15976	22500	27250	56167
Auxiliary Engine	2372	3500	4777	8838	28050
Refrigeration	11765	19058	27565	61574	97861
Vessel Equipment	13508	17384	20084	28786	45606
Other	2556	3000	3115	1500	194
TOTAL	104389	137500	193333	358750	657278

App. Tab. I-8

Average Monetary Returns as Percentage of Gross Income1974/75 to 1977/78

	Less than 15 m (%)	15 m and less than 17 m (%)	17 m and less than 19 m (%)	19 m and less than 21 m (%)	21 m and over (%)
<u>1974/75</u>					
Gross Income	100.0	100.0	100.0	100.0	100.0
Return to Labour & Capital	-ve	12.1	18.8	-ve	-ve
Return to Skipper & Capital	-ve	-ve	1.7	-ve	-ve
Return to Capital	-ve	-ve	-ve	-ve	-ve
<u>1975/76</u>					
Gross Income	100.0	100.0	100.0	100.0	100.0
Return to Labour & Capital	19.8	29.8	11.4	-ve	24.8
Return to Skipper & Capital	1.8	12.3	-ve	-ve	6.9
Return to Capital	-ve	-ve	-ve	-ve	-ve
<u>1976/77</u>					
Gross Income	100.0	100.0	100.0	100.0	100.0
Return to Labour & Capital	47.1	49.6	42.7	41.3	51.1
Return to Skipper & Capital	29.5	29.1	24.6	25.9	39.0
Return to Capital	11.3	9.1	4.6	17.4	29.4
<u>1977/78</u>					
Gross Income	100.0	100.0	100.0	100.0	100.0
Return to Labour & Capital	41.3	38.7	47.0	-ve	40.5
Return to Skipper & Capital	24.2	19.4	27.8	-ve	27.3
Return to Capital	5.4	-ve	8.9	-ve	19.0

App. Tab. I-9

Consumer Price Index : All Groups
Index Numbers
Base Year 1968/69

Weighted Average of Six State Capital Cities

1968/69	100.0
1969/70	103.2
1970/71	108.1
1971/72	115.3
1972/73	122.5
1973/74	138.3
1974/75	161.4
1975/76	182.4
1976/77	207.5
1977/78	227.4
1978/79	245.8
1979/80	270.8

Source: Consumer Price Index, Australian Bureau of Statistics, Canberra, various issues. The base year used in the above statistics is different from that employed by the ABS. The above index numbers have been calculated by dividing the ABS index numbers prepared using 1966/67 as the base year by the ABS index number for the weighted average of six State capital cities in 1968/69 and multiplying the quotient by 100.0.

APPENDIX J
DISTRIBUTION OF RETURNS

App. Tab. J-1

Return to Capital

1974/75

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	1	4.35
-99999 - -50000	1	6.67	-	-	-	-	1	16.67	16	69.57
-49999 - -40000	-	-	-	-	-	-	2	33.33	2	8.70
-39999 - -30000	-	-	-	-	-	-	1	16.67	1	4.35
-29999 - -20000	-	-	-	-	1	16.67	1	16.67	2	8.70
-19999 - -10000	-	-	5	33.33	-	-	-	-	1	4.35
- 9999 - 0	12	80.00	9	60.00	4	66.67	-	-	-	-
0 - 9999	2	13.33	-	-	-	-	-	-	-	-
10000 - 19999	-	-	1	6.67	-	-	1	16.67	-	-
20000 - 29999	-	-	-	-	1	16.67	-	-	-	-
30000 - 39999	-	-	-	-	-	-	-	-	-	-
40000 - 49999	-	-	-	-	-	-	-	-	-	-
50000 - 99999	-	-	-	-	-	-	-	-	-	-
100000 +	-	-	-	-	-	-	-	-	-	-
TOTAL	15	100.00	15	100.00	6	100.00	6	100.00	23	100.00

Return to Skipper and Capital

1974/75

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	-	-
-99999 - -50000	1	6.67	-	-	-	-	1	16.67	11	47.88
-49999 - -40000	-	-	-	-	-	-	1	16.67	3	13.04
-39999 - -30000	-	-	-	-	-	-	1	16.67	4	17.39
-29999 - -20000	-	-	-	-	1	16.67	1	16.67	1	4.35
-19999 - -10000	-	-	-	-	-	-	1	16.67	2	8.70
- 9999 - 0	7	46.67	10	66.67	-	-	-	-	-	-
0 - 9999	5	33.33	4	26.67	4	66.67	-	-	2	8.70
10000 - 19999	2	13.33	1	6.67	1	16.67	-	-	-	-
20000 - 29999	-	-	-	-	-	-	1	16.67	-	-
30000 - 39999	-	-	-	-	-	-	-	-	-	-
40000 - 49999	-	-	-	-	-	-	-	-	-	-
50000 - 99999	-	-	-	-	-	-	-	-	-	-
100000 +	-	-	-	-	-	-	-	-	-	-
TOTAL	15	100.00	15	100.00	6	100.00	6	100.00	23	100.00

App. Tab. J-1 (cont.)

Return to Labour and Capital1974/75

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	-	-
-99999 - -50000	1	6.67	-	-	-	-	-	-	5	21.74
-49999 - -40000	-	-	-	-	-	-	1	16.67	5	21.74
-39999 - -30000	-	-	-	-	-	-	-	-	3	13.04
-29999 - -20000	-	-	-	-	1	16.67	1	16.67	2	8.70
-19999 - -10000	-	-	-	-	-	-	2	33.33	1	4.35
- 9999 - 0	5	33.33	5	33.33	-	-	1	16.67	1	4.35
0 - 9999	6	40.00	8	53.33	3	50.00	-	-	3	13.04
10000 - 19999	2	13.33	1	6.67	1	16.67	-	-	-	-
20000 - 29999	1	6.67	1	6.67	1	16.67	-	-	-	-
30000 - 39999	-	-	-	-	-	-	-	-	1	4.35
40000 - 49999	-	-	-	-	-	-	-	-	2	8.70
50000 - 99999	-	-	-	-	-	-	1	16.67	-	-
100000 +	-	-	-	-	-	-	-	-	-	-
TOTAL	15	100.00	15	100.00	6	100.00	6	100.00	23	100.00

App. Tab. J-1 (cont.)

Return to Capital

1975/76

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	2	25.00	-	-
-99999 - -50000	-	-	-	-	-	-	2	25.00	5	20.00
-49999 - -40000	1	5.56	-	-	1	10.00	-	-	2	10.00
-39999 - -30000	-	-	-	-	-	-	1	12.50	3	12.00
-29999 - -20000	-	-	-	-	1	10.00	-	-	2	8.00
-19999 - -10000	1	5.56	5	33.33	3	30.00	1	12.50	2	8.00
- 9999 - 0	9	50.00	5	33.33	3	30.00	-	-	2	8.00
0 - 9999	7	38.89	3	20.00	2	20.00	1	12.50	-	-
10000 - 19999	-	-	1	6.67	-	-	1	12.50	3	12.00
20000 - 29999	-	-	1	6.67	-	-	-	-	2	8.00
30000 - 39999	-	-	-	-	-	-	-	-	2	8.00
40000 - 49999	-	-	-	-	-	-	-	-	-	-
50000 - 99999	-	-	-	-	-	-	-	-	2	8.00
100000 +	-	-	-	-	-	-	-	-	-	-
TOTAL	18	100.00	15	100.00	10	100.00	8	100.00	25	100.00

Return to Skipper and Capital

1975/76

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	-	-
-99999 - -50000	-	-	-	-	-	-	4	50.00	2	8.00
-49999 - -40000	1	5.56	-	-	-	-	-	-	-	-
-39999 - -30000	-	-	-	-	-	-	-	-	1	4.00
-29999 - -20000	-	-	-	-	2	20.00	1	12.50	3	12.00
-19999 - -10000	1	5.56	1	6.67	2	20.00	1	12.50	3	12.00
- 9999 - 0	5	27.78	6	40.00	2	20.00	-	-	4	16.00
0 - 9999	9	50.00	4	26.67	2	20.00	-	-	1	4.00
10000 - 19999	2	11.11	2	13.33	1	10.00	1	12.50	-	-
20000 - 29999	-	-	1	6.67	1	10.00	1	12.50	1	4.00
30000 - 39999	-	-	1	6.67	-	-	-	-	1	4.00
40000 - 49999	-	-	-	-	-	-	-	-	2	8.00
50000 - 99999	-	-	-	-	-	-	-	-	7	28.00
100000 +	-	-	-	-	-	-	-	-	-	-
TOTAL	18	100.00	15	100.00	10	100.00	8	100.00	25	100.00

App. Tab. J-1 (cont.)

Return to Labour and Capital1975/76

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	-	-
-99999 - -50000	-	-	-	-	-	-	2	25.00	1	4.00
-49999 - -40000	-	-	-	-	-	-	-	-	1	4.00
-39999 - -30000	1	5.56	-	-	-	-	-	-	-	-
-29999 - -20000	-	-	-	-	-	-	2	25.00	-	-
-19999 - -10000	1	5.56	-	-	3	30.00	1	12.50	-	-
- 9999 - 0	2	11.11	5	33.33	2	20.00	1	12.50	4	16.00
0 - 9999	6	33.33	3	20.00	1	10.00	-	-	1	4.00
10000 - 19999	7	38.89	3	20.00	2	20.00	-	-	3	12.00
20000 - 29999	1	5.56	2	13.33	-	-	-	-	1	4.00
30000 - 39999	-	-	-	-	2	20.00	2	25.00	2	8.00
40000 - 49999	-	-	1	6.67	-	-	-	-	-	-
50000 - 99999	-	-	1	6.67	-	-	-	-	7	28.00
100000 +	-	-	-	-	-	-	-	-	5	20.00
TOTAL	18	100.00	15	100.00	10	100.00	8	100.00	25	100.00

App. Tab. J-1 (cont.)

Return to Capital1976/77

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	1	4.00
-99999 - -50000	-	-	-	-	-	-	-	-	1	4.00
-49999 - -40000	-	-	-	-	1	11.11	-	-	-	-
-39999 - -30000	-	-	-	-	-	-	-	-	-	-
-29999 - -20000	-	-	-	-	1	11.11	-	-	-	-
-19999 - -10000	1	6.67	2	12.50	-	-	1	14.29	1	4.00
- 9999 - 0	4	26.67	4	25.00	1	11.11	1	14.29	-	-
0 - 9999	3	20.00	4	25.00	2	22.22	-	-	1	4.00
10000 - 19999	6	40.00	3	18.75	1	11.11	2	28.57	-	-
20000 - 29999	1	6.67	2	12.50	2	22.22	-	-	-	-
30000 - 39999	-	-	1	6.25	-	-	1	14.29	1	4.00
40000 - 49999	-	-	-	-	1	11.11	1	14.29	1	4.00
50000 - 99999	-	-	-	-	-	-	-	-	5	20.00
100000 +	-	-	-	-	-	-	1	14.29	14	56.00
TOTAL	15	100.00	16	100.00	9	100.00	7	100.00	25	100.00

Return to Skipper and Capital1976/77

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	1	4.00
-99999 - -50000	-	-	-	-	-	-	-	-	1	4.00
-49999 - -40000	-	-	-	-	-	-	-	-	-	-
-39999 - -30000	-	-	-	-	1	11.11	-	-	-	-
-29999 - -20000	-	-	-	-	-	-	-	-	-	-
-19999 - -10000	-	-	1	6.25	-	-	1	14.29	-	-
- 9999 - 0	2	13.33	1	6.25	-	-	-	-	-	-
0 - 9999	3	20.00	2	12.50	2	22.22	-	-	1	4.00
10000 - 19999	2	13.33	5	31.25	2	22.22	1	14.29	-	-
20000 - 29999	5	33.33	2	12.50	-	-	-	-	1	4.00
30000 - 39999	3	20.00	3	18.75	-	-	2	28.57	-	-
40000 - 49999	-	-	1	6.25	2	22.22	-	-	-	-
50000 - 99999	-	-	1	6.25	2	22.22	2	28.57	4	16.00
100000 +	-	-	-	-	-	-	1	14.29	17	68.00
TOTAL	15	100.00	16	100.00	9	100.00	7	100.00	25	100.00

App. Tab. J-1 (cont.)

Return to Labour and Capital

1976/77

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	-	-
-99999 - -50000	-	-	-	-	-	-	-	-	1	4.00
-49999 - -40000	-	-	-	-	-	-	-	-	-	-
-39999 - -30000	-	-	-	-	-	-	-	-	1	4.00
-29999 - -20000	-	-	-	-	-	-	-	-	-	-
-19999 - -10000	-	-	1	6.25	1	11.11	1	14.29	-	-
- 9999 - 0	1	6.67	1	6.25	-	-	-	-	-	-
0 - 9999	2	13.33	2	12.50	-	-	-	-	-	-
10000 - 19999	2	13.33	2	12.50	1	11.11	-	-	-	-
20000 - 29999	2	13.33	1	6.25	-	-	-	-	-	-
30000 - 39999	5	33.33	4	25.00	3	33.33	-	-	1	4.00
40000 - 49999	2	13.33	-	-	-	-	-	-	-	-
50000 - 99999	1	6.67	4	25.00	4	44.44	5	71.43	3	12.00
100000 +	-	-	1	6.25	-	-	1	14.29	19	76.00
TOTAL	15	100.00	16	100.00	9	100.00	7	100.00	25	100.00

App. Tab. J-1 (cont.)

Return to Capital1977/78

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	2	10.00
-99999 - -50000	-	-	-	-	-	-	3	50.00	-	-
-49999 - -40000	-	-	-	-	-	-	1	16.67	3	15.00
-39999 - -30000	1	7.14	-	-	-	-	-	-	-	-
-29999 - -20000	-	-	2	22.22	-	-	-	-	-	-
-19999 - -10000	1	7.14	1	11.11	1	14.29	1	16.67	-	-
- 9999 - 0	2	14.29	2	22.22	2	28.57	-	-	2	10.00
0 - 9999	6	42.86	1	11.11	1	14.29	-	-	-	-
10000 - 19999	1	7.14	2	22.22	1	14.29	-	-	3	15.00
20000 - 29999	2	14.29	1	11.11	-	-	-	-	-	-
30000 - 39999	1	7.14	-	-	1	14.29	-	-	-	-
40000 - 49999	-	-	-	-	1	14.29	-	-	-	-
50000 - 99999	-	-	-	-	-	-	1	16.67	1	5.00
100000 +	-	-	-	-	-	-	-	-	9	45.00
TOTAL	14	100.00	9	100.00	7	100.00	6	100.00	20	100.00

Return to Skipper and Capital1977/78

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	1	5.00
-99999 - -50000	-	-	-	-	-	-	3	50.00	1	5.00
-49999 - -40000	-	-	-	-	-	-	-	-	-	-
-39999 - -30000	1	7.14	-	-	-	-	-	-	-	-
-29999 - -20000	-	-	-	-	-	-	1	16.67	3	15.00
-19999 - -10000	1	7.14	1	11.11	-	-	-	-	-	-
- 9999 - 0	2	14.29	1	11.11	-	-	-	-	-	-
0 - 9999	-	-	3	33.33	2	28.57	1	16.67	-	-
10000 - 19999	5	35.71	-	-	-	-	-	-	1	5.00
20000 - 29999	2	14.29	2	22.22	2	28.57	-	-	1	5.00
30000 - 39999	-	-	-	-	-	-	-	-	2	10.00
40000 - 49999	2	14.29	2	22.22	1	14.29	-	-	1	5.00
50000 - 99999	1	7.14	-	-	2	28.57	1	16.67	-	-
100000 +	-	-	-	-	-	-	-	-	10	50.00
TOTAL	14	100.00	9	100.00	7	100.00	6	100.00	20	100.00

App. Tab. J-1 (cont.)

Return to Labour and Capital

1977/78

\$	less than 15 m		15 m and less than 17 m		17 m and less than 19 m		19 m and less than 21 m		21 m and over	
	No.	%	No.	%	No.	%	No.	%	No.	%
-100000 +	-	-	-	-	-	-	-	-	-	-
-99999 - -50000	-	-	-	-	-	-	2	33.33	1	5.00
-49999 - -40000	-	-	-	-	-	-	1	16.67	-	-
-39999 - -30000	-	-	-	-	-	-	-	-	-	-
-29999 - -20000	1	7.14	-	-	-	-	-	-	-	-
-19999 - -10000	-	-	-	-	-	-	-	-	-	-
- 9999 - 0	1	7.14	2	22.22	-	-	1	16.67	1	5.00
0 - 9999	2	14.29	1	11.11	1	14.29	-	-	2	10.00
10000 - 19999	2	14.29	2	22.22	1	14.29	-	-	1	5.00
20000 - 29999	3	21.43	1	11.11	-	-	-	-	-	-
30000 - 39999	2	14.29	-	-	1	14.29	1	16.67	1	5.00
40000 - 49999	-	-	1	11.11	1	14.29	-	-	-	-
50000 - 99999	3	21.42	2	22.22	2	28.57	-	-	4	20.00
100000 +	-	-	-	-	1	14.29	1	16.67	10	50.00
TOTAL	14	100.00	9	100.00	7	100.00	6	100.00	20	100.00

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