

ANALYSIS OF CATCH AND EFFORT DATA FOR THE
KIMBERLEY REGION AND THE JOSEPH BONAPARTE GULF AREA

History of the Fishery

Records collected for the period 1967-68 show that trawling for prawns commenced in Joseph Bonaparte Gulf (February 1967) by a Japanese Research Vessel and later (July 1967) in the Kimberley Region by Japanese fishermen. Although commercial fishing could have occurred earlier, no data can be located for the period prior to February 1967. In September 1967, the Development Section of the Department of Fisheries and Fauna (now Fisheries and Wildlife) undertook a small resource survey in the Broome to King Sound area. Their vessel 'Hamelin' was in the area from 29/9/1967 to 31/10/67 and carried out try-netting with no significant results. Following these earlier attempts to fish the region, the Development Section of the Department of Fisheries and Fauna initiated a series of prawn trawling resource surveys to determine the feasibility of a commercial fishery in the Kimberley Region, and the Western Australian portion of the Joseph Bonaparte Gulf Area. These surveys (1968-1972) were contracted to commercial trawlers to fish the two areas, with particular reference to the Kimberley Region (Fig. 2).

During the early nineteen seventies, as a result of the resource surveys, the potential for a prawn trawl fishery was recognised by Western Australian fishing companies and independent fishermen. Two companies despatched trawlers to fish the Kimberley Region in anticipation of licences, should the region be gazetted a limited entry fishery. Individual Western Australian fishermen from the banana prawn fishery of the Nickol Bay area, also fished within the region.

This initial development of the fishery soon declined due to the logistics involved in the operation of vessels over vast distances, with the added factor of fluctuating catches. Furthermore, with the establishment of an open entry fishery in the Gulf of Carpentaria and the economic viability of the trawl fisheries on the West Coast that are based on limited licence entry policy, the incentive for fishermen engaged in pioneering and finding of new grounds was reduced, further depressing prawn trawl fishing within the Kimberley Region.

The Gulf of Carpentaria fishery produced a larger type of prawn trawler due to the vastness of the region. These vessels are capable of remaining at sea fishing for longer periods of time, without the need to refuel. In addition they are equipped with larger freezer storage capacities. Many of these trawlers were built in Fremantle, Western Australia, and carry out annual refits in the port. Since 1972, the trawlers have been required to steam through the Kimberley Region from Darwin to Fremantle, making it inevitable

fishing would commence within the region. This fishing began in 1972. If time permits, most fishermen will fish the region when the tides are right. Fishermen who fish the Kimberley Region will trawl for banana prawns during the neap tides, as it is thought this is the time when they are most abundant, although some fishermen will remain within the area fishing constantly.

With Darwin as the base for many of the Gulf trawlers, new areas were developed within the Northern Territory waters, especially when the abundance of banana prawns diminished within the Gulf of Carpentaria. As a result, Joseph Bonaparte Gulf (Fig. 3), in particular the area in and around Fog Bay, developed into a commercial fishery. In 1974 good catches of banana prawns were taken out of the Fog Bay Area by at least seventeen trawlers in the months of May and June. One boat 'Chasseur' is reported to have caught 40,000 kg of banana prawns within a ten day period. Since the good catches of 1974, Joseph Bonaparte Gulf, and in particular Fog Bay, is fished frequently.

Many of the trawlers fishing Joseph Bonaparte Gulf continue west into the Kimberley Region, because it is only one day's steaming, as against a few days steaming into the Gulf of Carpentaria. Good catches of prawns are made within the Kimberley Region, but because of the tidal influences, prawns are generally caught on the neaps. Between tides the trawlers travel back to the Joseph Bonaparte Gulf area or further east. Normally the Kimberley Region is fished within the months of May and June, and depending on the abundance of prawns within the region, fishing can extend into July and August, or if the abundance of prawns within the Gulf of Carpentaria declines early, the season can begin in March or April.

The Joseph Bonaparte Gulf area and the Kimberley Region are now an extension of the Gulf of Carpentaria fishery because as the abundance of banana prawns drops below an economically viable catch rate within the Gulf, a movement West is made, whilst the skippers are looking for more economically exploitable stocks. This pattern of fishing has been in operation since 1974.

With this known activity within the Kimberley Region and many reported catches varying from anecdote to anecdote, a need arose for meaningful statistics to be collected and compiled into catch and effort tables.

Collection of Data

Since 1972 catch and effort data have been collected from the Western Australian trawlers fishing the Kimberley Region by the officers of the Data Section of the Western Australian Marine Research Laboratories. The collected data are an

accurate indication of the fishing activities of the Western Australian trawlers. The data from other vessels fishing the Kimberley Region are sparse, due to skippers not completing logbooks or to not forwarding the completed logsheets to research centres, such as the C.S.I.R.O. Investigations proved, however, that some catch and effort statistics were available from the following centres :-

1. Development Section - Western Australian Department of Fisheries and Wildlife.
2. Broome and Derby - Northern Western Australia.
3. Darwin - Northern Research Co.
4. C.S.I.R.O. - Cleveland, Queensland.
5. C.S.I.R.O. - Cronulla, N.S.W.
6. Raptis Fishing Co. - Adelaide, S.A.

Following a discussion at the Western Fisheries Research Committee Meeting (1977), money was obtained from the Department of Primary Industry to collect the data. This was undertaken in November-December of 1977 and the above-mentioned centres were visited. All available catch and effort data (original logsheets and catch records) for the Kimberley Region and the Joseph Bonaparte Gulf Area were collected during the trip.

The collected data were different in format, due to the analytical or catch and effort data requirements of the individual research centres and fishing companies. Listed below are the centres visited, the type of data collected and descriptions of the data.

1. The Development Section

The Development Section supplied the original resource survey records of the Kimberley Region and the Joseph Bonaparte Gulf Area. The data are an accurate record of the areas fished, catch (species separated) and effort (i.e. trawl duration, search time and try net duration). Although the data are complete, they provide an index of the prawn population density which is not strictly comparable with that obtained from the catch rates of vessels with experience in fishing for the banana prawn. The reasons are :-

- (a) The skippers were King and Tiger prawn fishermen from the established non-schooling fisheries, unaccustomed to the techniques of banana fishing.

- (b) The company skippers from the established West Coast Prawn Fisheries were contracted to their company for a full season. From conversations with them, it was learnt they did not wish to go north to the Kimberley Region after completing a full season in their home fishery. With this concern in mind, they unanimously decided not to fully exploit the potential of the banana prawn stocks within the Kimberley Region.
- (c) Fishermen who were contracted by the Department did not have the incentive to fish as efficiently as fishermen who were on a commission. In addition, under the terms of their contracts, they were required to fish certain areas which required them to be away from the more productive regions.

2. Broome and Derby

Sparse data were collected from these two centres. Derby Meat Works were closed for the season, and the data will be collected at a later date. The same applies to the Australia Game Meat Company. Any information received from these two companies will be of historical value only, because the Derby Meat Company's and the Australian Game Meat Company's ventures were failures. Very little fishing effort was carried out by their trawlers due to problems of logistics and the vessels not having freezing facilities on board, which would have enabled them to remain at sea for longer periods.

From Gascoyne Traders, in Broome, some records of landed weights were extracted from their consignment notes. The collected data showed only figures of total weights, which consisted of many vessels' catches combined into a single total. It was impossible to separate most of the individual catches because :-

- (a) Some of the unloadings consisted of prawns caught in the Northern Territory waters combined with prawns caught within the Kimberley Region.
- (b) Wet boats sold their catches to freezer boats which acted as motherships.
- (c) Freezer boats organised themselves into a roster system, where one vessel unloaded its own catch with the catches of the others, to avoid losing fishing time.

3. Darwin-Northern Research Co.

The catch and effort data from the Northern Territory based trawlers are collected by the officers of the Territory's Fisheries Branch and forwarded to Cleveland, Queensland for processing by the C.S.I.R.O. Records of the early catches were lost in Cyclone Tracey (1974).

In 1974 the Northern Research Company, the Darwin based fish processors, commenced a company logbook for their vessels. This logbook was not completed accurately. The catches were not necessarily recorded and the daily sheets were not recorded continuously for a full season. This is due to the skippers' desire to not disclose their catches or lack of interest in completing a book. No breakdown of landed weights could be guaranteed as accurate, because of the steaming range of the trawlers and the large number of different fishing areas. Although certain records were incomplete, they were collected because they are estimates of minimum catches and the accurately recorded catch and effort data were thought to reflect true catch per unit of effort.

4. C.S.I.R.O., Cleveland, Queensland.

The logbook catch and effort data collected from this centre were in two different formats. The earlier format required the fishermen to complete a daily logsheet which necessitated the recording of data in the form of area fished and the catch and effort for each shot. Provision for search time was included but modifications to a later version eliminated this.

A new logbook was issued in 1975 and this book requires basic information condensed into a daily summary of the fishing operations. The format requires only the day fished, area and catch. Effort, i.e. trawl duration and search time are not required making the unit of catch per unit of effort, catch per day. All available catch and effort data were extracted from the original logsheets and these were for the years 1976 and 1977. Data prior to 1976 are stored at the office of the Commonwealth Scientific and Industrial Research Organisation at Cronulla, N.S.W.

5. C.S.I.R.O., Cronulla, N.S.W.

Most data of the earlier efforts to fish the Kimberley Region and the Joseph Bonaparte Gulf Area are stored in Cronulla. The data are the original logsheets of

the C.S.I.R.O. logbooks. Daily summaries of the data were extracted, and in this procedure some data of the early attempts by the Japanese to fish the areas were found. At the time the Japanese style of fishing was similar to the methods used by the non schooling prawn fishermen, i.e. the Japanese skipper fished continuously day and night with a set duration for each trawl. Even though the catch was high, the data did not reflect the true potential of the banana fishery within the Kimberley Region and the Joseph Bonaparte Gulf Area, because this method of fishing is unsuitable for use in a banana prawn fishery. The data from the Japanese records show area and days fished, number of shots for the day, and the catch in species separated (headed and in kilograms). No mention is made of trawl duration but it is known that the length of trawl duration varied from two to three hours.

The logbook data completed by the fishermen have sequences of data missing within the fishing seasons, causing concern as to whether the data were never completed, lost or uncollected. Because of this the summarised collected data will give estimates of minimum catches only.

6. Raptis Fishing Co., Adelaide, S.A.

In 1974 the company introduced non-compulsory logbooks for company skippers to complete. The logbooks recorded the same information as those issued on a compulsory basis by the Northern Research Company, to their vessels. Access to the original logsheets was gained and the records summarised. Due to the unwillingness of the skippers to co-operate (jealousy of their catches, or lack of interest in completing the records), gaps were a significant feature of the data. Estimates of catches from the data reflect the minimum catch and effort values for vessels fishing for Raptis Co.

Summary of Data

The original logsheets stored and maintained by the centres, were summarised into daily totals and the data transcribed onto prepared forms. Catch and effort tables were produced from the data. When processing of the data was carried out, many discrepancies were found and these were :-

- (1) Two sets of data for the same vessel and period of fishing, but different values for the catch and effort.

66

- (2) Estimates of catch made by the skipper varied from the landed weight where this was available for comparison.
- (3) Completion of the logbook varied from skipper to skipper. There seemed to be no instructions or educational programme to ensure the skipper completed the data requirements in a uniform and accurate manner.
- (4) Areas fished (grid reference) were unreliable as the references were read inaccurately, i.e. fishing grounds were on the mainland, etc.
- (5) Sequences of data were missing throughout the entire collected data. The data show vessels fishing a productive area with good daily catches then the data ceases in the middle of these catches only to recommence up to one month later.

Due to the different degree of accuracy in the catch and effort data collected, the data in Tables 1 and 2 contain estimates of the catch and effort of all boats which have been estimated from details of catch and effort for those who provided accurate information. With known catch and effort data missing, the figures estimated for the tables are minimum values only.

The catch rate calculated from the reliable data will give an accurate index of abundance within each year of data, but changes in fishing technique (e.g. from continuous fishing to fishing the neap tides or searching) may produce indices which are not comparable from year to year. In addition, changes in the fishing grounds from year to year will cause the catch rate to vary from one season to the next.

Extra fishing effort is known to have been carried out within the areas, but the logbooks were never completed, or if completed, the data are still to be collected. The missing data will be collected when it becomes available, i.e. interviews with fishermen when they return to Fremantle for the annual refitting of vessels. It is possible more records of the earlier fishing activities within the two areas may become available after further investigations. When the data become available, it will necessitate modifying the tables after the data are processed.

Table 2 shows the catches in the Kimberley Region are on the increase, and with more and more vessels showing interest in the Region, it is recommended that consideration be given for the continuation of the collection of statistics in order that a more valid and up to date summary of catch and effort be produced for each year. To do this it would mean a trip, similar to the one undertaken, each year. This trip would visit the major centres, i.e. Darwin, Brisbane,

Sydney and Adelaide to collect the relevant data and if possible any back data that may have become available. A submission stating that such a field data collection trip is necessary, will be made at the next meeting of Western Fisheries Research Committee.

All the extracted raw data has been listed and is available from the Western Australian Marine Research Laboratories. Computer processing of the data is being carried out and when validated, further analysis of the data will be done.

FIGURE 1: KIMBERLEY REGION AND JOSEPH BONAPARTE GULF AREA.

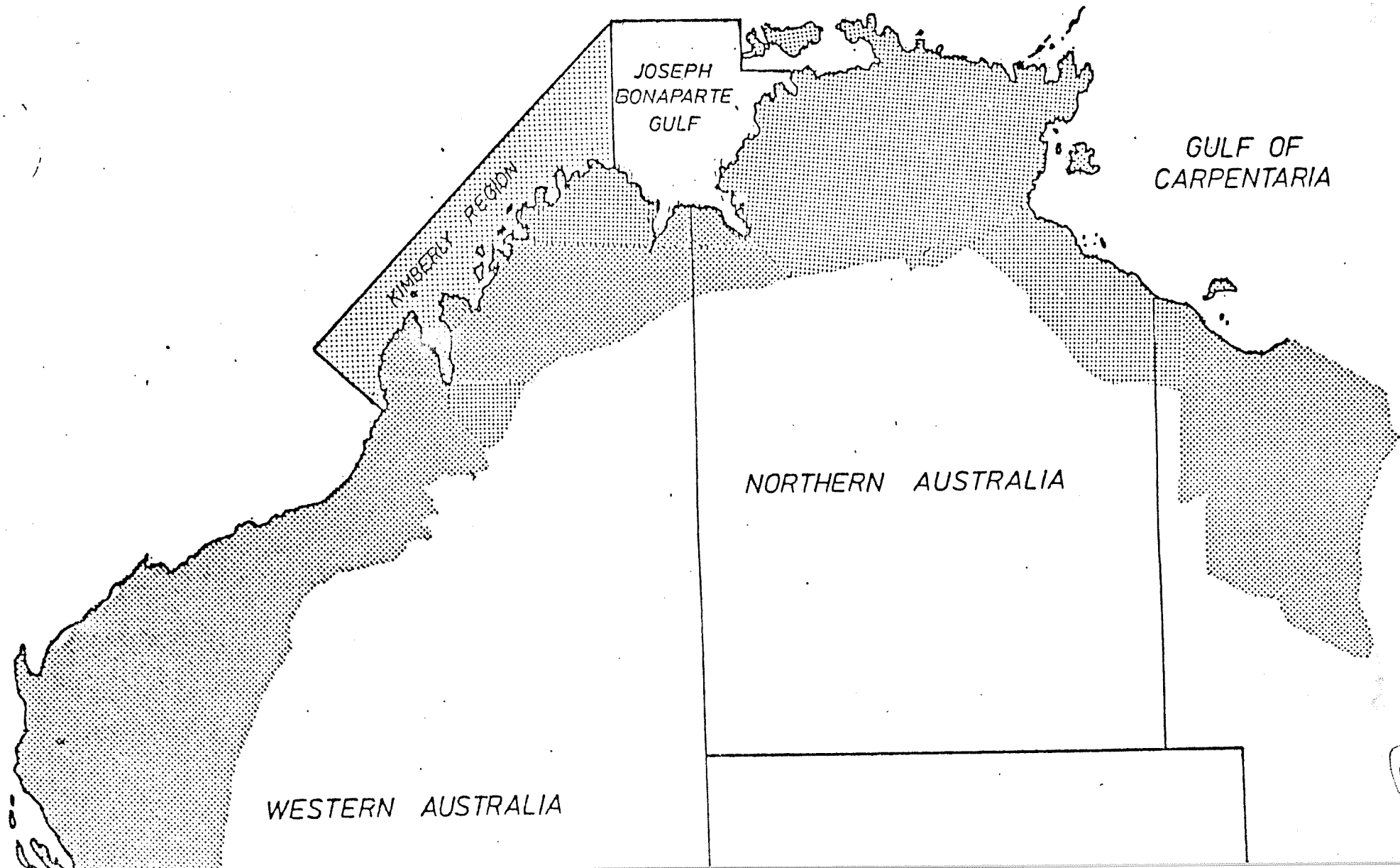


FIGURE 2: KIMBERLEY REGION - SHOWING THE AREAS TRAWLED.

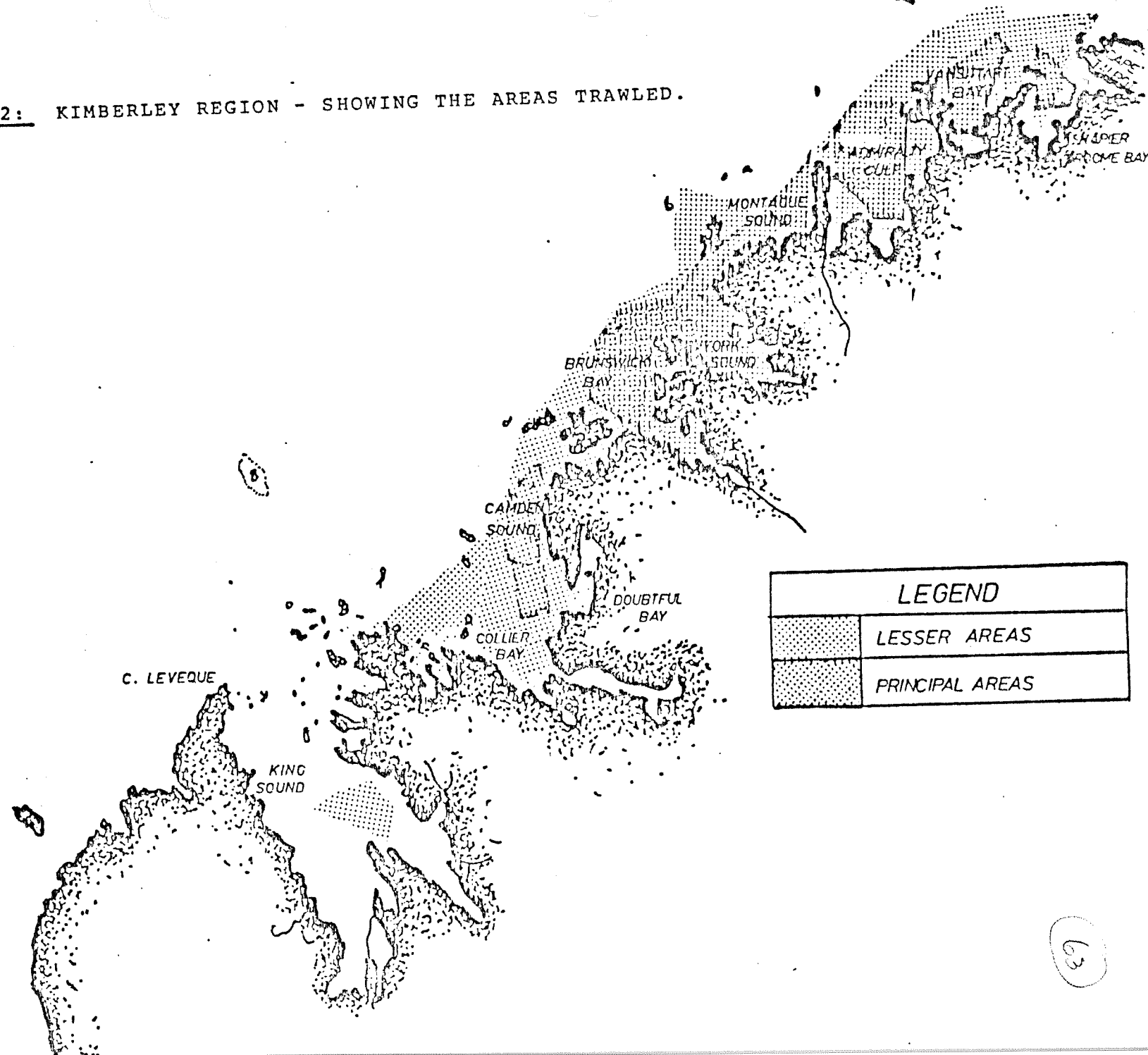
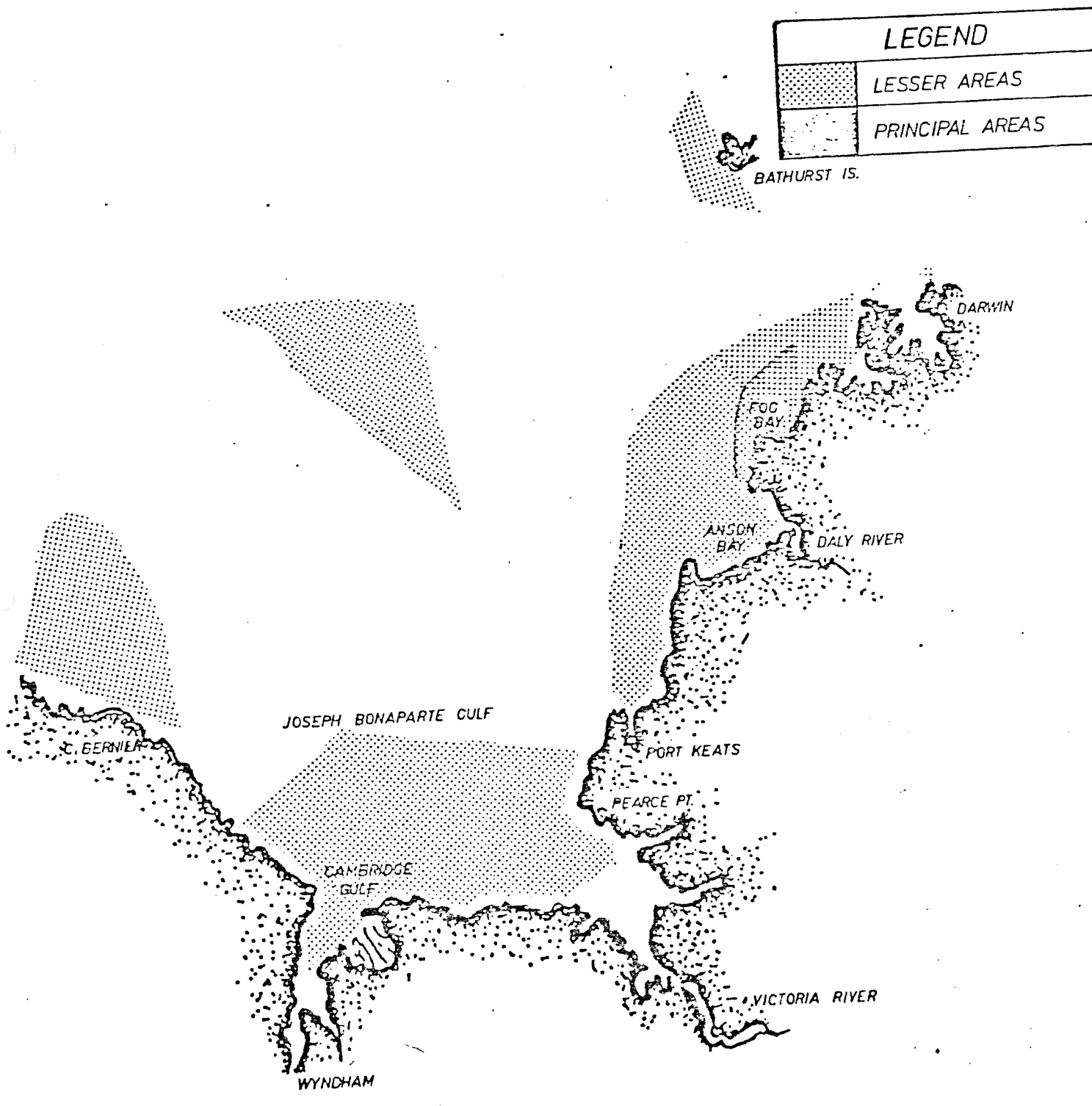


FIGURE 3: JOSEPH BONAPARTE GULF - SHOWING THE AREAS TRAWLED.



(61)

TABLE 1. MONTHLY SUMMARY OF CATCH AND EFFORT FOR
THE YEARS 1967 - 1977

These following tables contain estimates of the catch and effort of all boats, which have been estimated from details of catch and effort for those who provided information

1967 - PRELIMINARY SUMMARY OF MONTHLY CATCHES AND EFFORT DATA FOR JOSEPH BONAPARTE

MONTH	NO. BOATS	DAYS	EFFORT				CATCHES IN KILOGRAMS						
			SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL	
JANUARY	1	9	57						8	756	6404		716
FEBRUARY													
MARCH													
APRIL	3	40	316					96	1148	7820		906	
MAY													
JUNE													
JULY	3	68	463					1448	2091	13281		1682	
AUGUST													
SEPTEMBER													
OCTOBER													
NOVEMBER													
DECEMBER													
TOTAL		117	836					1552	3995	27505			3305

- Note (1) The data above refer to trawling undertaken by the Japanese. The fishing technique used was continuous trawling, no searching occurred.
- (2) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1968 . PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE GULF

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					TOTAL
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	
JANUARY												31963
FEBRUARY	3	54	398					2264	5707	23992	105	125
MARCH	1	3	12	9	19					20	2	2
APRIL	1	2	17	8	22						77	77
MAY	1	5	25	14	32					6	18	24
JUNE	2	11	55	36	43							
JULY												
AUGUST											1	
SEPTEMBER	1	6	8	7	20	17						
OCTOBER												
NOVEMBER												
DECEMBER												
TOTAL	Feb. Mar-Sept.	54 27	398 117	74	136	17		2264	5707	23992 27	202	3196 22

- Note (1) February's data above refer to trawling undertaken by the Japanese. The fishing technique used was continuous trawling - no searching occurred. The other data refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife. The fishing techniques used were for a schooling prawn fishery, however some of the skippers were inexperienced in the methods.
- (2) Days fished include searching time when no commercial trawling was undertaken.
- (3) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1969 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE GU

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH	1	3	4	2	13	3						
APRIL	2	5	44	23	5			2	7	7		16
MAY	1	1			4	2						
JUNE												
JULY												
AUGUST	1				10							
SEPTEMBER												
OCTOBER												
NOVEMBER												
DECEMBER												
TOTAL		9	48	25	32	5		2	7	7		16

- Note (1) The data above refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife. The fishing techniques used were for a schooling prawn fishery, however, some of the skippers were inexperienced in the methods.
- (2) Days fished include searching time when no commercial trawling was undertaken.
- (3) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1970 . PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE GULF

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH												
APRIL	1	3	1	1	8	2				1		1
MAY	1	1			8	1						
JUNE												
JULY												
AUGUST												
SEPTEMBER												
OCTOBER												
NOVEMBER												
DECEMBER												
TOTAL		4	1	1	16	3				1		1

- Note (1) The data above refer to trawling undertaken by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife. The fishing techniques used were for a schooling prawn fishery, however some of the skippers were inexperienced in the methods.
- (2) Days fished include searching time when no commercial trawling was undertaken.
- (3) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

There were no data available for the years 1971 - 1973 inclusive, however fishing may have occurred.

1974 . PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE C

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH	2	10	51	99				10		3160		3170
APRIL												
MAY												
JUNE	3	13	31	20	128	13		2	3	10056		10060
JULY	7	37	70	27	212					76015		76015
AUGUST												
SEPTEMBER												
OCTOBER												
NOVEMBER												
DECEMBER												
TOTAL		60	152	146	340	13		12	3	89231		89240

- Note (1) The data above refer to trawling undertaken by vessels from the Gulf of Carpentaria fishery, which were based in the Port of Darwin. The fishing techniques used were for a schooling prawn fishery.
- (2) Days fished include searching time when no commercial trawling was carried out.
- (3) It is known that at least seventeen additional vessels fished the Fog Bay area in June and July. One vessel 'Chasseur' is reported to have taken approximately 40000 kg out of the area for a few days fishing. This catch is not included in the tables. Additional to these, fishing may have occurred both within and outside the months listed above, however no additional data were available.

1975 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE GULF

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS						
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL	
JANUARY												5450	5450
FEBRUARY												44825	44825
MARCH	2	10										4110	4110
APRIL	2	4										8375	8375
MAY	12	73										10285	10285
JUNE	7	29										5835	5835
JULY	14	37											
AUGUST	5	23											
SEPTEMBER	1	7											
OCTOBER													
NOVEMBER													
DECEMBER												78880	78880
TOTAL		183											

- Note (1) The data above refer to trawling undertaken by vessels, from the Gulf of Carpentaria fishery, which were based in the Port of Darwin. The fishing techniques used were for a schooling prawn fishery.
- (2) Effort is recorded as days fished due to the introduction of the new C.S.I.R.O. logbook. Searching time is included in days fished.
- (3) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1976 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE GULF

MONTH	NO. BOATS	DAYS	EFFORT			CATCHES IN KILOGRAMS						
			SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY	1	1									73260	
FEBRUARY	11	63									88165	
MARCH	22	147									1415	
APRIL	17	90										450
MAY	5	11										15
JUNE	9	37										
JULY	2	3										
AUGUST	2	3										
SEPTEMBER												
OCTOBER												
NOVEMBER												
DECEMBER												
TOTAL		355						170	210		162925	163305

- Note (1) The above data refer to trawling undertaken by vessels from the Gulf of Carpentaria fishery, which were based in the Port of Darwin. The fishing techniques used were for a schooling prawn fishery.
- (2) Effort is recorded as days fished due to the C.S.I.R.O. logbook. Searching time is included in days fished.
- (3) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1977 . PRELIMINARY SUMMARY OF MONTHLY CATCHES AND EFFORT DATA FOR JOSEPH BONAPARTE GULF

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH	2	18								9450		9450
APRIL	9	77								56492		56492
MAY	17	85								6465		6465
JUNE	16	83								2260		2260
JULY	6	11								3630		3630
AUGUST	1	1										
SEPTEMBER												
OCTOBER	3	7								540		540
NOVEMBER												
DECEMBER												
TOTAL		282								78837		78837

- Note (1) The above data refer to trawling undertaken by vessels from the Gulf of Carpentaria fishery, which were based in the Port of Darwin. The fishing techniques used were for a schooling prawn fishery.
- (2) Effort is recorded as days fished due to the C.S.I.R.O. logbook. Searching time is included in days fished.
- (3) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.
- (4) This table is incomplete due to data being uncollected and or not processed by C.S.I.R.O.

1967 . PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					TOTAL
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY												
JUNE												
JULY	3	75	509				252	1120	1727	22818		2591
AUGUST	3	33	190				87	727	727	11748		1328
SEPTEMBER												
OCTOBER												
NOVEMBER												
DECEMBER												
TOTAL		108	699				339	1847	2454	34566		3920

- Note (1) The data above refer to trawling by Japanese. The technique used was continuous trawling and no searching occurred.
- (2) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1968 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					TOTAL
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	
JANUARY												
FEBRUARY	2	18	56	29	111	2		14	2	70		86
MARCH	2	15	58	51	85	9		281	15	68		364
APRIL	1	22	58	40	127	80		297	2	305		604
MAY	3	53	324	244	190	18		735	2	600		1337
JUNE	4	51	327	274	136	18		712	5	724	4	1443
JULY	4	49	249	240	132	6		347	3	1128		1477
AUGUST	2	49	245	197	108	16		166		2235		2401
SEPTEMBER	2	35	185	177	101	13		213		747		960
OCTOBER	3	43	310	235	81			283	39	3141		3463
NOVEMBER	1	4	16	12	7			7		135		149
DECEMBER	1	1	6	1								
TOTAL		340	1834	1500	1078	162		3055	68	9153	4	12284

- Note (1) The data above refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife.
- (2) The fishing techniques used were for a schooling prawn fishery, however most of the skippers were inexperienced in the methods.
- (3) Days fished include searching time when no commercial trawling occurred.
- (4) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

1969

PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	DAYS	EFFORT				CATCHES IN KILOGRAMS					
			SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												38
FEBRUARY												251
MARCH	1	3	16	14	11			12			26	
APRIL	1	16	82	81	54	2		159	24		68	1768
MAY	2	37	115	129	144	32		383	58		1325	1224
JUNE	1	17	78	100	45	24		374			850	1226
JULY	1	21	66	91	83	34		181	12		1027	429
AUGUST	1	24	51	88	89	31		221	9		196	2240
SEPTEMBER	1	19	65	125	68	100		255			1985	1017
OCTOBER	5	81	276	485	99	42		1292	163		8718	1
NOVEMBER	3	8	19	22		5		13				
DECEMBER												173
TOTAL		226	768	1135	593	270		2890	266		14198	

- Note (1) The data above refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife.
- (2) The fishing techniques used were for a schooling prawn fishery, however most of the skippers were inexperienced in the methods.
- (3) Days fished include searching time when no commercial trawling occurred.
- (4) It is known that one additional vessel fished within the region. However, no data were available for any additional fishing. Additional to this, fishing may have occurred both within and outside the months listed above.

(17)

1970 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	EFFORT						CATCHES IN KILOGRAMS					TOTAL
	NO. BOATS	DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY												
JUNE												
JULY	1	1	3	1	10			1				
AUGUST	3	55	144	176	251			64	22	2346		2432
SEPTEMBER	2	39	54	77	181			16	1	99		116
OCTOBER	2	10	11	17	51			5		1		
NOVEMBER												
DECEMBER												
TOTAL		105	212	271	493			86	109	2446		2641

- Note (1) The data above refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife.
- (2) The fishing techniques used were for a schooling prawn fishery, however most of the skippers were inexperienced in the methods.
- (3) Days fished include searching time when no commercial trawling occurred.
- (4) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

(18)

1971 PRELIMINARY SUMMARY OF MONTHLY CATCHES AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY	1	12	37	8	12			4	2	532		538
JUNE	1	25	15	3	182			23		5		28
JULY	1	14	36	4	117			4	1	653		657
AUGUST												
SEPTEMBER												
OCTOBER	1	13	52	52	98	1		162	13	355		515
NOVEMBER	2	55	104	113	127	58		275	26	969		1270
DECEMBER	2	54	157	203	252	109		46	3	5083		5132
TOTAL		173	401	383	788	168		514	45	7597		8197

- Note (1) The data above refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife.
- (2) The fishing techniques used were for a schooling prawn fishery, however most of the skippers were inexperienced in the methods.
- (3) Days fished include searching time when no commercial trawling occurred.
- (4) Additional fishing may have occurred both within and outside the months listed above. No additional data were available however.

(17)

1972 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY	2	31	141	161	110	12		45	10	2880		2935
FEBRUARY	2	46	65	57	359	22		2	4	3909		3915
MARCH	2	32	72	92	157	21			231	3704		3935
APRIL	2	36	147	193	126	18		4	129	8108		8241
MAY	2	38	38	54	203	75		85	130	141		356
JUNE	2	35	41	53	207	73		33	144	714		891
JULY	3	62	271	421	178	48		310	1570	4485		636
AUGUST	5	90	546	634	222	16		451	1510	12027	8	1399
SEPTEMBER	5	104	626	548	241	12		20	1264	20197		2148
OCTOBER	9	84	405	461	162	5		10	1687	18310		2000
NOVEMBER	2	50	200	251	156	7		4	179	12177		1236
DECEMBER	2	9	31	57	20			15	1	1790		180
TOTAL		617	2583	2982	2141	309		979	6859	88442	8	9628

- Note (1) The data above refer to trawling carried out by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife.
- (2) The fishing techniques used were for a schooling prawn fishery, however most of the skippers were inexperienced in the methods.
- (3) Days fished include searching time when no commercial trawling occurred.
- (4) It is known that one extra vessel fished within the region. Additional to this, fishing may have occurred both within and outside the months above. However, no data were available for any additional fishing.
- (5) Vessels from the Gulf of Carpentaria fishery began fishing the region this year.

78

1973 PRELIMINARY SUMMARY OF MONTHLY CATC AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	EFFORT						CATCHES IN KILOGRAMS					
	NO. BOATS	DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY												
JUNE	1	3	8	7						244		244
JULY	3	39	257	234				12	53	8307		8372
AUGUST	14	226	1412	1232	36			33	508	42805		43376
SEPTEMBER	14	245	1550	1622	210		5	818	550	41106		42484
OCTOBER	10	160	883	1010	206		8	359	590	23231		24180
NOVEMBER	4	18						1	12	2826		2838
DECEMBER												
TOTAL		691	4117	4105	452		13	1223	1713	118519		121452

- Note (1) In 1973 considerable interest was shown in the area and the above data refer to commercial fishing unbound by contracts. Seafarers, a Perth based fishing company, had at least six trawlers committed to the region, trying to prove its potential. Nor West Whaling Company, another Western Australian company also had its trawlers in the region.
- (2) The techniques used were for a banana prawn fishery, but some skippers, especially Nor West Whaling Company crews lacked experience and application.
- (3) Days fished include searching time when no commercial trawling occurred.
- (4) It is known that two additional trawlers fished the region. Additional to these, fishing may have occurred both within and outside the months listed above, however no additional data were available.
- (5) Data on effort (shots, hours trawled and searched) for November were not recorded. Effort could not be estimated because the four vessels fishing did not complete the information. The yearly totals do not include these missing data.
- (6) Fishing was carried out by trawlers from the Gulf of Carpentaria fishery.

58

1974 . PRELIMINARY SUMMARY OF MONTHLY CATCHES AND EFFORT DATA FOR KIMBERLEY REGION.

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY												
JUNE	3	18	112	116						7984		7984
JULY	3	28	137	128	21					5949		5949
AUGUST	3	47	258	252	69			20	60	14195		14275
SEPTEMBER	3	45	216	214	22			10	45	7202		7252
OCTOBER	3	30	134	107	53				125	3737		3862
NOVEMBER	2	11	73	68						1585		1585
DECEMBER												
TOTAL		179	930	885	165			30	230	40652		40912

- Note (1) The data above refer to fishing undertaken by the Lowe Bros. who originally came from the prawn fisheries within Queensland waters and were experienced banana prawn fishermen.
- (2) Days fished include searching time when no commercial trawling occurred.
- (3) It is known that two additional trawlers fished the region. The Gulf of Carpentaria trawlers may have fished, but it is thought unlikely due to the good catches made within the Gulf. Additional to these fishing may have occurred both within and outside the months listed above, however no additional data were available.

1975 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	DAYS	EFFORT			CATCHES IN KILOGRAMS							
			SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL	
JANUARY	1	19									1467	1467	
FEBRUARY	1	4									20	20	
MARCH												1842	
APRIL											650	17777	9000
MAY	8	40							25	10395	79580	4837	
JUNE	12	172							220	1533	46621	636	
JULY	13	121							35	70	6260	45	
AUGUST	7	39									455		
SEPTEMBER	1												
OCTOBER													
NOVEMBER													
DECEMBER													
TOTAL		395							280	12648	152180	1651	

- Note (1) The total fishing effort within the region was undertaken by trawlers from the Gulf of Carpentaria fishery. As these vessels completed the new C.S.I.R.O. logbook catch per data are the only data available.
- (2) Days fished include searching time when no commercial trawling occurred.
- (3) It is known that one additional vessel fished in June, two additional vessels fished in July and two additional boats fished in August. Additional to these, fishing may have occurred both within and outside the months listed above, however no extra data were available.

1976 PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	NO. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
JANUARY												
FEBRUARY												
MARCH	1	6										
APRIL												
MAY	6	64							335	28747		2908
JUNE	10	115	288	94	974			15	70	50553		506
JULY	7	106	195	80	375			280	470	29975		307
AUGUST	7	69	325	351	309			434	570	5881		68
SEPTEMBER	2	28	119	174	54			5	235	6020		62
OCTOBER	1	2	13	24	4					30		
NOVEMBER	1	9	15	9	37			2	2	213		2
DECEMBER	1	2	3	2	1			11		25		
CAPE PALMERSTON AND RAPTIS PEARL TOTALS ONLY								2490	660	4068		72
TOTAL		401	958	734	1757			3237	2342	125512		1310

- Note (1) The total fishing effort within the region was undertaken by trawlers from the Gulf of Carpentaria fishery except for one vessel which left the Exmouth Gulf area to fish the region.
- (2) Days fished include searching time when no commercial trawling occurred.
- (3) The effort totals are inaccurate due to the March and May data being incomplete.
- (4) The records for Cape Palmerston and Raptis Pearl had catch totals only. Effort (days fished) and period fishing were not available so their catches were added to the annual total.
- (5) It is known that two additional vessels fished within the region. Additional to these fishing may have occurred both within and outside the months listed above, however no additional data were available.

1977 . PRELIMINARY SUMMARY OF MONTHLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

MONTH	EFFORT						CATCHES IN KILOGRAMS					TOTAL
	NO. BOATS	DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY	8	76								64950		64950
JUNE	8	72								36980		36980
JULY												
AUGUST												
SEPTEMBER												
OCTOBER												
NOVEMBER												
DECEMBER	1	2								8		8
TOTAL		150								101938		101938

- Note (1) The total fishing effort within the region was undertaken by trawlers from the Gulf of Carpentaria fishery. As these vessels completed C.S.I.R.O. logbooks catch per day is the only data available.
- (2) Days fished include searching when no commercial trawling occurred.
- (3) It is known that two extra vessels fished this region. Additional to these, fishing may have occurred both within and outside the months listed above, however no additional data were available.
- (4) This table is incomplete due to data not being collected and or not processed by C.S.I.R.O.

TABLE 2:

The annual total catch and effort from 1967 - 1977
for the Kimberley Region and Joseph Bonaparte Gulf
Area.

PRELIMINARY SUMMARY OF YEARLY CATCH AND EFFORT DATA FOR JOSEPH BONAPARTE GULF

YEAR	MAX. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
1967 *	4	117	836					1552	3995	27505		33052
1968 *	3	81	515					2264	5707	24019	202	32192
1969 +	2	9	48	25	32	5		2	7	7		16
1970 †	1	4	1	1	16	3				1		
1971 o												
1972 o												89246
1973 o								12	3	89231		78880
1974 #	7	60	152	146	340	13				78880		163305
1975 #	14	183						170	210	162925		78837
1976 #	22	355								78837		
1977 #	17	282										

- Note (1) * Japanese fishermen operated within these years. Their method of fishing was continuous trawling, with no searching carried out.
- + Fishermen under contract to the Department of Fisheries and Wildlife operated within these years. Their method of fishing was that used in a schooling prawn fishery, but the fishermen were non-schooling prawn fishermen, therefore lacked experience in the techniques.
- o From the available data, no fishing was undertaken within these years.
- # The years 1974 onwards were fished by fishermen skilled in the techniques of banana prawn fishing, i.e. skippers who were actively engaged in the Gulf of Carpentaria fishery.
- (2) Days fished include searching time when it was undertaken.
- (3) Additional fishing may have occurred both within and outside the years listed above, however no additional data were available. The data above indicate minimum values only, but is thought to represent approximately 60% of the true catch and effort.
- (4) The data for 1977 are incomplete. All the information for this year has not been collected

PRELIMINARY SUMMARY OF YEARLY CATCH AND EFFORT DATA FOR KIMBERLEY REGION

YEAR	MAX. BOATS	EFFORT					CATCHES IN KILOGRAMS					
		DAYS	SHOTS	DURATION (HOURS)	ECH. SOUND (HOURS)	TRY (HOURS)	KING	TIGER	ENDEAVOUR	BANANA	RAINBOW	TOTAL
1967 *	3	108	699				339	1847	2454	34566		392
1968 +	4	340	1834	1500	1078	162		3055	68	9153	4	122
1969 +	5	226	768	1135	593	270		2890	266	14198		173
1970 +	3	105	212	271	493			86	109	2446		26
1971 +	2	173	401	383	788	168		514	45	7597		81
1972 +	9	617	2583	2982	2141	309		979	6859	88442	8	962
1973 o	14	691	4117	4105	452		13	1223	1713	118519		1214
1974 #	3	179	930	885	165			30	230	40652		409
1975 †	13	395						280	12648	152180		1651
1976 †	10	401	958	734	1757			3237	2342	125512		1310
1977 †	8	150								101938		1019

- Note (1)
- * Japanese fishermen operated within this year. Their method of fishing was continuous trawling with no searching.
 - + The main fishing effort within these years was undertaken by vessels under contract to the Development Section of the Western Australian Department of Fisheries and Wildlife. Occasional fishing was carried out by independent vessels from either the Nickol Bay fishery (W.A.) or the Gulf of Carpentaria fishery. The methods were those used in a schooling prawn fishery, with most of the skippers unskilled in the techniques or lacked application due to the terms of their contracts.
 - o Considerable interest was shown in the region this year and the fishing was carried out by experienced banana prawn fishermen, except for the skippers of the Nor West Whaling Co. vessels (a Western Australian based company) who were unskilled in schooling prawn fishing techniques and lacked application due to their contracts. Another fishing company Seafarer's (Fremantle based) committed at least six trawlers to fish the region hoping to prove its potential and establish claims for licences, if the region became a limited entry fishery.

The fishing this year was undertaken by the Lowe Bros. who were experienced Queensland fishermen. They fished the region when Seafarers transferred their vessels to the more lucrative Gulf of Carpentaria fishery. Little fishing was carried out by other trawlers due to the record catches within the Gulf of Carpentaria fishery.

† From 1975 onwards, the fishing within the region has been fished by trawlers from the Gulf of Carpentaria fishery.

- (2) Days fished include searching time when it occurred.
- (3) Additional fishing may have occurred both within and outside the years listed above, however no additional data were available. The data above indicate minimum values only, but it is thought the estimates are up to 50% of the true catch in the years 1972 onwards.
- (4) The data for 1977 are incomplete. All the information for this year has not been collected and or processed.