

# CSIRO

## MARINE LABORATORIES

Division of Fisheries Research  
Division of Oceanography

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TM 9/2 GC/MAB  
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F.V. 'RACHEL'  
CRUISE SUMMARY R07/84

12 AUG 1985

LIBRARY, HOBART

### NORTHERN PELAGIC FISH STOCK RESEARCH PROGRAMME

#### ITINERARY

Departed	Weipa	1215 h	Saturday	4 August 1984
Arrived	Thursday Is.	1530 h	Sunday	12 August 1984
Departed	Thursday Is.	1515 h	Monday	13 August 1984
Arrived	Gove	0130 h	Monday	27 August 1984

#### AREA OF OPERATION

In the north-eastern Gulf of Carpentaria between Weipa and the Torres Straits and offshore areas between the Torres Straits and Cape Wessel (Fig. 1).

#### 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 size.
2. To carry out exploratory fishing (using the standard 1 km 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 50 electrophoretic samples from *C. limbatus* and *C. sorrah* in the north-eastern Gulf of Carpentaria in the area between Weipa and the Torres Straits. Electrophoretic samples are 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 tag net, the 1 km 15-cm mesh commercial net and the mesh selectivity net were set 34, 13 and 5 times respectively. The longline was set 10 times. Trolling was carried out while travelling between stations and adjacent to shoals.
2. A total of 575 sharks were tagged. Table 1 shows the number of sharks caught and tagged by species. Eight *S. commerson* were also tagged.
3. Of the 47 sets made with the tag and commercial nets, 21 sets produced a nil catch. The maximum number of sharks caught in any one set was 259 of which 169 were tagged.
4. Handlining throughout the cruise was generally poor with two or less sharks caught on 14 of the 19 days fished.
5. The mesh selectivity net produced poor catches, especially in offshore areas (Table 3).
6. Gonad samples were retained and reproductive condition noted for all 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.
7. Electrophoretic samples were collected from eight *C. limbatus* and seven *C. sorrah* in the north-eastern Gulf of Carpentaria. Electrophoretic samples were also retained from five *S. commerson* during the cruise.
8. A total of 42 vertebrae were retained from the two main shark species for ageing studies.
9. Freezer induced shrinkage was investigated for ten *C. sorrah* and ten *C. limbatus* over a period of 21 days. The average shrinkages for *C. limbatus* and *C. sorrah* were 1.5 cm and 0.81 cm in fork length respectively.
10. Discrepancies in the replication of fork length measurements were investigated for ten *C. limbatus* and ten *C. sorrah*. Discrepancies ranged from 0 to 1.2 cm in fork length with the average discrepancy being 0.37 cm in fork length for the two species.
11. Surface temperature, salinity, secchi disc and turbidity meter readings were recorded at 1815 h C.S.T. on 19 occasions.
12. No cetaceans were captured, however, several sightings were made including a pod of approximately 30 false killer whales five miles north of the Wessel Islands, N.T.
13. In offshore areas, where low catch rates were experienced, the use of berley bags attached to the net appeared to improve shark catches.

## ACKNOWLEDGEMENTS

Many thanks are due to Ian Lew, Pam Canney, Paul Brant and Dave McKenna of the 'Rachel' for their understanding and patience on this cruise of very low catch rates.

**PERSONNEL****Scientific**

G. Cuthbert - CSIRO - Cruise Leader  
G. Timms - N.T. Fisheries  
G. Graham - DPI, Canberra

**F.V. 'Rachel'**

Ian Lew Skipper  
Pam Canney  
Paul Brant  
Dave McKenna

G. Cuthbert  
Cruise Leader

TABLE 1.

Species	Number caught	Number tagged	Number of biologicals	Electrophoretic samples retained
<b>ELASMOBRANCH</b>				
<i>Carcharhinus limbatus</i>	279	173	49	8
<i>C. sorrah</i>	109	85	11	7
<i>C. macroti</i>	327	253	25	-
<i>C. fitzroyensis</i>	1	1	-	-
<i>C. amboinensis</i>	2	2	-	-
<i>C. brevipinna</i>	1	-	-	-
<i>C. dussumieri</i>	7	6	1	-
<i>C. amblyrhynchos</i>	1	1	-	-
<i>Rhizoprionodon taylori</i>	1	-	1	-
<i>R. acutus</i>	107	44	21	-
<i>Sphyrna lewini</i>	5	3	2	-
<i>S. blochii</i>	5	2	3	-
<i>S. mokarran</i>	2	2	-	-
<i>Nebrius concolor</i>	1	1	-	-
<i>Galeocerdo cuvieri</i>	2	2	-	-
<i>Aetomyleus nicholfii</i>	1	-	-	-
<b>TOTAL</b>	<b>851</b>	<b>575</b>	<b>113</b>	<b>15</b>
<b>TELEOST</b>				
<i>Scomberomorus commerson</i>	29	8	20	5
<i>S. queenslandicus</i>	1	-	-	-
<i>S. semifasciatus</i>	3	-	1	-
<i>S. munroi</i>	3	-	-	-
<i>Thunnus tonggol</i>	14	-	13	-
<i>Apolectus niger</i>	13	-	-	-
<i>Carangoides gymnotethus</i>	1	-	-	-
<i>Auxis thazard</i>	2	-	-	-
<i>Megalaspis cordyla</i>	7	-	-	-
<i>Rastrelliger kanaгурта</i>	2	-	-	-
<i>Euthynnus affinis</i>	6	-	-	-
<i>Coryphaena hippurus</i>	6	-	-	-
<b>TOTAL</b>	<b>87</b>	<b>8</b>	<b>34</b>	<b>5</b>

TABLE 2.

Method	Total catch (number)	Percentage tagged	Number of sets
Handline	168	98	-
Longline	40	58	10 (594 hooks)
Tag net	342	70	34
Commercial net	156	61	13
Mesh selectivity net	144	37	5

TABLE 3.

Mesh selectivity net - catch by panel (5 sets)

Mesh size (cm)	Number of fish
10	87 (52)
15	33 (16)
20	12 (6)
25	12 (3)

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

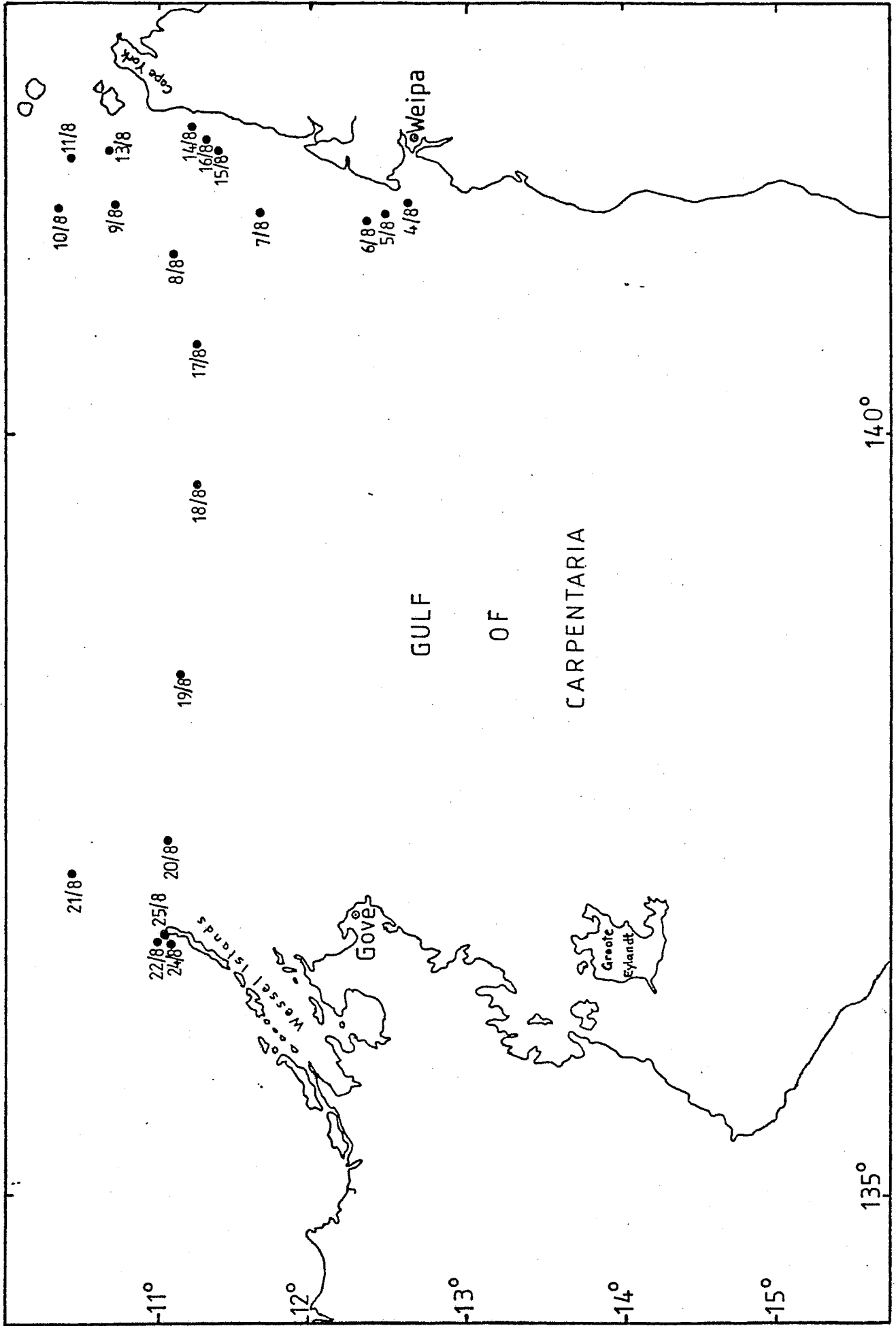


FIGURE 1: Map showing general positions of fishing operations (Figures represent dates: day/month).