

CSIRO
Marine Laboratories

REPORT 138

Fishery Statistics Relating to the
Declared Management Zone of the
Australian Northern Prawn Fishery,
1968-1979

I.F. Somers and B.R. Taylor

1981

CSIRO
Marine Laboratories

REPORT 138

**Fishery Statistics Relating to the
Declared Management Zone of the
Australian Northern Prawn Fishery,
1968-1979**

I.F. Somers and B.R. Taylor

1981

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION
MARINE LABORATORIES
P.O. BOX 21, CRONULLA, NSW 2230
AUSTRALIA

National Library of Australia Cataloguing-in-Publication Entry

Somers, I. F. (Ian Frazer), 1950-.

Fishery statistics relating to the declared management zone of the Australian northern prawn fishery, 1968-1979.

Bibliography.

ISBN 0 643 02757 2.

1. Shrimp fisheries—Australia, Northern—Statistics.
- I. Taylor, B. R. II. Commonwealth Scientific and Industrial Research Organization (Australia). Marine Laboratories. III. Title. (Series: Report (Commonwealth Scientific and Industrial Research Organization (Australia). Marine Laboratories); no. 138).

338.3'7253843

© CSIRO 1982.

Printed by CSIRO, Melbourne.

The title of this series has been changed recently. The last Report issued under the title *CSIRO Division of Fisheries and Oceanography Report* was number 136. From number 137 onward Reports are entitled *CSIRO Marine Laboratories Report*.

FISHERY STATISTICS RELATING TO THE DECLARED MANAGEMENT ZONE OF THE AUSTRALIAN NORTHERN PRAWN FISHERY, 1968-1979

I.F. Somers and B.R. Taylor*

Division of Fisheries Research
CSIRO Marine Laboratories
P.O. Box 120, Cleveland, Qld 4163

*Present address:

Division of Fisheries Research
CSIRO Marine Laboratories
P.O. Box 21, Cronulla, NSW 2230

Aust. CSIRO Mar. Lab. Rep. 138 (1981)

ABSTRACT

In 1977, a large proportion of the Australian northern prawn fishery was declared a limited entry fishery. This region is currently referred to as the Declared Management Zone (DMZ).

By using detailed catch and effort data obtained from prawn processing companies and fishermen's logbooks, data pertaining to the Australian northern prawn fishery have been partitioned in such a way that fishery statistics relevant to the DMZ could be derived. Statistics are for the period 1968-79 presented together with their method of derivation from the total northern prawn data set. These statistics are catch, effort, catch per unit effort and size composition.

INTRODUCTION

The Australian northern prawn fishery is the name commonly given to the collection of prawn fisheries situated in Australian waters north of latitude 20°S. Although the prawn fisheries in this region commenced in the early 1960's, it was not until 1968 that any comprehensive collection of fishery statistics was undertaken. Initially the information collected was confined to landing and production data from prawn processing companies which meant that little, if any, of the information could readily be identified with individual fishing grounds. Some of the landings were from Australian vessels which had fished as far away as waters adjacent to Irian Jaya and Papua New Guinea, waters which are outside the current 200 nautical mile Australian Fishing Zone.

With the evolution of management regulations governing subsections of this broad northern prawn fishery, there was a need for more precise partitioning of the basic fishery statistical data set. The most important of the management regulations was the introduction of limited entry into what has become the Declared Management Zone (DMZ) shown in Figure 1.

By the use of detailed catch and effort data collected from individual fishermen through a comprehensive logbook system, it has been possible to transform much of the more broadly based data set into a set pertaining primarily to the DMZ. This report documents the resultant data set as well as the methods used in its transformation.

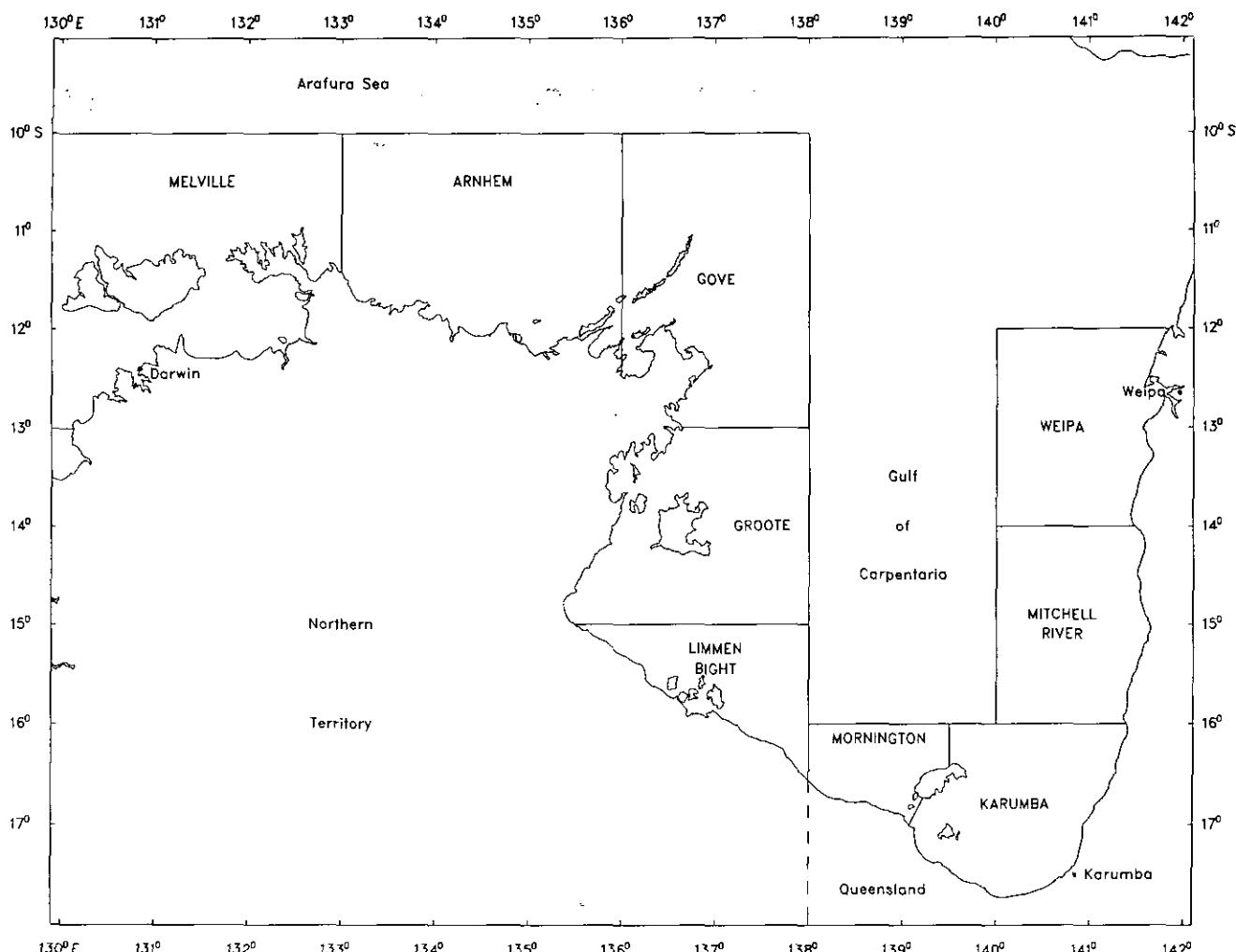


Figure 1. Map of northern Australia showing the Declared Management Zone of the Australian northern prawn fishery together with the statistical partitioning used in collating regional catches.

Although there are at least seven species of prawns caught in commercial quantities in the fishery, only four species categories are readily identified. These and the species they include are as follows:

Species Category	Species Included
1. Banana prawns	<i>Penaeus merguiensis</i>
2. Tiger prawns	<i>P. esculentus</i> <i>P. semisulcatus</i> <i>P. monodon</i>
3. Endeavour prawns	<i>Metapenaeus ensis</i> <i>M. endeavouri</i>
4. King prawns	<i>P. latisulcatus</i>

Both logbook catch data and processors' landing statistics were recorded using these categories, and consequently this report is based on this categorization.

In terms of catch and effort data the prawn fishery is most conveniently described as two separate fisheries - a banana prawn fishery and a mixed species fishery.

The Banana Prawn Fishery

As banana prawns are generally caught in large schools in northern Australian waters, a large proportion of fishing time is actually spent searching for prawns. As trawling operations are undertaken only when a

school of prawns is located, the units of fishing effort must account for the amount of time spent searching. The fishery is monospecific and very seasonal, the same vessels turning to the alternative mixed species fishery when catches decline to unprofitable levels.

The Mixed Species Fishery

The major species in this fishery are tiger and endeavour prawns but both king and banana prawns may be incidental components of the catch. Little or no searching is undertaken and fishing effort may be measured simply as time spent trawling.

DATA SOURCES

Processor Returns

In 1968, the Commonwealth Department of Primary Industry (DPI) established a system for gathering landing and production information from northern prawn processors. Data was collected on a monthly basis from individual processing companies and included the following:

- (a) Total landings for the particular month for each of the commercial prawn species groups.
- (b) Total landings of all species of prawns for each vessel which unloaded during the month.
- (c) The size composition of all prawn catches processed during the month.
- (d) The port of landing for prawns received during the month.

During the 1970's, new vessels entering the fishery were larger and more independent of shore bases, having the ability to freeze and hold the catch for long periods. Thus the month and port of landing gradually became a more unreliable indicator of when and where catches were taken.

In 1974, CSIRO supplemented the DPI collection system with a parallel collection of information from processors, obtaining more precise vessel landings data which were required as part of a research program in the Gulf of Carpentaria. The two collection systems were combined in 1978 and the resultant

system is currently administered by the Commonwealth Department of Primary Industry in Canberra.

Fishermen's Logbooks

A logbook system was introduced by CSIRO in 1969 to obtain detailed catch and effort data on individual prawn species in the northern prawn fishery.

Logbooks were initially designed for recording details of individual trawls. However, in the banana prawn fishery, on days when no banana prawns were located and consequently no trawling undertaken, fishermen were reluctant to complete details of time spent searching. Records from these early logs were therefore deficient in the number of actual nil-catch fishing days. The logbooks were subsequently redesigned and replaced in 1975 by logbooks centred around daily records rather than individual trawl records.

While proving more suitable for the banana prawn fishery, the log was less precise in the reporting of catches in the mixed species fishery. Logbook recording of fishing areas was initially based on a latitude/longitude system whereby the degree of precision was a six minute grid square. The recording of area to this precision was generally not possible for daily records from the banana prawn fishery and was thus supplemented by including provision for the recording of more general fishing grounds. The change, however, was accompanied by a corresponding loss of precision in the mixed species fishery, where fishermen found that reporting fishing grounds was easier than ascertaining and reporting six minute grid squares. This lack of precision, although not affecting basic statistics for the DMZ, will affect any detailed analysis of the mixed species fishery population dynamics.

The contents of the logbook data set are summarized in Tables 1 and 2. The unit of fishing effort used in both fisheries is vessel-days.

As a consequence of fishermen's reluctance to record unsuccessful fishing days in earlier logbooks, the estimates of catch per vessel-day for the banana prawn fishery for the years 1970-1973 are biased upwards. This bias was avoided in subsequent years through the use of interviews and the change in logbook design. The change in logbook design, however, has

TABLE 1. Summary of logbook records pertaining to the banana prawn fishery of the DMZ (1970-79).

Year	Logbook catch total banana prawn (tonnes)	Logbook catch ^a banana prawn only (tonnes)	Percentage of fishing days ^b with nil catch	Catch per vessel-day (tonnes)	Percentage of fishing days ^b with no six minute grid square recorded
1970	716	640	7.0	0.866 ^c	12.7
1971	4688	4169	11.5	1.639 ^c	32.6
1972	2262	1939	21.5	1.288 ^c	47.0
1973	1888	1574	21.5	0.869 ^c	66.6
1974	4978	4814	24.1	1.777	77.5
1975	2172	2081	52.5	0.609	78.9
1976	2773	2603	46.5	0.648	82.5
1977	4146	3973	40.6	0.911	68.8
1978	1523	1359	53.0	0.455	92.9
1979	2928	2658	40.2	0.662	94.8

^a Catch of banana prawns excluding that taken as an incidental component of catches in the mixed species fishery.

^b Fishing days when no species other than banana prawns are caught.

^c Vessel-days for years 1970-73 are deficient in recorded nil-catch days and hence logbook catch per unit effort for these years are overestimates of actual catch per unit effort.

TABLE 2. Summary of logbook records pertaining to the mixed species fishery of the DMZ (1970-79).

Year	Total catch tiger + king + endeavour (tonnes)	Hours per day trawled	Catch per vessel-day (tonnes)	Percentage of fishing days with no six minute grid square recorded
1970	1049	10.4	0.262	5.2
1971	940	12.2	0.205	2.5
1972	1225	12.7	0.230	6.3
1973	1260	11.8	0.294	30.7
1974	690	n.a.	0.382	42.7
1975	842	n.a.	0.245	67.2
1976	1024	n.a.	0.261	73.2
1977	2228	n.a.	0.350	67.1
1978	2368	n.a.	0.263	81.9
1979	2782	n.a.	0.299	82.6

n.a. Information not available as hours trawled were not recorded in log books for these years.

meant that for the later years, no information on hours spent trawling was available for the mixed species fishery.

FISHERY STATISTICS

Fishing Grounds

Maps of the fishing grounds within the DMZ for each of the four species groups were obtained from logbook catches recorded by six minute grid square. Logbook catches are accumulated for all years between 1970 and 1979 for all records with a recorded six minute grid square. The fishing grounds are shown in Figures 2, 3, 4 and 5 for banana prawns, tiger prawns, endeavour prawns and king prawns respectively. The size of the symbol drawn in each grid square is proportional to the total recorded catch for that square.

It must be remembered that the maps are of known recorded fishing grounds and do not necessarily represent the relative abundance of the individual species throughout the whole area of the DMZ.

Annual Catch

The annual catch of each of the various species groups in the DMZ has been estimated for the years 1968 to 1979 in the following ways:

1968-69

Landings given in monthly processors' returns were included in or excluded from the total DMZ estimates on the basis of port of landing or, in the case of motherships, the areas of operation.

1970-73

The DPI monthly processors' returns were cross-checked with available logbook data in order to exclude vessels fishing outside the DMZ. In the absence of logbook data, the port of landing, area of operation and logbook details of other vessels landing to the same processor in the same month were used to decide on the inclusion/exclusion of vessel landings.

1974-77

The CSIRO monthly processors' returns were structured in such a way that landings could be ascertained directly without the need for logbook cross-checking. Because of glut

conditions during the 1974 banana prawn fishing season, significant quantities of prawns were dumped without being landed. Thus the catch estimate for banana prawns in that year exceeds the recorded landings by 1,000 tonnes, an estimate which was based on skipper interviews.

1978-79

The joint CSIRO/DPI monthly processors' returns were sufficient for direct compilation of landings for the DMZ. Banana prawns were again dumped in 1978 but in that case had been caught incidentally with other species during a period and in an area closed to the capture of banana prawns. A figure of 150 tonnes (Macleod, 1980) has been added to the recorded landings for that year.

The estimated annual catches for the DMZ together with northern prawn fishery landings (source: DPI) are given in Table 3.

Annual Effort

The annual number of vessels fishing in the DMZ has been ascertained in the same manner as annual catch i.e. through the processors' returns cross-checked with available logbook data. These data are also included in Table 3. A more accurate indicator of annual fishing effort is the total number of vessel-days. As direct compilation of this statistic was not possible it was estimated by dividing total catch by average catch per unit effort. Thus estimates of annual vessel-days were obtained by dividing annual catch by the estimates of catch per vessel-day derived from logbooks. To this end the banana prawn fishery and the mixed species fishery are considered separately, with logbook records being separated on the basis of the target species. Although the target species was not recorded *per se*, interpretation of the logbook records was as follows: banana prawns were considered the target species on those fishing days when either no prawns were caught or when only banana prawns were caught. The remaining logbook records were assumed to refer to operations in the mixed species fishery. Thus although the two fisheries were kept mutually exclusive with respect to compilation of total fishing effort, a small proportion of the total banana prawn catch represented an incidental component of catches in the mixed species fishery.

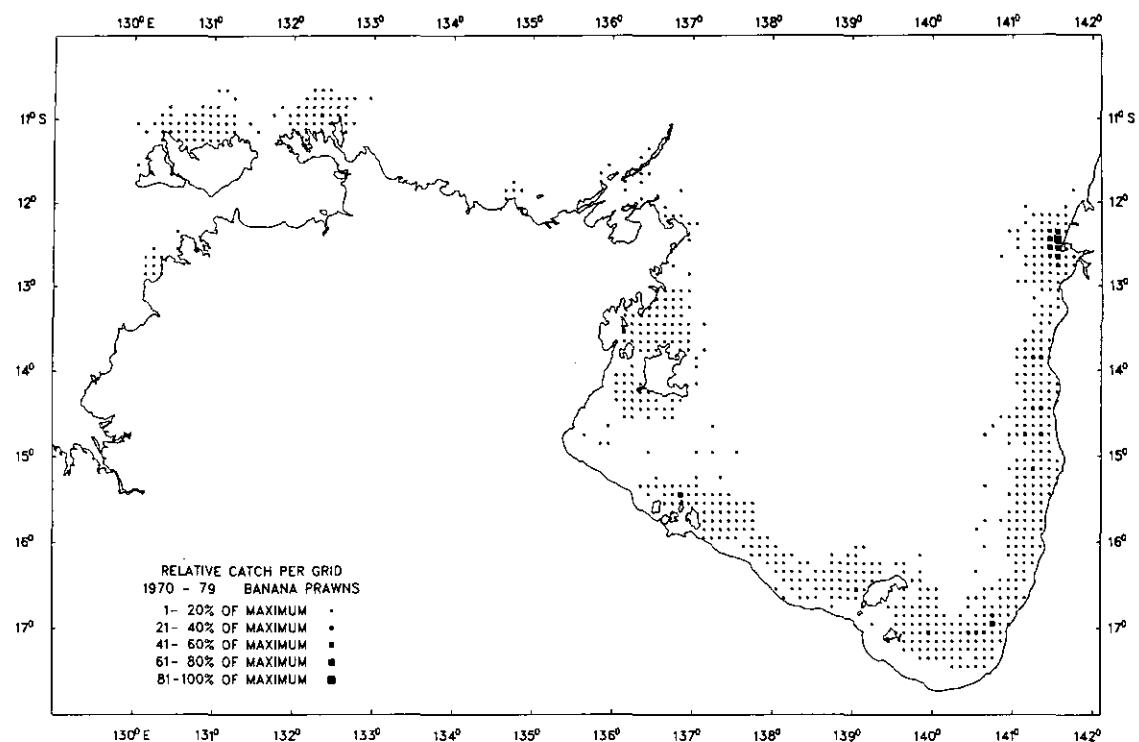


Figure 2. Map of banana prawn fishing areas (1970-79) showing catch by six minute grid relative to the maximum observed in any one grid. The size of the symbol drawn in each grid square is proportional to the total recorded catch for that square.

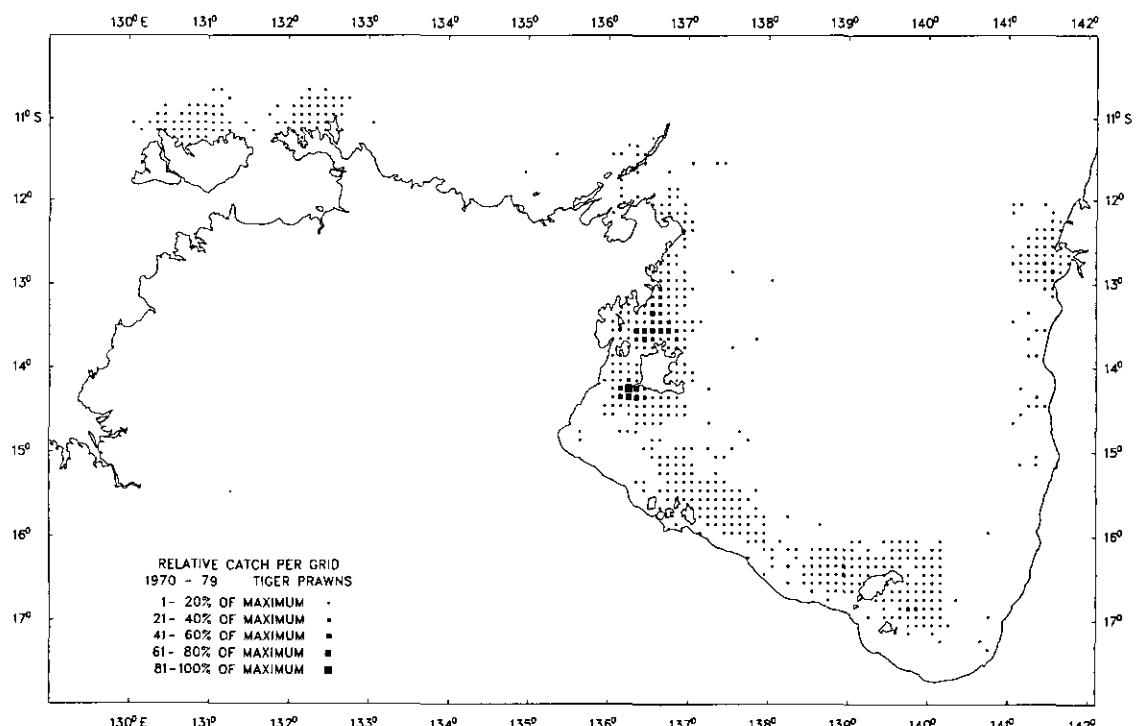


Figure 3. Map of tiger prawn fishing areas (1970-79) showing catch by six minute grid relative to the maximum observed in any one grid. The size of the symbol drawn in each grid square is proportional to the total recorded catch for that square.

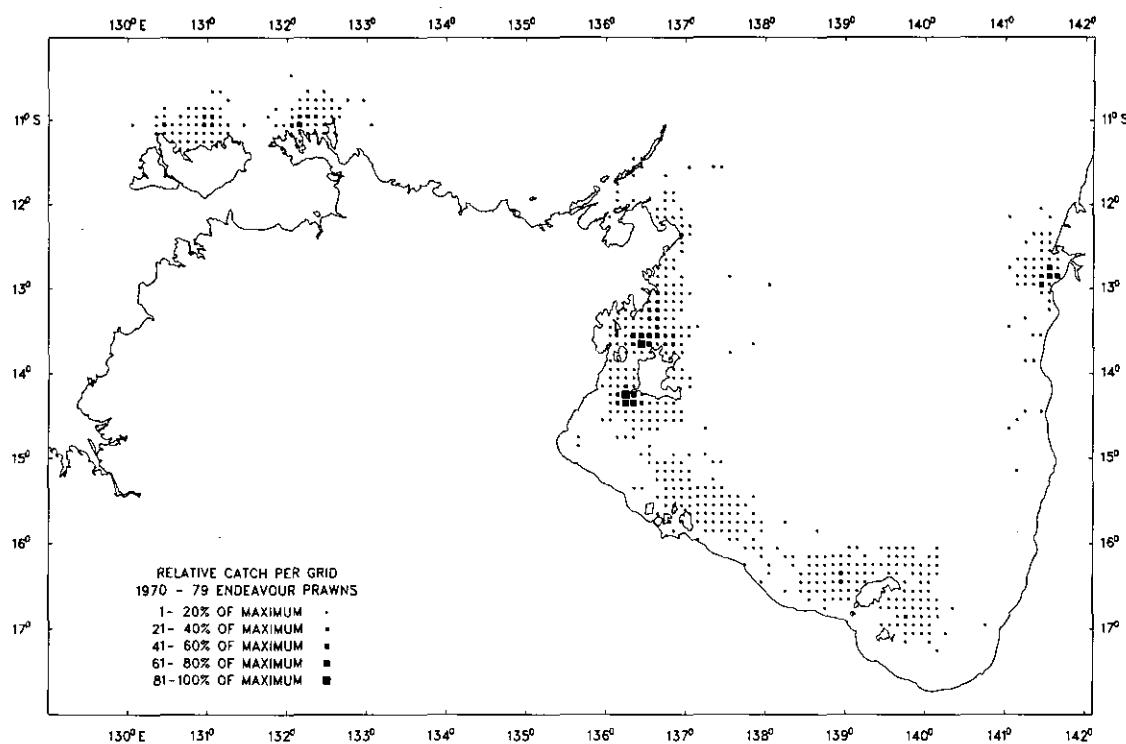


Figure 4. Map of endeavour prawn fishing areas (1970-79) showing catch by six minute grid relative to the maximum observed in any one grid. The size of the symbol drawn in each grid square is proportional to the total recorded catch for that square.

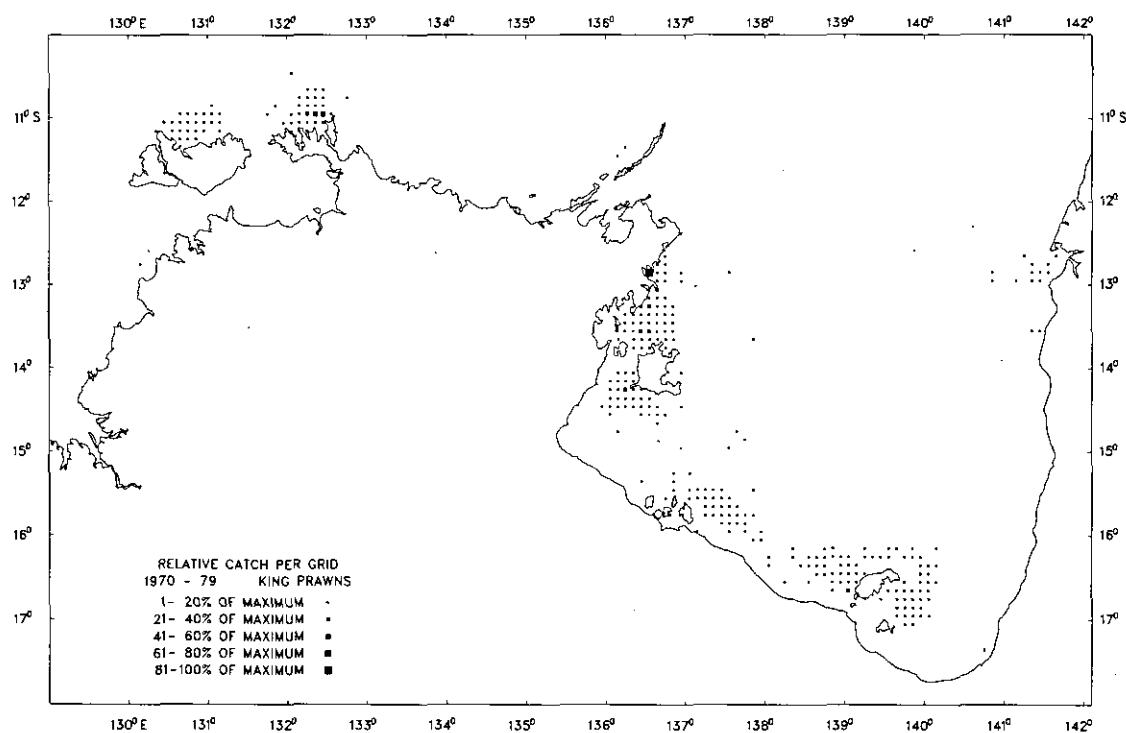


Figure 5. Map of king prawn fishing areas (1970-79) showing catch by six minute grid relative to the maximum observed in any one grid. The size of the symbol drawn in each grid square is proportional to the total recorded catch for that square.

TABLE 3. Annual northern prawn fishery landings, DMZ catches and corresponding numbers of fishing vessels (1968-79).

Year	Northern Prawn Fishery ^a		Declared Management Zone						Vessels	
	Landings ^b (tonnes)	Vessels	Catches ^b							
			Banana (tonnes)	Tiger (tonnes)	Endeavour (tonnes)	King (tonnes)	Mixed (tonnes)	Total (tonnes)		
1968	2268	118	1978	121	49	-	-	2148	65	
1969	4962	258	1070	570	275	-	-	1915	144	
1970	6750	252	1702	1138	417	-	-	3257	191	
1971	9984	292	7365	1183	400	-	-	8948	169	
1972	7650	321	4804	1381	473	-	-	6658	180	
1973	7840	291	4226	1672	594	-	-	6492	217	
1974	13003	220	12711	666	434	4	49	13864	196	
1975	4923	184	2980	973	444	6	2	4405	107	
1976	6912	192	4436	1122	675	6	2	6241	145	
1977	10503	301	6216	2900	1125	28	18	10287	193	
1978	8648	389	2535	3599	1240	82	16	7472	237	
1979	12881	545	4775	4218	1213	94	51	10351	240	

^a Source: DPI, Canberra

^b The distinction is made between catches and landings because catches may include estimates of banana prawns dumped prior to landing.

Banana Prawn Fishery

Annual fishing effort in the banana prawn fishery was estimated after first subtracting the incidental banana prawn catches from the total catch. The proportion of the total catch which this represented was estimated directly from logbook records (see Table 1). The catch and effort statistics for the banana prawn fishery are given in Table 4.

Although estimates of catch per unit effort for the years 1974 to 1979 were obtainable directly from logs, the logbook data set for the years 1970 to 1973, as mentioned previously, was deficient in the recordings of nil-catch days. This deficiency is evident in a graph of nil-catch days and annual catch (Figure 6) for which there appears to be an inverse linear relationship for the data from 1974 to 1979. Such a relationship is expected in a heavily exploited prawn fishery where the annual catch is a reliable index of the quantity of prawns available, as the probability of being unsuccessful on any

day's fishing should be inversely proportional to the quantity available. Lucas *et al.* (1979) have shown that the banana prawn fishery has been heavily exploited since 1971. The empirical relationship shown in Figure 6 has been used to estimate the actual number of nil-catch days in the years 1971 to 1973. From this, better estimates of catch per unit effort and consequently total effort have been obtained. In the year 1970, not all currently known banana prawn fishing grounds were worked and hence no comparison with later years was possible.

As can be seen from Table 4, the level of fishing effort has remained relatively constant since 1971 despite a slight increase in the number of vessels and despite the consistently small proportion of a year devoted to banana prawn fishing. This is consistent with the estimated high level of exploitation in this fishery as any such increase in fishing effort would result in an insignificant increase in total catch.

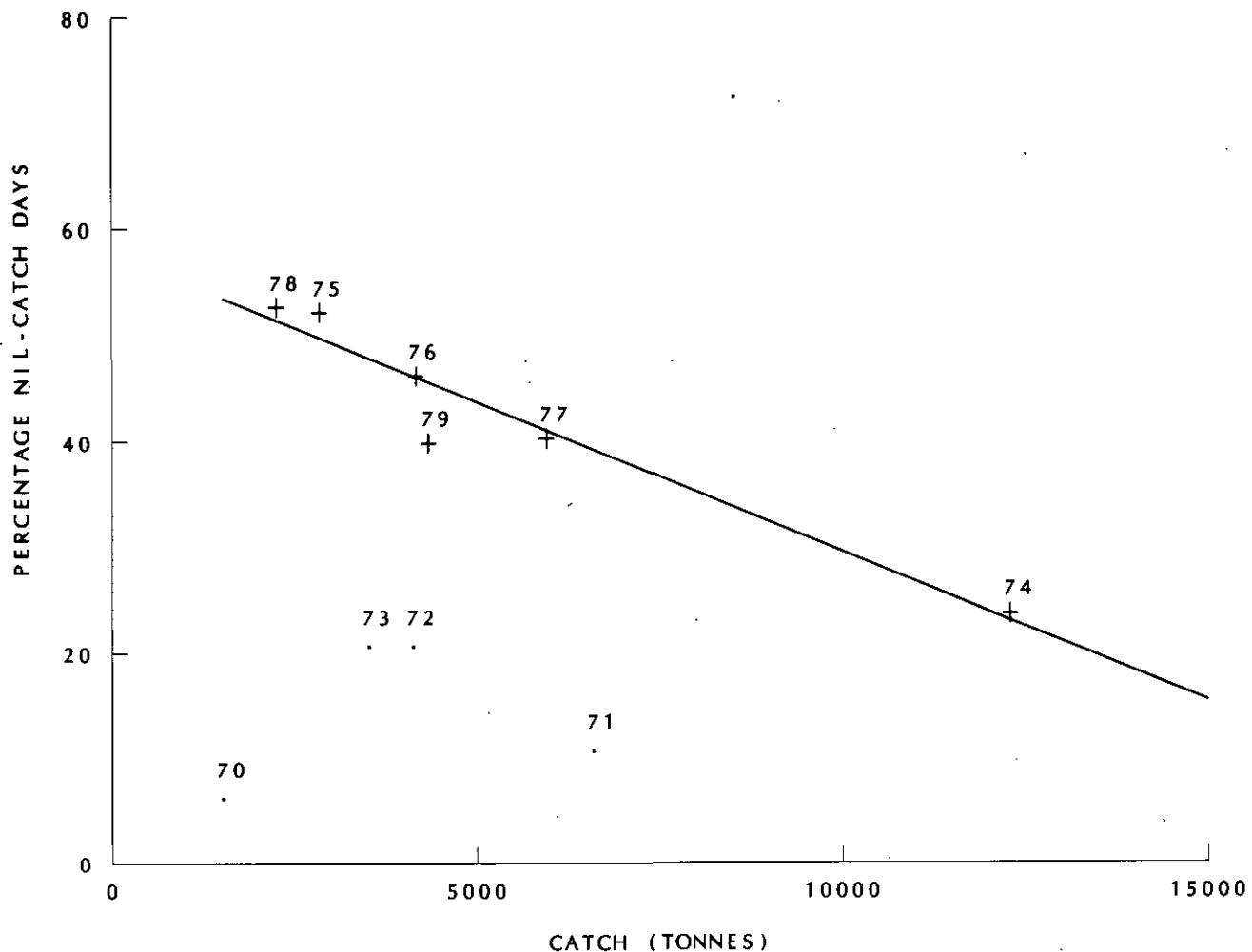


Figure 6. Graph of the relationship between total banana prawn catch and the percentage of days spent fishing for banana prawns, but which resulted in no catch as indicated by logbook records. A linear regression line is fitted for the years 1974-79.

Mixed Species Fishery

In all years including 1970, estimates of annual number of vessel-days spent in the mixed species fishery were calculated by dividing the total landings of tiger, endeavour and king prawns by the total logbook catch per vessel-day for those species. The catch and effort details for the mixed species fishery are given in Table 5.

Unlike the banana prawn fishery, the mixed species fishery has seen a marked increase in annual vessel-days, especially since the declaration of the DMZ in 1977. Furthermore, as the average size of vessels has become larger, skippers have become more experienced and trawling both day

and night has become more common, standardized fishing effort, which accounts for the increase in fishing power of an average vessel-day, would undoubtedly show an even greater increase during this period.

Regional Catches

Having ascertained the catch statistics for the DMZ, it was possible to further partition catches to a regional level by using the logbook data. The partitioning used (Figure 1) is purely statistical and has no biological significance, but it does provide flexibility in relating the data set to any new management zone that might evolve from the present DMZ. The estimates of regional catches in all cases except 1974 are

TABLE 4. Annual catch, effort and catch per unit effort (CPUE) for the banana prawn fishery of the DMZ (1968-79).

Year	Vessels	Total catch (tonnes)	Banana prawn fishery catch ^a (tonnes)	CPUE ^b (tonnes/vessel-day)	Effort (vessel-days)	Days per vessel per year
1968	19	1978	-	-	-	-
1969	115	1070	-	-	-	-
1970	142	1702	1527	-	-	-
1971	165	7365	6597	1.313	5024	27
1972	154	4804	4131	1.070	3861	27
1973	166	4226	3524	0.711	4956	32
1974	165	12711	12291	1.777	6916	42
1975	105	2980	2855	0.609	4690	45
1976	145	4436	4164	0.648	6427	44
1977	175	6216	5956	0.911	6535	37
1978	193	2535	2263	0.455	4977	26
1979	199	4775	4335	0.662	6549	33

^a Total catch of banana prawns excluding those caught as an incidental component of the mixed species fishery catches.

^b Catch per unit effort based on logbook records pertaining to banana prawn fishing only.

TABLE 5. Annual catch, effort and catch per unit effort (CPUE) for tiger, endeavour and king prawns from the mixed species fishery of the DMZ (1968-79).

Year	Vessels	Total catch (tonnes)	Catch per vessel (tonnes)	CPUE (tonnes/vessel-day)	Effort (vessel-days)	Days per vessel per year
1968	65	170	1.95	-	-	-
1969	144	845	5.87	-	-	-
1970	191	1555	8.14	0.262	5939	31
1971	169	1583	9.37	0.205	7725	46
1972	180	1854	10.30	0.230	8060	45
1973	217	2266	10.44	0.294	7701	36
1974	196	1153	6.56	0.382	3016	15
1975	107	1425	13.24	0.245	5817	54
1976	145	1805	12.48	0.261	6915	48
1977	193	4071	20.85	0.350	11637	60
1978	237	4937	20.07	0.263	18746	79
1979	240	5576	22.63	0.299	18618	78

based purely on a direct extrapolation of logbook catch partitioning to the total landings of each species group. In 1974, as the logbook data was supplemented with skipper interviews during the banana prawn fishing season, there was reason to believe that the regional catch estimates would be biased in favour of the areas adjacent to ports where interviews took place. In this case the interview information was further partitioned into groups corresponding to the processor to which the prawn catch was unloaded. The grouped data was then partitioned into regional units, extrapolated to the respective processing company totals and finally accumulated as total regional catches. Because the location of processor unloading facilities was more widespread than was the interviewing network, analysis in this manner should have removed much of the geographical interview bias. The regional catches are given in Table 6 for the three major species groups.

Size Composition

The monthly returns from processors include details on the size composition of prawns processed during the month. In order to convert these data into those relating directly to annual catches from the DMZ for the respective years, there are several problems to overcome.

(a) Catches can be stored for several weeks on board vessels before they are landed. Furthermore they can be stored on shore for several months before being processed. Any overlap of consecutive years' processing data was usually ascertained and accounted for by virtue of the seasonal nature of the fishery and through close liaison with company managers.

(b) Processing plants which handle product from within the DMZ may also handle product from outside the zone. As factory managers were very much interested in quality control of their processed product, they would generally keep records of the origin of prawns they received. The size

composition data from returns for which this information was not available were not included. Thus the weight of product used in estimating the annual size composition does not always account for total landings. This is particularly so in later years for both tiger and endeavour species as both the species groups are common in the northern prawn fishery outside the DMZ.

(c) The size composition data may relate to marketing size categories of any of headless, whole or even peeled prawns. An attempt has been made to standardize the size composition data into headless grades by using suitable conversion ratios for the various product types.

The annual size composition of the major species groups is given in Table 7. Insufficient data exist for king prawns and they are not included.

ACKNOWLEDGEMENTS

We thank all prawn processing companies who have contributed to the data set through monthly statistical returns and we also thank the Commonwealth Department of Primary Industry for making these returns available. We especially thank all of those fishermen of the northern prawn fishery who, by completing voluntary logbooks, have made it possible to refine the data set into one pertaining to the DMZ.

REFERENCES

Lucas, C., Kirkwood, G., and Somers, I. (1979) An assessment of the stocks of the banana prawn *Penaeus merguiensis* in the Gulf of Carpentaria. *Australian Journal of Marine and Freshwater Research* 30, 639 - 652.

Macleod, N.D. (1980) Limited entry management for the northern prawn fishery: A review essay on its development. Seminar, Economic Aspects of Limited Entry and Associated Fisheries Management Measures, Melbourne

TABLE 6. Annual landings (tonnes) of banana prawns, tiger prawns and endeavour prawns from each statistical region within the DMZ (1970-79).

Year	Weipa	Mitchell River	Karumba	Mornington Island	Limmen Bight	Groote Eylandt	Gove	Arnhem	Melville Island	Remaining area
Banana prawns										
1970	1020	0	556	57	5	38	1	0	25	0
1971	1672	3034	1667	178	32	169	0	0	613	0
1972	1921	1348	524	222	216	122	0	0	451	0
1973	615	1027	817	398	632	381	0	5	351	0
1974	1313	835	3854	1560	1375	768	0	1312	1694	0
1975	819	497	735	136	0	6	0	56	731	0
1976	746	615	1255	319	391	159	15	125	811	0
1977	641	864	2701	796	520	124	70	68	432	0
1978	1045	169	387	83	1	70	27	69	684	0
1979	444	505	1328	713	516	143	63	106	954	3
Tiger prawns										
1970	92	0	123	334	2	539	20	1	19	8
1971	54	2	83	62	35	769	45	0	133	0
1972	55	0	93	201	153	744	2	1	132	0
1973	164	1	56	86	103	1175	2	1	83	1
1974	6	0	34	3	20	522	1	0	80	0
1975	208	0	113	49	1	436	12	1	146	7
1976	137	1	78	76	24	609	29	0	166	2
1977	114	0	460	301	143	1581	166	1	134	0
1978	363	0	468	82	96	1987	264	3	336	0
1979	79	1	503	411	1035	1596	213	0	346	34
Endeavour prawns										
1970	85	0	32	95	1	191	5	0	7	1
1971	46	0	17	15	6	195	13	0	108	0
1972	65	0	23	33	16	181	2	0	153	0
1973	45	0	11	13	22	407	1	1	94	0
1974	9	0	17	0	5	205	1	0	197	0
1975	88	0	20	1	0	165	11	0	157	2
1976	40	0	36	2	8	219	16	0	353	1
1977	166	0	115	43	28	490	86	1	196	0
1978	95	0	212	29	7	496	61	1	339	0
1979	88	0	151	89	161	369	56	0	289	10

TABLE 7. Size composition of annual banana prawn, tiger prawn and endeavour prawn catch from the DMZ (1968-79).

Year	Size categories (count/lb, heads off) ^a							Percentage of catch ^b
	1-10 %	11-15 %	16-20 %	21-25 %	26-30 %	31-40 %	41-50 %	
Banana prawns								
1968	0	1	59	32	7	1	0	29
1969	0	1	11	37	40	9	2	63
1970	0	2	11	35	37	12	3	40
1971	0	8	31	27	24	8	2	45
1972	0	3	31	45	18	3	0	54
1973	1	4	16	36	33	10	0	49
1974	0	1	15	46	33	5	0	28
1975	0	1	11	38	34	16	0	55
1976	0	1	10	27	32	26	4	50
1977	0	2	13	40	33	11	1	35
1978	0	2	13	33	31	19	2	40
1979	1	5	20	28	30	15	1	47
Tiger prawns								
1968	6	24	40	23	5	2	0	79
1969	8	21	28	25	15	3	0	40
1970	9	21	32	26	9	3	0	42
1971	7	24	25	23	17	4	0	33
1972	11	24	25	22	14	4	0	42
1973	14	26	28	20	9	3	0	54
1974	12	18	30	28	10	2	0	16
1975	12	20	28	27	10	3	0	30
1976	7	12	28	29	16	8	0	16
1977	10	31	25	22	9	3	0	7
1978	16	25	27	21	8	3	0	23
1979	19	27	27	15	8	4	0	15
Endeavour prawns								
1968	0	5	21	38	19	17	0	80
1969	0	3	15	35	22	24	1	64
1970	0	8	32	40	15	5	0	42
1971	0	3	13	32	27	22	3	48
1972	0	5	22	30	21	19	3	33
1973	1	9	20	32	26	9	3	51
1974	0	1	10	34	30	24	1	20
1975	0	1	15	27	27	29	1	13
1976	0	1	18	30	21	27	3	12
1977	0	4	29	32	19	16	0	22
1978	0	6	32	26	23	12	1	23
1979	0	7	33	29	19	10	2	15

^a Headless prawns are currently marketed under a grading system which employs imperial units.

^b Percentage of total catch accounted for by weight of product represented in data on headless grades.

CSIRO
Marine Laboratories

comprises

Division of Fisheries Research
Division of Oceanography
Central Services Group

HEADQUARTERS

202 Nicholson Parade, Cronulla, NSW
P.O. Box 21, Cronulla, NSW 2230, Australia

QUEENSLAND LABORATORY

233 Middle Street, Cleveland, Qld
P.O. Box 120, Cleveland, Qld 4163

WESTERN AUSTRALIAN LABORATORY

Leach Street, Marmion, WA
P.O. Box 20, North Beach, WA 6020