

CSIRO

MARINE LABORATORIES

Division of Fisheries Research
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TM9/2

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August 22, 1984.

F.V. "Rachel"
Cruise Summary R06/84

Northern Pelagic Fish Stock Research Programme

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12 AUG 1985

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ITINERARY

Depart	Karumba	1030 h	Thursday	5 July, 1984
Arrive	Karumba	1000 h	Thursday	12 July, 1984
Depart	Karumba	1630 h	Thursday	12 July, 1984
Arrive	Weipa	0600 h	Friday	20 July, 1984
Depart	Weipa	0730 h	Saturday	21 July, 1984
Arrive	Weipa	0700 h	Saturday	28 July, 1984

AREA OF OPERATION

South-eastern Gulf of Carpentaria in inshore and offshore areas between Mornington Island and Weipa.

OBJECTIVES

1. To tag 1000 sharks (principally *Carcharhinus limbatus* and *C. sorrah*, together with *Scomberomorus commerson* and *Thunnus tonggol* as opportunities arise, by gillnetting, handlining, longlining and trolling, for studies on stock discrimination, movements, growth rate, mortalities, recruitment and stock sizes.
2. To carry out exploratory fishing (using the standard 1km of 15 cm mesh monofilament net) at selected sites within and outside the Taiwanese permitted fishing zone to determine catch rates, species composition, and to collect biological information on sharks, *S. commerson* and *T. tonggol*.
3. To investigate gear selection through mesh selectivity experiments using 10, 15, 20 and 25 cm mesh panels and by comparing catches from gillnet and longline sets.

4. To collect 100 electrophoretic samples from *C. limbatus* and *C. sorrah* in the southern and eastern Gulf of Carpentaria in the area between Mornington Island and Weipa. Electrophoretic samples also to be collected from *S. commerson* and *T. tonggol* as opportunities arise.
5. To obtain surface temperature, salinity and turbidity data from fishing sites.
6. To record cetacean sightings and to collect biological information from any dead cetacea taken incidentally in the gillnets.
7. To investigate discrepancies in the replication of fork and total length measurements of *C. limbatus* and *C. sorrah* and to investigate freezer induced shrinkage in these species.

PROGRAMME ACHIEVED

1. The 500 m 15 cm mesh monofilament tag net was set 40 times. The mesh selectivity net and longline were each set 8 times. Handline fishing was carried out daily except where prevented by rough weather conditions. Trolling was carried out while travelling between stations and in areas adjacent to shoals.
2. A total of 1020 sharks were tagged. Table 1 shows the number of sharks caught and tagged by species. A total of 134 teleosts were also tagged including 127 *S. commerson* and 2 *T. tonggol*.
3. Of the 40 sets made with the tag net 10 sets produced a nil catch. The maximum number of sharks caught in any one set was 88 of which 77 were tagged.
4. Handlining generally proved successful with the best session lasting 285 minutes and resulting in 67 sharks being caught of which 57 were tagged.
5. The mesh selectivity net was swung end for end at the commencement of the cruise in an attempt to increase catch rates in the 25 cm mesh panel. Only 34 sharks were taken in this panel during the entire cruise. Catch rates for the whole net were variable and ranged from 3 to 198 sharks. The maximum number of sharks caught in any one panel for a single set was 86 in the 10 cm panel (Table 3).
6. Gonad samples were retained and reproductive condition noted for most mature specimens of *C. limbatus* and *C. sorrah* which were not fit for tagging. Mature individuals of other species of shark and mackerel were also dissected and stomach contents examined (sharks).
7. Electrophoretic samples were collected from 70 *C. limbatus* and 40 *C. sorrah* in the southern Gulf of Carpentaria and from 50 *C. limbatus* and 48 *C. sorrah* in the eastern Gulf of Carpentaria. Electrophoretic samples were also retained from 11 *S. commerson* during the cruise.

8. Girth measurements were recorded for 140 *C. limbatus* and 89 *C. sorrah* in order to ascertain a girth/fork length relationship for these species.
9. A total of 135 vertebrae were retained from the two main shark species.
10. Freezer induced shrinkage was investigated for 10 *C. sorrah* and 10 *C. limbatus* over a period of 21 days. The average shrinkages for *C. limbatus* and *C. sorrah* were 1.18 cm and 0.925 cm in fork length respectively.
11. Discrepancies in the replication of fork length measurements were investigated for 10 *C. limbatus* and 10 *C. sorrah*. Discrepancies ranged from 0 to 0.9 cm in fork length with the average discrepancy being 0.37 cm in fork length for the two species.
12. Surface temperature, salinity, secchi disc and turbidity meter readings were recorded at 1800 hrs EST on 13 occasions.
13. No cetaceans were sighted during the cruise.

ACKNOWLEDGEMENTS

Many thanks are due to Ian Lew, Pam Canney, Paul Brant and Dave McKenna of the "Rachel".

PERSONNEL

F.V. "Rachel"

Ian Lew (Skipper)
Pam Canney
Paul Brant
Dave McKenna

Scientific

Tony Church - CSIRO (Cruise Leader)
Geoff McPherson - Qld. Fisheries Service
Peter Cooper - Qld. Fisheries Service

TABLE 1

SPECIES	NO. CAUGHT	NO. TAGGED	NO. BIOLOGICALS	ELECTROPHORETIC SAMPLES RETAINED
ELASMOBRANCH				
<i>Carcharhinus limbatus</i>	666	480	140	120
<i>C. sorrah</i>	506	353	89	88
<i>C. macroti</i>	47	39	-1	-
<i>C. amblyrhynchoides</i>	1	1	-	-
<i>C. amboinensis</i>	15	11	1	1
<i>C. brevipinna</i>	16	14	2	2
<i>C. dussumieri</i>	10	7	-	-
<i>C. amblyrhynchos</i>	10	4	6	2
<i>Rhizoprionodon taylori</i>	207	84	-	2
<i>R. acutus</i>	14	9	-	-
<i>Sphyrna lewini</i>	31	10	-	-
<i>S. blochii</i>	5	-	-	-
<i>S. mokarran</i>	9	5	-	-
<i>Pristis cuspidatus</i>	5	-	-	-
<i>Galeocerdo cuvieri</i>	4	3	-	-
<i>Manta</i> sp.	2	-	-	-
	<u>1548</u>	<u>1020</u>	<u>239</u>	<u>215</u>
TOTAL	1548	1020	239	215
TELEOST				
<i>Scomberomorus commerson</i>	138	127	11	11
<i>S. queenslandicus</i>	4	-	4	-
<i>S. semifasciatus</i>	7	-	7	-
<i>S. munroii</i>	5	2	2	-
<i>Thunnus tonggol</i>	10	2	8	-
<i>Rachycentron canadus</i>	5	2	-	-
<i>Carangoides bucculentis</i>	1	-	-	-
<i>Eleutheronema tetradactylum</i>	2	-	-	-
<i>Scomberoides lysan</i>	30	-	-	-
<i>Rastrelliger kanagurta</i>	2	-	-	-
<i>Euthynnus affinis</i>	6	-	-	-
<i>Istiophorus platypterus</i>	2	-	2	-
<i>Carangoides</i> sp.	1	-	-	-
<i>Caranx ignobilis</i>	1	1	-	-
	<u>214</u>	<u>134</u>	<u>32</u>	<u>11</u>
TOTAL	214	134	32	11

TABLE 2

Percentage tagged by fishing method

METHOD	TOTAL CATCH (NO.)	PERCENTAGE TAGGED	NUMBER OF SETS
Handline	266	92	-
Longline	93	32	8 (476 hooks)
Tag Net	547	89	40
Mesh Selectivity Net	659	39	8

TABLE 3

Mesh Selectivity Net - catch by panel (8 sets)

Mesh size (cm)	Number of fish
10	276 (86)
15	222 (68)
20	127 (56)
25	34 (14)
TOTAL	659

* Numbers in parentheses represent the largest catch in a single set.

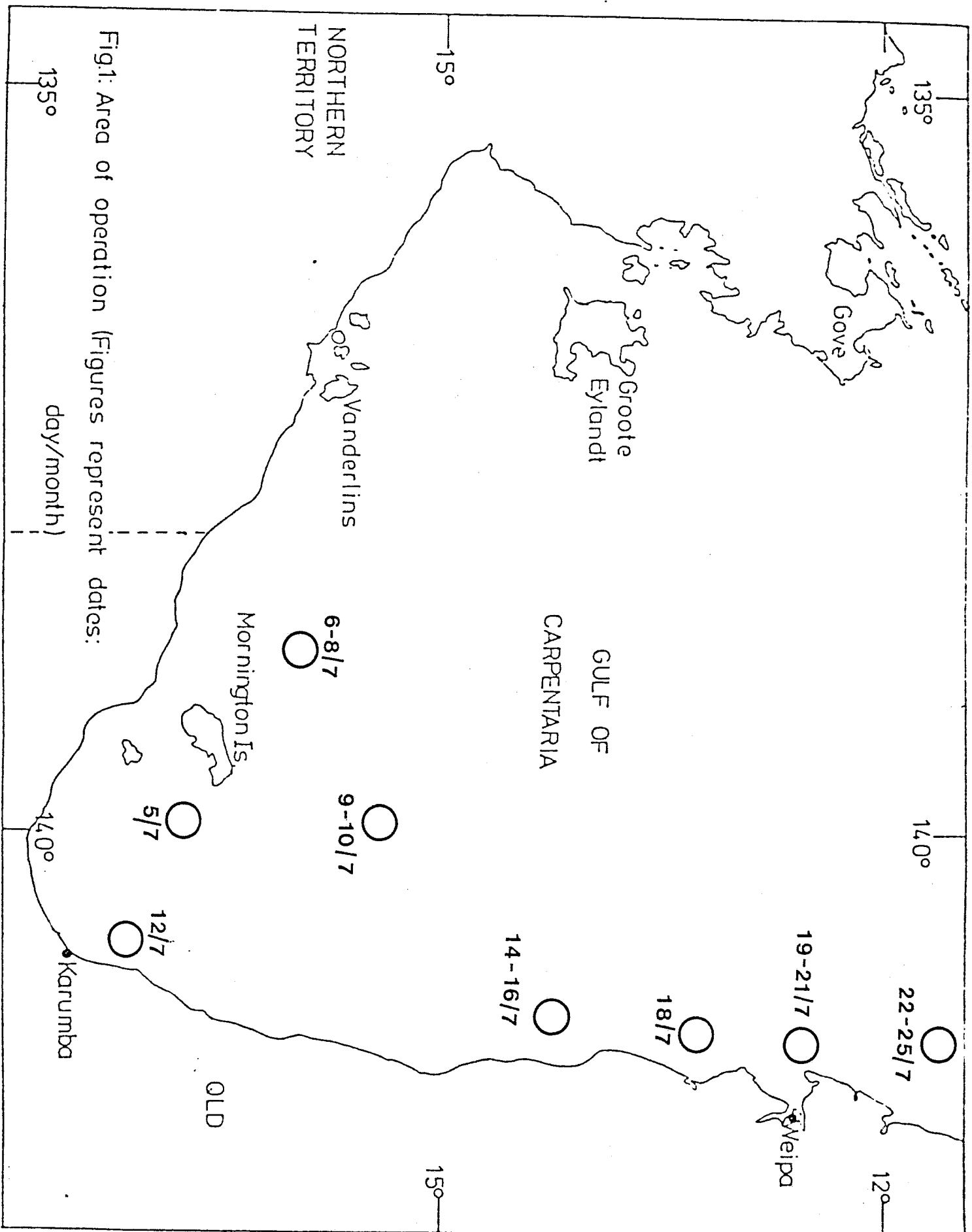


Fig1: Area of operation (Figures represent dates: day/month)