Trawl Fish Composition and Harvest Estimates for The Gulf of Papua

by

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ABSTRACT

Samples of trawl fishes taken from the Gulf of Papua between June and September 1983 were dominated by weight and numbers by sciaenids, engraulids, leiognathids and trichurids. The estimated fish to prawn ratio was 8.8:1. Based on this ratio, the estimated harvest of fishes was 209kg/hr. If this harvest was extrapolated for all trawl hours for 1982 the estimated total harvest was 11,300-17,200t or 1.2-1.9t/km^2 of trawled grounds. Seasonal and area differences were noted.

INTRODUCTION

A conservative estimate for the world-wide shrimp by-catch production is 3-5 X 10^6t/yr (Slavin, 1981). Despite years of study most of this by-catch is still discarded for economic or logistic reasons. As the world protein shortage becomes more acute it becomes imperative that a greater proportion of these fishes are utilized.

Production estimates are based on the accepted ratios of fish to shrimp of 5:1 for temperate and 10:1 for tropical waters. The estimated production of by-catch for Oceania was 95 X 10^3t for 1978 (Slavin, 1981).

A prawn fishery has been operating for more than ten years in the Gulf of Papua and large quantities of by-catch have been discarded annually. Witcombe (1978) examined the feasibility of using "trash" fish for crocodile feed. He reported that an estimated 6,000t/yr were currently being discarded for want of an economical method of utilization. He calculated that it was economical to land only 100t/yr at K200/t F.O.B. at Port Moresby. He believed that transhipment from commercial trawlers to a Gulf of Papua port would be uneconomical. Witcombe (1978) concluded that only the introduction of large scale crocodile farms would make an off-shore recovery programme for trawl fish economical; to date, this has not eventuated.

Kailola and Wilson (1978) reported on the composition and taxonomy of trawl fishes. They estimated an average harvest of 0.6t/boat-day of trawl fish and believed that 2,000 to 3,000t/yr were discarded into that Gulf of Papua. They reported seasonal, area and depth variations in trawl fish composition and numbers.

Current estimates (early 1983) put the weight of Gulf of Papua trawl fish which was landed and sold in Port Moresby at 250t/yr, of which 86% was used for human consumption (Kuk, personnel communication).

Trawl fishes differ in their perishability and marketability. Some require little handling and processing, while others are only suitable for use as fish meal or animal feeds. If plans to utilize more of this resource are to succeed then it is necessary to know the composition of the catch and the amount of each type of trawl fish caught.

The purpose the study was to describe the catch composition by weight and by the incidence of fish families in the trawl, and to make estimates of the total catches of trawl fishes by family, and in some cases by species.

MATERIAL AND METHODS

From June to September 1983, samples were taken from two 26m commercial prawn trawlers, New Marine 2 and New Marine 5, operated by New Guinea Marine Products Proprietary Limited (NGMP). in the eastern Gulf of Papua (Fig. 1). Two sampling trips were made, each of two weeks in duration. A general description of the trawls which were sampled and the samples taken appears in Table 1.

The study of trawl composition and trawl fish harvest was combined with a study of the biology of selected trawl fish species. The results of the latter work will appear elsewhere.

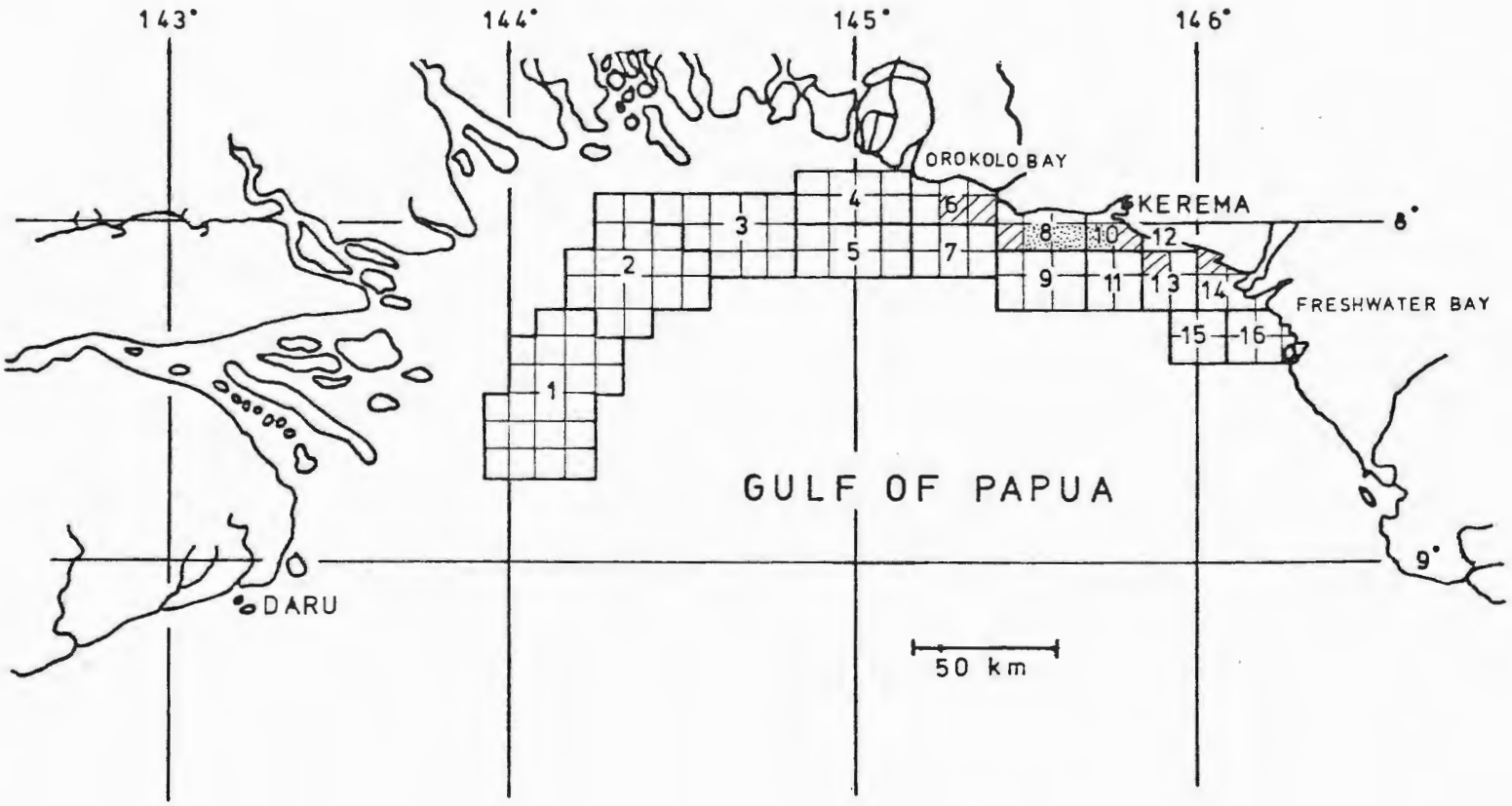

FIGURE 1. SAMPLINE AREAS IN THE GULF OF PAPUA

TABLE 1. Sample and trawl description

	BOTH TRIPS	1ST TRIP	2ND TRIP
SAMPLE DATES		29/6-9/7	27/8-5/9
NO. SAMPLES*	71(54)	41(34)	30(20)
AVG. DEPTH (m)	16.1	14.5	19.0
RANGE DEPTH (m)	12-31	12-31	12-28
AVG. FISH WT./SAMPLE (kg)	1.9	1.9	2.0
Total WEIGHT OF SAMPLE (kg)	2.5	2.5	2.6
Est. TOTAL FISH/TRAWL (kg)	676	645	728
Reported PRAWN/TRAWL (kg)	84	86	79
Est. FISH/PRAWN RATIO	8.8	8.0	10.1
Range FISH/PRAWN RATIO	1.8-42.0	1.8-22.8	2.6-42.0
Est. FISH/TRAWL HR (kg)	209	210	207

*number of trawl samples (number used for composition study)

TABLE 2. Percentage occurrence of families in samples

FISH FAMILY	BOTH TRIPS	1ST TRIP	2ND TRIP
Sciaenidae	100	100	100
Engraulidae	98	97	100
Trichuridae	98	97	100
Leiognathidae	91	88	95
Clupeidae	75	76	75
Mullidae	75	73	80
Harpodontidae	71	78	60
Theriponidae	71	72	70
Ariidae	50	66	25
Polynemidae	50	47	55
Cynglossidae	46	56	30
Pomadasyidae	42	19	80
Rhinoprenidae	38	53	15
Carangidae	29	34	20
Synodontidae	12	6	20
Priacanthidae	8	6	10
OTHER FISH	57	55	60
MISC. (Non-fish)	96	97	95

Two shovelfuls of trawl catch were taken at random immediately after the twin trawls were emptied. If a portion of a larger fish protruded into the area of the two shovelfuls then it was included in the sample.

In an effort to quickly characterize the trawl composition, an estimate was made of the three most numerous fish families and prawn species in the sample before the sample was sorted. Prawns were then removed, weighed and returned to the crew for processing. Fish in the sample were sorted by family, and the species nominated for detailed biological study were also separated. Each group was weighed using a spring balance. Plant material was not weighed. Animals other than prawns or fish were classified as "non-fish (miscellaneous)" and weighed together. This component consisted mostly of stomatopods, jellyfish, crabs and scallops.

Unlike other commercial prawns, banana prawns were weighed and sold headless in the commerical catch, however, all prawns in the samples in this study were weighed whole. An adjustment was made to the weights of prawns in the samples to make them comparable to the weights of the commercial prawn catch which were recorded on the trawl-by-trawl catch forms submitted by the company. From the commercial record of a trawl, the proportion of the groups weighed headless to those weighed whole was used to adjust the weight of prawns in the representative sample.

The adjusted weight of prawns in the sample was used to calculate the proportion which the sample formed of the total trawl catch. This factor was multiplied by the various component weights in the sample to estimate the weights of those components in the total trawl catch. These estimates were divided by the duration of the trawl to calculate the catch per hour of trawling. Selected trawl sample records appear in Appendix A.

RESULTS AND DISCUSSION

TRAWL COMPOSITION

Families by Presence in Sample

The percentage occurrence of fish families in the trawl samples appears in Table 2. Sciaenids were present in all trawl samples while engraulids and trichurids each appeared in 98%, and leiognathids were in 91% of samples. In addition to the fifteen nominated families, 57% of the samples included other fish families.

Kailola and Wilson (1978) reported the occurrence of trawl fishes from east of Orokolo Bay. Leiognathids were the most common trawl fish and occurred in 83% of trawls, followed by carangids (71%), mullids (65%) and theraponids (43%). Families which occurred most often in the present study were less common in their study, sciaenids (25%), engraulids (8%) and trichurids (17%). The generally less consistent occurrence of all families reported by Kailola and Wilson (1978) may have resulted from the greater variety of trawl depths and locations contributing to their results.

Families by Rank

The percentage of samples in which each family was estimated to be either the most, second most or third most numerous appear in Table 3.

Engraulids were most numerous in 30% of samples from both trips. Other families which were often the most numerous were leiognathids (20%), trichurids (19%) and sciaenids (17%). Engraulids ranked among the three most numerous families in 65% of all samples. Other families often within the top ranks were sciaenids (76%), leiognathids (54%) and trichurids (35%).

Kailola and Wilson (1978) presented data from the logs of

TABLE 3. Estimated rankings of families in sample by number

	R A N K I N G						
	1st		2nd		3rd		Total
Family	%	(No.)	%	(No.)	%	(No.)	% (No.)
Engraulidae	30	(16)	20	(11)	15	(8)	65 (35)
Leiognathidae	20	(11)	15	(8)	18	(10)	54 (29)
Trichuridae	19	(10)	9	(5)	7	(4)	35 (19)
Sciaenidae	17	(9)	33	(18)	26	(14)	76 (41)
Pomadasyidae	7	(4)	4	(2)	9	(5)	20 (11)
Clupeidae	6	(3)	11	(6)	4	(2)	20 (11)
Mullidae	2	(1)	2	(1)	4	(2)	7 (4)
Harpodontidae	-	-	4	(2)	13	(7)	17 (9)
Rhinoprenidae	-	-	2	(1)	-	-	2 (1)
Theraponidae	-	-	-	-	4	(2)	4 (2)

TABLE 4. Percentage of non-prawn trawl weight formed by families

FISH FAMILY	BOTH TRIPS		1ST TRIP		2ND TRIP
Sciaenidae	18.5		15.6		23.3
Engraulidae	12.6		16.5	>>	6.4
Leiognathidae	8.7		7.2		11.2
Trichuridae	6.5		7.0		5.7
Harpodontidae	5.7		5.6		5.8
Clupeidae	4.8		5.3		3.9
Pomadasyidae	4.1		2.9		6.0
Mullidae	3.9		2.3	<<	6.4
Ariidae	3.0		4.5	>>	0.5
Theraponidae	2.5		2.7		2.2
Polynemidae	1.5		1.7		1.1
Rhinoprenidae	1.0		1.4		0.3
Cynglossidae	0.8		1.0		0.6
Synodontidae	0.6		0.3		1.0
Carangidae	0.5		0.6		0.4
Priacanthidae	0.3		0.3		0.3
OTHER FISH	3.2		3.9		2.0
MISC. (Non-fish)	5.6		6.4		4.4

>> significantly (t-test, $p<.05$) greater than
<< significantly (t-test, $p<.05$) less than

the Tagula and the Climacs on the dominance of trawl fishes from the Gulf of Papua. They reported that catches from the area east of Orokolo Bay, the area of this study, were dominated by leiognathids in almost 60% of trawls, followed by mullids (14%) and theraponids (7%). In the present study, leiognathids were dominant in 20% of trawls but engraulids 30% of the time. In the work which Kailola and Wilson (1978) reported, engraulids never dominated in the 95 trawls surveyed. They also reported the results of Munro's (1968) study of trawls between 1963 and 1965. He did not list engraulids as dominant fishes.

Since these surveys of the early sixties and seventies, changes in the trawl fish composition may have occurred because of trawling or environmental changes.

Kailola and Wilson (1978) reported the dominance of fishes by numbers from the 10-19m depth zone between Orokolo and Freshwater Bays, the site and depth of the present study. They found that sciaenids were the most numerous, followed by clupeiformes (clupeids and engraulids), mullids and pomadasyids. If the families were ranked in the present study by how often they were within the the three most numerous, the order would be identical for first and second but leiognathids and trichurids would replace mullids and pomadasyids.

In this and subsequent comparisons with data reported by Kailola and Wilson (1978) it should be noted that their samples were taken from December to April while those in this study were taken in the dry season, June to September. The effects of seasonal differences can not be discarded.

Fish to Prawn Ratio

The fish to prawn ratio of samples varied considerably even between consecutive trawls (Appendix A). The average ratio was 8.8 (Table 1) and was found to be independent of the sample weight.

The ratio was 14.8 for Orokolo Bay (Appendix A, trawl

numbers 29-34). The higher ratio was attributed to larger catches of polynemids, particularly Polydactylus nigripinnis, the black-finned threadfin.

These ratios do not differ significantly from the 10:1 used by the FAO for tropical waters (Slavin, 1981).

Families by Percentage of Non-prawn Weight

The percentage that each family formed of the non-prawn trawl sample weight appears in Table 4. Together sciaenids and engraulids formed over 30% of the non-prawn weight. Leiognathids and trichurids together explained another 15% of the weight. Together with the "miscellaneous (non-fish)" component of the trawl these four major families accounted for more than half of the non-prawn weight of the trawl samples.

Kailola and Wilson (1978) reported the ranking of fishes by percentage weight for three depth zones. In the 10-19m zone they ranked them: sciaenids, harpondontids, mullids, clupeiformes (clupeids and engraulids), and pomadasyids. In the present study sciaenids were also first (Table 4) but engraulids were second and harpodontids were only fifth. Leiognathids and trichurids, not listed by Kailola and Wilson (1978), were third and fourth.

Results reported by Kailola and Wilson (1978) from the same depth zone but specifically from between Orokolo and Freshwater Bays placed the families in the same order as their other report except that in fifth place were ariids not pomadasyids. In the present study pomadasyids made up 4% of the non-prawn trawl weight compared with 3% for ariids.

HARVEST ESTIMATES

Family Catch per Unit Effort

The estimated catch per unit effort (kg/trawl hr) is shown in Table 5. Sciaenids formed 23% of the estimated total fish catch of 209kg/trawl hr. Engraulids and leiognathids each formed about 16% of the total. Combined with trichurids, these three families formed over 60% of the estimated total fish catch.

Trawlers observed operating in the Gulf of Papua during this study worked their gear at least 20hr each fishing day with an estimated daily catch of 4.2t, considerably increased from the 0.6t reported by Kailola and Wilson (1978).

Total Catch Estimates using Reported Trawling Hours

An estimated 68,190 hours of trawling were spent in the Gulf of Papua during 1982. If the estimates of 209kg/trawl hr (Table 5) can be extrapolated to all depths, seasons, areas and trawling companies for 1982 then the total estimated harvest of trawl fish was 14,250t or 1.6t/km^2 for the trawl areas marked in Figure 1 (Table 6).

Some areas like Orokolo Bay had higher trawl fish catches than other trawling areas and it would be dangerous to extrapolate harvest estimates for the whole Gulf of Papua from samples taken here. However, over 80% of the samples of the present study were taken from areas 8 and 10 in Freshwater Bay (Figure 1). These two areas were the most heavily fished in the Gulf of Papua during 1982 and over 30% of the trawling hours assigned to specific areas were spent there (Table 6). Using the trawling hours reported for these areas during 1982 and the estimated catch per trawling hour, the estimated 1982 harvest for areas 8 and 10 was 4140t.

Trawl depth probably affects trawl fish catches. Samples in this study were taken from an average depth of 16m (Table 1). This depth is quite representative of those areas commercially

TABLE 5. Estimated catch per unit of effort (kg/trawl hr) for families

FISH FAMILY	BOTH TRIPS		1ST TRIP		2ND TRIP
Sciaenidae	48.2		44.1		55.0
Engraulidae	33.7		45.4	>>	14.2
Leiognathidae	33.0		27.7		41.7
Trichuridae	17.1		17.2		17.0
Harpodontidae	13.6		14.4		12.4
Pomadasyidae	12.4		7.5		20.2
Mullidae	11.1		7.1		17.6
Clupeidae	8.6		9.4		7.2
Theraponidae	6.7		5.9		7.9
Ariidae	6.6		10.0	>>	1.1
Polynemidae	4.4		5.0		3.4
Rhinoprenidae	2.6		4.0		0.4
Carangidae	1.8		2.5		0.6
Cynglossidae	1.6		2.0		1.0
Synodontidae	1.3		0.8		2.1
Priacanthidae	<1		<1		<1
OTHER Fish	11.6		15.1		5.6
MISC. (Non-fish)	10.7		12.1		8.4
ALL FISH	209		210		207

>> significantly (t-test, $p<.05$) greater than
<< significantly (t-test, $p<.05$) less than

TABLE 6. Trawling hours for 1982 and the estimated trawl fish harvest

Area	Depth(m)	Company	Months	Hours Trawling	% Total Hours*	Estimated Yield (t)†	Estimated Yield (t/km^2)†
All	All	All	All	68,000	106	14,259(11,322-17,197)	1.56 (1.24-1.88)
8+10	"	"	"	19,797	31	4,140 (3,287-4,993)	8.05 (6.40-9.71)
All	11-20	"	"	36,176	56	7,565 (6,006-9,123)	0.83 (0.66-1.00)
8+10	"	"	"	16,400	26	3,429 (2,723-4,136)	6.67 (5.30-8.05)
"	"	NGMP	"	6,055	9	1,266 (1,005-1,527)	2.46 (1.96-2.97)
"	"	"	JUN-SEP	2,619	4	548 (435-660)	1.07 (0.85-1.28)

* of those hours that can be assigned a location

† average (95% confidence limits)

trawled in the Gulf of Papua. From 1979 to 1982, 45-56% of trawling hours were spent in the 11-20m depth zone (Branford, 1982). Based on recorded trawling hours (Table 6), the 1982 harvest estimate limited to the this depth zone of areas 8 and 10 was 3429t.

The most accurate estimation of trawl fish harvest using reported trawling hours and the calculated catch/trawling hour of samples in this study results from using only hours reported for NGMP boats, the company sampled, in the areas, depths and from the time of year that the samples were taken. This would eliminate any errors caused by gear, area, depth, or seasonal differences. This estimate is 548t or 1.1t/km^2 for 1982.

AREA DIFFERENCES

Kailola and Wilson (1978) arbitrarily divided the Gulf of Papua into two regions using Orokolo Bay as their dividing line. They found differences in the percentage occurrence of fishes in the trawls of these two regions. To the west of Orokolo there were higher percentages of ariids, sciaenids, polynemids, engraulids and harpodontids. Conversely, to the east, leiognathids, theraponids, carangids, synodontids, priacanthids and mullids were comparitively more prevalent. They attributed these differences mostly to environmental factors, the west was described as muddy and more influenced by river mouths.

A preliminary analysis of samples taken from south of Daru (Fig. 1) during September, 1983 from an average depth of 30m indicated differences from samples taken in the present study from the Kerema area. Sciaenids were the largest non-prawn component of the sample in both and formed just less than 20% of the weight. Though engraulids formed 13% of the weight in the present study, they formed only 2% in the Daru samples. Leiognathids were more important in samples from the present study (9% versus 6%) and though trichurids made up 6% of these samples, they were not present in the Daru samples. Daru samples were dominated by mullids (12%), synodontids (12%), theraponids

(10%) and nemipterids (9%). These families were less important in our samples and together they formed only 7% of the sample weight. Nemipterids were not found in our samples.

SEASONAL DIFFERENCES

Some significant differences in trawl sample composition occurred in the seven weeks between the 1st and 2nd sampling trips. Generally the most common families occurred in the samples more consistently in the 2nd trip (Table 2). In the 2nd trip, not just sciaenids, but also engraulids and trichurids were present in all trawl samples and leiognathids were present in 95% instead of 88% of samples.

Between the 1st and 2nd trips the percentage that engraulids and ariids formed of the non-prawn trawl weight decreased significantly ($p<.05$) while the weight of mullets increased.

Some of the differences between the findings of the present study and that of Kailola and Wilson (1978) not explainable by differences in trawl depth or area were likely due to seasonal differences. Though engraulids formed the greatest portion of the non-trawl weight in the present study from the June-July samples, they were only tied for third by August-September. Samples by Kailola and Wilson (1978) taken between December and April in the same area and depth found that engraulids, part of their "clupeiformes" component, ranked only fourth. Abundance of engraulids relative to other trawl fishes in the Gulf of Papua may change seasonally and be highest during the May-July period.

GENERAL DISCUSSION

In the present study, samples were taken from the most heavily trawled area of the Gulf of Papua. These samples would be more representative of the commercial trawls than those taken from any other area. If the samples were representative of the

commercial operation then the harvest estimates are probably reasonably accurate. Although some fishes, such as sharks, were rarely included in samples, they nevertheless were present in the trawls and contributed to the catch. Such omissions would make the harvest estimates somewhat conservative. Although non-sampled trawling areas may have had smaller catches of trawl fishes than the areas sampled, indications were that at least some areas, like Orokolo Bay, were more productive.

Most families of trawl fishes were not marketed either because their average size was too small or because they did not appeal to the existing market. Of the common families of Table 5, only sciaenids, a few leiognathids, polynemids, carangids, cynglossids, and priacanthids were retained for sale during this study. Scallop catches, part of the "miscellaneous (non-fish)" component, were also retained. On average it is estimated that a minimum of 50kg/hr of marketable fish were caught or using 68,000hr trawling, approximately 3,400t for 1982. Of this only an estimated 250t or 7% were sold.

Some families of fishes which were usually discarded, like trichurids and harpodontids, are utilized in other parts of the world. Fish which are retained by trawlers operating in the Gulf of Papua must compete for freezer space and handling time with prawns and crayfish. The average price per kilogramme for the latter (late 1983) is 5.5-7K and 12K respectively while trawl fish sells for only .7-.8K. In the existing competative market, trawl fishes are usually saved only when freezer space can not be filled with more lucrative products.

Though outside the scope of this study it is possible that if the current landings of trawl fish were increased by the ten fold possible, that the current markets would be saturated. It is important, however, to know more about the biology of these fishes, particularly those currently exploited, so that accurate estimates of the size of the available resource can be made. In this way the feasibility of an industry based primarily on trawl fishes can be assessed. It is also necessary to make a more complete survey of the trawl-fishes which are retained and the markets for these fishes. Future market demands for these fishes

should be more thoughly investigated.

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GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 19

DATE: 30783

VESSEL : NEW MARINE 5

TIME IN: 13.40 OUT: 16.10 DURATION: 2.50hr

DEPTH RANGE (METERS): MIN: 18 MAX: 18 AVG.: 18

MAP REFERENCE: GRID: 744 AREA: KEREMA BAY

COMMENT: MOVING SLIGHTLY WEST
LAT 08-02.5S LONG 145-35E

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PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	56.00kg
Black Tiger		x 1.5kg/b	47.00kg
Other Prawns		x 2.0kg/b	32.00kg
			=====
TOTAL PRAWN			135.00kg

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SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	1050gm	776gm

Ratio Sample / Trawl : 173.92 {Used To Estimate Total Fish Weights}

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			158	4.85	27	11
Setipinna godavari	34	Hairback Anchovy	110	3.38	19	8
Thrissocles setirostris	36	Long-horned Anchovy	48	1.47	8	3
Other			0	.00	0	0
Sciaenidae Total:			975	29.92	170	68
Otolithes ruber	646	Silver Teraglin	175	5.37	30	12
Other			800	24.55	139	56
Leiognathidae Total:			150	4.60	26	10
Trichiuridae Total:			425	13.04	74	30
Clupeidae Total:			0	.00	0	0
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			0	.00	0	0
Pomadasyidae Total:			42	1.29	7	3
Harpodontidae Total:			0	.00	0	0
Mullidae Total:			150	4.60	26	10
Theraponidae Total:			95	2.92	17	7
Cynoglossidae Total:			14	.43	2	1
Bothidae Total:			0	.00	0	0
Ariidae Total:			0	.00	0	0
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			0	.00	0	0
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	0	.00	0	0
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			0	.00	0	0
Carangidae Total:			0	.00	0	0
Other Fish:			0	.00	0	0
Miscellaneous Total: (non-fish)			200	6.14	35	14

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Fish Weight Sample:	2009gm	Fish Total Estimated Weight Trawl:	349kg	Estimated Ratio Fish : Prawn	2.59
Total Weight Sample:	3259gm	Prawns Total Reported Weight Trawl	135kg	Estimated Fish/ Trawl-Hour	140kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 20

DATE: 40783

VESSEL : NEW MARINE 5

TIME IN: 3.00 OUT: 6.40 DURATION: 3.67hr

DEPTH RANGE (METERS): MIN: 16 MAX: 18 AVG.: 16

MAP REFERENCE: GRID: 744 AREA: KEREMA BAY

COMMENT: SEAS MODERATE BUT RISING
LAT 08-02.5S LONG 145-35.5E

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	20.00kg
Black Tiger		x 1.5kg/b	15.00kg
Other Prawns		x 2.0kg/b	44.00kg
			=====
TOTAL PRAWN			79.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	600gm	406gm

Ratio Sample / Trawl : 194.79 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			700	30.55	136	37
Setipinna godavari	34	Hairback Anchovy	475	20.73	93	25
Thrissocles setirostris	36	Long-horned Anchovy	225	9.82	44	12
Other			0	.00	0	0
Sciaenidae Total:			500	21.82	97	27
Otolithes ruber	646	Silver Teraglin	150	6.55	29	8
Other			350	15.28	68	19
Leiognathidae Total:			3	.13	1	0
Trichiuridae Total:			90	3.93	18	5
Clupeidae Total:			32	1.40	6	2
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			32	1.40	6	2
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			0	.00	0	0
Mullidae Total:			125	5.46	24	7
Theraponidae Total:			18	.79	4	1
Cynoglossidae Total:			0	.00	0	0
Bothidae Total:			0	.00	0	0
Ariidae Total:			0	.00	0	0
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			0	.00	0	0
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	0	.00	0	0
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			0	.00	0	0
Carangidae Total:			15	.65	3	1
Other Fish:			83	3.62	16	4
Miscellaneous Total: (non-fish)			125	5.46	24	7

****

Fish Weight Sample:	1566gm	Fish Total Estimated Weight Trawl:	305kg	Estimated Ratio Fish : Prawn	3.86
Total Weight Sample:	2291gm	Prawns Total Reported Weight Trawl	79kg	Estimated Fish/ Trawl-Hour	83kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 24

DATE: 50783

VESSEL : NEW MARINE 5

TIME IN: 2.55 OUT: 6.35 DURATION: 3.67hr

DEPTH RANGE (METERS): MIN: 14 MAX: 16 AVG.: 14

MAP REFERENCE: GRID: 744 AREA: KEREMA BAY

COMMENT: LANDED 15 NORTHERN BLUEFIN TUNA AT 7:30
LAT 08-02-25 LONG 145-31E

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	46.00kg
Black Tiger		x 1.5kg/b	.00kg
Other Prawns		x 2.0kg/b	34.00kg
TOTAL PRAWN			80.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	625gm	375gm

Ratio Sample / Trawl : 213.33 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			498	20.67	106	29
Setipinna godavari	34	Hairback Anchovy	400	16.60	85	23
Thrissocles setirostris	36	Long-horned Anchovy	98	4.07	21	6
Other			0	.00	0	0
Sciaenidae Total:			100	4.15	21	6
Otolithes ruber	646	Silver Teraglin	25	1.04	5	1
Other			75	3.11	16	4
Leiognathidae Total:			190	7.89	41	11
Trichiuridae Total:			12	.50	3	1
Clupeidae Total:			450	18.68	96	26
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			450	18.68	96	26
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			98	4.07	21	6
Mullidae Total:			44	1.83	9	3
Theraponidae Total:			230	9.55	49	13
Cynoglossidae Total:			0	.00	0	0
Bothidae Total:			0	.00	0	0
Ariidae Total:			72	2.99	15	4
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			0	.00	0	0
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	0	.00	0	0
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			0	.00	0	0
Carangidae Total:			0	.00	0	0
Other Fish:			0	.00	0	0
Miscellanous Total: (non-fish)			90	3.74	19	5

****

Fish Weight Sample:	1694gm	Fish Total Estimated Weight Trawl:	361kg	Estimated Ratio Fish : Prawn	4.52
Total Weight Sample:	2409gm	Prawns Total Reported Weight Trawl	80kg	Estimated Fish/ Trawl-Hour	98kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 27

DATE: 60783

VESSEL : NEW MARINE 5

TIME IN: 3.00 OUT: 6.30 DURATION: 3.50hr

DEPTH RANGE (METERS): MIN: 12 MAX: 18 AVG.: 14

MAP REFERENCE: GRID: 744 AREA: KEREMA BAY

COMMENT: COMPLETELY REMOVED NET FOR REPAIR
LAT 08-02-25 LONG 145-31E

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	32.00kg
Black Tiger		x 1.5kg/b	.00kg
Other Prawns		x 2.0kg/b	50.00kg
TOTAL PRAWN			82.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	620gm	372gm

Ratio Sample / Trawl : 220.43 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			180	5.18	40	11
Setipinna godavari	34	Hairback Anchovy	100	2.88	22	6
Thrissocles setirostris	36	Long-horned Anchovy	80	2.30	18	5
Other			0	.00	0	0
Sciaenidae Total:			290	8.35	64	18
Otolithes ruber	646	Silver Teraglin	90	2.59	20	6
Other			200	5.76	44	13
Leiognathidae Total:			120	3.45	26	8
Trichiuridae Total:			28	.81	6	2
Clupeidae Total:			420	12.09	93	26
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			420	12.09	93	26
Pomadasyidae Total:			950	27.35	209	60
Harpodontidae Total:			250	7.20	55	16
Mullidae Total:			57	1.64	13	4
Theraponidae Total:			0	.00	0	0
Cynoglossidae Total:			0	.00	0	0
Bothidae Total:			0	.00	0	0
Ariidae Total:			260	7.48	57	16
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			24	.69	5	2
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	24	.69	5	2
Polydactylus nigripinnis	330	Black-finned Threadfin	0	.00	0	0
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			28	.81	6	2
Carangidae Total:			22	.63	5	1
Other Fish:			0	.00	0	0
Miscellaneous Total: (non-fish)			225	6.48	50	14

****

Fish Weight Sample:	2629gm	Fish Total Estimated Weight Trawl:	580kg	Estimated Ratio Fish : Prawn	7.07
Total Weight Sample:	3474gm	Prawns Total Reported Weight Trawl	82kg	Estimated Fish/ Trawl-Hour	166kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 29

DATE: 60783

VESSEL : NEW MARINE 5

TIME IN: 10.20 OUT: 12.50 DURATION: 2.50hr

DEPTH RANGE (METERS): MIN: 12 MAX: 12 AVG.: 12

MAP REFERENCE: GRID: 640 AREA: OROKOLO BAY

COMMENT: REPORTED GOOD FISH AREA, OFFSHORE PURARI RIVER MOUTH
MANY POLYNEMIDAE IN CATCH NOW

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	32.00kg
Black Tiger		x 1.5kg/b	8.00kg
Other Prawns		x 2.0kg/b	54.00kg
			=====
TOTAL PRAWN			94.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	325gm	206gm

Ratio Sample / Trawl : 456.17 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			275	16.08	125	50
Setipinna godavari	34	Hairback Anchovy	200	11.70	91	36
Thrissocles setirostris	36	Long-horned Anchovy	75	4.39	34	14
Other			0	.00	0	0
Sciaenidae Total:			125	7.31	57	23
Otolithes ruber	646	Silver Teraglin	25	1.46	11	5
Other			100	5.85	46	18
Leiognathidae Total:			450	26.32	205	82
Trichiuridae Total:			34	1.99	16	6
Clupeidae Total:			27	1.58	12	5
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			27	1.58	12	5
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			0	.00	0	0
Mullidae Total:			22	1.29	10	4
Therapanidae Total:			28	1.64	13	5
Cynoglossidae Total:			28	1.64	13	5
Bothidae Total:			0	.00	0	0
Ariidae Total:			78	4.56	36	14
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			120	7.02	55	22
Polynemus intermedius	324	Streamered Tasselfish	36	2.11	16	7
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	84	4.91	38	15
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			0	.00	0	0
Carangidae Total:			0	.00	0	0
Other Fish:			23	1.35	10	4
Miscellanous Total: (non-fish)			175	10.23	80	32

****

Fish Weight Sample:	1210gm	Fish Total Estimated Weight Trawl:	552kg	Estimated Ratio Fish : Prawn	5.87
Total Weight Sample:	1710gm	Prawns Total Reported Weight Trawl	94kg	Estimated Fish/ Trawl-Hour	221kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 30

DATE: 60783

VESSEL : NEW MARINE 5

TIME IN: 13.00 OUT: 16.00 DURATION: 3.00hr

DEPTH RANGE (METERS): MIN: 12 MAX: 13 AVG.: 13

MAP REFERENCE: GRID: 640 AREA: OROKOLO BAY

COMMENT:

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	42.00kg
Black Tiger		x 1.5kg/b	18.00kg
Other Prawns		x 2.0kg/b	46.00kg
			=====
TOTAL PRAWN			106.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	125gm	83gm

Ratio Sample / Trawl : 1269.60 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			525	29.76	667	222
Setipinna godavari	34	Hairback Anchovy	500	28.34	635	212
Thrissocles setirostris	36	Long-horned Anchovy	25	1.42	32	11
Other			0	.00	0	0
Sciaenidae Total:			190	10.77	241	80
Otolithes ruber	646	Silver Teraglin	50	2.83	63	21
Other			140	7.94	178	59
Leiognathidae Total:			425	24.09	540	180
Trichiuridae Total:			12	.68	15	5
Clupeidae Total:			29	1.64	37	12
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			29	1.64	37	12
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			58	3.29	74	25
Mullidae Total:			94	5.33	119	40
Theraponidae Total:			50	2.83	63	21
Cynoglossidae Total:			0	.00	0	0
Bothidae Total:			0	.00	0	0
Ariidae Total:			174	9.86	221	74
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			0	.00	0	0
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	0	.00	0	0
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			0	.00	0	0
Carangidae Total:			28	1.59	36	12
Other Fish:			45	2.55	57	19
Miscellanous Total: (non-fish)			9	.51	11	4

****

Fish Weight Sample:	1630gm	Fish Total Estimated Weight Trawl:	2069kg	Estimated Ratio Fish : Prawn	19.52
Total Weight Sample:	1764gm	Prawns Total Reported Weight Trawl	106kg	Estimated Fish/ Trawl-Hour	690kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 31

DATE: 70783

VESSEL : NEW MARINE 5

TIME IN: 3.00 OUT: 6.40 DURATION: 3.67hr

DEPTH RANGE (METERS): MIN: 15 MAX: 26 AVG.: 15

MAP REFERENCE: GRID: 641 AREA: OROKOLO BAY

COMMENT: SEAS MODERATE AND RISING, FEW LEIOGNATHIDAE OR TRICHURIDS

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	.00kg
Black Tiger		x 1.5kg/b	11.00kg
Other Prawns		x 2.0kg/b	54.00kg
TOTAL PRAWN			65.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	175gm	117gm

Ratio Sample / Trawl : 556.29 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			400	17.87	223	61
Setipinna godavari	34	Hairback Anchovy	300	13.40	167	45
Thrissocles setirostris	36	Long-horned Anchovy	100	4.47	56	15
Other			0	.00	0	0
Sciaenidae Total:			680	30.38	378	103
Otolithes ruber	646	Silver Teraglin	80	3.57	45	12
Other			600	26.81	334	91
Leiognathidae Total:			0	.00	0	0
Trichiuridae Total:			0	.00	0	0
Clupeidae Total:			0	.00	0	0
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			0	.00	0	0
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			620	27.70	345	94
Mullidae Total:			0	.00	0	0
Theraponidae Total:			32	1.43	18	5
Cynoglossidae Total:			30	1.34	17	5
Bothidae Total:			0	.00	0	0
Ariidae Total:			0	.00	0	0
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			46	2.06	26	7
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	46	2.06	26	7
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			115	5.14	64	17
Rhinoprenidae Total:			115	5.14	64	17
Carangidae Total:			0	.00	0	0
Other Fish:			0	.00	0	0
Miscellanous Total: (non-fish)			25	1.12	14	4

****

Fish Weight Sample:	2038gm	Fish Total Estimated Weight Trawl:	1134kg	Estimated Ratio Fish : Prawn	17.44
Total Weight Sample:	2238gm	Prawns Total Reported Weight Trawl	65kg	Estimated Fish/ Trawl-Hour	309kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 32

DATE: 70783

VESSEL : NEW MARINE 5

TIME IN: 7.00 OUT: 10.00 DURATION: 3.00hr

DEPTH RANGE (METERS): MIN: 26 MAX: 31 AVG.: 26

MAP REFERENCE: GRID: 641 AREA: OROKOLO BAY

COMMENT: SEAS MODERATE, SEVERAL SMALL BARRICOUTA
MANY DOROSOMIDAE AND MULLIDAE

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	18.00kg
Black Tiger		x 1.5kg/b	18.00kg
Other Prawns		x 2.0kg/b	26.00kg
			=====
TOTAL PRAWN			62.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	150gm	107gm

Ratio Sample / Trawl : 577.18 {Used To Estimate Total Fish Weights}

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			660	24.01	381	127
Setipinna godavari	34	Hairback Anchovy	550	20.01	317	106
Thriseocles setirostris	36	Long-horned Anchovy	110	4.00	63	21
Other			0	.00	0	0
Sciaenidae Total:			860	31.28	496	165
Otolithes ruber	646	Silver Teraglin	60	2.18	35	12
Other			800	29.10	462	154
Leiognathidae Total:			11	.40	6	2
Trichiuridae Total:			45	1.64	26	9
Clupeidae Total:			0	.00	0	0
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			0	.00	0	0
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			46	1.67	27	9
Mullidae Total:			225	8.18	130	43
Theraponidae Total:			30	1.09	17	6
Cynoglossidae Total:			0	.00	0	0
Bothidae Total:			0	.00	0	0
Ariidae Total:			0	.00	0	0
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			160	5.82	92	31
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	160	5.82	92	31
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			72	2.62	42	14
Carangidae Total:			20	.73	12	4
Other Fish:			320	11.64	185	62
Miscellanous Total: (non-fish)			150	5.46	87	29

****

Fish Weight Sample:	2449gm	Fish Total Estimated Weight Trawl:	1414kg	Estimated Ratio Fish : Prawn	22.80
Total Weight Sample:	2749gm	Prawns Total Reported Weight Trawl	62kg	Estimated Fish/ Trawl-Hour	471kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 33

DATE: 70783

VESSEL : NEW MARINE 5

TIME IN: 10.30 OUT: 13.30 DURATION: 3.00hr

DEPTH RANGE (METERS): MIN: 14 MAX: 31 AVG.: 14

MAP REFERENCE: GRID: 641 AREA: OROKOLO BAY

COMMENT: SEAS MODERATE

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	22.00kg
Black Tiger		x 1.5kg/b	15.00kg
Other Prawns		x 2.0kg/b	28.00kg
			=====
TOTAL PRAWN			65.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	325gm	225gm

Ratio Sample / Trawl : 288.89 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			1300	42.69	376	125
Setipinna godavari	34	Hairback Anchovy	1000	32.84	289	96
Thrissocles setirostris	36	Long-horned Anchovy	300	9.85	87	29
Other			0	.00	0	0
Sciaenidae Total:			425	13.96	123	41
Otolithes ruber	646	Silver Teraglin	25	.82	7	2
Other			400	13.14	116	39
Leiognathidae Total:			22	.72	6	2
Trichiuridae Total:			100	3.28	29	10
Clupeidae Total:			35	1.15	10	3
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			35	1.15	10	3
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			165	5.42	48	16
Mullidae Total:			0	.00	0	0
Theraponidae Total:			14	.46	4	1
Cynoglossidae Total:			42	1.38	12	4
Bothidae Total:			0	.00	0	0
Arildae Total:			172	5.65	50	17
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			200	6.57	58	19
Polynemus intermedius	324	Streamered Tasselfish	35	1.15	10	3
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	165	5.42	48	16
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			0	.00	0	0
Rhinoprenidae Total:			110	3.61	32	11
Carangidae Total:			45	1.48	13	4
Other Fish:			0	.00	0	0
Miscellanous Total: (non-fish)			90	2.96	26	9

****

Fish Weight Sample:	2630gm	Fish Total Estimated Weight Trawl:	760kg	Estimated Ratio Fish : Prawn	11.69
Total Weight Sample:	3045gm	Prawns Total Reported Weight Trawl	65kg	Estimated Fish/ Trawl-Hour	253kg/hr

GULF OF PAPUA - TRAWL FISH STUDY

TRAWL #: 34

DATE: 70783

VESSEL : NEW MARINE 5

TIME IN: 13.20 OUT: 16.00 DURATION: 2.67hr

DEPTH RANGE (METERS): MIN: 13 MAX: 20 AVG.: 15

MAP REFERENCE: GRID: 641 AREA: OROKOLO BAY

COMMENT: GUDGEON MUNRO SPECIES NUMBER 975 FOUND IN TRAWL

****

PRAWN CATCH

	No. Boxes	x Wt./Box =	Weight
Banana Prawns		x 2.0kg/b	16.00kg
Black Tiger		x 1.5kg/b	11.00kg
Other Prawns		x 2.0kg/b	26.00kg
			=====
TOTAL PRAWN			53.00kg

****

SAMPLE

	Actual Whole Weight	Estimated Headless Weight
PRAWNS	200gm	137gm

Ratio Sample / Trawl : 387.98 (Used To Estimate Total Fish Weights)

FISH FAMILY	SPECIES		gm / Sample	% of Sample	Estimate Total kg/Trawl	Estimate Catch kg/Hour
Engraulidae Total:			720	41.00	279	105
Setipinna godavari	34	Hairback Anchovy	620	35.31	241	90
Thrissocles setirostris	36	Long-horned Anchovy	100	5.69	39	15
Other			0	.00	0	0
Sciaenidae Total:			125	7.12	48	18
Otolithes ruber	646	Silver Teraglin	25	1.42	10	4
Other			100	5.69	39	15
Leiognathidae Total:			0	.00	0	0
Trichiuridae Total:			50	2.85	19	7
Clupeidae Total:			55	3.13	21	8
Sardinella albella	54	Perforated-scale Sardine	0	.00	0	0
Other			55	3.13	21	8
Pomadasyidae Total:			0	.00	0	0
Harpodontidae Total:			6	.34	2	1
Mullidae Total:			0	.00	0	0
Theraponidae Total:			50	2.85	19	7
Cynoglossidae Total:			0	.00	0	0
Bothidae Total:			0	.00	0	0
Ariidae Total:			0	.00	0	0
Priacanthidae Total:			0	.00	0	0
Polynemidae Total:			112	6.38	43	16
Polynemus intermedius	324	Streamered Tasselfish	0	.00	0	0
Polydactylus sp.	326	Five-thread Threadfin	0	.00	0	0
Polydactylus nigripinnis	330	Black-finned Threadfin	112	6.38	43	16
Other			0	.00	0	0
Formionidae Total:			0	.00	0	0
Sauridae Total:			58	3.30	23	8
Rhinoprenidae Total:			225	12.81	87	33
Carangidae Total:			0	.00	0	0
Other Fish:			140	7.97	54	20
Miscellanous Total: (non-fish)			15	.85	6	2

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Fish Weight Sample:	1541gm	Fish Total Estimated Weight Trawl:	598kg	Estimated Ratio Fish : Prawn	11.28
Total Weight Sample:	1756gm	Prawns Total Reported Weight Trawl	53kg	Estimated Fish/ Trawl-Hour	224kg/hr