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Exploratory Trawl Surveys by FRV *Soela* in the Australian Fishing Zone Sector of the Timor-Arafura Seas and in the Gulf of Carpentaria, 1980–81

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C O N T E N T S

EXPLORATORY TRAWL SURVEYS BY FRV *SOELA* IN THE AUSTRALIAN FISHING ZONE SECTOR OF THE TIMOR-ARAFURA SEAS AND IN THE GULF OF CARPENTARIA, 1980–81

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Abstract

A synthesis of the results of three exploratory fish trawls of FRV *Soela* in the Australian Fishing Zone sector of the Timor-Arafura Seas and in the Gulf of Carpentaria during 1980-81 is given. The composition of the catches, with indications of the utility and abundance of the different species, total catch rates by depth, and the catch rates by depth of 291 species of the greatest or potentially greatest economic importance are tabulated. The significance of these cruise results for fisheries management and development in the region is briefly discussed.

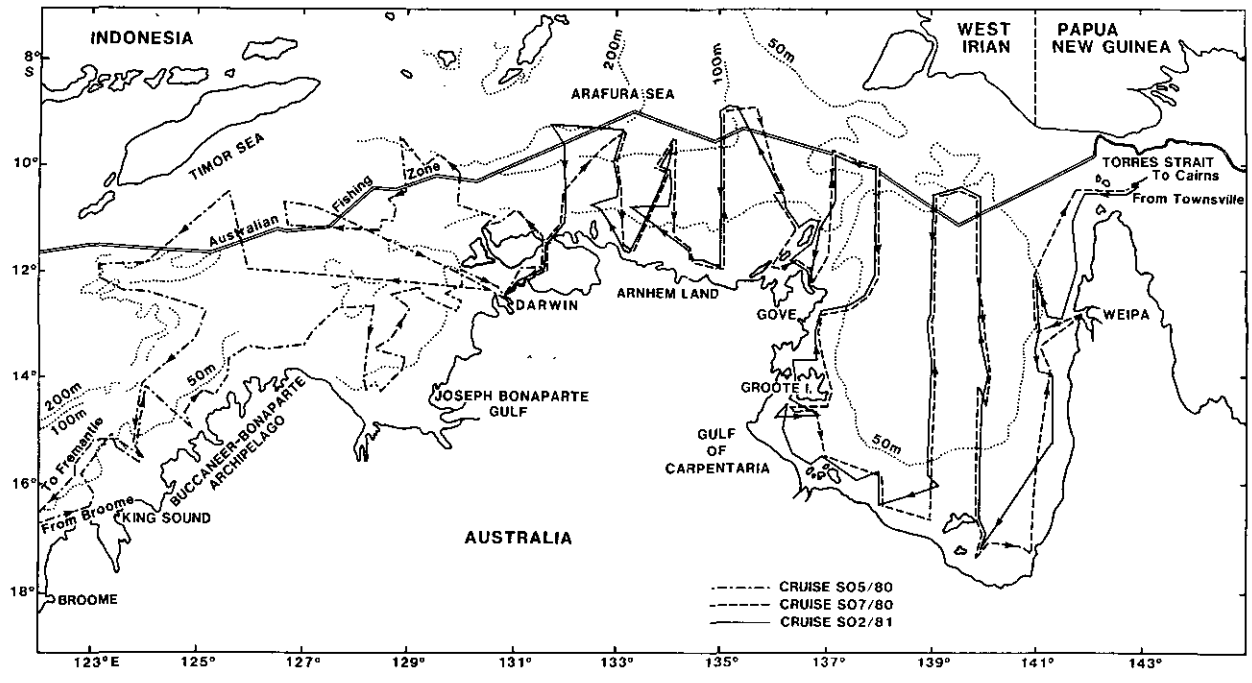

Figure 1. Cruise tracks for cruises SO5-80, SO7-80, SO2-81.

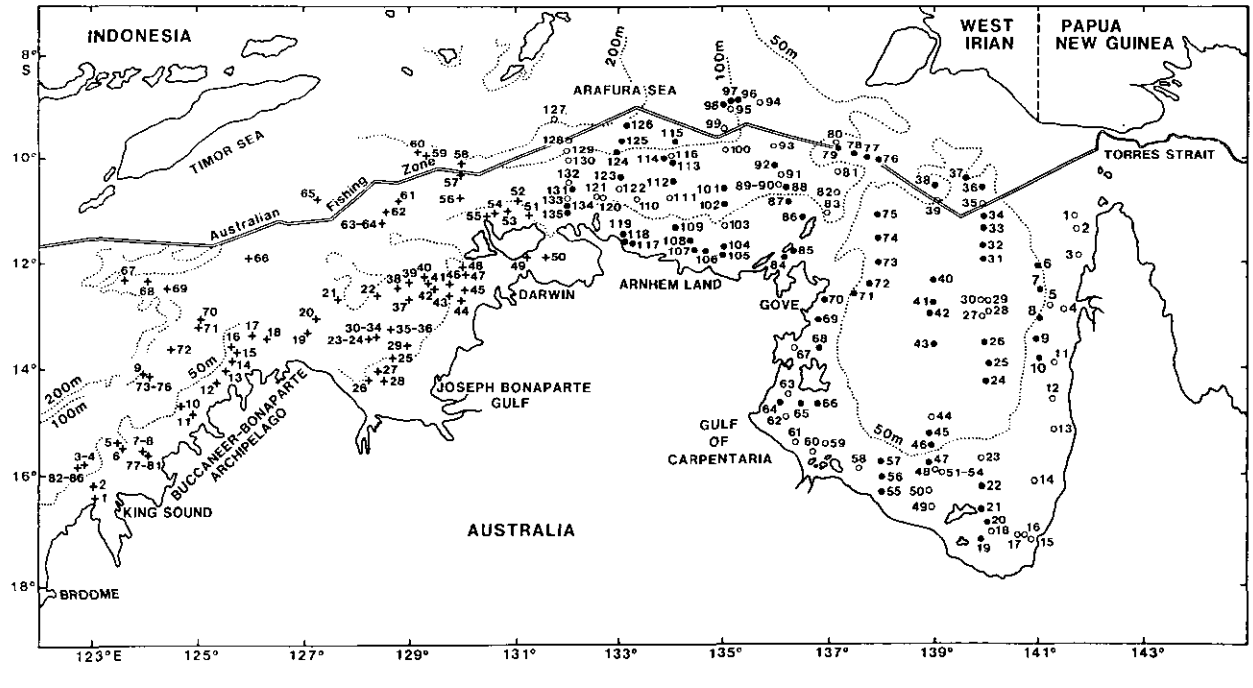

Figure 2. Position of the trawl stations during the three cruises (crosses SO5-80; open circles SO7-80; full circles SO2-81.

INTRODUCTION

The Australian Fishing Zone (AFZ), declared on the 1st November 1979, brought over 1 million square kilometres of the continental shelves of the North West Shelf and Timor-Arafura Seas, including the Gulf of Carpentaria, under Australian maritime jurisdiction (Fig 1). Although several studies have reported on the baseline oceanographic features of the Timor-Arafura Seas and the Gulf of Carpentaria (Rochford 1962; Newell 1973; Tranter and Kerr 1977; Motoda *et al.* 1978; Rothlisberg and Jackson, 1982), the fish resources of this entire region remained mostly uninvestigated by Australia. During the 1963/65 Gulf of Carpentaria Prawn Survey, the fish fauna of the southeast corner of the Gulf in depths of less than 40m was thoroughly investigated (Munro 1972). Similarly, the general fish fauna of the nearby New Guinea waters and of the Gulf of Papua has also been described by Munro (1967) and Kailola and Wilson (1978). These studies and others adequately demonstrated the Indo-Pacific nature of the ichthyofauna of the Indo-Australian archipelago, previously described in monumental taxonomic works by Professors Max Weber and L.F. de Beaufort and Dr H.W. Fowler (Munro 1967).

As for the utility of the species inhabiting the northern Australian continental shelf waters, knowledge of their food value lay with the coastal communities of the Indo-Pacific countries who were already accustomed to eating such or similar species found also in their coastal waters. Some countries from the eastern board of Asia were already fishing the northern Australian waters, whilst others had carried out exploratory fishery surveys in these waters. Sainsbury (1979), Okera *et al.* (1981*a*,*b*) and Okera (1982*a*,*b*) summarise the distant-nations fisheries and fishery investigations in the region. These papers should be consulted for historical information.

At the time of AFZ declaration, there was an urgent need for Australia to undertake a comprehensive inventory of both the pelagic and demersal resources of the region. During 1980-81, three exploratory trawl surveys - one to the Timor Sea and two to the Arafura Sea and the Gulf of Carpentaria - attempted in part to meet this need. This report summarises the findings of these surveys. The raw data from the cruises are stored in the CSIRONET computer system.

OBJECTIVES OF THE SURVEYS

The primary objectives of the three cruises were basically alike:

1 to carry out exploratory fishing surveys in the AFZ sector of the Timor and Arafura Seas, including the Gulf of Carpentaria, by aimed and unaimed demersal trawling and aimed pelagic trawling;

2 to estimate catch rates and establish the distribution of unusual concentrations of fish detected;

3 to undertake biological analyses of catches to determine the size and age composition, reproductive condition and diet of major species.

Several other more specific objectives were also accomplished during the cruises. Outlines of these can be found in the cruise summaries lodged at the Library of the CSIRO Marine Laboratories.+ The results reported here cover objectives 1 and 2. Those for objective 3 will be reported elsewhere by individual cruise participants.

DESCRIPTION OF THE AREAS INVESTIGATED

Cruise S05-80 investigated the inshore and offshore waters of the Sahul Shelf between Broome and Darwin (Fig 2). The shelf morphology of this area has been described in detail by van Andel and Vevers (1967). Briefly, the topography of the shelf is "complex", with a "regional system of rises and depressions and a superimposed topography of banks, terraces and channels". The shelf is mostly covered by a thin, calcareous layer of sediments, with silty clays in the Bonaparte Gulf. The irregular topography of the shelf and the roughness of the seabed curtailed the number of demersal trawl stations. The draught of the *FRV Soela* (5.7m) also restricted the number of tows that could be carried out in depths of less than 20m.

Cruise S07-80 investigated the shelf waters of the Arafura Sea and the Gulf of Carpentaria and cruise S02-81 carried out a second

+ Cruise summaries are available from the Library, CSIRO Marine Laboratories, P.O. Box 1538, Hobart, 7001 Australia.

reconnaissance of the same area six months later (Fig. 2). The Arafura shelf down to 80-90m and the Gulf of Carpentaria shelf, in contrast to the Sahul Shelf, are uniform and easy to trawl. Both these shelves are virtually flat. According to Jongsma (1974) the Arafura shelf is covered with calcareous, coarse-grained sediments low in silt content. In the eastern Gulf of Carpentaria, Rhodes (unpublished manuscript) has described a mud zone in less than 20m which either abruptly or gradually merges into a sand zone in 20-28m. Quoting earlier works, Rhodes also mentions an offshore mud zone in the deeper portions of the Gulf.

The Timor and Arafura Seas experience a monsoonal climate, with a wet season during the northwest monsoon or summer (November-March) and a dry season during the southeast monsoon or winter (April-October). Little is known of the relationship, if any, between these meteorological events and the biology and ecology of the exploited off shore species.

Although the primary productivity levels of the northern AFZ shelf waters are in the higher ranges of the primary productivity levels of the Indian Ocean (Anon 1976), there are no major upwelling systems in Australian waters comparable to those off the coast of Oregon in USA, northwest Africa and South West Africa (Rochford 1980). The absence of large concentrations of pelagic fish and bird populations in the region, and the presence of a modest fishing fleet from distant-water fishing nations relying mostly on highly predatory and scavenging fish, are probably further signs of the absence of the major enrichment processes in the region.

The hydrology of the tropical surface waters bathing the continental shelves of the Timor-Arafura Seas and the Gulf of Carpentaria has been described in detail (Newell 1973). Here, it suffices to say that the shelf down to approximately 90m is covered with water of > 25°C, the approximate temperature of the lower boundary of the tropical surface layer in southeast Asian waters (Wyrtki 1961). Below this depth and temperature the discontinuity layer of thermocline occurs. During the survey of the Sahul Shelf on cruise S05-80, the following temperatures were recorded at 100, 110, 120, 150 and 210m: 21.0°, 19.1°, 16.7°, 15.9° and 13.7°C respectively.

METHODS AND MATERIALS

Vessel

CSIRO's chartered fishery research vessel *FRV Soela*, a 53m, 1800 bhp stern trawler, carried out the three surveys. Further description of the vessel is given by Maxwell (1980).

Cruise tracks and trawl stations

The cruise tracks and positions of the trawl stations are shown in Figures 1 and 2 respectively, and the co-ordinates and depths of the stations are given in Appendix Tables 1 and 2.

The positions of the stations were fixed in such a way that most trawling was carried out during the day-time and there was sufficient time between the stations to analyse the catches. During each shot the net was towed on the bottom for 30 minutes. Four to five half-hour stations were trawled daily. Aimed trawling was carried out when sufficiently large fish marks were observed on the echo-sounder. The duration of these tows was variable. Twenty-four hour watches were maintained on the sounder to monitor the incidence of echoes from fish schools.

Overall, 331 trawl stations were occupied (Appendix Tables 1 and 2) and the catches of 274 demersal shots were analysed (Table 1). Most of the area in the Arafura Sea surveyed during the two cruises was less than 100m deep. In depths of 100m in both the Arafura and Timor Seas it was generally difficult to find trawlable ground without considerable searching. This factor accounts for the smaller number of stations in depths > 20m in the Arafura Sea and the Gulf of Carpentaria was due to caution exercised in moving into shallower waters.

Itinerary

	Cruise S05-80	
Departed	Broome	21.6.80
Arrived	Darwin	4.7.80
Departed	Darwin	5.7.80
Arrived	* Darwin	12.7.80
Departed	Darwin	12.7.80
Arrived	* Pt Hedland	21.7.80
Departed	Pt Hedland	21.7.80
Arrived	Fremantle	26.7.80

	Cruise S07-80	
Departed	Fremantle	1.11.80
Arrived	Darwin	11.11.80
Departed	Darwin	13.11.80
Arrived	* Gove	23.11.80
Departed	Gove	25.11.80

Arrived	* Weipa	8.12.80
Departed	Weipa	9.12.80
Arrived	Cairns	15.12.80
Departed	Cairns	15.12.80
Arrived	Sydney	20.12.80

Cruise
S02-81

Departed	Sydney	30.5.81
Arrived	Newcastle	30.5.81
Departed	Newcastle	30.5.81
Arrived	* Townsville	4.6.81
Departed	Townsville	4.6.81
Arrived	* Groote	20.6.81
Departed	Groote	21.6.81
Arrived	Gove	24.6.81
Departed	Gove	25.6.81
Arrived	Darwin	5.7.81
Departed	Darwin	6.7.81
Arrived	Fremantle	14.7.81

* unscheduled calls for medical reasons.

Fishing gear and acoustic equipment

Two types of demersal trawls were used during the cruises. A New Zealand Frank & Bryce net with a 32m (105') footrope and an opening height of 3m at 3 knots was used at most of the S05-80 stations (Table 2). A German Engel high opening ground trawl with 49m (164') footrope and an opening height of 6m at 3 knots was used throughout most of S07-80 and S02-81 cruises (Table 2). The cod-ends of these nets were lined with other 10 or 20 mm stretched mesh netting. During the first leg of S05-80 (Broome-Darwin) 500 kg Karmoy doors were used, while during the second half of this cruise and subsequently during S07-80 and S02-81, 1000 kg polyvalent doors were employed.

A prawn net with a 43m footrope was also used at some stations during cruises S07-80 and S02-81, principally to check for the presence of penaeid prawns in deeper waters of the Arafura Sea and the Gulf of Carpentaria. Polyvalent doors were used with this net.

Several midwater tows were made with the Engel 152 meshes x 1800mm and 308 meshes x 800mm pelagic trawl nets with 500 kg Suberkrub pelagic doors. These nets were also used with cod-end liners of either 10 or 20mm stretched mesh netting. Considerable difficulty was experienced in using the pelagic trawls, particularly in the shallower shelf waters. In the absence of dense mid-water fish echoes, the objectives of this investigation could not be achieved by frequent pelagic tows. Two trial tows only were made, using the International Young Gadoid Pelagic Trawl with Suberkrub doors.

Table 1. **Number of demersal stations where catches were analysed during the three *Soela* cruises, grouped by 10 m depth zones**

Depth zones (m)	Cruise S05-80	S07-80	S02-81	Total
11-20	-	1	3	4
21-30	2	12	26	40
31-40	10	9	9	28
41-50	7	13	13	33
51-60	11	18	20	49
61-70	14	12	18	44
71-80	4	7	6	17
81-90	12	4	4	20
91-100	7	-	2	9
101-110	3	1	1	5
111-120	5	2	1	8
121-130	2	-	-	2
131-140	-	-	2	2
141-150	1	-	1	2
151-160	1	-	-	1
161-170	-	2	-	2
171-180	-	1	-	1
181-190	-	-	-	-
191-200	-	-	-	1
201-210	-	-	1	1
211-220	1	-	-	1
Total	80	82	107	269

Table 2. **Number of tows made with different nets during the three *Soela* cruises**

Cruise	Frank & Bryce	Engel high opening ground trawl	Engel pelagic 152 x 1800mm	Engel pelagic 308 x 800mm	Prawn trawl	IYGPT*
S05-80	66	14	1	-	-	2
S07-80	6	76	-	5	13	
S02-81	16	91	-	-	14	-
Total	88	181	1	5	27	2

* International Young Gadoid Pelagic Trawl

The echo-sounders were used for fish detection and determination of trawlability of the seabed. During the first half of S05-80, the Simrad wet paper EK50 (50kHz) sounder was used. During the second half of that cruise and during S07-80 and S02-81, the Simrad 11000 (50kHz) dry paper sounder was used. *Soela's* Krupp Atlas 38kHz dry paper sounder was also in use during the three cruises. Net opening was monitored by a Simrad trawl eye connected to a dry paper recorder.

Catch analysis and identification

Depending on the size, either the whole catch or a subsample was analysed. When subsampling, large specimens were removed.

The species composition of the catch was recorded as far as practicable. The weight of the catch for each species was recorded to the nearest 100g, using a Vega Onboard Scale Balance, Model No. 6010

Fork length, or total length in species with truncate caudal fins, was measured to the nearest 1cm, using an offset measuring board. For a number of tows and particularly during S05-80, only the weights or numbers of some species were recorded. In such cases, figures for both weights and numbers were obtained from mean conversion values (Appendix Table 3) derived from instances when the species was both weighed and counted at the same time.

The primary taxonomic guides used in the identification were: (1) Sainsbury *et al.* "Continental Shelf Fishes of Northern and North-Western Australia" (1984); (2) Munro "The Fishes of New Guinea" (1967) and "Handbook of Australian Fishes" (1956-61); (3) FAO's Identification Sheets for Eastern Indian Ocean and Western Central Pacific (1974); and

(4) Masuda *et al.* "Coastal Fishes of Southern Japan" (1975). In addition to these, a large number of specialist taxonomic papers not cited here also consulted. Identification of a number of species, especially of the Sciaenidae, Mullidae, Apogonidae, Cynoglossidae and Bothidae, is possibly erroneous.

This is inevitable during surveys when the difficult species are left either unidentified, identified within the constraints of existing taxonomic key or even if carefully identified in one haul become difficult to separate from similar species in subsequent hauls.

RESULTS

Species composition of the catches and an indication of their importance in trawl fisheries

Of the approximately 364 species identified (Table 3), 71 (19.5%) are important in the present AFZ demersal fishery. These are food species retained by the Taiwanese trawl fishery if taken in sufficient quantities. Another 41 species (11.3%) may also be important as food species. Forty species (11%) occur in large quantities, either singly as species or collectively as genera, and are potentially important for meal, petfood, berley and bait. Another 13 (3.5%) may be similarly important. One hundred and eighty-one species (49.7%) are unimportant, because they are rare, small, large but grotesque, or generally occur in small quanitities.

The remaining 39 species (10.7%) are of unknown importance. The total of 105.8% is due to some species being placed in more than one category in Table 3. The proportions of nearly all of these species during each of the cruises are given in Tables 4-6.

Table 3. Species collected during *Soela* cruises S05-80, S07-80 and S02-81, and an indication of their usefulness in commercial fisheries

Species	Role in demersal trawl fisheries		
	Important/ exploited	Potentially important	Unimportant
Elasmobranchii			
Orectolobidae			
Stegostoma varium	-	-	x
Brachaelurus waddi	-	-	x
Chiloscyllium punctatum	-	-	x
Sphyrnidae			
Sphyrna lewini	x	-	-
Sphyrna mokarran	x	-	-
Sphyrna blochii	x	-	-
Carcharhinidae			
Rhizoprionodon acutus	x	-	-
Rhizoprionodon taylori	x	-	-
Carcharhinus sealei	x	-	-
Carcharhinus limbatus	x	-	-
Carcharhinus previpinna	x	-	-
Carcharhinus plumbeus	x	-	-
Hemipristis elongatus	x	-	-
Hemigaleus microstoma	x	-	-
Galeocerdo cuvieri	-	-	x
Loxodon macrorhinus	x	-	-
Triakidae			
Mustelus sp.	x	-	-
Squalidae			
Squalus megalops	-	-	x
Pristidae			
Pristis zijsron	x	-	-
Squatinidae			
Squatina australis	-	-	x
Rhynchobatidae			
Rhynchobatus djiddensis	-	-	-
Rhina ancylostomus	-	-	x

Table 3 (Cont. 1)

Species	Role in demersal trawl fisheries		
	Important/ exploited	Potentially important	Unimportant
Rhinobatidae			
Rhinobatos batillum	-	-	x
Rhinobatos schlegeli	-	-	x
Aptychotrema rostrata	-	-	x
Rajidae			
Raja australis	-	-	x
Torpedinidae			
Narcine sp.	-	-	x
Dasyatidae			
Dasyatis brevicaudata?	x	-	-
Dasyatis thetidis?	x	-	-
Amphotistius kuhlii	x	-	-
Himantura uarnak	x	-	-
Gymnura australis	x	-	-
- unidentified species			
Urolophidae			
Myliobatidae			
Aetobatus narinari	-	-	x
- unidentified species			
Chimaeridae			
Megalopidae			
Megalops cyprinoides	-	-	x
Albulidae			
Albula sp.	-	-	x
Chirocentridae			
Chirocentrus dorab	-	-	x
Clupidae			
Sardinella sirm	-	x	-
Sardinella gibbosa	-	x	-
Sardinella albella	-	x	-
Herklotsichthys koningsbergeri	-	x	-
Herklotsichthys macculloch	-	x	-
Pellona ditchela	-	x	-
Dussumieria acuta	-	x	-
Ilisha cf melastoma	-	-	x
Dorosoma chacunda	-	-	x

Table 3 (Cont. 2)

Species	Role in demersal trawl fisheries		
	Important/	Potentially exploited	Unimportant important
Engraulidae			
Thryssa setirostris	-	-	x
Thryssa hamiltonii	-	-	x
Setipinna papuensis	-	-	x
Papuengraulis micropinna	-	-	x
Stolephorus indicus	-	-	x
Synodontidae			
Saurida undosquamis	x	-	-
Saurida micropectoralis	x	-	-
Saurida filamentosa?	-	-	x
Saurida elongata	-	-	x
Trachinocephalus myops	-	-	x
Synodus variegatus	-	-	x
Synodus sagenaeus	-	-	x
Synodus hoshinonis	-	-	x
Harpodontidae			
Harpodon translucens	-	-	x
Ariidae			
Arius thalassinus	-	-	?
Plotosidae			
Euristhmus nudiceps	-	-	x
Euristhmus lepturus	-	-	x
Plotosus lineatus	-	-	x
Muraenidae			
- unidentified species	-	-	x
Muraenosocidae			
Muraenesox cinereus	-	-	x
Oxyconger leptognathus	-	-	x
Lophiidae			
- unidentified species	-	-	x
Chaunacidae			
Chaunax fimbriatus	-	-	x
Ogcocephalidae			
Halieutaea coccinea	-	-	x
Halieutaea stellata	-	-	x

Table 3 (Cont. 3)

Species	Role in demersal trawl fisheries		
	Important/ exploited	Potentially important	Unimportant
Ophidiidae			
Sirembo imberbis	-	-	x
Sirembo philippinus	-	-	x
Monocentridae			
Monocentrus japonicus	-	-	x
Holocentridae			
Adioryx ruber	-	-	x
Veliferidae			
Velifer hypselopterus	-	-	x
Fistulariidae			
Fistularia petimba	-	-	x
Centriscidae			
Centriscus scutatus	-	-	x
Syngnathidae			
Syngnathus guntheri	-	-	x
Scorpaenidae			
Apistus carinatus	-	-	x
Apistops caloundra	-	-	x
Pterois russelli	-	-	x
Inimicus sinensis	-	-	x
Liocranium sp.	-	-	x
Minous versicolor	-	-	x
Scorpaenopsis gibbosa	-	-	x
Erosa erosa	-	-	x
Setarches longimanus	-	-	x
- unidentified species	-	-	x
Triglidae			
Peristedion sp.	-	-	x
Lepidotrigla kishinoyi	-	-	x
Lepidotrigla spilotera	-	-	x
Pterygotrigla sp.	-	-	x
Satyrichthys welchi	-	-	x
- unidentified species	-	-	x

Table 3 (Cont. 4)

Species	Role in demersal trawl fisheries		
	Important/ exploited	Potentially important	Unimportant
Platycephalidae			
Elates ransonetti	-	-	x
Ratabulus cf diversidens	-	-	x
Platycephalus macracanthus	-	-	x
Platycephalus nematopthalmus	-	-	x
Platycephalus endrachtensis	-	-	x
Platycephalus spp.	-	-	x
Onigocia spinosa	-	-	x
Chlorophthalmidae			
Chlorophthalmus sp.	-	-	x
Cephalacanthidae			
Dactyloptena papilio	-	-	x
Dactyloptena peterseni	-	-	x
Dactyloptena macracanthus	-	-	x
Serranidae			
Plectropoma maculatum	x	-	-
Epinephelus sexfasciatus	-	-	x
Epinephelus maculatus?	x	-	-
Epinephelus malabaricus	-	-	x
Epinephelus areolatus	x	-	-
Epinephelus rankini?	-	-	x
Epinephelus hata?	-	-	x
Epinephelus tuavina?	x	-	-
Epinephelus amblycephalus	-	-	x
Diploprion bifasciatum	-	-	x
Sayonora satsumi	-	-	x
Synagrops philippinensis	-	-	x
?Acropoma japonicum	-	-	x
Pseudochromidae			
Pseudochromis quinquedentatus	-	-	x
Glaucosomidae			
Glaucosoma magnificum	-	-	x
Latidae			
Psammoperca waigiensis	-	-	x
Therapontidae			
Pelates quadrilineatus	-	x	-
Therapon theraps	-	x	-
Therapon jarbua	-	-	x
Therapon sp. (slender therapon)	-	-	x

Table 3 (Cont. 5)

Species	Role in demersal trawl fisheries		
	Important/ exploited	Potentially important	Unimportant
Priacanthidae			
Priacanthus tayenus	x	-	-
Priacanthus cruentatus	x	-	-
Priacanthus hamrur	-	-	x
Apogonidae			
Apogon quadrifasciatus	-	-	x
Apogon poecilopterus	-	-	x
Apogon ellioti	-	-	x
Apogon brevicaudatus	-	-	x
Apogon atripes	-	-	x
Apogon melanopus	-	-	x
Apogon albimaculosus	-	-	x
Siphamia spp.	-	-	x
Sillaginidae			
Sillago analis	x	-	-
Sillago maculata	x	-	-
Sillago sihama	x	-	-
Lactariidae			
Lactarius lactarius	-	-	x
Rachycentridae			
Rachycentron canadus	x	-	-
Echeneidae			
Echeneis naucrates	-	-	x
Macrouridae			
Coelorhynchus sp.	-	-	x
Carangidae			
Carangoides malabaricus	x	-	-
Carangoides chrysophrys	x	-	-
Carangoides equula	x	-	-
Carangoides coeruleopinnatus	x	-	-
Carangoides gymnostethus	x	-	-
Carangoides fulvoguttatus	x	-	-
Carangoides humerosus	x	-	-
Carangoides armatus	x	-	-
Carangoides aurochs	x	-	-
Carangoides hedlandensis	x	-	-
Carangoides talamparoides	x	-	-
Selar boops	x	-	-
Selar crumenophthalmus	x	-	-

Table 3 (Cont. 6)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Carangidae (Continued)			
Alepes macrurus	-	x	-
Alepes mate	-	x	-
Alepes kalla	-	x	-
Selaroides leptolepis	-	x	-
Decapterus macrosoma	-	x	-
Gnathanodon speciosus	x	-	-
Seriolina nigrofasciata	x	-	-
Caranx bucculentus	-	x	-
Caranx ignobilis	x	-	-
Caranx radiatus	-	-	x
Alectis indica	-	-	x
Alectis ciliaris	-	-	x
Uraspis helvola	-	-	x
Ulua mentalis	-	-	x
Megalaspis cordyla	-	x	-
Elagatis bipinnulatus	-	-	x
Scomberoides tol	-	-	x
Scomberoides tala	-	-	x
Formionidae			
Apolectus niger	x	-	-
Menidae			
Mene maculata	-	-	x
Leiognathidae			
Leiognathus bindus	-	x	-
Leiognathus smithursti	-	-	x
Leiognathus leuciscus	-	x	-
Leiognathus equulus	-	x	-
Leiognathus fasciatus	-	x	-
Leiognathus splendens	-	x	-
Leiognathus hastatus?	-	x	-
Leiognathus blochii?	-	-	x
Leiognathus cf aureus	-	-	x
Gazza minuta	-	x	-
Secutor insidiator	-	x	-
Secutor ruconius	-	x	-
Lutjanidae			
Pristipomoides multidens	x	-	-
Pristipomoides typus	x	-	-
Lutjanus lineolatus	x	-	-
Lutjanus vitta	x	-	-
Lutjanus sebae	x	-	-

Table 3 (Cont. 7)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Lutjanidae (Continued)			
Lutjanus erythropterus	x	-	-
Lutjanus malabaricus	x	-	-
Lutjanus carponotatus	x	-	-
Lutjanus russelli	x	-	-
Lutjanus argentimaculatus	x	-	-
Gabrilutjanus nematophorus	-	-	x
Caesio cuning	-	-	x
Pterocaesio diagramma	-	-	x
Paracaesio sp.	-	-	x
Dipterygonotus balteatus	-	-	x
Nemipteridae			
Nemipterus peronii	x	-	-
Nemipterus hexodon	-	x	-
Nemipterus tolu	-	x	-
Nemipterus tambuloides	-	x	-
Nemipterus virgatus	-	x	-
Nemipterus bathybus	-	x	-
Nemipterus mesoprion?	-	x	-
Nemipterus metopias?	-	x	-
Nemipterus spp.	-	-	x
Pentapodus nagasakiensis	-	-	x
Pentapodus setosus	-	x	-
Scolopsis taeniopterus	-	x	-
Scolopsis regina	-	x	-
Scolopsis vosmeri	-	-	x
Parascolopsis inermis	-	-	x
Gerridae			
Pentaprion longimanus	-	-	x
Gerres filamentosus	-	-	x
Gerres oyena	-	-	x
Haemulidae			
Pomadasys maculatus	-	x	-
Pomadasys hasta	x	-	-
Pomadasys argyres	x	-	-

Table 3 (Cont. 8)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Haemulidae (Continued)			
Plectorhynchus pictus	x	-	-
Hapalogenys kishinouyei	-	-	x
Pristigenys niphonia	-	-	x
Lethrinidae			
Lethrinus choerorynchus	x	-	-
Lethrinus microdon?	x	-	-
Lethrinus fraenatus	x	-	-
Lethrinus lentjan	x	-	-
Lethrinus nebulosus	x	-	-
Lethrinus miniatus	x	-	-
Lethrinus nematacanthus	-	x	-
Sparidae			
Argyrops spinifer	x	-	-
Argyrops bleekeri	x	-	-
Gymnocranius griseus	x	-	-
Gymnocranius robinsoni	x	-	-
Gymnocranius elongatus	x	-	-
Sciaenidae			
Johnieops sina	-	x	-
Austronibea oedongenys	-	x	-
Protonibea diacanthus	-	x	-
Johnieops volgleri	-	x	-
Johnius amblycephalus	-	x	-
Atrobucca nibe	-	x	-
Johnius trachycephalus	-	x	-
Johnius coitor	-	x	-
Johnius antarctica?	x	-	-
Chrysochir aureus	-	x	-
Argyrosomus amoensis	-	x	-
Argyrosomus sp.	-	x	-
Mullidae			
Upeneus bensasi	-	-	x
Upeneus moluccensis	-	-	x
Upeneus sundaicus	-	-	x
Upeneus asymmetricus	-	-	x
Upeneus luzonius	-	-	x
Upenius sulphureus	-	-	x
Upeneus spp.	-	-	x
Parupeneus pleurospilus	-	-	x

Table 3 (Cont. 9)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Mullidae (Continued)			
Parupeneus chryserpleuron	-	-	x
Parupeneus chryserydros	-	-	x
Parupeneus indicus	-	-	x
Parupeneus pleurotaenia	-	-	x
Parupeneus spilurus	-	-	x
Ephippidae			
Platax batavianus	x	-	-
Platax orbicularis	x	-	-
Platax teire	x	-	-
Drepane punctata	-	-	x
Zabidius novaemaculatus	x	-	-
Rhinoprenidae			
Rhinoprenes pentanemus	-	-	x
Chaetodontidae			
Parachaetodon ocellatus	-	-	x
Chaetodon modestus?	-	-	x
Chaetodon aureofasciatus	-	-	x
Coradion chrysozonus	-	-	x
Chelmon marginalis	-	-	x
Chelmon mulleri	-	-	x
Chaetodontoplus personifer	-	-	x
Chaetodontoplus duboulayi	-	-	x
Heniochus acuminatus	-	-	x
Euxiphipops sexstriatus	-	-	x
Pentacerotidae			
Banjos banjos	-	-	x
Histopterus typus	-	-	x
Pomacentridae			
Pristotis jerdoni	-	-	x
Cepolidae			
- unidentified species	-	-	x
Mugilidae			
- unidentified species	-	-	x
Sphyraenidae			
Sphyraena obtusata	-	-	x

Table 3 (Cont. 10)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Sphyraenidae (continued)			
Sphyraena jello	x	-	-
Sphyraena forsteri	-	-	x
Sphyraena flavicauda?	-	-	x
Polynemidae			
Polynemus nigripinnis	-	-	x
Polynemus specularis	-	-	x
Eleutheronema tetradactylum	x	-	-
Polynemus multiradiatus?	-	-	x
Labridae			
Choerodon cephalotes	-	-	x
Choerodon monostigma	-	-	x
Choerodon shoenleini	-	-	x
Choerodon vitta?	-	-	x
Choerodon spp.	-	-	x
Anampses lennardi	-	-	x
Scaridae			
Scarus ghobban	-	-	x
Mugiloididae			
Parapercis spp.	-	-	x
Uranoscopidae			
Uranoscopus spp.	-	-	x
Champsodontidae			
Champsodon guentheri	-	-	x
Callionymidae			
Callionymus spp.	-	-	x
Gobiidae			
Acentrogobius criniger	-	-	x
Siganidae			
Siganus canaliculatus	-	-	x
Acanthuridae			
Acanthurus grammoptilus	-	-	x

Table 3 (Cont. 11)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Gempylidae			
Rexea solandri	-	-	x
Epinnula orientalis	-	-	x
Trichiuridae			
Trichiurus lepturus	x	-	-
Tentoriceps sp.	-	-	x
Scombridae			
Scomberomorus queenslandicus	x	-	-
Scomberomorus commerson	x	-	-
Scomberomorus semifasciatus	x	-	-
Scomberomorus munroi	x	-	-
Rastrelliger kanagurta	-	x	-
Cybiosarda elegans	-	-	x
Sarda orientalis	-	-	x
Centrolophidae			
Psenopsis humerosus	x	-	-
Nomeidae			
Psenes arafurensis	x	-	-
Ariomma indica	-	-	x
Psettodidae			
Psettodes erumei	-	-	x
Bothidae			
Pseudorhombus dupliciocellatus	-	-	x
Pseudorhombus arsius	-	-	x
Grammatobothus polyophthalmus	-	-	x
Pseudorhombus spinosis	-	-	x
Engyprosopon grandisquama	-	-	x
Engyprosopon latifrons	-	-	x
Pseudorhombus diplospilus	-	-	x
- unidentified species	-	-	x
Pleuronectidae			
Brachypleura novaezeelandiae	-	-	x
Samaris cocatuae	-	-	x
Soleidae			
Aesopia cornuta	-	-	x
Dexillichthys mulleri	-	-	x

Table 3 (Cont. 12)

Species	Role in demersal trawl fisheries		
	Important exploited	Potentially important	Unimportant
Soleidae (Continued)			
Pardicula setifer	-	-	x
Zebrias craticula	-	-	x
Cynoglossidae			
- unidentified species	-	-	x
Triacanthidae			
Trixiphichthys weberi	-	-	x
Triacanthus biaculeatus	-	-	x
Anacanthidae			
Anacanthus barbatus	-	-	x
- unidentified species	-	-	x
Balistidae			
Abalistes stellaris	-	-	x
Sufflamen fraenatus	-	-	x
Monacanthidae			
Chaetoderma penicilligera	-	-	x
Paramonacanthus japonicus	-	-	-
Paramonacanthus filicauda	-	-	-
Pseudomonacanthus peroni	-	-	x
Alutera monoceros	-	-	x
Ostraciontidae			
Rhynchostracion nasus	-	-	x
Tetrosomus gibbosus	-	-	x
Rhinostracion rhinorhynchus	-	-	x
Tetradontidae			
Lagocephalus sceleratus	-	-	x
Lagocephalus inermis	-	-	x
Lagocephalus lunaris	-	-	x
Lagocephalus spadiceus	-	-	x
Spheroides cf tuberculiferous	-	-	x
Amblyrhynchotes multistriatus	-	-	x
Amblyrhynchotes spinosissimus	-	-	x
Chelonodon patoca	-	-	x
Fugu poecilonotura	-	-	x
Canthigaster coronata	-	-	x

Table 3 (Cont. 13)

Species	Role in demersal trawl fisheries		
	Important	Potentially exploited	Unimportant important
Triodontidae			
Triodon macropterus	-	-	x
Diodontidae			
Chilomycterus spp.	-	-	x
Cyclichthys jaculiferus	-	-	x
Myctophidae			
- unidentified species	-	-	x
Cephalopoda			
Cuttlefish	x	-	-
Squid (mostly Loliginidae)	x	-	-
Crustacea			
Thenus orientalis	x	-	-
Panulirus spp.	x	-	-
Penaeid prawns (several species)	x	-	-

Total catch rates by depth

Figures 3 to 5 show the total catch rates by depth for the three cruises. The observed variability in the catch rates for any given depth zone is to be expected. During S07-80, catch rates averaged 420 kg per half-hour in 21-60m. In 61-100m, the catch rates dropped to an average of 110 kg per half-hour. During S02-81, the situation was generally similar, with a higher average catch rate in 21-60m (364 kg per half-hour) than in 61-100m (162 kg per half-hour). During cruise S02-81, however, higher catch rates were obtained in the 61-80m depth zone than during cruise S07-80. The pattern of total catch rate *v.* depth during cruise S05-80 was different from the later two cruises. The mean catch rates in 21-60m and 61-100m during S05-80 were 221 and 190 kg per half-hour respectively.

Comparison between catch rates of S05-80 in the Timor Sea and those of S07-80 and S02-81 in the Arafura Sea and Gulf of Carpentaria is complicated by the use of two very different demersal trawls on the three cruises (Table 2). As no attempt was, or has since been, made to callibrate the net openings or swept areas of the Frank and Bryce and Engel high opening ground trawls (the nets with which the majority of samples were caught) no comment can be made on their relative catching power. Intuitively, the Engel trawl with its 49m footrope and 6m opening height would have a greater effective fishing area than the smaller (32m foot rope, 3m opening height) Frank and Bryce. However, the comparison is complicated by the use of different foot ropes with the two nets: the Engel trawl is fitted with 14" rubber bobbins designed to carry the foot rope and net well above the bottom, while the Frank and Bryce foot rope is covered by 6" rubber punchings that allow the net to fish hard onto the bottom. The effect of these different footrope configurations on catch rates and species composition of catches is unknown.

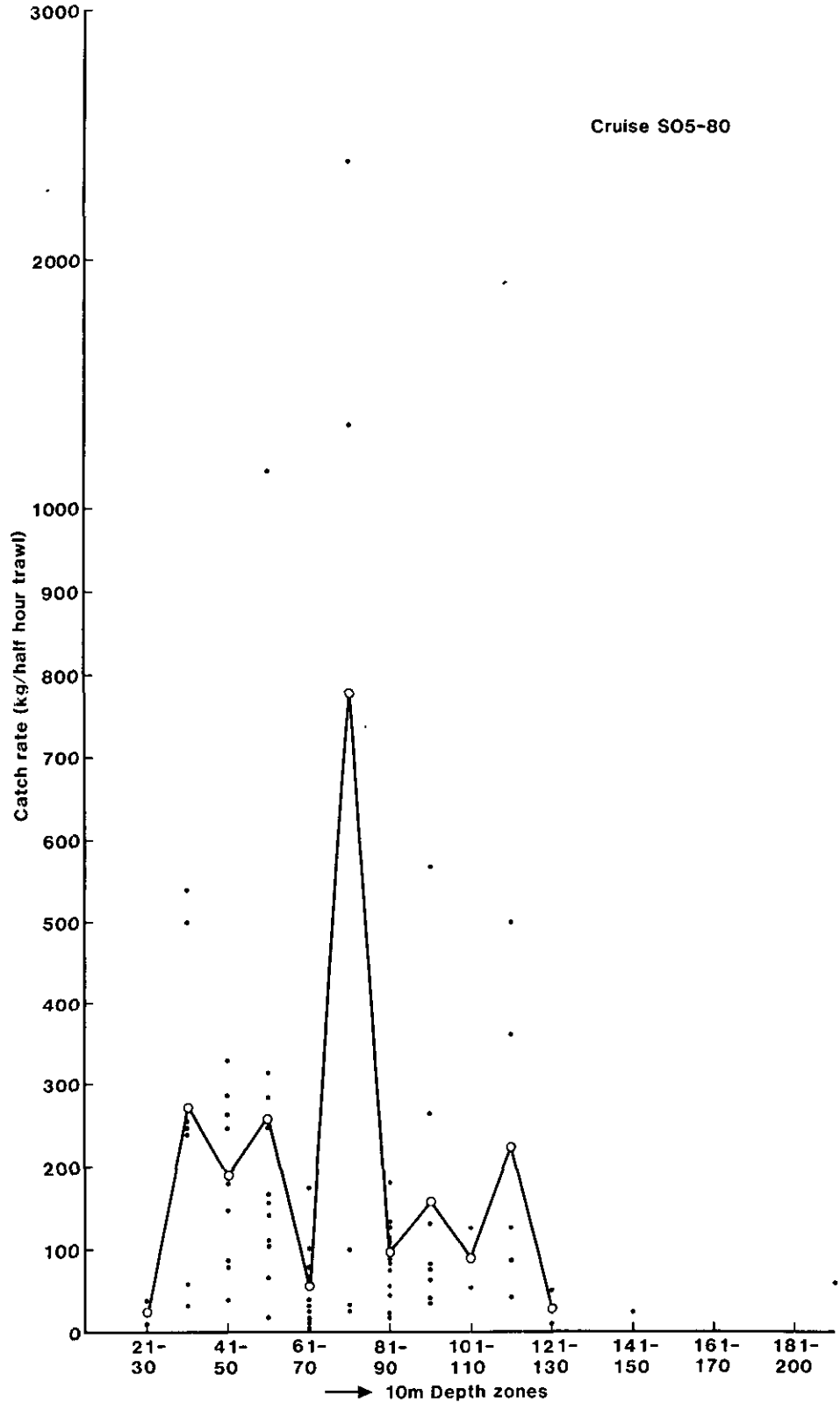

Figure 3. Total catch rate per depth category for cruise SO5-80.

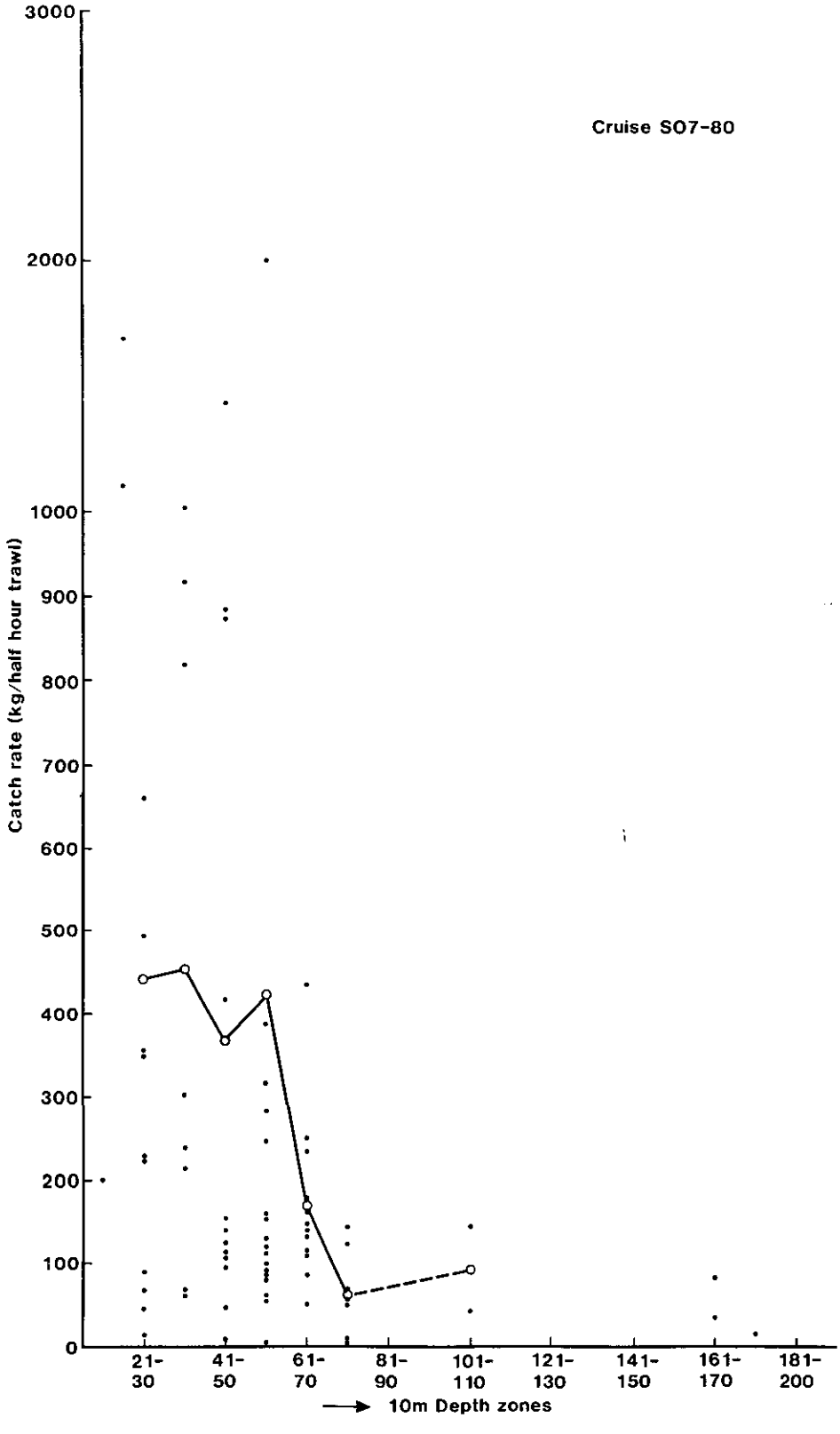

Figure 4. Total catch rate per depth category for cruise SO7-80.

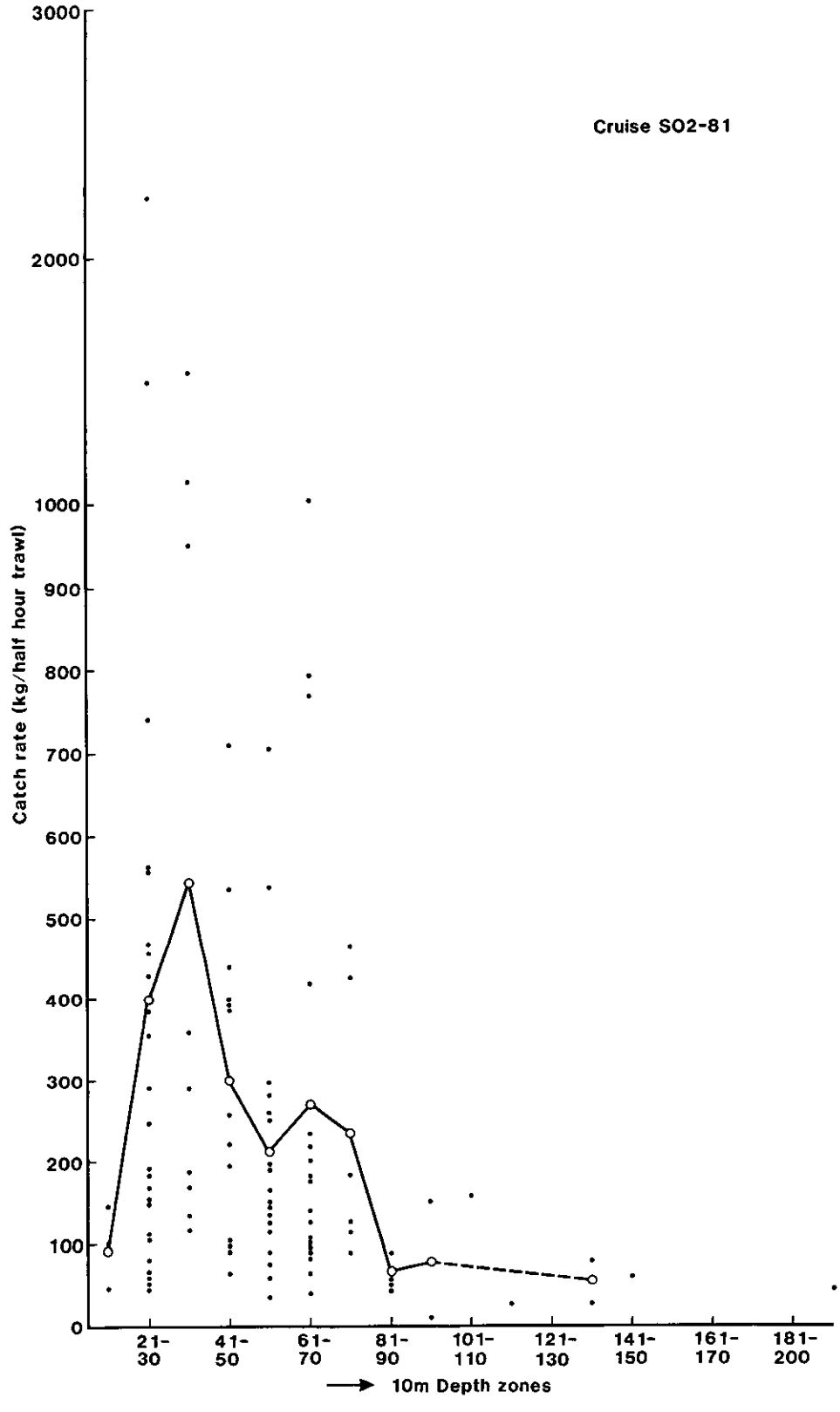

Figure 5. Total catch rate per depth category for cruise SO2-81.

Summary description of the useful and major components of the catch

Sphyrnidae

The three species taken are of economic importance. *Sphyrna lewini* was the most common hammerhead shark in 20-100m, with mostly small individuals encountered. Few *Sphyrna mokarran* and *Sphyrna blochii* were taken in 50-70m and 20-40m respectively.

Carcharhinidae

Eleven species of carcharhinid sharks were identified, all of which are retained by the present Taiwanese trawl and gillnet fisheries operating in northern Australian Fishing Zone waters. *Carcharhinus dussumieri* was the most common and abundant species, followed by *Rhizoprionodon* spp. However, at Stn 45 (Figure 2) in the Gulf of Carpentaria during cruise S07-80, 500 *Rhizoprionodon acutus* were taken in a 3.5 t catch predominantly of lutjanids; *Rhizoprionodon taylori* was taken less frequently than *R. acutus*. These two species are much alike and were not distinguished during cruise S05-80 and the first part of cruise S07-80. Thus, they have been grouped together here. *C. dussumieri* occurred down to 110m; *Rhizoprionodon* spp. to 170m. However, these species were most numerous in depths of less than 80m. *Hemigaleus microstoma* was the next most common carcharhinid, followed by *Carcharhinus limbatus* and *Carcharhinus sorrah* respectively. *H. microstoma* and *C. limbatus* were taken from 21-110m and *C. sorrah* from 11-80m. Other shark species that were taken occasionally were: *Carcharhinus brevipinna* (4 in all, each weighing 2-5 kg, from 21-90m); *Hemipristis elongatus* (4 in all, each weighing 2-9 kg, from 21-70m); *Carcharhinus plumbeus* (3 in all, each weighing 2-28 kg, from 71-220m); *Galeocerdo cuvieri* (3 in all, each weighing 2-200 kg, from 41-60m) and *Loxodon macrorhinus* (1 only, from 101-110m).

Triakidae and Squalidae

Several specimens of the triakid *Mustelus* were taken from 110-220m during the three cruises. Two specimens only of the spined shark *Squalus megalops* were taken during cruise S05-80 in 141-150m. These species are probably unexploited.

Pristidae

A few species of *Pristis* were commonly taken from 20-100m. Although

occurring in small numbers, they are retained in the Taiwanese fishery because of their massive size, edible flesh, and the "saw".

Rhynchobatidae and Rhinobatidae

The shovel-nose ray *Rhynchobatus djiddensis* was common in 11-70m, mostly at 1 to 2 per half-hour trawl. Three species of rhinobatid shovel-nose rays were also taken from 21-160m. Specimens weighed up to 100 kg. Their role in the Taiwanese fishery is not known.

Dasyatidae

The three most frequently occurring dasyatid species were *Amphotistius kuhlii*, *Himuntura uarnak* and *Gymnura australis*. They were common and equally abundant. They occurred in 11-120m, although in the Arafura Sea the lower limit of their range was 80-90m. The fourth species, *Dasyatis brevicaudata? (thetidis?)*, was commonly encountered during cruise S05-80 but not recorded during cruises S07-80 and S02-81. Foreign fishing vessel observers report that large dasyatids are frequently retained by the Taiwanese pair trawl fishery.

Myliobatidae

These were much less common than the dasyatids and taken in ones and twos in half-hour trawls. Small specimens of 1-3 kg were recorded from 20-120m. Although edible, the fate of the large specimens in the Taiwanese trawl and gillnet fishery is not known.

Clupeidae (Appendix Table 7.1)

The most abundant clupeid was *Pellona ditchela*. It occurred in 11-120m. Several catches of 100-150 kg per half-hour trawl were made. This species is unimportant for human consumption. However, its abundance means it could be a potential source of fish-meal. The second most abundant clupeid was *Herklotsichthys koningsbergeri* in 11-80m. This species and *Dussumieria acuta*, *Sardinella gibbosa* and *Sardinella albella*, which were taken in small quantities, are important species for food, bait, etc. The abundance of these species needs to be determined by appropriate pelagic gears. The important clupeid species *Sardinella sirm* also occurs in the region. Several specimens were taken by the Engel pelagic trawl from the Gulf of Carpentaria, together with larger

quantities of the leatherjacket *Paramonacanthus*. The species extends westwards to the North West Shelf, but determination of its abundance awaits future pelagic surveys.

Synodontidae (Appendix Table 7.2)

Of the eight synodontid species recorded, only two, *Saurida undosquamis* and *Saurida micropectoralis*, are abundant and large. Both these species are important constituents of the Taiwanese trawl fishery. The ratio of the two species in the fishery is not known. In the present surveys, their mean numerical abundances are in the ratio of 5:1 (S05-80); 3:1 (S07-80) and 6:1 (S02-81). *S. undosquamis* occurred in 11-50m; *S. micropectoralis* in 11-120m. The third, smaller species, *Saurida filamentosa*, occurred in 61-170m. The fourth species, *Saurida elongata*, was uncommon, occurring in 81-220m.

Serranidae

The most common species was the small *Epinephelus sexfasciatus* taken in small numbers from 10-110m. The larger and commercially important species *(Plectropoma maculatum, Epinephelus areolatus, Epinephelus maculatus* and *Epinephelus tauvina)* occurred in very low numbers.

Plectropoma maculatum and most other *Epinephelus* species are reef-associated fishes. Their higher incidence during cruise S05-80 reflects the presence of more reef-like environments on the Sahul Shelf than in the Arafura Sea. The identification of several of the uncommon species *(Epinephelus mera, Epinephelus malabaricus, Epinephelus rankeni, Epinephelus amblycephalus, Epinephelus hata* and *Epinephelus tauvina)* is tentative because of difficulties in the taxonomy of this group.

Therapontidae (Appendix Table 7.3)

Three species of grunters were found, of which the most abundant was *Therapon theraps* followed by *Pelates quadrilinieatus*. The third species, *Therapon jarbua*, was taken in much smaller numbers. In the Arafura Sea, both *T. theraps* and *P. quadrilineatus* were most abundant < 50, often occurring in large concentrations. The species are edible but difficult to handle because of their small size, hardiness and sharp spines. Thus, at present they are of no economic value. Their large concentration offers a possible source of meal.

Priacanthidae

Three priacanthid species were found. *Priacanthus tayenus* was the most common and abundant, followed by *Priacanthus cruentatus*. The third species, *Priacanthus hamrur*, was uncommon, especially in the Arafura Sea. It is probably the larger species of *P. tayenus* and *P. cruentatus* which are retained in the Taiwanese fishery. *P. tayenus* occurred in 11-110m and *P. cruentatus* in 20-220m, the latter species appearing to move into deeper waters during June-July.

Carangidae (Appendix Tables 7.4 - 7.8)

The two most abundant species *Selaroides leptolepis* and *Caranx bucculentus*, occur principally in inner shelf waters (< 50 m). They represent a presently unexploited resource. These species would be acceptable on the fresh-fish markets of the Indo-Pacific coastal countries. *Megalaspis cordyla*, the torpedo trevally, is also a common inner-shelf species. It is a food species but, at present, is not harvested. Of the nine *Carangoides* species, *Carangoides malabaricus* was the most abundant. This species, together with the other less abundant species, *C. caeruleopinnatus*, *C. talamparoides*, *C. humerosus*, *C. aurochs*, *C. chrysophrys*, *C. fulvoguttatus* and *C. gymnostethus*, is retained by Taiwanese trawlers. *C. equula* is a shelf-break species (80-150) and occurred in small numbers. *Carangoides hedlandensis* is a small species generally confined to < 50m.

The two *Selar* species (*Selar boops* and *S. crumenopthalmus*), the two *Decapterus* species (*Decapterus russelli* and *D. macrosoma*) and *Alepes* species are schooling semi-pelagic fishes. From time to time they occur in the trawls in large quantities. Again, these species are acceptable food species in the Indo-Pacific countries. *Gnathanodon speciosus* and *Caranx ignobilis* are large reef-associated species. Not many were taken during the three surveys. These species are retained by the Taiwanese fishery. The remaining carangid species - *Seriolina nigrofasciata*, *Caranx radiatus*, *Alectis* spp., *Scomberoides* spp. and *Ulua mentalis* - are unimportant.

Leiognathidae (Appendix Tables 7.9 - 7.13)

Leiognathids, commonly known as silver bellies, dollarfish, slipmouths etc., were extremely abundant down to 90m, although large catches were generally in < 50m. The genus *Leiognathus* was the most abundant, followed by *Secutor* and *Gazza*. Large quantities of leiognathids are taken and discarded in the northern prawn fishery and the use of this by-catch should be investigated.

Formionidae (Appendix Table 7.14)

Apolectus (= Formio) niger, commonly known as the black pomfret, is a schooling fish occuring in relatively large quantities in depths down to 120m. It is good eating and is retained by Taiwanese trawlers.

Menidae

Mene maculata, the moon fish, is a small, unimportant species. It occurs in small numbers, although on one occasion a catch of 72 kg was taken in a half-hour trawl.

Lutjanidae (Appendix Tables 7.15 - 7.16)

This family contains a large number of very important commercial species. Two species of *Pristipomoides* were taken in small numbers in 50-170m, although they appear to be more common in 50-90m.

Lutjanus argentimaculatus was caught infrequently but, when it did occur, it was taken in large aggregations on patches of uneven bottom. The schools were detected acoustically. Approximatley half-hour aimed hauls at two such aggregations, Stn 90 of cruise S07-80 and Stn 12 of cruise S02-81 (Stns 45 and 12 of Figure 2), caught 915 kg and 542 kg respectively.

Lutjanus malabaricus is another large species, encountered uniformly in depths of 50-100m in the Arafura Sea. This species is one of the principal targets of Taiwanese trawlers in the Arafura Sea. It does not appear to form very large aggregations, with only one large catch of 182 kg taken. Small specimens with fork lengths (FL) OF 12-23cm were found in depths of 40-70m.

Lutjanus sebae, the red emperor, grows to over 1m and 22 kg (Grant 1965). It was not taken in large quantities and was generally associated with reef areas. Young specimens of 14-25cm FL were caught in depths of 11-70m.

Lutjanus erythropterus, *Lutjanus russelli* and *Lutjanus carponotatus* are relatively small species. Approximately 1 t of *L. erythropterus* was taken at Stn 89 (not shown in Figure 2, 20°24'S, 115°44'E to 20°17'S, 115°43'E) on the North West Shelf during cruise S05-80, and approximately 600 kg at Stn 90 (Stn 45 in Figure 2) during cruise S07-80. At Stn 90, it was mixed with *L. argentimaculatus* and *Rhizoprionodon*. *L. russelli* was generally taken in small quantities from 20-120m. The largest catches of 49kg and 38 kg were taken at nearly the same spot (Stn 45 of Figure 2) during cruises S07-80 and S02-81 respectively. *L. carponotatus* occurred in small numbers of < 60m. Its largest catch, of 32 kg at Stn 12 (Figure 2) during cruise S02-81, was from 20-30m when it was mixed with *L. argentimaculatus* (see above).

Lutjanus vitta and *Lutjanus lineolatus* were the smallest of the commercially important lutjanid species encountered.

Small catches of *L. vitta* were generally common down to 100m. *L. lineolatus*, the least common lutjanid species, was taken from 40-80m only. All of the small lutjanid species are retained by the Taiwanese trawl fishery.

Lethrinidae

Lethrinids also form an economically important group of fishes in the Indo-Pacific, especially in reef fisheries. The most common species in the Arafura Sea was *Lethrinus lentjan*. However, it rarely occurred in large quantities, the exception being at Stn 38 during S02-81 (Stn 45 of Figure 2) where 219 kg were taken in a half-hour trawl. The catch rates of *Lethrinus fraenatus* did not exceed 23 kg per half-hour and those of *L. choerorynchus* were even lower. *Lethrinus nebulosus* and *Lethrinus microdon?*, were rare. *Lethrinus nematacanthus*, a small species, was common along the inner shelf and numerically abundant at some stations. This species is presently unexploited, although it is quite good to eat if properly prepared.

Sparidae

This is another family of economically important species. *Argyrops spinifer* was uncommon, with a maximum catch of 10 kg taken at Stn 57 of cruise S07-80 (Stn 97 of Figure 2). It occurred in 31-130m but was most frequently caught in 40-90m. The three species of *Gymnocranius* were taken only during cruise S05-80. Sparids are associated with hard bottom environments (reef, rocks, sand) in clear water.

Nemipteridae (Appendix Table 7.17)

This is another family of economically important species in the Indo-Pacific, forming an important constituent of the catches during the present surveys. The most abundant species is *Nemipterus hexodon* is 11-110m. It is more common in the Arafura Sea and Gulf of Carpentaria than on the Sahul Shelf. *Nemipterus peronii* is the most abundant species, more common on the Sahul Shelf than in the Arafura Sea and Gulf of Carpentaria, occurring in 11-90m. An unidentified species of *Nemipterus* is the next most abundant species in the Arafura Sea, in 40-90m. *Nemipterus tolu* appears to be mainly an inner shelf (< 60m) species in the Arafura Sea and, therefore, is probably outside the range of present Taiwanese trawlers. *Nemipterus tambuloides* occurs infrequently and in small numbers in 50-100m. *Nemipterus bathybus* and *Nemipterus virgatus* are both mid-shelf to shelf-break species (60-150m) and are perhaps only partly subject to exploitation. *Nemipterus mesoprion* and *N. metopias* are rare. Properly prepared, most of the *Nemipterus* species are good quality food.

Haemulidae (Appendix Tables 7.18 - 7.19)

The economically important species of this family are *Plectorphynchus*

pictus, *Pomadasys argyreus* and *Pomadasys hasta*. *Plectorhynchus pictus*, the painted sweetlip, was more abundant on the Sahul Shelf than in the Arafura Sea.

The species occurred in 10-110m. Several small specimens were taken from 50-60m. *Pomadasys argyreus* was caught at three stations only during S02-81, with a maximum catch of 182 kg at Stn 12 (Figure 2) where it was associatd with a school of *Lutjanus argentimaculatus* (see under Lutjanidae). *Pomadasys hasta* was taken at a total of nine stations during cruises S05-80 and S02-81, in small numbers.

The small *Pomadasys maculatus* was the most abundant haemulid species in < 50m. Its large concentrations form a potential resource for the production of animal feed.

Sciaenidae

In several regions of the tropical Indo-Pacific and Atlantic, this family forms one of the dominant groups of inshore fishes, especially in estuarine environments and over muddy bottoms. Because of their abundance and the relatively large size of some species, they constitute important food fishes. However, this group was not abundant in the areas examined during the present surveys. The northern jewfish, *Johnius antarctica?*, is one of the few sciaenids of any importance in Australia. Only a few of these were caught. *Johnieops volgleri?* appeared to be the most common species. At Stn 47 of cruise S07-80 (Stn 109 of Fig. 2), 217 kg of it was caught. Seventy-one kg of an unidentified sciaenid species was taken at Stn 16 of cruise S02-81 (Stn 21 of Fig. 2) and 75 kg of *Argyrosomus amoensis?* was taken at Stn 45 of S07-80 (Stn 114 of Figure 2) in 100-108m. Several kilograms of *Argyrosomus* sp. were also taken in fairly deep waters (130-134m) at Stn 112 of cruise S02-81 (Stn 125 of Figure 2). The uncertainties in the identifications reflect the difficulties the group poses to a non-sciaenid specialist.

Mullidae (Appendix Tables 7.20 - 7.21)

The most abundant species was the small (average size - 15cm) *Upeneus sulphureus*, with maximum abundance in 30-80m in the Arafura Sea. Other similar sized *Upeneus* species occurred in smaller quantities, except for *Upeneus moluccensis*, which had a mean catch rate of 10-13 kg per half-hour in 80-110m during S02-81. Several species of *Parupeneus* were also taken but, other than *Parupeneus pleurospilus*, they were uncommon. Some mullid species normally associated with Indo-Pacific reef-environment fisheries grow to a fairly large size and are fine eating fish. However, few of these larger species were taken during the present surveys.

Ephippidae

Although the commonest of the bat-fishes, *Zabidius novaemaculatus* was nowhere abundant except at Stn 90 of S07-80 (84 kg) and Stn 12 of S02-81 (455 kg) where it was associated with lutjanid aggregations over uneven bottom. Small catches of *Platax batavianus* were taken at several stations, with a maximum catch of 50 kg at Stn 63 of cruise S05-80, where the species was associated with a hard-bottom fish assemblage. Two other species, *Platax tiere* and *Platax orbicularis*, were uncommon. *Platax* spp. were probably retained by Taiwanese trawlers because of their relatively large size and fleshiness.

Sphyraenidae

Four species of barracuda occurred in the trawls. Only *Sphyraena jello* is considered here, as the other species were generally small. Few to several dozens of *S. jello* appeared in a number of trawls. Large catches were made at four stations : 356 kg at Stn 35 of cruise S05-80 where it was mixed with *Decapterus* and *Selar*; 48 and 105 kg at Stns 47 and 81 respectively of cruise S07-80 (corresponding to Stns 109 and 68 of Figure 2), where it was associated with the inner shelf assemblage; and 78 kg at Stn 12 of cruise S02-81. At the last station, the species was associated with a hard-bottom fish assemblage.

Polynemidae

Eleutheronema tetradactylum (northern Threadfin salmon), an important commercial species in estuarine fisheries in northern Australia, was taken in small numbers in 21-30m during S02-81. Three other small polynemids were recorded infrequently.

Trichiuridae (Appendix Table 7.22)

Trichiurus lepturus, the ribbonfish or hairtail, was one of the most common components of the catches of all three cruises. Near-bottom schools were detected acoustically on several occasions and at Stn 4 during cruise S05-80, 700 kg was taken, together with *Herklotsichthys koningsbergeri*, *Pellona ditchela*, *Apolectus niger* etc. The species occurred in 20-170m, although it appeared to be most abundant in depths of > 60m. The species was probably retained by the Taiwanese when bigger catches of the larger specimens were made.

Scombridae (Appendix Table 7.23)

In the Arafura Sea and the Gulf of Carpentaria, *Rastrelliger kanagurta*, *Scomberomorus queenslandicus* and *Scomberomorus munroi* were frequently taken in depths of < 60m. These species, together with the larger *Scomberomorus commerson* and *S. semifasciatus* are taken in relatively large quantities by the Taiwanese gillnet fishery.

Centrolophidae and Nomeidae

Two species, *Psenopsis humerosus* and *Psenes arafurensis*, are retained by Taiwanese trawlers when large catches are made. The two species are most abundant in off-shore waters (70-120m).

Psettodidae

Psettodes erumei, the Queensland halibut, is the largest of the Australian flatfishes. Although taken regularly, it was never abundant. Few to several specimens were taken in trawls down to 90-110m. This species is good eating. In some other parts of the Indo-Pacific, it is taken in bottom set gillnets and trawls in fairly large numbers.

Triacanthidae (Appendix Table 7.24)

Trixiphichthys weberi, the tripod fish, is of no commercial value. However, it was common and often caught in fairly large quantities down to 100m in the Timor Sea, and to 60m in the Arafura Sea. Its three large spines and leathery skin may pose problems if it is to be used in the manufacture of fish meal.

Monacanthidae (Appendix Table 7.25)

Paramonacanthus filicauda and *Paramonacanthus japonicus*, two small species of leatherjackets, were often taken together, generally in < 70 m. These species are unsuitable for human consumption but their reduction to fish meal may be possible. *P. filicauda* was the more abundant species of the two, with catches of 0.5-1t taken on several occasions in the Gulf of Carpentaria. The species occurred in both mid-water and demersal trawls. The range of these leatherjackets extended from King Sound to the eastern Gulf of Carpentaria but they were most abundant in the Gulf.

Mollusca - squid and cuttlefish (Appendix Tables 7.26 - 7.27)

Loliginid squid (generally < 20cm long) and cuttlefish were common, but exceptionally large catches of market-sized individuals were not made.

Crustacea - slipper lobsters, rock lobsters and penaeid prawns (Appendix Tables 7.28 - 7.29)

The slipper lobster, *Thenus orientalis*, was common and most abundant in < 60m. A few rock lobsters and small quantities of penaeid prawns were also taken. In addition, half to one-hour trawls with a prawn net were made during cruise S07-80 (9 trawls) and S02-81 (10 trawls) to investigate the incidence of penaeid prawns in deeper shelf waters. Details of these hauls are given in Appendix Table 8.

DISCUSSION

The principal objectives of the cruises as listed at the beginning of this report were satisfactorily achieved. The catch composition and the relative importance of the different species by weight and number across the shelf have been established. These results provide, for the first time, comprehensive quantitative information on the fish resources of the region, against which the results of future monitoring can be compared. This is of particular importance should an intensive demersal fishery develop in the region, which could lead to large scale changes in the composition of the exploited fish community. While the data contain some errors in species identifications, these are not considered to be important for the purposes of identifying the resources of commercially important species. With the exception of the dasyatids, sciaenids, and on cruise S05-80 a few shark species, misidentifications were restricted to the smaller, unimportant species. The most abundant, conspicuous and important species, whether small or large, were identified, weighed or counted. The present data, therefore, provide reliable estimates of the relative abundances of most of the species.

The results obtained during the cruises give estimates of the catch rates likely to be made by a fishing vessel of Soela's class and using similar gears. This information is important for the fishing industry, as it provides an insight to the type and extent of a trawl fishery that might be developed in the region. These catch rates, however, cannot be compared with those of commercial trawlers presently working in restricted areas of the northern Australian Fishing Zone. These trawlers probably direct their efforts at certain locations or depth contours where aggregations of the desired species occur. A few such locations harbouring large concentrations of lutjanids, pomadasyds and demersal shark species were discovered during the three cruises. Others may well have been missed due to wide-spacing of the cruise tracks.

No attempt has been made to calculate the population sizes or

biomasses (that is, observed densities in kg/ha) of the various species by the sweep method. Such figures would be misleading in view of the spatial variability of the populations, variability in fishing operations and the sparse coverage of the region. As Longhurst (1964) has pointed out, very intensive and extensive research-vessel prospecting is required to estimate these parameters. These quantities cannot be satisfactorily worked out from the present reconnaissance surveys.

It has also become clear that in the Arafura Sea that part of the shelf up to 12n. miles (22 km) from the coast that is closed to Taiwanese trawlers mainly excludes the shallow (< 50 m) water, which abounds in small species. The areas mostly outside this exclusion zone in 50-100m, where the Taiwanese trawlers operate, harbour such species as *Lutjanus malabaricus* and *Pristipomoides*. Thus, for these species, which might in fact be the targets of the trawlers, the exclusion zone probably has little effect on controlling the exploitation of their adult population. In the Gulf of Carpentaria, which has been closed to Taiwanese fishing since June 1978, stocks of the important lutjanid species occur in depths of > 50m. The closure here, therefore, has a protective value for these species, although the size of this protected stock is probably smaller than that on the Arafura Shelf. The extensive closed zones also serve to protect parts of the stocks of exploited demersal species of sharks, squid and *Thenus* found down to 100m. Hence, the closed zones are beneficial for stock replenishment of these species.

From a scientific point of view, the cruises have raised a number of important and interesting questions. For instance, is the Sahul Shelf ecologically different from the Arafura Shelf and the Gulf of Carpentaria? Are the fish species assemblages and the standing stock of fish in the two areas comparable? How large and frequent are the aggregations of commercially important species of lutjanids-pomasyds-demersal sharks and what are the ecological conditions that determine the location of these aggregations? What is the nature of the scattering layers observed in the Arafura Sea and the Gulf of Carpentaria and in what ways do they resemble or differ from those observed elsewhere in the tropics or in higher latitudes? If the plankton biomass of the Arafura Sea and the Gulf of Carpentaria is relatively high (Motoda *et al.* 1978; Rothlisberg and Jackson 1982), what is then the magnitude of the stocks of commercially important planktonivores such as *Sardinella*, *Dussumieria*, *Rastrelliger* etc., which have been taken occasionally in fairly large quantities during the present surveys? What would be the impact of a fishery, more diverse and extensive than the present one, in a region that does not have major inputs of nutrients from land and from the deeper waters? What are the ecological conditions in the eastern Arafura Sea and the Gulf of Carpentaria that favour preponderance of the leatherjacket *Paramonacanthus?* These and other questions require long-term investigations.

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Appendix Tables

Appendix Table 1. Depth range and co-ordinates of trawling stations during Cruise S05-80. Total depth is recorded depth plus 4 m, the latter being the approximate depth of the transducer below the waterline. Trawl start times are given in GMT as three time zones - Western Australian Time, Central Australian Time and Eastern Australian Standard Time - were observed during Soela cruises to northern Australia. Nets used : 1 = Frank & Bryce demersal trawl, 2 = Engel high rise demersal trawl, 3 = Engel mid-water trawl 1800 mm x 152 meshes, 4 = International Young Gadoid Pelagic trawl (IYGPT), 5 = Prawn trawl, 6 = Engel mid-water trawl 800 mm x 308 meshes.

Station number	Net Used	Depth range (m)	Position Start Lat. S	Start Long. E	Finish Lat. S	Finish Long. E	Trawl start time (GMT)
1	1	54-	16°16'	122°54'	-		-
2	1	59-	16°01'	122°57'	-		1600
3	1	74-74	15°46'	122°50'	15°48'	122°50'	0400
4	2	74-74	15°46'	122°50'	15°48'	122°50'	0605
5	2	68-	15°12'	123°35'	-		1600
6	-	-	-		-		-
7	2	52-56	15°30'	124°01'	15°31'	124°02'	0535
8	1	52-58	15°31'	124°02'	15°30'	124°01'	0705
9	1	120-121	14°03'	124°05'	14°05'	124°05'	2300
10	-	-	-		-		-
11	1	43-45	14°49'	124°57'	14°47'	124°55'	-
12	1	46-48	14°11'	124°25'	14°11'	124°57'	2255
13	1	48-48	14°01'	125°34'	14°03'	125°33'	0200
14	1	56-58	13°50'	125°41'	13°48'	125°41'	0410
15	1	44-58	13°42'	125°45'	13°40'	125°46'	0620
16	1	58-60	13°30'	125°41'	13°27'	125°41'	0215
17	1	28-28	13°18'	126°02'	13°18'	126°05'	0720
18	1	64-67	13°25'	126°19'	13°25'	126°22'	1015
19	1	94-99	13°16'	127°05'	13°16'	127°08'	2255
20	1	90-90	12°59'	127°16'	12°58'	127°15'	0230
21	1	96-108	12°41'	127°42'	12°43'	127°41'	0745
22	1	108-108	12°34'	128°27'	12°36'	128°26'	2300
23	1	86-92	13°18'	128°21'	13°20'	128°20'	0415
24	1	88-92	13°20'	128°20'	13°18'	128°21'	0525
25	1	68-71	13°46'	128°14'	13°48'	128°13'	0905
26	1	54-55	14°09'	128°19'	14°11'	128°19'	2340
27	1	52-56	14°00'	128°24'	14°02'	128°26'	0225
28	1	45-46	14°08'	128°34'	14°10'	128°35'	0615
29	1	68-68	13°29'	120°01'	13°27'	129°02'	0925
30	1	88-91	13°18'	128°21'	13°16'	128°21'	1670
31	1	88-91	13°16'	128°21'	13°18'	128°21'	0005
32	2	88-91	13°18'	128°21'	13°16'	128°21'	0345
33	1	92-92	13°16'	128°21'	13°18'	128°21'	0445
34	1	92-93	13°16'	128°21'	13°18'	128°21'	1000
35	1	92-92	13°13'	128°39'	13°11'	128°41'	2300
36	1	92-92	13°11'	128°41'	13°13'	128°39'	0025
37	1	95-96	12°28'	129°01'	12°37'	129°02'	0450
38	1	104-106	12°28'	128°49'	12°25'	128°49'	0715
39	1	90-92	12°21'	129°02'	12°20'	129°04'	1110
40	1	34-38	12°18'	129°18'	12°18'	129°20'	1141
41	1	74-76	12°23'	129°21'	12°25'	129°23'	2300
42	1	62-64	12°29'	129°32'	12°30'	129°33'	0210
43	1	46-51	12°37'	129°48'	12°38'	129°50'	0415
44	1	32-32	12°43'	130°00'	12°44'	130°02'	0640
45	1	42-48	12°31'	130°05'	12°29'	130°08'	2200
46	1	52-56	12°25'	129°56'	12°24'	129°53'	2355
47	1	54-54	12°15'	130°03'	12°13'	130°02'	-
48	1	58-58	12°05'	130°00'	12°05'	130°05'	-
49	1	24-24	11°53'	131°15'	11°53'	131°17'	2305
50	1	30-33	11°55'	131°36'	11°54'	131°35'	0220
51	1	40-41	11°04'	131°18'	11°03'	131°17'	0900
52	1	53-54	10°50'	131°07'	10°50'	131°05'	2235
53	1	36-40	11°02'	130°54'	11°02'	130°52'	0120
54	1	38-40	11°04'	130°37'	11°04'	130°35'	0440
55	1	34-35	11°10'	130°30'	11°09'	130°29'	0635
56	1	33-34	10°42'	129°59'	10°40'	129°59'	2210
57	1	128-128	10°15'	130°02'	10°14'	130°03'	0230
58	1	220-220	10°02'	130°03'	10°02'	130°01'	0645
59	1	124-132	09°57'	129°25'	09°57'	129°27'	0055
60	1	142-162	09°52'	129°12'	09°52'	129°14'	2210
61	1	38-39	10°47'	128°53'	10°46'	128°54'	0140
62	1	34-34	11°01'	128°37'	11°04'	128°35'	0550
63	1	42-42	11°13'	128°34'	11°12'	128°35'	0710
64	1	42-42	11°12'	128°35'	11°13'	128°34'	0400
65	3	74-74	10°46'	127°15'	10°45'	127°14'	-
66	1	90-90	10°55'	125°58'	11°54'	125°59'	-
67	1	154-154	12°20'	123°38'	12°18'	123°38'	-
68	1	86-88	12°18'	124°05'	12°16'	124°03'	-
69	1	80-82	12°27'	124°27'	12°27'	124°25'	1420
70	1	82-84	13°02'	125°07'	13°01'	125°08'	0210
71	1	84-88	13°06'	125°03'	13°07'	125°02'	0510
72	1	88-90	13°38'	124°30'	13°37'	124°32'	1015
73	1	114-116	14°03'	124°05'	14°05'	124°05'	1620
74	1	116-118	14°05'	124°0'	14°03'	124°05'	1725
75	2	114-116	14°03'	124°05'	14°05'	124°05'	-
76	2	114-116	14°05'	124°05'	14°03'	124°05'	-
77	2	66-	15°30'	134°01'	15°31'	124°02'	-
78	2	66-66	15°32'	124°02'	15°31'	124°01'	-
79	2	66-66	15°31'	124°01'	15°32'	124°02'	-
80	1	64-66	15°32'	124°02'	15°31'	124°01'	-
81	1	64-64	15°31'	124°01'	15°32'	124°02'	1200
82	2	66-67	15°45'	122°46'	15°46'	122°47'	0320
83	2	67-67	15°46'	122°47'	15°45'	122°46'	-
84	4	67-67	15°45'	122°46'	15°47'	122°50'	-
85	4	67-67	15°47'	122°50'	15°45'	122°46'	-
86	2	64-64	15°45'	122°46'	15°45'	122°48'	1110
87	2	72-72	17°44'	121°25'	17°42'	121°26'	-
88	2	76-76	17°52'	121°27'	17°50'	121°28'	-
89	2	52-56	20°24'	115°44'	20°17'	115°43'	-

Appendix Table 2. Depth range and coordinates of stations trawled during S07-80 and S02-81. For explanations of recorded and total depths, time zones and nets used, see Appendix Table 1.

Combined † station notation as shown in Fig. 2	CRUISE S07-80				CRUISE S02-81				Coordinates (in degrees & minutes)			
	Station number	Net Used	Total depth (m)	Trawl start time (GMT)	Station number	Net Used	Total depth (m)	Trawl start time (GMT)	From Lat. S	From Long. E	To Lat. S	To Long. E
1	-	-	-	-	1	1	20-21	2125	11°01'	141°36'	11°03'	141°38'
2	-	-	-	-	2	1	22-22	0010	11°18'	141°41'	11°18'	141°40'
3	-	-	-	-	3	1	22-22	0300	11°40'	141°48'	11°41'	141°47'
4	-	-	-	-	4	1	22-23	1030	12°45'	151°31'	12°46'	141°31'
5	-	-	-	-	5	5	46-51	1310	12°34'	141°18'	12°32'	141°15'
6	121	2	53-55	0600	6	2	54-55	2130	12°00'	141°00'	12°02'	140°58'
7	120	2	64-66	0105	7	2	65-72	0003	12°19'	141°00'	12°21'	141°00'
8	119	2	44-46	2115	8	2	47-48	0500	13°00'	141°00'	13°03'	141°00'
9	118	2	42-42	0055	9	2	45-46	0720	13°18'	140°57'	13°17'	140°57'
11	-	-	-	-	11	1	24-25	2120	13°50'	141°20'	13°52'	141°19'
12	-	-	-	-	12	1	22-23	0155	14°29'	141°17'	14°29'	141°11'
13	-	-	-	-	13	1	21-21	0800	15°00'	141°15'	15°02'	141°15'
14	116	2	22-22	0830	-	-	-	-	16°07'	140°57'	16°08'	140°56'
15	115	5	16-16	0140	-	-	-	-	16°59'	140°45'	16°59'	140°47'
16	114	5	16-16	0015	-	-	-	-	17°00'	140°39'	17°00'	140°41'
17	113	5	18-18	2300	-	-	-	-	17°04'	140°19'	17°05'	140°20'
18	112	5	20-20	2110	-	-	-	-	16°56'	140°10'	16°57'	140°11'
19	111	2	17-17	0715	14	2	18-18	2205	17°01'	139°58'	16°58'	139°56'
20	110	2	22 22	0455	15	2	23-24	0030	16°45'	140°01'	16°44'	139°59'
21	109	2	34-34	0015	16	2	37-38	0340	16°24'	139°58'	16°22'	139°58'
22	108	2	38-38	2130	17	2	37-38	0650	16°06'	139°58'	16°04'	139°58'
23	107	6	-	-	18	5	55-57	1115	15°34'	139°57'	15°31'	139°57'
25	105	2	71-72	2330	20	2	73-74	0115	13°46'	140°01'	13°46'	139°59'
26	104	2	68-68	2110	21	2	73-73	0420	13°26'	139°59'	13°25'	139°57'
27	-	-	-	-	22	5	65-65	0820	12°56'	139°55'	12°57'	139°55'
28	103	6	-	-	-		-	-	12°54'	140°00'	12°59'	139°59'
29	102	6	-	-	-		-	-	12°44'	139°59'	12°49'	139°59'
30	-	-	-	-	23	5	61-61	1040	12°41'	139°54'	12°37'	139°54'
31	101	2	64-65	0440	24	2	66-66	2135	11°56'	139°59'	11°58'	139°58'
32	100	2	68-68	0130	25	2	62-62	0020	11°42'	139°59'	11°44'	139°59'
33	99	2	64-64	2300	26	2	63-63	0310	11°25'	139°59'	11°27'	139°59'
34	98	2	64-64	2115	27	2	60-61	0720	11°04'	139°58'	11°06'	139°58'
35	-	-	-	-	28	5	62-62	1015	10°48'	139°55'	10°44'	139°55'
36	97	2	56-56	0540	29	2	56-56	2125	10°19'	139°57'	10°20'	140°00'
37	96	2	58-89	0055	30	2	62-62	0030	10°13'	139°40'	10°13'	139°38'
38	95	2	54-55	2115	31	2	51-52	0550	10°17'	139°02'	10°17'	139°00'
39	-	-	-	-	32	2	56-56	1125	10°51'	130°01'	10°52'	139°00'
40	94	2	60-60	0645	33	2	59-60	2125	12°18'	139°00'	12°21'	138°59'
41	93	2	60-60	0345	34	2	64-64	0005	12°37'	139°00'	12°35'	139°00'
42	92	2	62-62	0005	35	2	64-64	0240	12°52'	138°55'	12°52'	138°55'
43	91	2	62-62	2115	36	2	61-61	0745	13°25'	139°00'	13°24'	139°01'
44	-	-	-	-	37	2	61-61	2130	14°50'	139°00'	14°48'	139°00'
45	90	2	60-60	0725	38	2	64-64	0450	15°04'	138°58'	15°08'	138°58'
46	89	2	56-56	0500	39	2	54-54	0725	15°16'	139°00'	15°17'	139°01'
47	88	2	52-53	0030	40	2	54-55	1000	15°38'	138°58'	15°36'	138°58'
48	-	-	-	-	41	5	44-45	1250	15°48'	139°08'	15°46'	139°06'
49	-	-	-	-	42	1	18-20	2145	16°31'	138°59'	16°30'	138°59'
50	-	-	-	-	43	1	25-25	0020	16°20'	139°00'	16°21'	139°02'
51	-	-	-	-	44	1	50-52	0550	15°48'	139°08'	15°46'	139°07'
52	-	-	-	-	45	5	46-52	0730	15°40'	139°06'	-	-
53	-	-	-	-	46	5	46-46	0850	15°41'	139°05'	15°41'	139°08'
54	-	-	-	-	47	5	46-46	1040	15°43'	139°06'	15°41'	139°08'
55	87	2	21-22	0500	48	2	24-24	2130	16°11'	138°05'	16°12'	138°06'
56	86	2	29-31	0155	49	2	32-32	0005	15°59'	138°03'	15°57'	138°01'
57	85	2	52-52	2240	50	2	52-52	0305	15°40'	138°02'	-	-
58	-	-	-	-	51	1	23-23	1530	15°48'	137°34'	15°46'	137°33'
59	-	-	-	-	52	1	28-28	1320	15°19'	136°58'	15°19'	137°00'
60	-	-	-	-	53	1	22-24	2130	15°25'	136°50'	15°24'	136°50'

† To allow comparison of catch rates for a station position trawled during both S07-80 and S02-81 a "Combined station notation has been introduced (e.g. Combined Station No. 7, from 12°19'S 141°00'E to 12°21'S 141°00'E, was first trawled as Station No. 120 on S07-80 and repeated as Station No. 7 on S02-81). In cases where a station position was trawled on only one occasion, the Combined Station number is designated, but corresponds to only one Cruise station number.

Appendix Table 2 (Cont. 1)

Combined † station notation as shown in Fig. 2	CRUISE S07-80 Station number	Net used	Total depth (m)	Trawl start time (GMT)	CRUISE S02-81 Station number	Net used	Total depth (m)	Trawl Start Time (GMT)	Coordinates (in degrees & minutes) From Lat. S	From Long. E	To Lat. S	To Long. E
61	-	-	-	-	54	1	23-24	0110	15°13'	136°22'	15°12'	136°21'
62	-	-	-	-	55	1	24-24	0445	14°48'	136°12'	14°47'	136°11'
63	-	-	-	-	56	1	24-24	0825	14°17'	136°11'	14°16'	136°10'
64	82	2	22-22	2115	57	2	23-24	2105	14°32'	136°06'	14°32'	136°07'
65	83	2	26-28	0445	58	2	29-29	0005	14°35'	136°27'	14°34'	136°23'
66	84	2	36-38	0810	59	2	36-36	0245	14°32'	136°44'	14°32'	136°42'
67	-				60	2	24-24	0020	13°35'	136°25'	13°35'	136°28'
68	81	2	38-38	0440	61	2	41-43	0345	13°27'	136°51'	13°28'	136°52'
69	80	2	46-47	0020	62	2	42-43	0730	13°00'	136°59'	13°00'	136°52'
70	79	2	46-48	2120	63	2	42-42	1000	12°45'	136°54'	12°43'	136°54'
71	78	2	54-55	0835	64	2	52-52	2130	12°27'	137°32'	12°27'	137°30'
72	77	2	54-55	0610	65	2	52-52	0000	12°24'	137°48'	12°22'	137°48'
73	76	2	56-56	0325	66	2	54-54	0355	11°59'	137°58'	11°57'	137°58'
74	75	2	56-56	0015	67	2	54-54	0650	11°34'	137°58'	11°36'	137°59'
75	74	2	56-56	2120	68	2	54-54	1000	11°10'	137°57'	11°08'	137°57'
76	73	2	44-46	1310	69	2	44-46	2134	09°58'	137°51'	09°56'	137°49'
77	72	2	41-42	1025	70	2	44-44	0020	09°55'	137°39'	09°50'	137°37'
78	71	2	48-48	0730	71	2	44-44	0200	09°50'	137°38'	09°50'	137°26'
79	70	2	48-49	0525	72	2	44-44	0415	09°48'	137°14'	09°48'	137°14'
80	69	2	50-50	0415	-	-	-	-	09°46'	137°12'	09°48'	137°12'
81	-	-	-	-	73	2	52-53	0725	10°12'	137°13'	10°13'	137°13'
82	-	-	-	-	74	2	55-55	1035	10°36'	137°12'	10°38'	137°12'
83	-	-	-	-	75	5	56-56	1405	11°01'	136°58'	11°07'	136°54'
84	67	2	28-28	2110	76	2	23-23	2135	11°52'	136°10'	11°51'	136°11'
85	68	2	31-31	2342	77	2	28-28	2335	11°43'	136°18'	11°41'	136°20'
86	66	2	32-36	0640	78	2	30-32	2330	11°11'	136°23'	11°10'	136°22'
87	65	2	48-48	0244	79	2	46-60	0210	10°48'	136°11'	10°46'	136°10'
88	64	2	62-62	0010	80	2	57-57	0450	10°28'	136°06'	10°25'	136°08'
89	63	2	56-56	2115	-	-	-	-	10°25'	136°03'	10°26'	136°07'
90	62	2	64-64	0500	-	-	-	-	-	-	-	-
91	-	-	-	-	81	2	63-63	0650	10°16'	136°03'	10°16'	136°05'
92	61	2	76-80	0215	82	2	67-68	0945	10°02'	135°58'	10°01'	135°57'
93	60	2	62-64	2225	-	-	-	-	09°44'	135°58'	09°40'	135°37'
94	59	6	-	-	-	-	-	-	08°54'	135°39'	08°54'	135°34'
95	58	6	-	-	-	-	-	-	08°59'	135°06'	08°57'	135°10'
96	56	2	78-82	0051	83	2	84-84	2130	08°53'	135°15'	08°53'	135°12'
97	57	2	82-92	0210	84	2	82-82	2250	08°53'	135°10'	08°53'	135°13'
98	55	2	109-112	2120	85	2	96-100	0135	08°55'	135°00'	08°57'	135°00'
99	-	-	-	-	86	2	104-117	0435	09°16'	135°00'	09°19'	135°00'
100	-	-	-	-	87	2	88-90	0745	09°40'	135°00'	09°41'	135°00'
101	54	2	70-74	0917	88	2	64-64	2145	10°35'	135°00'	10°38'	135°00'
102	53	2	54-54	0545	89	2	57-57	0010	10°53'	135°00'	10°51'	135°00'
103	-	-	-	-	90	2	50-50	0345	11°16'	135°00'	11°14'	135°00'
104	51	2	39-39	0108	91	2	31-31	0655	11°35'	135°00'	11°38'	135°00'
105	52	2	52-54	2110	92	2	22-22	0855	11°42'	134°58'	11°44'	134°57'
106	50	2	22-24	0830	93	2	24-24	2155	11°48'	134°48'	11°50'	134°45'
107	49	2	24-29	0425	94	2	23-23	0030	11°48'	134°27'	11°48'	134°25'
108	48	2	44-44	0118	95	2	36-37	0240	11°29'	134°25'	11°29'	134°23'
109	47	2	44-48	2135	96	2	48-50	0630	11°16'	134°05'	11°15'	134°03'
110	-	-	-	-	97	5	62-62	1215	10°46'	133°23'	-	-
111	-	-	-	-	98	2	66-66	0430	10°45'	134°00'	10°43'	134°00'
112	43	2	76-76	0720	99	2	70-70	0530	10°22'	134°03'	10°22'	134°00'
113	44	2	84-88	0230	100	2	73-73	0825	10°01'	134°01'	09°59'	133°57'
114	45	2	100-108	0000	101	2	82-82	1120	09°56'	133°56'	09°53'	133°55'
115	46	2	110-112	2110	102	2	94-94	2140	09°34'	134°04'	09°36'	134°02'
116	-	-	-	-	103	5	82-84	0040	09°57'	133°59'	09°55'	133°56'
117	42	2	20-28	0205	104	2	21-21	2355	11°35'	133°15'	11°34'	133°12'
118	41	2	24-28	0025	105	2	26-28	0105	11°34'	133°12'	11°32'	133°12'
119	40	2	34-34	2120	106	2	32-32	0210	11°25'	133°10'	11°24'	133°10'
120	-	-	-	-	107	5	62-62	0845	10°48'	132°38'	10°48'	132°34'
121	-	-	-	-	108	5	52-52	1015	10°48'	132°33'	10°47'	132°27'
122	-	-	-	-	109	2	76-76	2140	10°35'	133°00'	10°33'	133°00'
123	39	2	171-174	1230	110	2	70-70	0010	10°19'	133°05'	10°22'	133°05'
124	38	2	80-82	0805	111	2	73-75	0345	09°51'	133°00'	09°47'	133°01'
125	37	2	169-169	0420	112	2	130-134	0615	09°37'	133°06'	09°34'	133°07'

Appendix Table 2. (Cont. 2)

Combined † station notation as shown in Fig. 2	CRUISE S07-80 Station number	Net used	Total depth (m)	Trawl start time (GMT)	CRUISE S02-81 Station number	Net used	Total depth (m)	Trawl start time (GMT)	Coordinates (in degrees & minutes) From Lat. S	From Long. E	To Lat. S	To Long. E
126	36	1	160-168	0130	113	2	136-149	0835	09°21'	133°12'	09°19'	133°13'
127	-	-	-	-	114	2	202-218	2145	09°10'	131°46'	09°09'	131°48'
128	-	-	-	-	115	2	136-138	0125	09°29'	132°00'	09°29'	131°58'
129	-	-	-	-	116	2	112-112	0440	09°44'	132°00'	09°46'	132°00'
130	-	-	-	-	117	2	74-82	1500	10°00'	132°02'	10°04'	132°02'
131	35	1	80-82	0920	118	2	66-66	2100	10°29'	132°01'	10°30'	132°03'
132	34,33	1	78-80	(1645,	-	-	-	-	10°27'	132°01'	10°27'	132°00'
133	-	-	-	1455)	119	2	56-56	2315	10°46'	132°01'	10°46'	131°59'
134	32	1	40-44	0145	120	2	43-44	0105	10°53'	132°00'	10°53'	131°57'
135	31	1	36-37	2145	121	2	33-37	0300	11°01'	132°01'	11°01'	132°00'

Appendix Table 3. Mean weights (g) of specimens of some species used in converting weights into numbers or vice versa. The means are computed from sample weights.

Clupeidae	
Sardinella gibbosa	37
Sardinella albella	28
Herklotsichthys koningsbergeri	53
Pellona ditchela	31
Dussumieria acuta	38
Ilisha cf. *melastoma*	40
Dorosoma chacunda	59
Engraulidae	
Stolephorus indicus	18
Setipinna papuensis	40
Thryssa spp.	30
Synodontidae	
Saurida undosquamis	48
Saurida micropectoralis	158
Saurida filamentosa	165
Harpodontidae	
Harpodon translucens	100
Arriidae	
Arius thalassinus	1000
Plotosidae	
Euristhmus nudiceps	50
Holocentridae	
Adioryx ruber	180
Monocentridae	
Monocentrus japonicus	71
Veliferidae	
Velifer Hypselopterus	64
Triglidae	
Lepidotrigla spilotera	37
Lepidotrigla kishinoyi	40
Platycephalidae	
Elates Ransonetti	11
Chlorophthalmidae	
Chlorophthalmus sp.	49
Serranidae	
Epinephelus maculatus	3000
Epinephelus sexfasciatus	300
Synagrops philippinensis	15
Therapontidae	
Therapon theraps	61
Therapon jarbua	70
Pelates quadrilineatus	44
Priacanthidae	
Priacanthus tayenus	98
Apogonidae	
Apogon spp.	11
Siphamia	7
Sillaginidae	
Sillago maculata	58
Carangidae	
Carangoides malabaricus	47
Carangoides chrysophrys	200
Carangoides coeruleopinnatus	123
Carangoides talamparoides	34
Carangoides humerosus	96
Carangoides auroch	76
Carangoides hedlandensis	79
Selar boops	100
Selar crumenophthalmus	65
Alepes macrurus	125
Alepes mate	143
Alepes kalla	55
Selaroides leptolepis	60
Decapterus russelli	68

Appendix Table 3 (Cont.1)

Carangidae (cont.)	
Seriolina nigrofasciata	290
Caranx bucculentus	65
Megalaspis cordyla	129
Scomberoides tol	106
Scomberoides tala	112
Formionidae	
Apolectus niger	190
Menidae	
Mene maculata	79
Leiognathidae	
Leiognathus bindus	3
Leiognathus leuciscus	21
Leiognathus equulus	324
Leiognathus fasciatus	20
Leiognathus splendens	30
Leiognathus hastatus	10
Leiognathus blochii	38
Leiognathus smithursti	64
Leiognathus sp.1	7
Leiognathus sp.2	22
Secutor insidiator	8
Secutor ruconius	6
Gazza minuta	18
Lutjanidae	
Lutjanus vitta	100
Lutjanus malabaricus	2000
Lutjanus russelli	500
Lutjanus erythropterus	1500
Nemipteridae	
Nemipterus peronii	100
Nemipterus bathybus	44
Nemipterus tolu	61
Nemipterus virgatus	90
Nemipterus hexodon	75
Nemipterus spp.	100
Pentapodus setosus	60
Scolopsis taeniopterus	81
Scolopsis regina	150
Gerridae	
Pentaprion longimanus	17
Gerres Filamentosa	41
Gerres oyena	42
Haemulidae	
Pomadasys maculatus	40
Plectorhynchus pictus	1500
Lethrinidae	
Lethrinus choerorynchus	400
Lethrinus fraenatus	281
Lethrinus lentjan	585
Lethrinus nematacanthus	51
Sparidae	
Argyrops bleekeri	300
Sciaenidae	
Johnieops volgleri	100
Johnius coitor	100
Argyrosomus amoensis	150
Protonibea diacanthus	150
Mullidae	
Uepneus moluccensis	37
Uepneus sundaicus	37
Upeneus asymmetricus	37
Upeneus luzonius	30
Upeneus sulphureus	37
Parupeneus pleurospilus	100
Parupeneus chryserpleuron	216
Parupeneus indicus	100
Ephippidae	
Platax batavianus	2000
Platax tiere	2000
Drepane punctata	34
Zabidius novaemaculatus	81
Chaetodontidae	
Parachaetodon ocellatus	100
Chaetodon modestus	28
Coradion chrysozonus	35
Chaetodontoplus personifer	200
Chaetodontoplus duboulayi	200
Pentacerotidae	
Banjos banjos	30
Pomacentridae	
Pristotis jerdoni	10

Appendix Table 3 (Cont. 2)

Sphyraenidae	
Sphyraena obtusata	83
Sphyraena jello	200
Polynemidae	
Polynemus nigripinnis	50
Polynemus speculatis	55
Labridae	
Choerodon cephalotes	182
Choerodon monostigma	49
Siganidae	
Siganus canaliculatus	70
Gempylidae	
Epinnula orientalis	
Trichiuridae	
Trichiurus lepturus	179
Scombridae	
Scomberomorus queenslandicus	980
Scomberomorus munroi	640
Rastrelliger kanagurta	72
Centrolophidae	
Psenopsis humerosus	100
Nomeidae	
Psenes arafurensis	151
Ariomma indica	70
Bothidae	
Pseudorhombus dupliciocellatus	138
Pseudorhombus diplospilus	139
Tricanthidae	
Trixiphichthys weberi	35
Balistidae	
Abalistes stellaris	380
Monacanthidae	
Paramonacanthus filicauda	23
Paramonacanthus oblonga	11
Ostraciodontidae	
Rhynchostracion nasus	63
Tetraodontidae	
Lagocephalus sceleratus	43
Lagocephalus lunaris	1640

Appendix Table 4. Percentage composition of the catches from 11-50, 51-100, 101-150, 151-200 and 201-220 m during cruise S05-80.

P - present

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Stegostoma varium	0	0	1.0	P	0	0	0	0	0	0
Chiloscyllium punctatum	0	0	0	0	0	0	0	0	0	0
Sphyrna lewini	0	0	0.9	P	0	0	0	0	0	0
Sphyrna mokarron	0	0	0.6	P	0	0	0	0	0	0
Sphyrna blochii	0	0	0	0	0	0	0	0	0	0
Rhizoprionodon acutus	0.07	P	0.5	P	0.1	P	0	0	0	0
Rhizoprionodon taylori	0	0	0	0	0	0	0	0	0	0
Carcharhinus sealei	2.9	0.1	0.4	P	0.3	0.03	0	0	0	0
Carcharhinus sorrah	0	0	0	0	0	0	0	0	0	0
Carcharhinus limbatus	0.03	P	0.06	P	0	0	0	0	0	0
Carcharhinus brevipinna	0	0	0	0	0	0	0	0	0	0
Carcharhinus plumbeus	0	0	P	P	0	0	0	0	0	0
Hemipristis elongatus	0	0	0	0	0	0	0	0	0	0
Hemigaleus microstoma	2.9	0.2	0.5	P	0.2	P	0	0	0	0
Galeocerdo cuvieri	0.07	P	0	0	0	0	0	0	0	0
Loxodon macrorhinus	0	0	0	0	0	0	0	0	0	0
Halaelurus buergeri?	0	0	0	0	0	0	0	0	0	0
Unidentified triakids	0	0	0	0	0	0	0	0	0	0
Mustelus sp.	0	0	0	0	0.2	P	0	0	P	P
Squalus megalops	0	0	0	0	3.6	0.8	0	0	0	0
Pristis zijsron	0	0	0.4	P	13.0	P	0	0	0	0
Squatina australis	0	0	0	0	0	0	0	0	12.5	0.1
Aptychotrema rostrata	0	0	0	0	P	0.4	0	0	0	0
Rhynchobatus djiddensis	0.6	P	0.3	P	0.1	P	0	0	0	0
Rhina ancylostomus	0	0	0	0	0	0	0	0	0	0
Rhinobatos batillum	0	0	3.0	P	0	0	0	0	0	0
Rhinobatos schlegeli	0	0	0	0	0	0	0	0	0	0
Unidentified rhinobatids	P	P	0	0	0	0	0	0	0	0
Raja australis	0	0	0	0	P	P	0	0	0	0
Narcine sp.	0	0	0	0	0	0	0	0	P	P
Dasyatis brevicaudata?	P	P	0.08	P	2.2	0.08	0	0	0	0
Amphotistius kuhlii	0.9	0.3	1.3	0.06	0.2	0.05	0	0	0	0
Himantura uarnak	7.9	4.0	1.0	P	0.6	0.05	0	0	0	0
Gymnura australis	0.07	P	0.06	P	P	0.03	0	0	0	0
Unidentified dasyatids	0	0	0.4	P	0	0	0	0	0	0
Unidentified urolophids	0	0	1.3	P	0	0	0	0	0	0
Aetobatus narinari	0	0	0	0	0	0	0	0	0	0
Myliobatis australis	0	0	0	0	0	0	0	0	0	0
Unidentified myliobatids	P	P	0.06	P	0.1	P	0	0	0	0
Hydrolagus ogilbyi	0	0	0	0	0	0	0	0	P	P
Megalops cyprinoids	0	0	P	P	0	0	0	0	0	0
Albula sp.	0	0	0	0	0	0	0	0	0	0
Chirocentrus dorab	0	0	P	P	P	P	0	0	0	0
Sardinella sirm	0	0	0	0	0	0	0	0	0	0
Spratelloides sp.	0	0	0	0	0	0	0	0	0	0
Sardinella gibbosa	P	P	0.02	0	0	0	0	0	0	0
Sardinella albella	0	0	0	0	0	0	0	0	0	0
Herklotsichthys koningsbergeri	0.03	0.07	6.0	7.8	0	0	0	0	0	0

Appendix Table 4 (Cont. 1)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Herklotsichthys macculloch	0	0	P	0.02	0	0	0	0	0	0
Pellona ditchela	P	P	6.7	13.0	0.4	1.7	0	0	0	0
Dussumieria acuta	0	0	0	0	0	0	0	0	0	0
Ilisha cf *melastoma*	0.3	0.3	0	0	0	0	0	0	0	0
Dorosoma chacunda	0	0	0	0	0	0	0	0	0	0
Thryssa setirostris	0.07	0.07	0.04	0.1	0	0	0	0	0	0
Thryssa hamiltoni	P	P	P	P	0	0	0	0	0	0
Setipinna papuensis	0.4	0.4	1.2	1.6	0	0	0	0	0	0
Papuengraulis micropinna	P	P	0	0	0	0	0	0	0	0
Stolephorus indicus	0.3	0.4	P	P	0	0	0	0	0	0
Unidentified engraulids	0	0	0	0	0	0	0	0	0	0
Saurida undosquamis	0.4	0.1	2.3	3.1	2.1	0.9	0	0	0	0
Saurida micropectoralis	0.6	0.5	0.4	0.2	0.1	0.05	0	0	0	0
Saurida filamentosa	0	0	P	P	0.4	0.1	0	0	0	0
Saurida elongata	0	0	0	0	0	0	0	0	0	0
Trachinocephalus myops	0	0	P	P	P	0.03	0	0	0	0
Synodus variegatus	0	0	0	0	0	0	0	0	0	0
Synodus sagenaeus	P	0.2	0	0	0	0	0	0	0	0
Synodus hoshinonis	0	0	P	P	0	0	0	0	0	0
Unidentified synodontids	0	0	0	0	0	0	0	0	0	0
Harpodon translucens	0.1	P	P	P	0	0	0	0	0	0
Arius thalassinus	0.9	0.07	0.2	P	0.8	0.05	0	0	0	0
Plotosus lineatus	0	0	P	P	0	0	0	0	0	0
Euristhmus nudiceps	P	P	0.08	0.2	0	0	0	0	0	0
Euristhmus lepturus	0	0	0	0	0	0	0	0	0	0
Unidentified muraenids	0	0	0	0	0	0	0	0	0	0
Muraenesox cinereus	0	0	P	P	P	P	0	0	0	0
Oxyconger leptognathus	0	0	0	0	0	0	0	0	0	0
Unidentified congrids	0	0	0	0	0.05	P	0	0	0	0
Unidentified lophiids	0	0	0	0	0	0	0	0	0	0
Lophiomus setigerus	0	0	0	0	0	0	0	0	0	0
Chaunax fimbriatus	0	0	0	0	0	0	0	0	P	P
Unidentified gadoid	0	0	0	0	0	0	0	0	0	0
Halieutaea coccinea	0	0	0	0	P	P	0	0	0	0
Halieutaea stellata	0	0	0	0	P	0.4	0	0	P	P
Sirembo imberbis	P	P	0	0	0	0	0	0	0	0
Sirembo philippinus	0	0	0	0	0	0	0	0	0	0
Monocentrus japonicus	0	0	0	0	P	0.8	0	0	0	0
Adiorux ruber	0.5	0.07	0.6	0.3	0.2	0.08	0	0	0	0
Velifer hypselopterus	P	P	P	P	P	P	0	0	0	0
Fistularia petimba	P	P	0.06	0.2	P	P	0	0	P	P
Centriscus scutatus	P	P	P	P	0	0	0	0	0	0
Syngnathus guntheri	0	0	0	0	0	0	0	0	0	0
Apistus carinatus	P	P	0	0	0	0	0	0	0	0
Apistops Caloundra	0	0	0	0	0	0	0	0	0	0
Pterois russelli	0	0	P	P	0	0	0	0	0	0
Inimicus sinesis	P	P	0	0	0	0	0	0	0	0
Inimicus didactylus	0	0	0	0	0	0	0	0	0	0
Liocranium sp.	P	P	P	P	0	0	0	0	0	0
Minous versicolor	0	0	0	0	0	0	0	0	0	0
Scorpaenopsis gibbosa	0	0	0	0	0	0	0	0	0	0

Appendix Table 4 (Cont. 2)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Erosa erosa	0	0	0	0	0	0	0	0	0	0
Setarches longimanus	0	0	0	0	0	0	0	0	P	P
Neocentropogon sp.	0	0	0	0	0	0	0	0	0	0
Unidentified scorpaenids	P	0.07	P	P	0	0	0	0	0	0
Peristedion sp.	0	0	0	0	P	0.03	0	0	41.7	P
Lepidotrigla spilotera	P	P	0.1	0.2	P	0.03	0	0	0	0
Lepidotrigla cf *grandis*	0	0	0	0	0	0	0	0	0	0
Lepidotrigla kishinoyi	0	0	0	0	1.5	0.8	0	0	4.2	6.0
Lepidotrigla argus	0	0	0	0	0	0	0	0	0	0
Pterygotrigla sp.	0	0	0	0	0.5	0.1	0	0	0	0
Bovitrigla leptacanthus	0	0	0	0	0	0	0	0	P	P
Paratrigla sp.	0	0	0	0	0	0	0	0	0	0
Satyrichthys welchi	0	0	0	0	1.8	1.2	0	0	0	0
Unidentified triglids	0	0	0	0	0	0	0	0	0	0
Elates ransonetti	P	0.3	P	P	P	P	0	0	0	0
Ratabulus cf *diversidens*	0	0	P	P	0	0	0	0	0	0
Platycephalus macracanthus	0	0	0	0	0	0	0	0	0	0
Platycephalus nematophthalmus	0	0	0	0	0	0	0	0	0	0
Platycephalus endrachtensis	P	P	0	0	0	0	0	0	0	0
Rogadius asper	0	0	0	0	0	0	0	0	0	0
Platycephalus spp.	0	0	0	0	0	0	0	0	0	0
Unidentified platycephalids	P	0.3	P	0.2	P	P	0	0	0	0
Onigocia spinosa	0	0	0	0	0	0	0	0	0	0
Unidentified callionymids	P	P	P	P	0	0	0	0	0	0
Chlorophthalmus sp.	0	0	0	0	P	0.8	P	P	12.5	14.7
Dactyloptena papilio	P	P	P	P	0	0	0	0	0	0
Dactyloptena peterseni	P	P	P	P	1.0	0.5	0	0	0	0
Dactyloptena macracanthus	0	0	0.02	0.02	P	P	0	0	0	0
Plectropoma maculatum	0.5	P	P	P	0	0	0	0	0	0
Epinephelus sexfasciatus	0.07	P	P	P	P	0.05	0	0	0	0
Epinephelus maculatus	0.2	P	0.2	P	0	0	0	0	0	0
Epinephelus malabaricus	0	0	0.02	P	0	0	0	0	0	0
Epinephelus aerolatus	P	P	P	P	0	0	0	0	0	0
Epinephelus rankini	P	P	0	0	0	0	0	0	0	0
Ephinephelus hata	0	0	0.1	P	0	0	0	0	0	0
Unidentified serranids	0	0	0	0	0	0	0	0	0	0
Epinephelus tauvina?	0	0	0	0	0	0	0	0	0	0
Epinephelus amblycephalus	0	0	0	0	0	0	0	0	0	0
Epinephelus merra	0	0	0	0	0	0	0	0	0	0
Diploprion bifasciatum	P	P	P	P	0	0	0	0	0	0
Sayonora satsumi	0	0	0	0	0	0	0	0	0	0
Synagrops philippinensis	0	0	P	P	0	0	0	0	0	0
Acropoma japonicum	0	0	P	0.3	1.5	4.8	P	P	8.3	68.8
Pseudochromis quinquedentatus	P	0.07	0	0	0	0	0	0	0	0
Glaucosoma magnificum	P	0.07	P	P	0	0	0	0	0	0
Psammoperca waigiensis	0	0	0	0	0	0	0	0	0	0
Pelates quadrilinieatus	P	0.5	P	P	0	0	0	0	0	0
Therapon theraps	0.6	0.5	1.6	1.6	0.5	0.5	0	0	0	0
Therapon jarbua	P	P	0.04	0.04	0	0	0	0	0	0
Therapon sp. (slender therapon)	0	0	0	0	0	0	0	0	0	0

Appendix Table 4 (Cont. 3)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Priacanthus tayenus	P	P	0.1	0.1	P	0.03	0	0	0	0
Priacanthus cruentatus	0	0	0	0	0	0	0	0	4.2	P
Priacanthus hamrur	P	P	0.06	0.04	P	P	0	0	0	0
Pristigenys niphonia	0	0	0	0	P	P	0	0	0	0
Apogon qudrifasciatus	P	0.2	P	0.04	0	0	0	0	0	0
Apogon poecilopterus	0	0	0	0	0	0	0	0	0	0
Apogon ellioti	P	P	P	0.1	P	P	0	0	0	0
Apogon brevicaudatus	P	P	P	P	0	0	0	0	0	0
Apogon atripes	P	P	0	0	0	0	0	0	0	0
Apogon melanopus	0	0	0	0	0	0	0	0	0	0
Apogon carinatus	0	0	0	0	0	0	0	0	0	0
Apogon albimaculosus	0	0	0	0	0	0	0	0	0	0
Siphamia spp.	0	0	0	0	0	0	0	0	0	0
Unidentified apogonids	0.8	3.7	0	0.1	0	0	0	0	0	0
Sillago analis	2.4	1.7	P	P	0	0	0	0	0	0
Sillago maculata	0.5	0.7	0	0	0	0	0	0	0	0
Sillago sihama	0	0	P	P	0	0	0	0	0	0
Unidentified sillaginids	0.8	2.3	0	0	0	0	0	0	0	0
Branchiostegus sawakinensis	0	0	0	0	0	0	0	0	0	0
Lactarius lactarius	0	0	0	0	0	0	0	0	0	0
Rachycentron canadus	0.9	P	0.2	P	0	0	0	0	0	0
Echeneis naucrates	0.03	P	P	P	0	0	0	0	0	0
Coelorhynchus sp.	0	0	0	0	0	0	0	0	0	0
Antigonia rubicunda	0	0	0	0	0	0	0	0	0	0
Zeus faber	0	0	0	0	1.0	0.4	0	0	0	0
Carangoides malabaricus	0.2	0.1	5.6	5.8	14.0	13.1	0	0	0	0
Carangoides chrysophrys	P	P	0.1	0.06	0	0	0	0	0	0
Carangoides equula	0	0	0	0	P	0.05	0	0	0	0
Carangoides coeruleopinnatus	0.1	0.03	0.6	0.4	P	0.1	0	0	0	0
Carangoides gymnostethus	P	P	0.3	0.2	0	0	0	0	0	0
Carangoides fulvoguttatus	0.6	0.2	0	0	0	0	0	0	0	0
Carangoides armochs	P	P	0.4	0.3	P	P	0	0	0	0
Carangoides humerosus	0.2	0.1	0.1	0.06	P	P	0	0	0	0
Carangoides hedlandensis	0.3	0.07	P	P	0	0	0	0	0	0
Carangoides talamparoides	0	0	0	0	0	0	0	0	0	0
Selar boops	2.0	0.9	2.3	2.2	0	0	0	0	0	0
Selkar crumenophthalmus	0	0	P	P	P	P	0	0	0	0
Alepes macrurus	0	0	0	0	0	0	0	0	0	0
Alepes mate	0.03	P	0.3	0.1	0	0	0	0	0	0
Alepes kalla	0	0	0.3	0.2	0	0	0	0	0	0
Selaroides leptolepis	3.6	2.7	0.3	0.2	P	P	0	0	0	0
Decapterus macrosoma	0	0	0	0	0	0	0	0	0	0
Decapterus russelli	0	0	1.4	2.0	0	0	0	0	0	0
Gnathanodon speciosus	P	P	P	P	0	0	0	0	0	0
Seriolina nigrofasciata	0.1	P	0.1	0.04	P	0.3	0	0	0	0
Caranx bucculentus	2.4	1.2	0.8	0.6	P	P	0	0	0	0
Caranx ignobilis	0.1	P	P	P	0	0	0	0	0	0
Caranx radiatus	0	0	0	0	0	0	0	0	0	0
Alectis indica	P	P	P	P	0	0	0	0	0	0
Alectis ciliaris	P	P	0	0	0	0	0	0	0	0
Uraspis helvola	0	0	0.08	P	P	P	0	0	0	0

Appendix Table 4 (Cont. 4)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Ulua mentalis	0	0	0	0	0	0	0	0	0	0
Megalaspis cordyla	0.3	0.1	0.1	0.1	0	0	0	0	0	0
Scomberoides tol	0	0	0	0	0	0	0	0	0	0
Scomberoides tala	0	0	0	0	0	0	0	0	0	0
Elagatis bipinnulatus	0	0	0	0	0	0	0	0	0	0
Apolectus niger	0.1	P	2.2	0.8	P	P	0	0	0	0
Mene maculata	P	P	P	P	0	0	0	0	0	0
Leiognathus bindus	3.8	33.5	0.7	11.8	0.3	8.5	0	0	0	0
Leiognathus smithursti	0	0	0	0	0	0	0	0	0	0
Leiognathus leuciscus	1.7	1.7	P	P	0	0	0	0	0	0
Leiognathus equulus	P	P	P	P	0	0	0	0	0	0
Leiognathus fasciatus	0	0	P	P	3.8	8.1	0	0	0	0
Leioganthus splendens	P	P	0	0	0	0	0	0	0	0
Leiognathus sp.2	3.0	3.2	0.06	0.1	0	0	0	0	0	0
Leiognathus hastatus?	0.1	0.9	P	0.04	P	0.05	0	0	0	0
Leiognathus blochii?	P	P	0.2	0.4	0	0	0	0	0	0
Leiongathus cf *aureus*	0	0	0	0	0	0	0	0	0	0
Gazza minuta	0	0	0.2	0.6	15.1	17.5	0	0	0	0
Secutor insidiator	0.8	2.1	P	0.02	P	P	0	0	0	0
Secutor ruconius	P	P	0.02	0.1	0	0	0	0	0	0
Pristipomoides multidens	0	0	0.3	P	7.2	0.8	0	0	0	0
Pristipomoides typus	0	0	0	0	3.6	1.2	0	0	0	0
Lutjanus lineolatus	P	P	0.04	P	0	0	0	0	0	0
Lutjanus vitta	0.3	0.2	0.3	0.2	P	P	0	0	0	0
Lutjanus sebae	2.3	P	0.4	P	0.5	P	0	0	0	0
Lutjanus erythropterus	0.03	P	5.6	0.2	0	0	0	0	0	0
Lutjanus malabaricus	0.07	0.17	1.9	0.06	6.1	0.4	0	0	0	0
Lutjanus carponotatus	0.07	P	P	P	0	0	0	0	0	0
Lutjanus russelli	P	P	0.3	0.04	0.1	0.1	0	0	0	0
Lutjanus argentimaculatus	0	0	0	0	P	0.03	0	0	0	0
Gabrilutjanus nematophorus	3.2	0.1	0	0	0	0	0	0	0	0
Caesio cuning	0	0	0	0	0	0	0	0	0	0
Pterocaesio diagramma	P	P	P	P	P	P	0	0	0	0
Paracaesio sp.	0	0	0	0	0	0	0	0	0	0
Dipterygonotus balteatus	0	0	0	0	0	0	0	0	0	0
Nemipterus peronii	1.9	0.6	0.7	0.3	0	0	0	0	0	0
Nemipterus hexodon	0.6	0.4	0.4	0.2	P	P	0	0	0	0
Nemipterus tolu	0	0	0.08	0.08	0	0	0	0	0	0
Nemipterus tambuloides	0	0	0.5	0.4	P	P	0	0	0	0
Nemipterus virgatus	0	0	0	0	0.05	0.03	0	0	0	0
Nemipterus bathybus	0	0	0.04	0.02	7.4	13.4	0	0	0	0
Nemipterus mesoprion?	P	P	0	0	0	0	0	0	0	0
Nemipterus metopias?	0	0	0	0	P	P	0	0	0	0
Nemipterus spp.	0	0	0.2	0.1	P	0.03	0	0	0	0
Pentapodus nagasakiensis	0	0	0	0	0	0	0	0	0	0
Pentapodus setosus	2.2	2.6	P	P	0	0	0	0	0	0
Scolopsis taeniopterus	0.6	0.6	0.1	0.08	0	0	0	0	0	0
Scolopsis regina	0.9	0.2	P	P	0	0	0	0	0	0
Scolopsis vosmeri	0	0	0	0	0	0	0	0	0	0
Parascolopsis inermis	0	0	0	0	P	P	0	0	0	0
Pentaprion longimanus	2.9	8.7	2.1	7.4	0.4	4.0	0	0	0	0

Appendix Table 4 (Cont. 5)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Gerres filamentosus	0.3	0.6	0.1	0.2	0	0	0	0	0	0
Gerres oyena	0	0	0	0	0	0	0	0	0	0
Pomadasys maculatus	1.8	0.9	0.7	0.8	0	0	0	0	0	0
Pomadasys hasta	P	P	P	P	0.2	0.03	0	0	0	0
Pomadasys argyreus	0	0	0	0	0	0	0	0	0	0
Plectorhynchus pictus	11.8	0.7	1.9	0.1	P	P	0	0	0	0
Hapalogenys kishinouyei	0	0	0	0	P	P	0	0	0	0
Pristigenys niphonia	0	0	0	0	0	0	0	0	0	0
Lethrinus choerorynchus	0.5	P	P	P	0	0	0	0	0	0
Lethrinus microdon	0.05	P	0	0	0	0	0	0	0	0
Lethrinus fraenatus	3.2	0.8	0.06	P	0	0	0	0	0	0
Lethrinus lentjan	0.3	P	0.3	0.04	0	0	0	0	0	0
Lethrinus nebulosus	0	0	0	0	0	0	0	0	0	0
Lethrinus nematacanthus	P	P	P	P	0	0	0	0	0	0
Argyrops spinifer	0	0	0	0	P	P	0	0	0	0
Gymnocranius griseus	0	0	0	0	3.6	1.5	0	0	0	0
Gymnocranius robinsoni	0.05	P	0	0	0	0	0	0	0	0
Gymnocranius elongatus	0	0	0	0	0	0	0	0	0	0
Austronibea oedogenys	P	P	0	0	0	0	0	0	0	0
Protonibea diacanthus	0	0	0	0	0	0	0	0	0	0
Johnieops volgleri	P	P	0.7	0.4	0	0	0	0	0	0
Johnius amblycephalus	P	P	0	0	0	0	0	0	0	0
Atrobucca nibe	0	0	0	0	0	0	0	0	0	0
Johnius trachycephalus	0	0	0	0	0	0	0	0	0	0
Johnius coitor	0.03	P	0.2	0.2	0	0	0	0	0	0
Johnius antarctica?	0	0	0	0	0	0	0	0	0	0
Chrysochir aureus	0	0	0	0	0	0	0	0	0	0
Argyrosomus amoensis?	0	0	0	0	0	0	0	0	0	0
Argyrosomus sp.	0	0	0	0	0	0	0	0	0	0
Unidentified sciaenids	0.2	0.1	0.04	0.04	0	0	0	0	0	0
Upeneus bensasi	0	0	P	0.04	P	P	0	0	0	0
Upeneus moluccensis	0.4	0.6	P	P	0.8	0.9	0	0	0	0
Upeneus sundaicus	P	P	P	P	0	0	0	0	0	0
Upeneus asymmetricus	P	0.2	P	P	0	0	0	0	0	0
Upeneus luzonius	P	0.1	P	0.02	0	0	0	0	0	0
Upeneus sulphureus	0.03	0.03	6.1	9.2	2.3	9.6	0	0	0	0
Upeneus spp.	0.07	0.7	0.4	0.8	P	P	0	0	0	0
Parupeneus pleurospilus	0.08	P	0.3	0.2	0	0	0	0	0	0
Parupeneus chryserpleuron	0	0	0	0	0	0	0	0	0	0
Parupeneus chryserydros	0	0	0	0	0	0	0	0	0	0
Parupeneus indicus	0.05	P	0	0	0	0	0	0	0	0
Parupeneus pleurotaenia	0	0	P	P	0	0	0	0	0	0
Parupeneus spilurus	0	0	0	0	0	0	0	0	0	0
Platax batavianus	6.5	0.4	0.1	P	0	0	0	0	0	0
Platax orbicularis	0.1	P	0	0	0	0	0	0	0	0
Platax teire	P	P	0.04	P	0	0	0	0	0	0
Drepane punctata	0	0	P	P	0	0	0	0	0	0
Zabidius novaemaculatus	P	0.2	0.1	0.2	0	0	0	0	0	0
Rhinoprenes pentanemus	0.05	P	0.06	0.04	P	P	0	0	0	0
Parachaetodon ocellatus	P	P	P	P	0	0	0	0	0	0
Chaetodon modestus?	0	0	0	0	P	1.5	0	0	0	0

Appendix Table 4 (Cont. 6)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Chaetodon aureofasciatus	0	0	0	0	0	0	0	0	0	0
Coradion chrysozonus	0.2	0.4	0.02	0.02	0	0	0	0	0	0
Chelmon marginalis	P	P	P	P	0	0	0	0	0	0
Chelmon mulleri	0.8	1.8	P	P	0	0	0	0	0	0
Chaetodontoplus personifer	0.1	P	P	P	0	0	0	0	0	0
Chaetodontoplus duboulayi	2.7	1.9	0.08	P	0	0	0	0	0	0
Heniochus acuminatus	0	0	0	0	0	0	0	0	0	0
Euxiphipops sexstriatus	0	0	0	0	0	0	0	0	0	0
Banjos banjos	0	0	0	0	0	0	0	0	0	0
Histiopterus typus	0	0	0	0	P	0.4	0	0	0	0
Pristotis jerdoni	P	P	0.02	0.04	0	0	0	0	0	0
Cepolidae - unidentified species	0	0	0	0	0	0	0	0	0	0
Unidentified mugilids	0	0	0	0	0	0	0	0	0	0
Sphyraena obtusata	0	0	P	P	0	0	0	0	0	0
Sphyraena jello	0	0	7.6	3.6	0	0	0	0	0	0
Sphyraena forsteri	0.07	P	0.08	P	P	P	0	0	0	0
Sphyraena flavicauda?	P	P	0	0	0	0	0	0	0	0
Polynemus nigripinnis	0.1	0.1	0.4	0.5	0.2	0.6	0	0	0	0
Polynemus speculoris	P	P	0	0	0	0	0	0	0	0
Eleutheronema tetradactylum	0	0	0	0	0	0	0	0	0	0
Unidentified polynemids	0	0	0	0	0	0	0	0	0	0
Choerodon cephalotes	0.07	0.3	0.02	P	0	0	0	0	0	0
Choerodon monostigma	P	0.6	0.04	0.08	P	P	0	0	0	0
Choerodon shoenleini	P	P	0	0	0	0	0	0	0	0
Choerodon vitta?	P	P	P	P	0	0	0	0	0	0
Choerodon spp.	P	P	0.06	0.06	P	P	0	0	0	0
Anampses lennardi	P	P	P	P	0	0	0	0	0	0
Xiphocheilus typus	0	0	0	0	0	0	0	0	0	0
Scarus ghobban	0.1	0.07	P	P	0	0	0	0	0	0
Parapercis nebulosus	0	0	0	0	0	0	0	0	0	0
Parapercis emeryana	P	P	P	P	0	0	0	0	0	0
Uranoscopus japonicus	0	0	P	P	0	0	0	0	0	0
Uranoscopus oligolepis	0	0	0	0	0	0	0	0	0	0
Champsodon guentheri	0	0	0	0	P	P	P	P	P	P
Callionymus spp.	0	0	0	0	0	0	0	0	0	0
Acentrogobius criniger	0	0	0	0	0	0	0	0	0	0
Siganus canaliculatus	0.3	0.2	P	P	0	0	0	0	0	0
Acanthurus grammoptilus	P	P	0.02	P	0	0	0	0	0	0
Rexea solandri	0	0	0	0	0	0	0	0	0	0
Epinnula orientalis	0	0	0	0	0	0	0	0	8.3	3.2
Trichiurus lepturus	P	P	6.0	2.3	P	P	0	0	0	0
Tentoriceps sp.	0	0	0	0	0	0	0	0	0	0
Scomberomorus queenslandicus	0.3	P	0.06	P	0	0	0	0	0	0
Scomberomorus commerson	P	P	0.1	P	0	0	0	0	0	0
Scomberomorus semifasciatus	0	0	0	0	0	0	0	0	0	0
Scomberomorus munroi	0	0	0.4	0.02	0	0	0	0	0	0
Rastrelliger kanagurta	0.03	P	1.6	1.3	0.05	P	0	0	0	0
Cybiosarda elegans	0	0	0	0	0	0	0	0	0	0
Sarda orientalis	0	0	0	0	0	0	0	0	0	0
Psenopsis humerosus	P	P	4.1	2.7	0.1	0.05	0	0	0	0

Appendix Table 4 (Cont. 7)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Psenes arafurensis	0	0	0	0	0.4	0.1	0	0	0	0
Ariomma indica	0	0	0	0	0	0	0	0	8.3	6.9
Psettodes erumei	0.07	P	P	P	0	0	0	0	0	0
Pseudorhombus dupliciocellatus	P	P	0.2	0.1	P	0.1	0	0	0	0
Pseudorhombus arsius	P	0.2	P	P	0	0	0	0	0	0
Grammatobothus polyophthalmus	P	P	P	P	0	0	0	0	0	0
Pseudorhombus spinosis	P	P	P	P	P	0.03	0	0	0	0
Engyprosopon grandisquama	P	P	0	0	0	0	0	0	0	0
Engyprosopon latifrons	P	P	P	0.02	0	0	0	0	0	0
Pseudorhombus diplospilus	0	0	0	0	0	0	0	0	0	0
Pseudorhombus elevatus	0	0	P	0.02	P	P	0	0	0	0
Unidentified bothids	0	0	0	0	0	0	0	0	0	0
Brachypleura novaezeelandiae	0	0	P	P	P	P	0	0	0	0
Samaris cocatuae	0	0	0	0	0	0	0	0	0	0
Aesopia cornuta	P	P	P	P	0	0	0	0	0	0
Dexillichthys mulleri	0	0	0	0	0	0	0	0	0	0
Pardicula setifer	0	0	0	0	0	0	0	0	0	0
Zebrias craticula	P	P	P	P	0	0	0	0	0	0
Unidentified cynoglossids	0.8	0.9	0.04	P	0	0	0	0	0	0
Trixiphichthys weberi	1.4	3.0	2.9	5.0	0.2	0.03	0	0	P	P
Triacanthus biaculeatus	P	P	0	0	0	0	0	0	0	0
Anacanthus barbatus	P	P	0	0	0	0	0	0	0	0
Unidentified anacanthids	P	P	P	P	0	0	0	0	0	0
Abalistes stellaris	1.8	0.2	0.6	0.08	0	0	0	0	0	0
Sufflamen fraenatus	0.05	P	0	0	0	0	0	0	0	0
Chaetoderma penicilligera	P	0.07	0	0	0	0	0	0	0	0
Paramonacanthus japonicus	P	P	P	0.02	0	0	0	0	0	0
Paramonacanthus filicauda	P	P	P	P	0	0	0	0	0	0
Pseudomonacanthus peroni	P	P	0	0	0	0	0	0	0	0
Thamnaconus multilineatus	P	P	0	0	P	0.4	0	0	0	0
Alutera monoceros	0	0	0.02	0.03	0	0	0	0	0	0
Rhynchostracion nasus	6.1	9.7	0.08	0.08	0	0	0	0	0	0
Tetrosomus gibbosus	P	P	P	P	0	0	0	0	0	0
Rhinostracion rhinorhynchus	P	P	0	0	0	0	0	0	0	0
Lagocephalus sceleratus	P	P	P	P	0	0	0	0	0	0
Lagocephalus inermis	P	0.07	0.06	P	0.4	P	0	0	0	0
Lagocephalus lunaris	P	P	P	P	P	P	0	0	0	0
Lagocephalus spadiceus	P	P	0	0	0	0	0	0	0	0
Spheroides cf *tuberculiferous*	P	P	P	P	0	0	0	0	0	0
Amblyrhynchotes multistriatus	0	0	P	P	0	0	0	0	0	0
Amblyrhynchotes spinosissimus	0	0	0	0	0	0	0	0	0	0
Chelonodon patoca	P	P	0	0	0	0	0	0	0	0
Fugu poecilonotura	0	0	0	0	0	0	0	0	0	0
Canthigaster coronata	0	0	0	0	0	0	0	0	0	0
Unidentified tetraodontids	0	0	0.06	P	0	0	0	0	0	0
Triodon macropterus	0	0	0	0	0	0	0	0	0	0
Chilomycterus orbicularis	0	0	P	P	P	P	0	0	0	0
Chlomycterus hardenbergi	0.1	P	P	P	0	0	0	0	0	0
Cyclichthys jaculiferus	P	0.3	P	P	0	0	0	0	0	0
Unidentified diodontids	0.03	P	0.02	P	0	0	0	0	0	0
Unidentified myctophids	0	0	P	P	0	0	0	0	0	0

Appendix Table 4 (Cont. 8)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Cuttlefish	0.03	P	0.7	0.5	0	0	0	0	0	0
Squid (mostly Loliginidae)	0.07	0.03	0.6	1.0	0.1	0.6	0	0	0	0
Thenus orientalis	0.1	P	P	P	0	0	0	0	0	0
Panulirus spp.	0	0	0	0	0	0	0	0	0	0
Penaeid prawns (several species)	0	0	P	P	P	P	0	0	0	0
Crabs	0.3	P	0.1	P	0	0	0	0	0	0

Appendix Table 5. Percentage composition of the catches from 11-50, 51-100, 101-150, 151-200 and 201-220 m during cruise S07-80.

P - present

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Stegostoma varium	0.1	P	0	0	0	0	0	0	0	0
Chiloscyllium punctatum	P	P	0	0	0	0	0	0	0	0
Sphyrna lewini	0.03	P	0.3	P	0	0	0	0	0	0
Sphyrna mokarran	0	0	0.2	P	0	0	0	0	0	0
Sphyrna blochii	0	0	0	0	0	0	0	0	0	0
Rhizoprionodon acutus	0.5	P	2.0	P	0	0	2.6	0.1	0	0
Rhizoprionodon taylori	P	P	P	P	0	0	0	0	0	0
Carcharhinus sealei	0.8	P	1.1	P	0	0	0	0	0	0
Carcharhinus sorrah	0.1	P	0.1	P	0	0	0	0	0	0
Carcharhinus limbatus	0.4	P	1.8	P	0	0	0	0	0	0
Carcharhinus brevipinna	0.07	P	0.4	P	0	0	0	0	0	0
Carcharhinus plumbeus	0	0	0	0	0	0	1.8	0.1	0	0
Hemipristis elongatus	0.1	P	P	P	0	0	0	0	0	0
Hemigaleus microstoma	0.07	P	0.2	P	0	0	0	0	0	0
Galeocerdo cuvieri	0.3	P	0.7	P	0	0	0	0	0	0
Loxodon macrorhinus	0	0	0	0	P	P	0	0	0	0
Halaelurus buergeri?	0	0	0	0	0	0	0	0	0	0
Unidentified triakids	0	0	0	0	0	0	2.6	0.1	0	0
Mustelus sp.	0	0	0	0	0	0	0	0	0	0
Squalus megalops	0	0	0	0	0	0	0	0	0	0
Pristis zijsron	1.3	P	0	0	0	0	0	0	0	0
Squatina australis	0	0	0	0	0	0	0	0	0	0
Aptychotrema rostrata	0	0	0	0	0	0	0	0	0	0
Rhynchobatus djiddensis	P	P	0.8	P	0	0	0	0	0	0
Rhina ancylostomus	0	0	0.2	P	0	0	0	0	0	0
Rhinobatos batillum	0	0	0	0	0	0	0	0	0	0
Rhinobatos schlegeli	0	0	0	0	0	0	0	0	0	0
Unidentified rhinobatids	0	0	0	0	0	0	0	0	0	0
Raja australis	0	0	0	0	0	0	0	0	0	0
Narcine sp.	0	0	0	0	0	0	0	0	0	0
Dasyatis brevicaudata?	P	P	0	0	0	0	0	0	0	0
Amphotistius kuhlii	P	P	P	P	0	0	0	0	0	0
Himantura uarnak	0.8	P	2.6	P	0	0	0	0	0	0
Gymnura australis	0.2	P	0.2	P	0	0	0	0	0	0
Unidentified dasyatids	P	P	0.5	P	0	0	0	0	0	0
Unidentified urolophids	0	0	0	0	0	0	0	0	0	0
Aetobatus narinari	0	0	0	0	0	0	0	0	0	0
Myliobatis australis	0	0	0.03	P	0	0	0	0	0	0
Unidentified myliobatids	P	P	P	P	0	0	0	0	0	0
Hydrolagus ogilbyi	0	0	0	0	0	0	0	0	0	0
Megalops cyprinoides	P	P	0	0	1.6	0.1	0	0	0	0
Albula sp.	0	0	0	0	0	0	0	0	0	0
Chirocentrus dorab	P	P	P	P	0	0	0	0	0	0
Sardinella sirm	0	0	P	P	0	0	0	0	0	0
Spratelloides sp.	0	0	0	0	0	0	0	0	0	0
Sardinella gibbosa	4.1	1.9	0	0	0	0	0	0	0	0
Sardinella albella	P	P	0	0	0	0	0	0	0	0
Herklotsichthys koningsbergeri	1.0	0.5	P	P	0	0	0	0	0	0

Appendix Table 5 (Cont. 1)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Herklotsichthys macculloch	0	0	0	0	0	0	0	0	0	0
Pellona ditchela	5.2	5.4	4.1	9.8	2.1	6.0	0	0	0	0
Dussumieria acuta	0.7	0.5	P	P	0	0	0	0	0	0
Ilisha cf *melastoma*	0	0	0	0	0	0	0	0	0	0
Dorosoma chacunda	0.4	0.2	0	0	0	0	0	0	0	0
Thryssa setirostris	P	P	0	0	0	0	0	0	0	0
Thryssa hamiltoni	0	0	0	0	0	0	0	0	0	0
Setipinna papuensis	0	0	0	0	0	0	0	0	0	0
Papuengraulis micropinna	0	0	0	0	0	0	0	0	0	0
Stolephorus indicus	3.9	2.4	P	P	0	0	0	0	0	0
Unidentified engraulids	0	0	0	0	0	0	0	0	0	0
Saurida undosquamis	0.9	0.2	1.6	1.5	1.6	2.9	P	0.4	0	0
Saurida micropectoralis	0.9	0.2	1.1	0.4	0	0	0	0	0	0
Saurida filamentosa	0	0	3.2	1.4	14.5	8.0	P	0.1	0	0
Saurida elongata	0	0	P	P	1.1	1.1	0	0	0	0
Trachinocephalus myops	0	0	P	P	0	0	0	0	0	0
Synodus variegatus	0	0	P	P	0	0	0	0	0	0
Synodus sagenaeus	P	P	0	0	0	0	0	0	0	0
Synodus hoshinonis	0	0	0	0	0	0	0	0	0	0
Unidentified synodontids	0	0	P	P	0	0	0	0	0	0
Harpodon translucens	0	0	0	0	0	0	0	0	0	0
Arius thalassinus	0.2	P	0.4	P	0.5	0.2	0	0	0	0
Plotosus lineatus	0.07	P	0	0	0	0	0	0	0	0
Euristhmus nudiceps	0	0	0	0	0	0	0	0	0	0
Euristhmus lepturus	0	0	0	0	0	0	0	0	0	0
Unidentified muraenids	0	0	P	P	0	0	0	0	0	0
Muraenesox cinereus	0	0	0	0	0	0	0	0.1	0	0
Oxyconger leptognathus	P	P	0	0	0	0	0	0	0	0
Unidentified congrids	0	0	0	0	0	0	0	0	0	0
Unidentified lophiids	0	0	0	0	0	0	P	0.1	0	0
Lophiomus setigerus	0	0	0	0	0	0	0	0	0	0
Chaunax fimbriatus	0	0	0	0	0	0	0	0	0	0
Unidentified gadoid	0	0	0	0	0	0	0	0	0	0
Halieutaea coccinea	P	P	0	0	0	0	0	0	0	0
Halieutaea stellata	0	0	0	0	0	0	0	0	0	0
Sirembo imberbis	0	0	0	0	0	0	0	0	0	0
Sirembo philippinus	0	0	0	0	0	0	0	0	0	0
Monocentrus japonicus	0	0	0	0	0	0	2.6	3.1	0	0
Adioryx ruber	0	0	0.6	0.1	0	0	0	0	0	0
Velifer hypselopterus	P	P	P	0.08	0	0	0	0	0	0
Fistularia petimba	P	P	P	0.1	0	0	0	0	0	0
Centriscus scutatus	P	P	P	P	0	0	0	0	0	0
Syngnathus guntheri	0	0	P	P	0	0	0	0	0	0
Apistus carinatus	P	P	P	P	0	0	0	0	0	0
Apistops caloundra	0	0	0	0	0	0	0	0	0	0
Pterois russelli	P	P	P	P	0	0	0	0	0	0
Inimicus sinensis	P	P	0	0	0	0	0	0	0	0
Inimicus didactylus	0	0	0	0	0	0	0	0	0	0
Liocranium sp.	0	0	0	0	0	0	0	0	0	0
Minous versicolor	0	0	0	0	0	0	0	0	0	0
Scorpaenopsis gibbosa	0	0	P	P	0	0	0	0	0	0
Erosa erosa	0	0	0	0	0	0	0	0	0	0

Appendix Table 5 (Cont. 2)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Setarches longimanus	0	0	0	0	0	0	0	0	0	0
Neocentropogon sp.	0	0	0	0	0	0	0	0	0	0
Unidentified scorpaenids	0	0	0	0	0	0	0	0	0	0
Peristedion sp.	0	0	0	0	0	0	0	0	0	0
Lepidotrigla spilotera	P	P	P	0.05	1.1	2.7	0	0	0	0
Lepidotrigla cf *grandis*	0	0	0	0	0	0	0	0	0	0
Lepidotrigla kishinoyi	0	0	P	P	0	0	0	0	0	0
Lepidotrigla argus	0	0	0	0	0	0	0	0	0	0
Pterygotrigla sp.	0	0	0	0	0	0	0	0	0	0
Bovitrigla leptacanthus	0	0	0	0	0	0	0	0	0	0
Paratrigla sp.	0	0	0	0	0	0	0	0	0	0
Satyrichthus welchi	0	0	0.1	0.08	P	P	0	0	0	0
Unidentified triglids	P	P	P	P	0	0	0	0	0	0
Elates Ransonetti	0.1	0.5	P	P	0	0	0	0	0	0
Ratabulus cf *diversidens*	0	0	P	P	0	0	0	0	0	0
Platycephalus macracanthus	0	0	P	P	0	0	0	0	0	0
Platycephalus nematophthalmus	P	P	0	0	0	0	0	0	0	0
Platycephalus endrachtensis	P	P	0	0	0	0	0	0	0	0
Rogadius asper	0	0	0	0	0	0	0	0	0	0
Platycephalus spp.	0	0	0	0	0	0	0	0	0	0
Unidentified platycephalids	P	P	P	P	0	0	0	0	0	0
Onigocia spinosa	0	0	0	0	0	0	0	0	0	0
Unidentified callionymids	0	0	0	0	0	0	0	0	0	0
Chlorophthalmus sp.	0	0	0	0	0	0	P	0.4	0	0
Dactyloptena papilio	P	P	P	P	0	0	0	0	0	0
Dactyloptena peterseni	0	0	0	0	0	0	0	0	0	0
Dactyloptena macracanthus	0	0	P	0.3	0	0	0	0	0	0
Plectropoma maculatum	0	0	0	0	0	0	0	0	0	0
Epinephelus sexfasciatus	P	P	0.08	0.05	0	0	0	0	0	0
Epinephelus maculatus	0	0	0.08	P	0	0	0	0	0	0
Epinephelus malabaricus	0	0	0	0	0	0	0	0	0	0
Epinephelus aerolatus	P	P	0.3	0.05	0	0	0	0	0	0
Epinephelus rankini	0	0	0	0	0	0	0	0	0	0
Epinephelus hata	0	0	0	0	0	0	0	0	0	0
Unidentified serranids	0	0	0	0	0	0	0.9	0.3	0	0
Epinephelus tauvina?	P	P	0	0	0	0	0	0	0	0
Epinephelus amblycephalus	0	0	0	0	0	0	0	0	0	0
Epinephelus merra	0	0	0	0	0	0	0	0	0	0
Diploprion bifasciatus	0	0	0	0	0	0	0	0	0	0
Sayonora satsumi	0	0	0	0	0	0	P	0.1	0	0
Synagrops philippinensis	0	0	P	0.2	2.1	12.4	7.1	39.8	0	0
Acropoma jponicum	0	0	0	0	1.1	9.4	12.4	21.0	0	0
Pseudochromis quinquedentatus	P	P	0	0	0	0	0	0	0	0
Glaucosoma magnificum	0	0	0	0	0	0	0	0	0	0
Psammoperca waigiensis	0	0	0	0	0	0	0	0	0	0
Pelates quadrilinieatus	2.0	0.5	P	P	0	0	0	0	0	0
Therapon therapa	4.2	2.0	2.4	3.0	0	0	0	0	0	0
Therapon jarbua	0.03	P	P	P	0	0	0	0	0	0
Therapon sp. (slender therapon)	0	0	0	0	0	0	0	0	0	0
Priacanthus tayenus	0.1	P	0.2	0.1	0	0	0	0	0	0
Priacanthus cruentatus	P	P	0.6	0.3	11.3	10.3	P	0.1	0	0

Appendix Table 5 (Cont. 3)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Priacanthus hamrur	0	0	0.1	0.03	0	0	0	0	0	0
Pristigenys niphonia	0	0	0	0	0	0	0	0	0	0
Apogon qudrifasciatus	0	0	0	0	0	0	0	0	0	0
Apogon poecilopterus	0	0	0	0	0	0	0	0	0	0
Apogon ellioti	P	P	P	P	0	0	0	0	0	0
Apogon brevicaudatus	0	0	0	0	0	0	0	0	0	0
Apogon atripes	P	P	0	0	0	0	0	0	0	0
Apogon melanopus	0	0	0	0	0	0	0	0	0	0
Apogon carinatus	0	0	0	0	0	0	0	0	0	0
Apogon albimaculosus	0	0	0	0	0	0	0	0	0	0
Siphamia spp.	0	0	0	0	0	0	0	0	0	0
Unidentified apogonids	0.03	0.1	0.05	0.4	P	0.9	0	0	0	0
Sillago analis	0.5	0.3	0	0	0	0	0	0	0	0
Sillago maculata	P	P	0	0	0	0	0	0	0	0
Aillago sihama	0	0	0	0	0	0	0	0	0	0
Unidentified sillaginids	0	0	0	0	0	0	0	0	0	0
Branchiostegus sawakinensis	0	0	0	0	0	0	0	0	0	0
Lactarius lactarius	P	P	0	0	0	0	0	0	0	0
Rachycentron canadus	P	P	0.4	P	0	0	0	0	0	0
Echeneis naucrates	P	P	P	P	0	0	0	0	0	0
Coelorhynchus sp.	0	0	0	0	0	0	P	0.1	0	0
Antigonia rubicunda	0	0	0	0	0	0	0	0	0	0
Zeus faber	0	0	0	0	0	0	0	0	0	0
Carangoides malabaricus	0.1	0.05	1.6	1.9	P	0.2	0	0	0	0
Carangoides chrysophrys	0.08	P	P	P	0	0	0	0	0	0
Carangoides equula	0	0	P	P	1.6	1.1	0	0	0	0
Carangoides coeruleopinnatus	1.1	0.3	3.2	0.8	0	0	0	0	0	0
Carangoides gymnostethus	0	0	0.03	0.1	0	0	0	0	0	0
Carangoides fulvoguttatus	0	0	0	0	0	0	0	0	0	0
Carangoides ajurochs	0.2	0.08	P	P	0	0	0	0	0	0
Carangoides humerosus	0.3	0.08	0.08	0.05	0	0	0	0	0	0
Carangoides hedlandensis	0.2	0.05	0	0	0	0	0	0	0	0
Carangoides talamparoides	0.4	0.2	0.3	0.3	0	0	0	0	0	0
Selar boops	0.6	0.1	0.05	0.08	0	0	0	0	0	0
Selar crumenophthalmus	0.2	0.07	0.6	0.4	0	0	0	0	0	0
Alepes macrurus	0	0	0	0	0	0	0	0	0	0
Alepes mate	0.05	P	0.2	0.05	0	0	0	0	0	0
Alepes kali	0.4	0.2	0	0	0	0	0	0	0	0
Selaroides leptolepis	4.9	2.2	0.4	0.2	0	0	0	0	0	0
Decapterus macrosoma	0	0	P	P	0	0	0	0	0	0
Decapterus russelli	0.7	0.1	1.4	0.8	0	0	0	0	0	0
Gnathanodon speciosus	P	P	0	0	0	0	0	0	0	0
Seriolina nigrofasciata	0.2	P	0.3	P	0	0	0	0	0	0
Caranx bucculentus	4.3	1.8	0.4	0.2	0	0	0	0	0	0
Caranx ignobilis	0	0	0	0	0	0	0	0	0	0
Caranx radiatus	1.2	0.5	0	0	0	0	0	0	0	0
Alectis indica	0	0	0	0	0	0	0	0	0	0
Alectis ciliaris	0	0	0	0	0	0	0	0	0	0
Uraspis helvola	P	P	0.05	P	0	0	0	0	0	0
Ulua mentalis	0	0	0	0	0	0	0	0	0	0
Megalaspis cordyla	0.2	0.03	0.8	0.2	0	0	0	0	0	0
Scomberoides tol	0.08	P	0.2	0.05	0	0	0	0	0	0

Appendix Table 5 (Cont. 4)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Scomberoides tala	0	0	0	0	0	0	0	0	0	0
Elagatis bipinnulatus	0	0	P	P	0	0	0	0	0	0
Apolectus niger	0.4	0.05	0.8	0.3	0	0	0	0	0	0
Mene maculata	0.6	0.07	0.03	P	0	0	0	0	0	0
Leiognathus bindus	7.5	38.8	3.5	51.8	0	0	0	0	0	0
Leiognathus smithursti	0.4	0.2	P	P	0	0	0	0	0	0
Leiognathus leuciscus	0.5	0.4	0	0	0	0	0	0	0	0
Leiognathus equulus	1.1	0.1	0.08	P	0	0	0	0	0	0
Leiognathus fasciatus	0.03	0.07	P	0.03	2.1	9.4	0	0	0	0
Leioganthus splendens	0.5	0.4	0.03	0.03	0	0	0	0	0	0
Leiognathus sp. 2	0.5	0.5	P	P	0	0	0	0	0	0
Leiognathus hastatus?	0.8	2.6	0.3	0.2	0	0	0	0	0	0
Leiognathus blochii?	0.03	0.03	0	0	0	0	0	0	0	0
Leiongathus cf *aureus*	0	0	0	0	0	0	0	0	0	0
Gazza minuta	0.6	0.8	0	0	0	0	0	0	0	0
Secutor insidiator	5.5	8.3	P	P	0	0	0	0	0	0
Secutor ruconius	0.1	0.4	0	0	0	0	0	0	0	0
Pristipomoides multidens	0	0	1.6	P	0	0	2.6	0.1	0	0
Pristipomoides typus	0	0	0	0	0	0	0	0	0	0
Lutjanus lineolatus	0	0	0	0	0	0	0	0	0	0
Lutjanus vitta	0.08	P	0.5	0.3	0	0	0	0	0	0
Lutjanus sebae	P	P	1.3	0.05	0	0	0	0	0	0
Lutjanus erythropterus	P	P	7.1	0.3	0	0	0	0	0	0
Lutjanus malabaricus	0.5	P	13.9	0.4	0	0	0	0	0	0
Lutjanus carponotatus	P	P	0	0	0	0	0	0	0	0
Lutjanus russelli	P	P	0.9	0.1	0	0	0	0	0	0
Lutjanus argentimaculatus	0	0	3.3	0.1	0	0	0	0	0	0
Gabrilutjanus nematophorus	0	0	0	0	0	0	0	0	0	0
Caesio cuning	0	0	P	P	0	0	0	0	0	0
Pterocaesio diagramma	P	P	P	P	0	0	0	0	0	0
Paracaesio sp.	0	0	P	P	0	0	0	0	0	0
Dipterygonotus balteatus	0	0	0	0	0	0	0	0	0	0
Nemipterus peronii	0.1	P	P	P	0	0	0	0	0	0
Nemipterus hexodon	0.5	0.1	1.3	1.1	P	P	0	0	0	0
Nemipterus tolu	0.3	0.2	P	P	0	0	0	0	0	0
Nemipterus tambuloides	P	P	P	P	0	0	0	0	0	0
Nemipterus virgatus	0	0	0.05	0.05	0.5	P	0.9	0.3	0	0
Nemipterus bathybus	0	0	P	P	0	0	0	0	0	0
Nemipterus mesoprion?	P	P	0	0	0	0	0	0	0	0
Nemipterus metopias?	0	0	0	0	0	0	0	0	0	0
Nemipterus spp.	0.1	P	1.2	0.7	P	P	0.9	0.9	0	0
Pentapodus nagasakiensis	0	0	0	0	0	0	0	0	0	0
Pentapodus setosus	0.3	0.1	P	P	0	0	0	0	0	0
Scolopsis taeniopterus	0.4	0.1	0.1	0.1	0	0	0	0	0	0
Scolopsis regina	P	P	0	0	0	0	0	0	0	0
Scolopsis vosmeri	0	0	P	0.07	1.1	P	0	0	0	0
Parascolopsis inermis	0	0	0	0	0	0	0	0	0	0
Pentaprion longimanus	0.8	1.2	0.5	1.3	0	0	0	0	0	0
Gerres filamentosus	0.1	0.05	P	P	0	0	0	0	0	0
Gerres oyena	0.1	0.1	0	0	0	0	0	0	0	0
Pomadasys maculatus	13.2	13.1	0	0	0	0	0	0	0	0
Pomadasys hasta	0	0	0	0	0	0	0	0	0	0

Appendix Table 5 (Cont. 5)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Pomadasys argyreus	0	0	0	0	0	0	0	0	0	0
Plectorhynchus pictus	0.05	P	2.4	0.1	0	0	0	0	0	0
Hapalogenys kishinouyei	0	0	0	0	0	0	0	0	0	0
Pristigenys niphonia	0	0	0	0	0	0	0	0	0	0
Lethrinus choerorynchus	P	P	0.05	P	0	0	0	0	0	0
Lethrinus microdon	0	0	0	0	0	0	0	0	0	0
Lethrinus fraenatus	0.1	P	0	0	0	0	0	0	0	0
Lethrinus lentjan	P	P	0.3	P	0	0	0	0	0	0
Lethrinus nebulosus	0	0	0	0	0	0	0	0	0	0
Lethrinus nematacanthus	0.2	P	0	0	0	0	0	0	0	0
Argyrops spinifer	P	P	0.9	P	0	0	0	0	0	0
Gymnocranius griseus	0	0	0	0	0	0	0	0	0	0
Gymnocranius robinsoni	0	0	0	0	0	0	0	0	0	0
Gymnocranius elongatus	0	0	0	0	0	0	0	0	0	0
Austronibea oedogenys	0	0	0	0	0	0	0	0	0	0
Protonibea diacanthus	0	0	0	0	0	0	0	0	0	0
Johnieops volgleri	1.3	0.2	0	0	0	0	0	0	0	0
Johnius amblycephalus	0.03	P	0	0	0	0	0	0	0	0
Atrobucca nibe	0	0	0	0	0	0	0	0	0	0
Johnius trachycephalus	P	P	0	0	0	0	0	0	0	0
Johnius coitor	0	0	0	0	0	0	0	0	0	0
Johnius antarctica?	0	0	0	0	0	0	0	0	0	0
Crysochir aureus	0	0	0	0	0	0	0	0	0	0
Argyrosomus amoensis?	0	0	0	0	40.3	23.5	0	0	0	0
Argyrosomus sp.	P	P	0	0	0	0	0	0	0	0
Unidentified sciaenids	0.1	P	0	0	0	0	0	0	0	0
Upeneus bensasi	P	P	P	P	P	0.5	0	0	0	0
Upeneus moluccensis	P	P	0.5	1.1	0.5	2.1	P	0.2	0	0
Upeneus sundaicus	0.2	P	P	P	0	0	0	0	0	0
Upeneus asymmetricus	0.1	0.05	0	0	0	0	0	0	0	0
Upeneus luzonius	0.1	0.05	P	P	0	0	0	0	0	0
Upeneus sulphureus	2.6	2.2	5.9	6.1	0	0	0	0	0	0
Upeneus spp.	0.05	P	0.05	0.1	P	P	0	0	0	0
Parupeneus pleurospilus	P	P	P	P	0	0	0	0	0	0
Parupeneus chryserpleuron	0	0	0	0	0	0	0	0	0	0
Parupeneus chryserydros	0	0	P	P	0	0	0	0	0	0
Parupeneus indicus	0	0	0	0	0	0	0	0	0	0
Parupeneus pleurotaenia	0	0	0	0	0	0	0	0	0	0
Parupeneus spilurus	0	0	0	0	0	0	0	0	0	0
Platax batavianus	P	P	P	P	0	0	0	0	0	0
Platax orbicularis	0	0	P	P	0	0	0	0	0	0
Platax teire	P	P	P	P	0	0	0	0	0	0
Drepane punctata	P	P	0	0	0	0	0	0	0	0
Zabidius novaemaculatus	P	P	0.3	0.03	0	0	0	0	0	0
Rhinoprenes pentanemus	0	0	0	0	0	0	0	0	0	0
Parachaetodon ocellatus	P	P	P	P	0	0	0	0	0	0
Chaetodon modestus?	0	0	0	0	P	0.6	0.9	2.6	0	0
Chaetodon aureofasciatus	0	0	0	0	0	0	0	0	0	0
Coradion chrysozonus	P	P	P	P	0	0	0	0	0	0
Chelmon marginalis	P	P	0	0	0	0	0	0	0	0
Chelmon mulleri	P	P	0.2	P	0	0	0	0	0	0
Chaetodontoplus personifer	0	0	0	0	0	0	0	0	0	0

Appendix Table 5 (Cont. 6)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Chaetodontoplus duboulayi	P	P	0	0	0	0	0	0	0	0
Heniochus acuminatus	P	P	P	P	0	0	0	0	0	0
Euxiphipops sexstriatus	P	P	0	0	0	0	0	0	0	0
Banjos banjos	0	0	0	0	0	0	0	0	0	0
Histiopterus typus	0	0	0	0	0	0	0	0	0	0
Pristotis jerdoni	P	P	P	P	0	0	0	0	0	0
Cepolidae - unidentified species	0	0	0	0	0	0	0	0	0	0
Unidentified mugilids	0	0	0	0	0	0	0	0	0	0
Syphyraena obtusata	0.1	0.05	0.1	0.05	0	0	0	0	0	0
Sphyraena jello	1.1	0.1	0.08	P	0	0	0	0	0	0
Sphyraena forsteri	P	P	P	P	0	0	0	0	0	0
Sphyraena flavicauda?	0	0	0	0	0	0	0	0	0	0
Polynemus nigripinnis	P	P	0	0	0	0	0	0	0	0
Polynemus specularis	0.3	0.1	0	0	0	0	0	0	0	0
Eleutheronema tetradactylum	0	0	0	0	0	0	0	0	0	0
Unidentified polynemids	P	P	0	0	0	0	0	0	0	0
Choerodon cephalotes	P	P	0	0	0	0	0	0	0	0
Choerodon monostigma	P	P	P	P	0	0	0	0	0	0
Choerodon shoenleini	P	P	0	0	0	0	0	0	0	0
Choerodon vitta?	0	0	0	0	0	0	0	0	0	0
Choerodon spp.	P	P	0	0	0	0	0	0	0	0
Anampses lennardi	0	0	0	0	0	0	0	0	0	0
Xiphocheilus typus	0	0	0	0	0	0	0	0	0	0
Scarus ghobban	0	0	P	P	0	0	0	0	0	0
Parapercis nebulosus	0	0	0	0	0	0	0	0	0	0
Parapercis emeryana	P	P	0	0	0	0	0	0	0	0
Uranoscopus japonicus	P	P	P	P	0	0	0	0	0	0
Uranoscopus oligolepis	P	P	P	P	P	0.4	1.8	P	0	0
Champsodon guentheri	0	0	0	0	P	0.2	P	0.7	0	0
Callionymus spp.	0	0	0	0	0	0	0	0	0	0
Acentrogobius criniger	0	0	0	0	0	0	0	0	0	0
Siganus canaliculatus	0.1	0.05	P	P	0	0	0	0	0	0
Acanthurus grammoptilus	0	0	0	0	0	0	0	0	0	0
Rexea solandri	0	0	0	0	0	0	0	0	0	0
Epinnula orientalis	0	0	0	0	0	0	0	0	0	0
Trichiurus lepturus	0.2	0.1	7.0	2.3	12.4	6.0	56.6	26.7	0	0
Tentoriceps sp.	0	0	0	0	0	0	P	0.1	0	0
Scomberomorus queenslandicus	1.8	0.3	0.1	P	0	0	0	0	0	0
Scomberomorus commerson	0.03	P	0.03	P	0	0	0	0	0	0
Scomberomorus semifasciatus	0.03	P	0	0	0	0	0	0	0	0
Scomberomorus munroi	0.5	P	0.5	0.03	0	0	0	0	0	0
Rastrelliger kanagurta	4.7	2.0	0.2	0.1	P	P	0	0	0	0
Cybiosarda elegans	P	P	P	P	0	0	0	0	0	0
Sarda orientalis	0	0	0	0	0	0	0	0	0	0
Psenopsis humerosus	P	P	0.2	0.2	0.5	0.5	2.6	2.2	0	0
Psenes arafurensis	P	P	0.7	0.4	3.8	2.3	0	0	0	0
Ariomma indica	0	0	0	0	0	0	0	0	0	0
Psettodes erumei	P	P	P	P	P	P	P	P	0	0
Pseudorhombus dupliciocellatus	P	P	P	P	0	0	0	0	0	0
Pseudorhombus arsius	0	0	0	0	0	0	0	0	0	0
Grammatobothus polyophthalmus	P	P	P	P	0	0	0	0	0	0

Appendix Table 5 (Cont. 7)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Pseudorhombus spinosis	0	0	P	P	0	0	0	0	0	0
Engyprosopon grandisquama	0	0	0	0	0	0	0	0	0	0
Engyprosopon latifrons	0	0	0	0	0	0	0	0	0	0
Pseudorhombus diplospilus	P	P	0.05	P	0	0	0	0	0	0
Pseudorhombus elevatus	0.03	0.03	P	P	0	0	0	0	0	0
Unidentified bothids	P	P	0	0	0	0	0	0	0	0
Brachypleura novaezeelandiae	0	0	P	P	0	0	0	0	0	0
Samaris cocatuae	0	0	P	P	0	0	0	0	0	0
Aesopia cornuta	0	0	0	0	0	0	0	0	0	0
Dexillichthys mulleri	0	0	P	P	0	0	0	0	0	0
Pardicula setifer	0	0	0	0	0	0	0	0	0	0
Zebrias craticula	0	0	0	0	0	0	0	0	0	0
Unidentified cynoglossids	0	0	0	0	0	0	0	0	0	0
Trixiphichthys weberi	0.9	0.5	0.2	0.5	0	0	0	0	0	0
Triacanthus biaculeatus	0	0	0	0	0	0	0	0	0	0
Anacanthus barbatus	0	0	0	0	0	0	0	0	0	0
Unidentified anacanthids	P	P	0	0	0	0	0	0	0	0
Abalistes stellaris	P	P	0.6	P	0	0	0	0	0	0
Sufflamen fraenatus	0	0	0	0	0	0	0	0	0	0
Chaetoderma penicilligera	P	P	0	0	0	0	0	0	0	0
Paramonacanthus japonicus	0.1	0.1	0	0	0	0	0	0	0	0
Paramonacanthus filicauda	0.2	0.3	5.1	7.2	0	0	0	0	0	0
Pseudomonacanthus peroni	0	0	0	0	0	0	0	0	0	0
Thamnaconus multilineatus	0	0	0	0	0	0	0	0	0	0
Alutera monoceros	P	P	P	P	0	0	0	0	0	0
Rhynchostracion nasus	P	P	0.05	0.05	0	0	0	0	0	0
Tetrosomus gibbosus	P	P	P	P	0	0	0	0	0	0
Rhinostracion rhinorhynchus	P	P	0	0	0	0	0	0	0	0
Lagocephalus sceleratus	0.1	0.1	P	P	0	0	0	0	0	0
Lagocephalus inermis	P	P	P	P	P	0.3	0	0	0	0
Lagocephalus lunaris	4.6	0.1	0.1	P	0	0	0	0	0	0
Lagocephalus spadiceus	P	P	P	P	0	0	0	0	0	0
Spheroides cf tuberculiferous	P	P	P	P	0	0	0	0	0	0
Amblyrhynchotes multistriatus	P	P	P	P	0	0	0	0	0	0
Amblyrhynchotes spinosissimus	0	0	0	0	0	0	0	0	0	0
Chelonodon patoca	P	P	0	0	0	0	0	0	0	0
Fugu poecilonotura	P	P	0	0	0	0	0	0	0	0
Canthigaster coronata	0	0	0	0	0	0	0	0	0	0
Unidentified tetraodontids	P	P	P	P	0	0	0	0	0	0
Triodon macropterus	0	0	0	0	0	0	0	0	0	0
Chilomycterus orbicularis	P	P	P	0.08	P	0.2	0	0	0	0
Chlomycterus hardenbergi	P	P	P	P	0	0	0	0	0	0
Cholichthys jaculiferus	P	P	P	P	0	0	0	0	0	0
Unidentified diodontids	P	P	0	0	0	0	0	0	0	0
Unidentified myctophids	0	0	0	0	0	0	3.5	0.3	0	0
Cuttlefish	0	0	0.03	P	0	0	0	0	0	0
Squid (mostly Loliginidae)	1.5	3.8	P	P	0	0	0	0	0	0
Thenus orientalis	0.1	0.08	P	P	0	0	0	0	0	0
Panulirus spp.	0	0	P	P	0	0	0	0	0	0
Penaeid prawns (several species)	P	P	0	0	0	0	0	0	0	0
Crabs	0	0	0	0	0	0	0	0	0	0

Appendix Table 6. Percentage composition of the catches from 11-50, 51-100, 101-150, 151-200m during cruise S02-81.

P - Present

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Stegostoma varium	0.1	P	0.08	P	0	0	0	0	0	0
Chiloscyllium punctatum	0	0	P	0	0	0	0	0	0	0
Sphyrna lewini	0.05	P	0.08	P	0	0	0	0	0	0
Sphyrna mokarran	0	0	0	0	0	0	0	0	0	0
Sphyrna blochii	P	P	0	0	0	0	0	0	0	0
Rhizoprionodon acutus	0.7	P	0.2	P	0	0	0	0	0	0
Rhizoprionodon taylori	0.07	P	0	0	0	0	0	0	0	0
Carcharhinus sealei	3.2	0.1	0.7	P	0	0	0	0	0	0
Carcharhinus sorrah	0.4	P	0.06	P	0	0	0	0	0	0
Carcharhinus limbatus	0.1	P	0.2	P	4.2	P	0	0	0	0
Carcharhinus brevipinna	0	0	0	0	0	0	0	0	0	0
Carcharhinus plumbeus	0	0	0	0	0	0	0	0	10.5	P
Hemipristis elongatus	0.1	P	0	0	0	0	0	0	0	0
Hemigaleus microstoma	0.2	P	0.2	P	0	0	0	0	0	0
Galeocerdo cuvieri	0	0	0	0	0	0	0	0	0	0
Loxodon macrorhinus	0	0	0	0	0	0	0	0	0	0
Halaelurus buergeri?	0	0	0	0	P	P	0	0	P	0.1
Unidentified triakids	0	0	0	0	0	0	0	0	0	0
Mustelus sp.	0	0	0	0	0	0	0	0	15.8	0.1
Squalus megalops	0	0	0	0	0	0	0	0	0	0
Pristis zijsron	P	P	0	0	0	0	0	0	0	0
Squatina australis	0	0	0	0	0	0	0	0	0	0
Aptychotrema rostrata	0	0	0	0	0	0	0	0	0	0
Rhynchobatus djiddensis	0.3	P	0.04	P	0	0	0	0	0	0
Rhina ancylostomus	0	0	0	0	0	0	0	0	0	0
Rhinobatos batillum	0	0	0	0	0	0	0	0	0	0
Rhinobatos schlegeli	0	0	0	0	0	0	0	0	0	0
Unidentified rhinobatids	0.5	P	0	0	0	0	0	0	0	0
Raja australis	0	0	0	0	0	0	0	0	0	0
Narcine sp.	0	0	0	0	0	0	0	0	2.6	0.8
Dasyatis brevicaudata?	0	0	0	0	0	0	0	0	0	0
Amphotistus kuhlii	P	P	0.08	P	0	0	0	0	0	0
Himantura uarnak	1.1	P	0.7	P	0	0	0	0	0	0
Gymnura australis	0.1	P	0.4	P	0	0	0	0	0	0
Unidentified dasyatids	0.8	P	0.1	P	0	0	0	0	0	0
Unidentified urolophids	0	0	0	0	0	0	0	0	0	0
Aetobatus narinari	0	0	0	0	0	0	0	0	0	0
Myliobatis australis	0	0	0	0	0	0	0	0	0	0
Unidentified myliobatids	0.05	P	0.06	P	0	0	0	0	0	0
Hydrolagus ogilbyi	0	0	0	0	0	0	0	0	10.5	0.4
Megalops cyprinoides	P	P	P	P	0	0	0	0	0	0
Albula sp.	0	0	P	P	0	0	0	0	0	0
Chriocentrus dorab	0.05	P	P	P	0	0	0	0	0	0
Sardinella sirm	P	P	0	0	0	0	0	0	0	0
Sratelloides sp.	0	0	0	0	P	0.2	0	0	0	0
Sardinella gibbosa	0.05	0.08	P	P	0	0	0	0	0	0
Sardinella albella	0.5	2.0	0	0	0	0	0	0	0	0
Herklotsichthys koningsbergeri	0.4	0.2	0.04	0.02	0	0	0	0	0	0

Appendix Table 6 (Cont. 1)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Herklotsichthys maccullochi	0.08	0.2	0	0	0	0	0	0	0	0
Pellona ditchela	3.5	4.5	1.3	1.6	0.2	0.1	0	0	0	0
Dussumieria acuta	0.9	1.0	0.04	P	0	0	0	0	0	0
Ilisha cf *melastoma*	P	P	0	0	0	0	0	0	0	0
Dorosoma chacunda	P	P	0	0	0	0	0	0	0	0
Thryssa setirostris	0.05	0.05	0	0	0	0	0	0	0	0
Thryssa hamiltoni	P	P	0	0	0	0	0	0	0	0
Setipinna papuensis	0	0	0	0	0	0	0	0	0	0
Papuengraulis micropinna	0	0	0	0	0	0	0	0	0	0
Stolephorus indicus	P	P	P	P	0	0	0	0	0	0
Unidentified engraulids	0.1	0.4	0	0	0	0	0	0	0	0
Saurida undosquamis	1.4	1.5	1.9	1.5	3.1	7.0	0	0	0	0
Saurida micropectoralis	1.0	0.3	1.5	0.1	0	0	0	0	0	0
Saurida filamentosa	0	0	4.9	1.6	17.7	5.4	0	0	0	0
Saurida elongata	0	0	0	0	0	0	0	0	0	0
Trachinocephalus myops	P	P	P	P	0	0	0	0	0	0
Synodus variegatus	0	0	P	P	0	0	0	0	0	0
Synodus sagenaeus	P	P	P	P	0	0	0	0	0	0
Synodus hoshinonis	P	P	P	P	0	0	0	0	0	0
Unidentified synodontids	0	0	P	P	0	0	0	0	0	0
Harpodon translucens	0	0	0	0	0	0	0	0	0	0
Arius thalassinus	0.1	P	0.6	0.6	0	0	0	0	0	0
Plotosus lineatus	0	0	0	0	0	0	0	0	0	0
Euristhmus nudiceps	0	0	0	0	0	0	0	0	0	0
Euristhmus lepturus	0	0	0	0	0	0	0	0	0	0
Unidentified muraenids	0	0	0	0	0	0	0	0	0	0
Muraenesia cinereus	P	P	0.1	P	P	P	0	0	0	0
Cxyconger leptognathus	P	P	0	0	0	0	0	0	0	0
Unidentified congrids	0	0	0	0	0	0	0	0	0	0
Unidentified lophiids	0	0	0	0	0	0	0	0	0	0
Lophiomus setigerus	0	0	P	P	0	0	0	0	0	0
Chaunax fimbriatus	0	0	0	0	0	0	0	0	P	1.3
Unidentified gadoid	0	0	0	0	0	0	0	0	P	0.8
Halieutaea coccinea	0	0	P	0.02	P	P	0	0	0	0
Halieutaea stellata	0	0	0	0	0	0	0	0	0	0
Sirembo imberbis	P	P	P	P	P	0.03	0	0	0	0
Sirembo philippinus	0	0	0	0	0	0	0	0	0	0
Monocentrus japonicus	0	0	0.1	0.03	P	0.07	0	0	0	0
Adioryx ruber	P	P	0.3	P	0	0	0	0	0	0
Velifer hypselopterus	P	P	P	P	P	P	0	0	0	0
Fistularia petimba	0.2	0.2	0.04	0.06	0	0	0	0	0	0
Centriscus scutatus	P	P	P	P	0	0	0	0	0	0
Syngnathus guntheri	0	0	0	0	0	0	0	0	0	0
Apistus carinatus	0.1	0.05	P	P	0	0	0	0	0	0
Apistops caloundra	P	P	0	0	0	0	0	0	0	0
Pterois russelli	P	P	P	P	0	0	0	0	0	0
Inimicus sinesis	0	0	P	P	0	0	0	0	0	0
Inimicus didactylus	0	0	P	P	0	0	0	0	0	0
Liocranium sp.	0	0	0	0	0	0	0	0	0	0
Minous versicolor	0	0	0	0	0	0	0	0	0	0
Scorpaenopsis gibbosa	0	0	0	0	0	0	0	0	0	0
Erosa Erosa	0	0	0	0	0	0	0	0	0	0

Appendix Table 6 (Cont. 2)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Setarches longimanus	0	0	P	P	0	0	0	0	P	0.1
Neocentropogon sp.	0	0	0	0	P	P	0	0	0	0
Unidentified scorpaenids	P	0.05	P	P	0.3	0.2	0	0	0	0
Peristedion sp.	0	0	0	0	0	0	0	0	0	0
Lepidotrigla spilotera	P	P	0.3	0.2	0.7	0.3	0	0	0	0
Lepidotrigla cf *grandis*	0	0	0	0	P	P	0	0	P	0.4
Lepidotrigla kishinoyi	0	0	P	P	0	0	0	0	0	0
Lepidotrigla argus	0	0	P	P	0	0	0	0	0	0
Pterygotrigla sp.	0	0	0	0	0	0	0	0	0	0
Bovitrigla leptacanthus	0	0	0	0	0	0	0	0	0	0
Paratrigla sp.	0	0	P	P	0	0	0	0	0	0
Satyrichthus welchi	0	0	P	0.3	P	P	0	0	P	0.1
Unidentified triglids	0	0	P	P	0	0	0	0	P	0.5
Elates ransonetti	P	0.2	P	P	0	0	0	0	0	0
Ratabulus cf *diversidens*	0	0	P	P	0	0	0	0	0	0
Platycephalus macracanthus	0	0	P	P	0	0	0	0	0	0
Platycephalus nematophthalmus	P	P	0	0	0	0	0	0	0	0
Platycephalus endrachtensis	P	P	0	0	0	0	0	0	0	0
Rogadius asper	0	0	P	P	0	0	0	0	0	0
Platycephalus spp.	0	0	0	0	0	0	0	0	0	0
Onigocia spinosa	0	0	0	0	0	0	0	0	0	0
Unidentified platycephalids	P	P	0.04	0.04	4.1	P	0	0	2.6	0.7
Unidentified callionymids	P	P	P	P	0	0	0	0	0	0
Chlorophthalmus sp.	0	0	0	0	P	0.03	0	0	2.6	1.4
Dactyloptena papilio	P	P	P	P	0	0	0	0	0	0
Dactyloptena peterseni	0	0	0	0	0	0	0	0	0	0
Dactyloptena macracanthus	P	P	P	P	P	P	0	0	0	0
Plectropoma maculatum	P	P	0	0	0	0	0	0	0	0
Unidentified serranids	0	0	0.05	P	0.8	0.03	0	0	0	0
Epinephelus sexfasciatus	0.05	P	0.06	P	0	0	0	0	0	0
Epinephelus maculatus	P	P	0	0	0	0	0	0	0	0
Epinephelus malabaricus	0	0	0	0	0	0	0	0	0	0
Epinephelus aerolatus	P	P	0.2	0.04	0.3	0.03	0	0	0	0
Epinephelus rankini	0	0	0	0	0	0	0	0	0	0
Epinephelus hata	0	0	0	0	0	0	0	0	0	0
Epinephelus tauvina?	0.1	P	0	0	0	0	0	0	0	0
Epinephelus amblycephalus	0	0	0	0	0	0	0	0	0	0
Epinephelus mera	P	P	0	0	0	0	0	0	0	0
Diploprion bifasciatum	0	0	0	0	0	0	0	0	0	0
Sayonora satsumi	0	0	0	0	0	0	0	0	0	0
Synagrops philippinensis	0	0	0	0	0	0	0	0	0	0
Acropoma japonicum	0	0	0.2	2.9	16.5	56.1	0	0	39.5	69.0
Pseudochromis quinquedentatus	P	P	0	0	0	0	0	0	0	0
Glaucosoma magnificum	P	P	0	0	0	0	0	0	0	0
Psammoperca waigiensis	P	P	0	0	0	0	0	0	0	0
Pelates quadrilineatus	0.2	0.2	0	0	0	0	0	0	0	0
Therapon theraps	1.4	1.3	0.08	0.04	0	0	0	0	0	0
Therapon jarbua	0.05	0.08	0.04	P	0	0	0	0	0	0
Therapon sp. (slender therapon)	0	0	0	0	0	0	0	0	0	0
Priacanthus tayenus	0.3	0.1	1.1	0.3	0	0	0	0	0	0
Priacanthus cruentatus	0	0	P	P	6.3	1.2	0	0	10.5	0.8

Appendix Table 6 (Cont. 3)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Priacanthus hamrur	0	0	0.1	P	0	0	0	0	0	0
Pristigenys niphonia	0	0	0	0	P	0.1	0	0	0	0
Apogon quadrifasciatus	P	0.1	0.1	0.6	P	P	0	0	0	0
Apogon poecilopterus	0.05	0.1	0.06	0.2	0	0	0	0	0	0
Apogon ellioti	P	P	P	P	0	0	0	0	0	0
Apogon brevicaudatus	0	0	0	0	0	0	0	0	0	0
Apogon atripes	P	P	0	0	0	0	0	0	0	0
Apogon melanopus	0	0	P	P	0	0	0	0	0	0
Apogon carinatus	0	0	P	0.03	P	P	0	0	0	0
Apogon albimaculosus	0	0	P	P	0	0	0	0	0	0
Siphamia spp.	0	0	0.1	0.9	1.4	2.9	0	0	2.6	14.6
Unidentified apogonids	P	0.3	P	0.4	P	P	0	0	0	0
Sillago analis	P	0.1	0	0	0	0	0	0	0	0
Sillago maculata	0.08	P	0	0	0	0	0	0	0	0
Sillago sihama	P	P	0	0	0	0	0	0	0	0
Unidentified sillaginids	P	P	0	0	0	0	0	0	0	0
Branchiostegus sawakinensis	0	0	P	P	0	0	0	0	0	0
Lactarius lactarius	0	0	0	0	0	0	0	0	0	0
Rachycentron canadus	P	P	0.1	P	0	0	0	0	0	0
Echeneis naucrates	P	P	0.04	P	0	0	0	0	0	0
Coelorhynchus sp.	0	0	0	0	0.5	0.6	0	0	P	0.1
Antigonia rubicunda	0	0	0	0	0	0	0	0	P	0.2
Zeus faber	0	0	0	0	0	0	0	0	0	0
Carangoides malabaricus	0.2	0.08	0.9	0.3	0	0	0	0	0	0
Carangoides chrysophrys	0.1	P	1.4	0.1	0	0	0	0	0	0
Carangoides equula	0	0	0.1	0.06	1.1	0.2	0	0	0	0
Carangoides coeruleopinnatus	0.7	0.1	3.8	0.6	0	0	0	0	0	0
Carangoides gymnostethus	0	0	0.02	P	0	0	0	0	0	0
Carangoides fulvoguttatus	0	0	P	P	0	0	0	0	0	0
Carangoides aurochs	0.2	0.1	P	P	0	0	0	0	0	0
Carangoides humerosus	1.3	1.0	0.08	0.02	0	0	0	0	0	0
Carangoides hedlandensis	0.2	0.2	0	0	0	0	0	0	0	0
Carangoides talamparoides	0.6	0.3	0.3	0.1	0	0	0	0	0	0
Selar boops	2.0	1.3	1.0	0.1	0	0	0	0	0	0
Selar crumenophthalmus	1.6	1.6	0.9	0.3	0	0	0	0	0	0
Alepes macrurus	0.5	0.1	0.2	P	0	0	0	0	0	0
Alepes mate	0.1	0.05	0.3	0.02	0	0	0	0	0	0
Alepes kalla	P	P	0	0	0	0	0	0	0	0
Selaroides leptolepis	4.7	4.7	0.6	0.3	0	0	0	0	0	0
Decapterus macrosoma	1.1	0.3	0.3	0.1	0	0	0	0	0	0
Decapterus russelli	1.0	0.3	1.1	0.5	1.0	0.2	0	0	0	0
Gnathanodon speciosus	0.8	P	0	0	0	0	0	0	0	0
Seriolina nigrofasciata	0.2	0.2	0.1	P	0	0	0	0	0	0
Caranx bucculentus	5.2	2.5	0.3	0.06	0	0	0	0	0	0
Caranx ignobilis	0	0	0	0	0	0	0	0	0	0
Caranx radiatus	0.1	0.1	0	0	0	0	0	0	0	0
Alectis indica	P	P	P	P	0	0	0	0	0	0
Alectis ciliaris	0	0	P	P	0	0	0	0	0	0
Uraspis helvola	0.1	P	0.06	P	0.3	P	0	0	0	0
Ulua mentalis	0	0	P	P	0	0	0	0	0	0
Megalaspis cordyla	0.3	0.05	0.1	0.02	0	0	0	0	0	0
Scomberoides tol	0.2	0.05	0	0	0	0	0	0	0	0

Appendix Table 6 (Cont. 4)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Scomberoides tala	P	P	0	0	0	0	0	0	0	0
Elagatis bipinnulatus	0	0	0	0	0	0	0	0	0	0
Apolectus niger	0.6	0.08	0.5	0.04	0	0	0	0	0	0
Mene maculata	P	P	P	P	0	0	0	0	0	0
Leiognathus bindus	5.9	25.3	4.9	42.9	0	0	0	0	0	0
Leiognathus smithursti	P	P	0	0	0	0	0	0	0	0
Leiognathus leuciscus	1.0	1.6	0.2	0.2	0	0	0	0	0	0
Leiognathus equulus	0.1	P	P	P	0	0	0	0	0	0
Leiognathus fasciatus	P	P	0.3	0.08	0	0	0	0	0	0
Leioganthus splendens	1.1	1.2	0	0	0	0	0	0	0	0
Leiognathus sp. 2	2.0	2.8	P	P	0	0	0	0	0	0
Leiognathus hastatus?	0.5	2.6	0.4	1.2	0	0	0	0	0	0
Leiognathus blochii?	0.2	0.4	0	0	0	0	0	0	0	0
Leiongathus cf *aureus*	0	0	P	0.8	P	1.2	0	0	0	0
Gazza minuta	1.3	2.7	0.04	0.02	0	0	0	0	0	0
Secutor insidiator	1.4	5.0	0.04	0.1	0	0	0	0	0	0
Secutor ruconius	0.08	0.6	0	0	0	0	0	0	0	0
Pristipomoides multidens	0	0	0.5	P	0	0	0	0	0	0
Pristipomoides typus	0	0	0	0	0	0	0	0	0	0
Lutjanus lineolatus	0.1	0.1	0.1	0.08	0	0	0	0	0	0
Lutjanus vitta	0.7	0.3	1.2	0.3	0	0	0	0	0	0
Lutjanus sebae	P	P	0.7	0.04	0	0	0	0	0	0
Lutjanus erythropterus	0.03	P	0.9	0.02	0	0	0	0	0	0
Lutjanus malabaricus	1.4	0.05	9.6	0.2	0.5	P	0	0	0	0
Lutjanus carponotatus	0.1	P	0	0	0	0	0	0	0	0
Lutjanus russelli	0.08	P	1.6	0.5	P	P	0	0	0	0
Lutjanus argentimaculatus	2.0	0.03	0	0	0	0	0	0	0	0
Gabrilutjanus nematophorus	0	0	0	0	0	0	0	0	0	0
Caesio cuning	P	P	P	P	0	0	0	0	0	0
Pteroccaesio diagramma	0	0	P	P	0	0	0	0	0	0
Paracaesio sp.	0	0	0	0	0	0	0	0	0	0
Dipterygonotus balteatus	0	0	0	0	0	0	0	0	0	0
Nemipterus peronii	1.7	0.4	0.2	0.04	0	0	0	0	0	0
Nemipterus hexodon	1.4	0.7	1.1	0.3	0	0	0	0	0	0
Nemipterus tolu	0.5	0.4	0.08	P	0	0	0	0	0	0
Nemipterus tambuloides	P	P	0.2	0.06	0	0	0	0	0	0
Nemipterus virgatus	0	0	2.1	0.1	1.5	0.7	0	0	0	0
Nemipterus bathybus	0	0	0.5	0.9	7.5	2.1	0	0	0	0
Nemipterus mesoprion?	P	P	0	0	0	0	0	0	0	0
Nemipterus metopias?	0	0	0	0	0	0	0	0	0	0
Nemipterus spp.	0.1	0.05	1.4	0.6	0	0	0	0	0	0
Pentapodus nagasakiensis	0	0	0	0	0	0	0	0	0	0
Pentapodus setosus	1.9	1.8	P	P	0	0	0	0	0	0
Scolopsis taeniopterus	0.5	0.2	0.1	P	0	0	0	0	0	0
Scolopsis regina	P	P	P	P	0	0	0	0	0	0
Scolopsis vosmeri	0	0	0	0	0	0	0	0	0	0
Parascolopsis inermis	0	0	0	0	P	P	0	0	2.6	2.8
Pentaprion longimanus	0.9	1.9	1.0	1.5	P	P	0	0	0	0
Gerres filamentosus	0.2	0.2	0.02	P	0	0	0	0	0	0
Gerres oyena	0.4	0.6	P	P	0	0	0	0	0	0
Pomadasys maculatus	9.6	6.2	P	P	0	0	0	0	0	0
Pomadasys hasta	P	P	0	0	0	0	0	0	0	0

Appendix Table 6 (Cont. 5)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Pomadasys argyreus	0.6	0.2	0	0	0	0	0	0	0	0
Plectorhynchus pictus	0.5	P	2.3	0.1	0	0	0	0	0	0
Hapalogenys kishinouyei	0	0	0.2	0.07	3.3	0.5	0	0	0	0
Pristigenys niphonia	0	0	0	0	0	0	0	0	0	0
Lethrinus choerorynchus	0.2	P	0	0	0	0	0	0	0	0
Lethrinus microdon	0	0	0	0	0	0	0	0	0	0
Lethrinus fraenatus	0.2	P	0	0	0	0	0	0	0	0
Lethrinus lentjan	0.2	P	1.2	0.1	0	0	0	0	0	0
Lethrinus nebulosus	0	0	0	0	0	0	0	0	0	0
Lethrinus nematacanthus	0.2	0.2	P	P	0	0	0	0	0	0
Argyrops spinifer	P	P	P	P	0	0	0	0	0	0
Gymnocranius griseus	0	0	0	0	0	0	0	0	0	0
Gymnocranius robinsoni	0	0	0	0	0	0	0	0	0	0
Gymnocranius elongatus	0	0	0	0	0	0	0	0	0	0
Austronibea oedogenys	0	0	0	0	0	0	0	0	0	0
Protonibea diacanthus	0	0	0	0	0	0	0	0	0	0
Johnieops volgleri	P	P	0	0	0	0	0	0	0	0
Johnius amblycephalus	P	P	0	0	0	0	0	0	0	0
Atrobucca nibe	0	0	0	0	1.6	0.4	0	0	0	0
Johinus Trachycephalus	0	0	0	0	0	0	0	0	0	0
Johnius coitor	0	0	0	0	0	0	0	0	0	0
Johnius antarctica?	0.03	P	0	0	0	0	0	0	0	0
Chrysochir aureus	0	0	0	0	0	0	0	0	0	0
Argyrosomus amoensis?	0	0	0	0	0	0	0	0	0	0
Argyrosomus sp.	0	0	0	0	0	0	0	0	0	0
Unidentified sciaenids	0.5	0.3	P	P	0	0	0	0	0	0
Upeneus bensasi	P	P	P	P	0	0	0	0	0	0
Upeneus moluccensis	P	P	7.3	9.8	5.2	5.3	0	0	0	0
Upeneus sundaicus	0.05	0.1	0	0	0	0	0	0	0	0
Upeneus asymmetricus	0.1	0.1	0	0	0	0	0	0	0	0
Upeneus luzonius	0.08	P	0	0	0	0	0	0	0	0
Upeneus sulphureus	1.5	1.6	8.8	6.9	0	0	0	0	0	0
Upeneus spp.	0.2	0.3	0.6	1.0	0.5	1.8	0	0	0	0
Parupeneus pleurospilus	0.1	P	0.04	P	0	0	0	0	0	0
Parupeneus chryserpleuron	0	0	0.1	0.03	0	0	0	0	0	0
Parupeneus chryserydros	0	0	0	0	0	0	0	0	0	0
Parupeneus indicus	0	0	0	0	0	0	0	0	0	0
Parupeneus pleurotaenia	0	0	0	0	0	0	0	0	0	0
Parupeneus spilurus	0	0	P	P	0	0	0	0	0	0
Platax batavianus	P	P	0.08	P	0	0	0	0	0	0
Platax orbicularis	P	P	0	0	0	0	0	0	0	0
Platax teire	0	0	0	0	0	0	0	0	0	0
Drepane punctata	P	0.05	0	0	0	0	0	0	0	0
Zabidius novaemaculatus	1.3	0.2	P	P	0	0	0	0	0	0
Rhinoprenes pentanemus	0	0	0	0	0	0	0	0	0	0
Parachaetodon ocellatus	P	P	P	P	0	0	0	0	0	0
Chaetodon modestus?	0	0	P	0.08	0.2	0.6	0	0	0	0
Chaetodon aureofasciatus	P	P	0	0	0	0	0	0	0	0
Coradion chrysozonus	P	P	P	P	0	0	0	0	0	0
Chelmon marginalis	P	P	0	0	0	0	0	0	0	0
Chelmon mulleri	P	P	0	0	0	0	0	0	0	0
Chaetodontoplus personifer	0	0	0	0	0	0	0	0	0	0

Appendix Table 6 (Cont. 6)

Species	11-50		51-100		101-150		151-200		201-220	
	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.	%Wt	%No.
Chaetodontoplus duboulayi	0.1	P	0	0	0	0	0	0	0	0
Heniochus acuminatus	0	0	0	0	0	0	0	0	0	0
Euxiphipops sexstriatus	0	0	0	0	0	0	0	0	0	0
Banjos banjos	0	0	0	0	0	0	0	0	0	0
Histiopterus typus	0	0	0	0	P	P	0	0	0	0
Pristotis jerdoni	0.05	0.1	P	P	0	0	0	0	0	0
Cepolidae - unidentified species	0	0	P	P	0	0	0	0	0	0
Unidentified mugilids	P	P	0	0	0	0	0	0	0	0
Sphyraena obtusata	0.3	P	0.1	P	0	0	0	0	0	0
Sphyraena jello	0.3	0.08	0.2	P	0	0	0	0	0	0
Shyraena forsteri	P	P	P	P	0	0	0	0	0	0
Sphyraena flavicauda?	0	0	0	0	0	0	0	0	0	0
Polynemus nigripinnis	0	0	0	0	0	0	0	0	0	0
Polynemus speculoris	0.9	0.5	0	0	0	0	0	0	0	0
Eleutheronema tetradactylum	P	P	0	0	0	0	0	0	0	0
Unidentified polynemids	0	0	0	0	0	0	0	0	0	0
Choerodon cephalotes	0.2	0.05	P	P	0	0	0	0	0	0
Choerodon monostigma	0.1	P	0.04	P	0	0	0	0	0	0
Choerodon shoenleini	0	0	0	0	0	0	0	0	0	0
Choerodon vitta?	0	0	0	0	0	0	0	0	0	0
Choerodon spp.	P	P	P	P	0	0	0	0	0	0
Anampses lennardi	0	0	0	0	0	0	0	0	0	0
Xiphocheilus typus	0	0	P	P	0	0	0	0	0	0
Scarus ghobban	0	0	0	0	0	0	0	0	0	0
Parapercis nebulosus	P	P	0	0	0	0	0	0	0	0
Parapercis emeryana	0	0	0	0	0	0	0	0	0	0
Uranoscopus japonicus	P	P	P	P	0.5	0.07	0	0	0	0
Uranoscopus oligolepis	P	P	P	0.08	0	0	0	0	P	0.8
Champsodon guentheri	0	0	0	0	P	0.2	0	0	P	0.9
Callionymus spp.	0	0	0	0	0	0	0	0	0	0
Acentrogobius criniger	P	P	0	0	0	0	0	0	0	0
Siganus canaliculatus	1.4	1.5	0.04	P	0	0	0	0	0	0
Acanthurus grammoptilus	0	0	0	0	0	0	0	0	0	0
Rexea solandri	0	0	0	0	P	P	0	0	P	1.7
Epinnula orientalis	0	0	0	0	0	0	0	0	P	0.1
Trichiurus lepturus	0.1	P	3.9	0.7	12.0	1.8	0	0	0	0
Tentoriceps sp.	0	0	0	0	0	0	0	0	0	0
Scomberomorus queenslandicus	1.0	0.08	0.1	P	0	0	0	0	0	0
Scomberomorus commerson	0.3	P	P	P	0	0	0	0	0	0
Scomberomorus semifasciatus	0.1	P	0	0	0	0	0	0	0	0
Scomberomorus munroi	0.7	0.05	0.2	P	0	0	0	0	0	0
Rastrelliger kanagurta	2.4	2.5	0.1	0.02	0	0	0	0	0	0
Cybiosarda elegans	0	0	P	P	0	0	0	0	0	0
Sarda orientalis	P	P	0	0	0	0	0	0	0	0
Psenopsis humerosus	0.07	P	0.5	0.08	2.5	0.4	0	0	0	0
Psenes arafurensis	P	P	8.8	5.5	3.7	0.4	0	0	0	0
Ariomma indica	0	0	0	0	0	0	0	0	0	0
Psettodes erumei	P	P	0.3	P	0	0	0	0	0	0
Pseudorhombus dupliciocellatus	P	P	P	P	0	0	0	0	0	0
Pseudorhombus arsius	P	P	0	0	0	0	0	0	0	0
Grammatobothus polyophthalmus	P	P	P	P	0	0	0	0	0	0

Appendix Table 6 (Cont. 7)

Species	11-50 %Wt	11-50 %No.	51-100 %Wt	51-100 %No.	101-150 %Wt	101-150 %No.	151-200 %Wt	151-200 %No.	201-220 %Wt	201-220 %No.
Pseudorhombus spinosis	0	0	P	P	0	0	0	0	0	0
Engyprosopon grandisquama	0	0	0	0	0	0	0	0	0	0
Engyprosopon latifrons	0	0	0	0	0	0	0	0	0	0
Pseudorhombus diplosilus	0.08	P	P	P	0	0	0	0	0	0
Pseudorhombus elevatus	P	P	P	P	0	0	0	0	0	0
Unidentified bothids	0	0	0	0	0	0	0	0	P	0.5
Brachypleura novaezeelandiae	0	0	P	P	0	0	0	0	0	0
Samaris cocatuae	0	0	0	0	0	0	0	0	0	0
Aesopia cornuta	0	0	0	0	0	0	0	0	0	0
Dexillichthys mulleri	0	0	0	0	0	0	0	0	0	0
Pardicula setifer	P	P	0	0	0	0	0	0	0	0
Zebrias craticula	0	0	0	0	0	0	0	0	0	0
Unidentified cynoglossids	P	P	0	0	0	0	0	0	0	0
Trixiphichthys weberi	0.7	0.5	0.2	0.08	P	0.2	0	0	0	0
Triacanthus biaculeatus	0	0	0	0	0	0	0	0	0	0
Anacanthus barbatus	0	0	0	0	0	0	0	0	0	0
Unidentified anacanthids	P	0.05	0	0	0	0	0	0	0	0
Abalistes stellaris	0.3	P	0.5	0.04	0	0	0	0	0	0
Sufflamen fraenatus	0	0	0	0	0	0	0	0	0	0
Chaetoderma penicilligera	0	0	0	0	0	0	0	0	0	0
Paramonacanthus japonicus	0.3	1.4	0	0	0	0	0	0	0	0
Paramonacanthus filicauda	7.1	6.3	8.6	10.5	0	0	0	0	0	0
Pseudomonacanthus peroni	0	0	P	P	0	0	0	0	0	0
Thamnaconus multilineatus	0	0	0	0	0	0	0	0	0	0
Alutera monoceros	0	0	0	0	0	0	0	0	0	0
Rhynchostracion nasus	P	0.05	0.04	P	0	0	0	0	0	0
Tetrosomus gibbosus	0	0	P	P	0	0	0	0	0	0
Rhinostracion rhinorhynchus	0	0	0	0	0	0	0	0	0	0
Lagocephalus sceleratus	P	P	P	P	0	0	0	0	0	0
Lagocephalus inermis	0	0	1.2	P	0	0	0	0	0	0
Lagocephalus lunaris	0.2	P	0.5	P	0	0	0	0	0	0
Lagocephalus spadiceus	P	P	P	P	0	0	0	0	0	0
Spheroides cf *tuberculiferous*	0.1	0.4	P	P	0	0	0	0	0	0
Amblyrhynchotes multistriatus	0	0	P	P	0	0	0	0	0	0
Amblyrhynchotes spinosissimus	P	P	0	0	P	P	0	0	0	0
Chelonodon patoca	P	P	0	0	0	0	0	0	0	0
Fugu poecilonotura	P	P	0	0	0	0	0	0	0	0
Canthigaster coronata	0	0	0	0	0	0	0	0	0	0
Unidentified tetraeodontids	P	0.05	0	0	0	0	0	0	0	0
Triodon macropterus	P	P	0	0	0	0	0	0	0	0
Chilomycterus orbicularis	0	0	P	P	0	0	0	0	0	0
Chlomycterus hardenbergi	0	0	P	P	0	0	0	0	0	0
Cyclichthys jaculiferus	P	P	P	P	0	0	0	0	0	0
Unidentified diodontids	0	0	0	0	0	0	0	0	0	0
Unidentified myctophids	0	0	0	0	P	0.07	0	0	P	0.7
Cuttlefish	P	P	P	P	0	0	0	0	P	0.6
Squid (mostly Loliginidae)	0.3	0.5	0.5	1.7	1.5	7.2	0	0	0	0
Thenus orientalis	1.9	0.2	P	P	0	0	0	0	0	0
Parulirus spp.	P	P	P	P	0	0	0	0	0	0
Penaeid prawns (several species)	P	P	P	P	0	0	0	0	0	0
Crabs	0.05	P	P	P	0	0	0	0	0	0

7.1 *Pellona ditchela*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					14-968	200	P-30	10	84	28	2	+
21-30	0	0	0	0	P-4064	485	P-126	17	2-3495	186	P-76	5
31-40	P-5	+	P	+	P-14903	2454	P-462	76	8-17290	2005	P-536	70
41-50	1	+	P	+	19-64	7	P-2	+	17-2031	261	P-35	6
51-60	P-10129	844	P-314	26	1-25	2	P	+	32-1540	121	1-6	1
61-70	1-1000	200	P-31	11	0	0	0	0	2-518	61	P-5	1
71-80	P-5645	1129	P-175	35	0	0	0	0	42-2872	573	1-58	10
81-90	1-710	112	P-22	4	64-1710	443	2-53	14	1-98	25	P-2	1
91-100	32-903	269	1-28	8	0	0	0	0	0	0	0	0
101-110	64-97	54	2-3	2	129	64	4	2	33	33	1	1
111-120	P-161	45	P-5	2					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Catch rate per half hour trawl

Depth zones (m)	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					14-103	37	1-5	2	7-134	50	P-5	2
21-30	0	0	0	0	1-104	27	P-5	2	2-162	32	P-7	2
31-40	5-437	59	P-21	3	12-84	16	1-6	1	1-772	121	P-34	6
41-50	1-10	3	P-1	+	1-460	102	P-46	11	38-705	155	1-45	8
51-60	4-312	29	P-15	2	20-200	74	1-10	3	29-1530	259	1-61	10
61-70	1-42	6	P-2	+	21-229	84	1-11	4	16-800	201	1-31	7
71-80	25-83	18	1-4	1	21-75	23	1-6	1	27-235	114	1-11	4
81-90	2-1708	169	P-82	10	42	10	2	+	5-18	12	P-1	+
91-100	4-83	22	P-4	1					20	10	P	+
101-110	6	2	P	+	62	30	3	1	7	7	P	+
111-120	P	+	P	+					80	80	2	2
121-130	P-83	41	P-4	2								
131-140									30-43	24	2-2	1
141-150	P	+	P	+								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					P-620	222	P-38	14	71	24	2	1
21-30	0	0	0	0	P-3541	447	P-216	27	P-1591	155	P-97	8
31-40	P-5	+	P	+	16-1082	357	1-66	21	13-1854	248	1-98	13
41-50	2-180	42	P-11	2	P-393	39	P-24	2	P-107	23	P-6	2
51-60	1-1869	175	P-114	11	2-49	5	P-3	+	1-42	6	P-3	+
61-70	2-49	21	1-3	1	1-15	2	P-1	+	4-62	8	P-4	1
71-80	P-82	14	P-5	1	1-639	92	P-39	6	1-10	2	P	+
81-90	P-147	15	P-9	1	1	+	P	+	0	0	0	0
91-100	1-213	37	P-13	2					0	0	0	0
101-110	12	4	P	+	0	0	0	0	0	0	0	0
111-120	P-262	72	P-16	4					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.4 *Selaroides leptolepis*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					33-620	204	2-37	12	10-267	101	P-16	6
21-30	P	+	P	+	2-2667	528	P-160	32	18-5385	489	1-162	18
31-40	P-717	93	P-43	6	50-1100	455	3-66	27	71-1091	530	4-73	31
41-50	2-833	200	P-50	12	2-533	94	P-32	6	12-1822	219	1-34	7
51-60	P-217	32	P-13	2	P-450	86	P-27	5	1-953	117	P-47	5
61-70	2-17	2	P-1	+	1-83	7	P-5	+	2-600	48	P-8	1
71-80	1-266	47	P-16	3	8	1	P	+	0	0	0	0
81-90	5	+	P	+	0	0	0	0	0	0	0	0
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					52-210	120	3-14	8	16-104	40	1-6	2
21-30	3	1	P	+	3-1846	367	P-120	24	1-3045	259	P-591	37
31-40	P-1015	191	P-66	12	63-1261	415	5-82	27	7-1537	214	P-98	15
41-50	P-154	26	P-10	2	1-1108	138	P-72	9	1-255	18	P-81	10
51-60	P-1538	155	P-100	10	1-61	10	P-4	1	3-242	18	1-21	2
61-70	2	+	P	+	1-62	5	P-4	+	18-138	12	4-15	2
71-80	112	19	12	2	6	1	P	+	0	0	0	0
81-90	46	3	3	+	0	0	0	0	0	0	0	0
91-100	1	+	P	+					0	0	0	0
101-110	0	0	0	0					0	0	0	0
111-120	6	1	P	+					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.6 *Carangoides malabaricus*

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					3	1	P	+	0	0	0	0
21-30	0	0	0	0	P-10	1	P	+	2-35	1	P-1	+
31-40	P-149	15	P-7	1	11-84	19	P-5	1	13-25	7	1	+
41-50	P-64	9	P-3	+	P-234	23	P-11	1	7-295	45	P-11	2
51-60	P-328	34	P-14	1	2-149	26	P-7	1	2-364	59	P-10	2
61-70	1-2255	251	P-106	12	1-532	89	P-25	4	2-247	55	P-13	3
71-80	800-1025	304	50-62	19	1-191	35	P-9	2	9-191	46	1-12	3
81-90	P-1085	96	P-51	5	1-30	10	P-1	+	11	3	2	+
91-100	1-2	1	P	+					0	0	0	0
101-110	64	21	3	1	5	2	P	+	0	0	0	0
111-120	P-6787	2468	P-319	116					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					6-8	3	1	+	7	2	1	+
21-30	0	0	0	0	P-122	14	P-15	2	2-23	3	P-3	+
31-40	P-13	1	P-2	+	114-764	136	14-94	15	17-227	32	1-68	8
41-50	P-24	4	P-3	+	P-57	5	P-7	1	3-42	16	P-11	3
51-60	P-8	1	P-1	+	2-5423	349	P-667	43	2-62	11	P-5	1
61-70	0	0	0	0	1-122	18	P-15	2	2-94	10	P-12	1
71-80	12	2	1	+	2-5	1	P-1	+	1-1976	329	P-224	37
81-90	2-4	1	P	+	0	0	0	0	0	0	0	0
91-100	4-195	33	3-24	4					0	0	0	0
101-110	2-8	3	P	+	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.8 *Decapterus russelli*

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					3	1	P	+	4	1	P	+
21-30	0	0	0	0	3-441	41	P-30	3	1-144	9	P-6	+
31-40	0	0	0	0	8-941	122	P-64	8	8-74	11	1-4	1
41-50	0	0	0	0	1-147	23	P-10	2	1-1554	128	P-135	11
51-60	0	0	0	0	P-397	33	P-27	2	1-1406	173	P-97	10
61-70	0	0	0	0	P-647	107	P-44	7	2-65	12	P-2	+
71-80	0	0	0	0	2-29	5	P-2	+	3-20	5	P-1	+
81-90	0	0	0	0	0	0	0	0	1-6	2	P-1	+
91-100	59-765	164	4-52	11					4	2	P	+
101-110	0	0	0	0	0	0	0	0	22	22	1	1
111-120	1	+	P	+					1	1	P	+
121-130	0	0	0	0								
131-140									36	12	3	1
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.9 *Leiognathus bindus*

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					P-193	39	P-3	1	4	1	P	+
21-30	P	+	P	+	P-164,667	16,664	P-494	50	P-16,154	2,056	P-346	29
31-40	P-53,667	6,533	P-161	20	P-20,333	4,333	P-61	13	50-16,383	3,902	1-182	34
41-50	7-2,667	1,001	P-8	3	P-120,000	17,140	P-360	51	23-51,667	8,339	P-155	29
51-60	7-14,333	2,288	P-43	7	P-64,333	6,722	P-193	20	P-37,692	4,491	P-108	12
61-70	2-1,333	150	P-4	+	P-8,667	2,917	P-26	9	51-33,345	3,685	P-95	11
71-80	2,000	333	6	1	2-1333	381	P-4	1	82-18,035	7,597	1-30	17
81-90	P-23	3	P	+	24-1000	423	P-3	1	156-2669	1,336	P-8	4
91-100	667	111	2	+					9	5	P	+
101-110	7-667	225	P-2	1	0	0	0	0	0	0	0	0
111-120	12-2,000	406	P-6	1					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.10 *Leiognathus* sp. 2

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	90	30	2	1
21-30	0	0	0	0	20-3,091	393	P-68	9	15-7,063	399	P-228	12
31-40	7682	768	169	17	3-273	40	P-6	1	36-5,122	654	P-178	22
41-50	P-227	52	P-5	1	P-45	5	P-1	+	5-272	22	P-6	+
51-60	1-56	5	P	+	P	+	P	+	4	+	P	+
61-70	91	10	2	+	0	0	0	0	0	0	0	0
71-80	0	0	0	0	0	0	0	0	0	0	0	0
81-90	0	0	0	0	0	0	0	0	0	0	0	0
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					226-731	423	2-4	3	28	9	P	+
21-30	2	1	P	+	P-2,800	634	P-28	6	P-4,976	540	P-37	4
31-40	P	+	P	+	P-700	175	P-7	2	9-1,136	174	P-11	2
41-50	14-300	59	P-3	1	P-1,000	125	P-10	1	16-1,871	353	P-13	3
51-60	P-26	4	P	+	P-500	38	P-5	+	8-1,670	344	P-12	3
61-70	P-5	1	P	+	P-100	12	P-1	+	8-1,833	210	P-8	1
71-80	2	+	P	+	P-12	2	P	+	P-100	19	P-1	+
81-90	17	1	P	+	0	0	0	0	5-8	3	P	+
91-100	P	+	P	+					0	0	0	0
101-110	6	2	P	+	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	129	43	1	+
21-30	P	+	P	+	P-4,875	501	P-39	4	12-635	380	P-13	5
31-40	P-6,250	634	P-50	5	P-3,250	469	P-26	4	23-15,682	1,776	P-182	20
41-50	P-6	1	P	+	P-105,000	8,897	P-840	71	94-2,250	237	1-23	2
51-60	2-60	6	P	+	P-25	4	P	+	9-239	23	P-2	+
61-70	3	+	P	+	0	0	0	0	2-128	12	P-1	+
71-80	16	3	P	+	P	+	P	+	12-108	20	P	+
81-90	P-1	+	P	+	0	0	0	0	0	0	0	0
91-100	0	0	0	0					0	0	0	0
101-110	1	+	P	+	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Catch rate per half hour trawl

Depth zones (m)	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	55	18	1	+
21-30	0	0	0	0	1-2,111	333	P-38	6	1-2,667	234	P-69	5
31-40	0	0	0	0	P-833	223	P-15	4	8-9,773	1,098	P-182	21
41-50	0	0	0	0	1-55	5	P-1	+	6	+	P	+
51-60	0	0	0	0	6	+	P	+	0	0	0	0
61-70	0	0	0	0	0	0	0	0	0	0	0	0
71-80	775	129	25	4	0	0	0	0	22-35	9	P-2	+
81-90	P	+	P	+	0	0	0	0	0	0	0	0
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	1,611	805	29	14								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.14 *Apolectus niger*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					P-6	2	P	+				
21-30	0	0	0	0	2	+	P	+	1-42	4	P-30	2
31-40	P-33	4	P-4	+	P-60	30	P-10	5	P-244	29	P-49	6
41-50	P-10	2	P-1	+	P-53	5	P-10	1	4-80	10	1-23	3
51-60	3-221	19	P-42	3	1-30	2	P-7	1	3-12	1	1	+
61-70	1	+	P	+	2-37	5	P-7	1	1-29	3	P-12	1
71-80	526-921	241	100-175	46	2-3	1	P	+	3-12	4	1-2	1
81-90	P-31	5	P-6	1	42	10	8	2	15	4	4	1
91-100	1-21	4	P-4	1					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	P	+	P	+					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	0	0	0	0
21-30	2	1	P	+	P-3	+	P-15	1	P-136	6	P-41	2
31-40	4	+	4	+	P	+	P	+	9-25	4	P-6	1
41-50	1	+	P	+	25	2	55	5	1-74	9	P-148	15
51-60	1-3	+	P-3	+	1-7	2	P-24	6	1-76	7	P-182	13
61-70	1	+	P	+	1-32	9	P-64	17	1-101	17	2-128	27
71-80	3-4	2	8-14	6	2-28	8	4-56	16	1-18	9	P-45	20
81-90	P-22	3	P-28	3	1-18	5	2-36	9	2-7	3	7-17	8
91-100	1-10	2	P-27	7					3-6	4	1-14	7
101-110	13-26	13	15-71	29	0	0	0	0	0	0	0	0
111-120	1-16	5	P-33	10					0	0	0	0
121-130	0	0	0	0								
131-140									1	+	2	1
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.16 *Lutjanus vitta*

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	36	12	4	1
21-30	2	1	P	+	P-150	12	P-10	1	2-69	3	P-6	+
31-40	30-31	12	3	1	0	0	0	0	26-442	52	1-46	5
41-50	1-10	4	P-2	+	P-16	3	P-3	+	7-43	5	1-5	1
51-60	1-60	6	P-6	1	1-70	5	P-7	+	P-508	37	P-67	5
61-70	P-1	+	P	+	1-29	6	P-2	+	1-91	16	P-14	2
71-80	2	+	P	+	1-30	4	P-3	1	4-70	14	P-6	1
81-90	P-60	9	P-6	1	8	2	3	1	1-17	5	P-2	+
91-100	1-5	2	P	+					6	3	1	+
101-110	2	1	P	+	0	0	0	0	0	0	0	0
111-120	P	+	P	+					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.17 *Nemipterus hexodon*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					2-13	3	P-1	+	1-42	14	P-3	1
21-30	0	0	0	0	P-72	7	P-5	+	1-391	31	P-9	1
31-40	2-67	7	P-5	+	P-53	20	P-4	1	7-392	50	P-20	3
41-50	3-93	29	P-7	2	P-272	61	P-22	5	9-458	128	P-42	11
51-60	3-120	22	P-9	2	1-185	52	P-13	3	4-371	84	P-36	7
61-70	2-7	2	P-1	+	P-200	34	P-15	2	2-344	52	P-28	4
71-80	3	+	P	+	1-120	23	P-9	2	4-27	10	P-2	+
81-90	P-15	3	P-2	+	1-7	2	P	+	0	0	0	0
91-100	P-20	8	P-2	1					0	0	0	0
101-110	1	+	P	+	1	+	P	+	0	0	0	0
111-120	1	+	P	+					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.18 *Plectorhynchus pictus*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					21	4	P	+	1	+	P	+
21-30	3-4	3	2-6	3	P-4	+	P-1	+	1-91	6	P-91	4
31-40	5-25	5	8-38	8	0	0	0	0	4-136	16	1-32	4
41-50	1-33	13	P-49	19	1-6	1	P-7	1	2-14	2	P-11	1
51-60	4-14	3	6-21	4	P-12	2	P-18	2	1-37	3	P-50	3
61-70	1	+	3-4	1	1-10	2	2-15	2	1-28	4	1-20	4
71-80	4	1	8	1	1-7	2	1-11	2	1-6	1	P-13	2
81-90	P-12	2	P-20	3	8	2	12	3	1-2	1	1-5	1
91-100	P-16	3	P-24	4					5	2	5	2
101-110	P	+	P	+	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.19 *Pomadasys maculatus*

Catch rate per half hour trawl

Depth zones (m)	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					44-9,200	3,176	2-368	120	2-21	8	P-2	1
21-30	0	0	0	0	P-2,250	423	P-90	17	5-16,383	1,084	P-1,304	70
31-40	8-2,875	288	P-115	12	P-1,000	260	P-40	10	4-17,123	1,938	2-1,000	112
41-50	0	0	0	0	6-6,025	888	P-241	35				
51-60	3	+	P	+	0	0	0	0	1	+	P	+
61-70	1-275	46	P-11	2	0	0	0	0	1	+	P	+
71-80	25-416	73	1-25	4	0	0	0	0	0	0	0	0
81-90	0	0	0	0	0	0	0	0	0	0	0	0
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					216		8		0	0	0	0
21-30	0	0	0	0	0	0	0	0	1-3,300	335	P-69	7
31-40	P-64	7	P-2	+	1-4,754	741	P-176	27	8-98	17	P-5	1
41-50	0	0	0	0	2-405	76	P-15	3	4-2,388	356	P-82	12
51-60	11-9,243	1,023	P-342	38	P-2,756	450	P-120	17	3-3,113	569	P-107	19
61-70	P-513	79	P-19	3	54-1,838	680	2-68	25	2-18,062	1,344	P-625	47
71-80	500-4,054	759	18-150	28	1-189	46	P-7	2	1-8,273	1,579	P-273	52
81-90	6-1,432	135	P-53	5	3-54	21	P-2	1	3	1	P	+
91-100	P-135	35	P-5	1					0	0	0	0
101-110	459-513	324	17-19	12	0	0	0	0	0	0	0	0
111-120	27-108	49	1-4	2					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.21 *Upeneus moluccensis*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	0	0	0	0
21-30	0	0	0	0	0	0	0	0	0	0	0	0
31-40	0	0	0	0	14	2	P	+	0	0	0	0
41-50	324	46	12	2	P-54	5	P-2	+	10	1	P	+
51-60	0	0	0	0	P-4	+	P	+	0	0	0	0
61-70	0	0	0	0	P-81	8	P-3	+	33-900	62	1-30	2
71-80	0	0	0	0	P-81	12	P-3	+	159-315	118	5-10	3
81-90	P-1	+	P	+	3-81	30	P-3	1	91-987	356	2-39	13
91-100	0	0	0	0					39-517	278	1-20	10
101-110	0	0	0	0	3-24	23	P-1	+	263	263	10	10
111-120	P-351	183	P-13	7					50	50	2	2
121-130	0	0	0	0								
131-140									14-57	24	P-3	1
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.22 *Trichiurus lepturus*

Catch rate per half hour trawl

Depth zones (m)	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	0	0	0	0
21-30	0	0	0	0	2-8	1	P	+	5-11	1	P	+
31-40	P	+	P	+	0	0	0	0	452	50	24	3
41-50	0	0	0	0	1	+	P	+	21-55	8	2-6	1
51-60	P-11	1	P-2	+	1-17	2	P-3	+	1-300	24	P-50	4
61-70	5-73	23	1-13	4	1-1,341	113	P-240	20	1-225	17	P-15	1
71-80	3-911	652	700	117	5-90	17	P-16	3	12-46	13	2-6	2
81-90	1-123	12	P-22	2	P-207	52	P-37	9	3-64	22	P-24	8
91-100	1-78	14	P-14	2					8-26	17	1-5	3
101-110	2	1	P	+	P-128	64	P-23	11	142	142	21	21
111-120	P	+	P	+					15	15	5	5
121-130	0	0	0	0								
131-140									1-23	8	P-6	2
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					100-257	178	18-46	32				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.23 *Rastrelliger kanagurta*

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					27-120	54	2-9	4	4-347	117	P-25	8
21-30	0	0	0	0	P-528	49	P-38	4	P-87	8	P-13	1
31-40	P-28	3	P-2	+	P-5,000	886	P-360	65	33-67	15	3-10	2
41-50	P-9	1	P	+	1-222	45	P-16	3	12-66	9	1-9	1
51-60	P-1,389	119	P-100	9	P-83	17	P-6	1	P-103	6	P-15	1
61-70	0	0	0	0	1-42	9	P-3	+	4-27	2	P-1	+
71-80	1-25	5	P-2	+	3-14	2	P-1	+	1	+	P	+
81-90	P-569	50	P-41	4	0	0	0	0	0	0	0	0
91-100	P-2	+	P	+					0	0	0	0
101-110	5	2	P	+	1	+	P	+	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					57-560	273	2-20	7	1	+	P	+
21-30	28	14	1	+	P-514	74	P-18	3	4-869	110	P-43	7
31-40	P-30	6	P-1	+	P-571	166	P-20	6	2-532	74	P-20	3
41-50	P-486	73	P-17	2	P-2,057	174	P-72	6	9-422	71	P-31	4
51-60	1-4,771	457	P-167	16	P-857	49	P-30	2	1-13	3	P-1	+
61-70	P-429	62	P-15	2	1-3	1	P	+	4-7	1	P-1	+
71-80	143-1,057	200	5-37	7	1-14	3	P	+	9-47	9	1-4	1
81-90	1-257	43	P-9	2	1-28	14	P-1	+	1-8	3	P-1	+
91-100	2-257	116	P-9	4					1	+	P	+
101-110	6-10	5	P	+	0	0	0	0	0	0	0	0
111-120	P-36	7	P-1	+					2	2	P	+
121-130	1	+	P	+								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.25 *Paramonacanthus filicauda*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					317	63	7	1	0	0	0	0
21-30	0	0	0	0	P-2	+	P	+	1-34	3	P-1	+
31-40	4	+	P	+	P-100	12	P-2	+	63-5,300	596	1-100	11
41-50	4-7	2	P	+	1-184	30	P-4	1	6-21,500	3,254	P-500	76
51-60	1-5	+	P	+	1-57,956	3,319	P-1,333	76	2-33,558	2,364	P-430	35
61-70	1-2	+	P	+	14-391	42	P-9	1	21-27,187	2,578	P-625	68
71-80	0	0	0	0	0	0	0	0	6-10	3	P	+
81-90	2	+	P	+	0	0	0	0	1	+	P	+
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					P-4,114	1,015	P-70	17	26-27	18	P-2	1
21-30	0	0	0	0	0	0	0	0	3-76	10	P-3	+
31-40	69	14	2	+	103	13	3	+	2-101	18	P-9	1
41-50	0	0	0	0	1-103	9	P-3	+	11-153	30	P-4	1
51-60	172	14	5	+	P	+	P-1	+	9-335	58	P-5	1
61-70	17-172	21	3-5	1	0	0	0	0	P-288	53	P-3	+
71-80	138-345	80	4-10	2	0	0	0	0	40-321	164	P-2	1
81-90	3-138	21	P-4	1	0	0	0	0	2-244	66	P-1	+
91-100	69	11	2	+					16-21	18	P-1	+
101-110	69	23	2	1	0	0	0	0	44	44	1	1
111-120	0	0	0	0					83	83	1	1
121-130	0	0	0	0								
131-140									23	8	1	+
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0								

7.27 Cuttlefish

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					0	0	0	0	1	+	P	+
21-30	0	0	0	0	P-588	68	P-10	1	5-33	2	P-9	+
31-40	P	+	2	+	0	0	0	0	4-13	3	P-1	+
41-50	0	0	0	0	0	0	0	0	7-12	2	P	+
51-60	0	0	0	0	0	0	0	0	0	0	0	0
61-70	0	0	0	0	P	+	2	+	3-12	2	P	+
71-80	0	0	0	0	0	0	0	0	6	1	P	+
81-90	20-180	25	2-18	3	0	0	0	0	2	+	P	+
91-100	0	0	0	0					2	1	P	+
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

7.28 *Thenus orientalis*

Depth zones (m)	Catch rate per half hour trawl											
	S05-80				S07-80				S02-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					46-71	23	3-5	2	14	5	1	+
21-30	0	0	0	0	2	+	P	+	P-108	6	P-15	1
31-40	P-10	5	P-2	1	5	1	P	+	5-25	6	1-3	1
41-50	P-20	2	P-2	+	20	2	2	+	5-217	23	P-11	1
51-60	0	0	0	0	10	1	1	+	4-43	4	P-4	+
61-70	0	0	0	0	10	1	1	+	2-10	1	P-1	+
71-80	0	0	0	0	0	0	0	0	2	+	P	+
81-90	2	+	P	+	0	0	0	0	2	+	P	+
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	0	0	0	0					0	0	0	0
121-130	0	0	0	0								
131-140									P	+	P	+
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Depth zones (m)	Catch rate per half hour trawl											
	SO5-80				SO7-80				SO2-81			
	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)	Range numbers	Mean numbers	Range weight (kg)	Mean weight (kg)
11-20					3	1	P	+	0	0	0	0
21-30	0	0	0	0	0	0	0	0	2-32	2	P-1	+
31-40	0	0	0	0	0	0	0	0	5-6	1	P	+
41-50	0	0	0	0	P	+	P	+	4-47	7	P-1	+
51-60	0	0	0	0	0	0	0	0	1-36	4	P-1	+
61-70	P	+	P	+	0	0	0	0	6-57	5	P-1	+
71-80	0	0	0	0	0	0	0	0	0	0	0	0
81-90	10	1	P	+	0	0	0	0	0	0	0	0
91-100	0	0	0	0					0	0	0	0
101-110	0	0	0	0	0	0	0	0	0	0	0	0
111-120	6	1	P	+					0	0	0	0
121-130	0	0	0	0								
131-140									0	0	0	0
141-150	0	0	0	0								
151-160	0	0	0	0								
161-170					0	0	0	0				
171-180												
181-190												
191-200												
201-220	0	0	0	0					0	0	0	0

Appendix Table 8. Stations trawled with a prawn net (with polyvalent doors) during S07-80 and S02-81. Large catches of fish were taken at all the stations, but only the prawns were weighed.

	Location					Depth	Prawn catch	Remarks
	Lat. S	Long. E		Lat. S	Long. E	(m)	(kg)	
S07-80	10°35'	133°45'	to	10°37'	133°47'	64	0	-
	10°02'	133°58'	to	10°05'	133°58'	88	4	Predominantly endeavour prawns; few *Penaeus monodon*; 2 *Panulirus*
	11°24'	134°54'	to	11°20'	134°54'	42-44	4	Mostly tiger prawns + 4 kg of *Thenus*
	10°25'	136°03'	to	16°26'	136°07'	56	0	
	11°47'	136°16'	to	11°49'	136°14'	32	-	Mixture of banana, tiger and endeavour prawns + 3 kg *Thenus*
	12°39'	137°04'	to	12°39'	136°55'	54	0	-
	14°24'	136°44'	to	14°29'	136°26'	44-49	5	Mixture of tiger and king prawns
	14°26'	136°23'	to	14°26'	136°31'	28-34	5	Mixture of tiger and king prawns
	14°33'	138°58'	to	14°30'	138°59'	61	0	-
S02-81	15°34'	139°57'	to	15°31'	139°57'	55-57	2	Mixture of red spot and tiger prawns
	12°56'	139°55'	to	12°57'	139°55'	65	0	-
	10°48'	139°55'	to	10°44'	139°55'	62	1/2	No records
	15°48'	139°08'	to	15°46'	139°06'	44-45	14	Mixture of tiger and endeavour prawns + 4 kg *Thenus*
	11°01'	136°58'	to	11°07'	136°54'	56	1	Large tiger prawns
	10°46'	133°23'	to	?	?	62	1	Mixture of endeavour, red spot and tiger prawns
	09°57'	133°59'	to	09°55'	133°56'	82	2	No records
	10°48'	132°38'	to	10°48'	132°34'	62	3	Large tiger prawns and *Thenus*
	10°48'	132°33'	to	10°47'	132°27'	52	30	Mostly tiger prawns

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