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REPORT ON SOME OFFSHORE DEMERSAL RESOURCES OF THE ANDAMAN SEA

Suppachai Ananpongsuk

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INTRODUCTION

From 19 August to 24 September 1987, the SEAFDEC Training Department conducted shipboard training for the 1986-87 Regular Course Trainees (M.V. PAKNAM cruise order number 79-3/1987. A bottom trawl survey was made as part of the shipboard training. The training vessel, M.V. PAKNAM, carried out seventeen bottom trawl operations, four hauls for deep-sea fishing operations (along the continental slope) and the rest were shallow water fishing operations (over the continental shelf). The deep-sea trawls were operated in order to introduce the trainees to the techniques for deep-sea trawl fishing, including those for deep-sea ichthyofauna species. This report covers the primary survey of deep water species by the Training Department. It gives some ideas of research on the deeper part which could be developed in the future.

MATERIALS AND METHODS

The ichthyofauna listed in this report were collected in the Thai territorial waters of the Andaman sea from 30 August to 11 September 1987. The fishing grounds in this survey are shown in Figure 1. The fishing operations were done by 2-seam trawl net with a 36 m. long head rope and 37 m. long ground rope, the mesh size of the cod-end of this trawl net was 20 mm and it was prepared by the Training Department. The otter boards used were of paravane otter board type. The ship's speed during fishing operations while towing the trawl net was 2.00 to 3.20 knots.

Topographic surveys using the echosounder were carried out before the bottom trawl operations in order to search for fish schools and know the state of the sea-bed. The transmitter of the net monitor was installed at the center of the head rope to monitor the height of the net mouth.

The catch from each trawl operation was sorted (Figure 2) and photographs were taken of the different species, then all the specimens were preserved in a 10% formalin solution. The identification of the samples was done at the SEAFDEC/TD Research Division.

All the specimens are being kept at the Research Division of the Southeast Asian Fisheries Development Center, Samut Prakarn.

RESULTS AND COMMENTS

The trawl fishing operations for this survey were carried out in two locations, the depths of catch were 59-92 metres and 400-421 metres, respectively. From the fish samples, the classification consists of 28 families of common species and 35 families of deep-waters species. The list of the ichthyofauna, decapods and cephalopods appear in the appendix. The species common in deep waters were; Family Nomeidae *(Cubiceps squamiceps)*, Family Polymixiidae *(Polymixia japonicus* and *Polymixia berndti)* and Family Macrouridae *(Coelorhynchus* sp., *Hymetnocephalus* sp., *Nezumia* sp. and *Malacocephalus laevis)*, etc.

The most common species found in shallow waters were; Family Carangidae (857.70 kg.), Family Nemipteridae (530.50 kg.), and Family Trichiuridae (345.50 kg.).

The maximun catch per unit effort in the shallow water area was 327.56 kg. per hour (65.31 kg./hr. useful species and 262.25 kg./hr. trash fish), while in the deep-sea area the results were 181.78 kg./hr. (20.33 kg./hr. useful species, 11.45 kg./hr. of crustaceans and 150.00 kg./hr. of trash fish). The catch per unit effort in the shallow water area was more than in the deep-sea water area by 145.78 kg. So, it can be roughly estimated that the potential yield by catch in kilograms per hour for the shallow waters is higher than that for the deep-sea waters when comparing the results of the two fishing areas.

As for the species composition percentages. Generally, trash fish were of a very high value in each survey (55.60-95.10 per cent of total catch). The catch of useful fish was less than 50 per cent in each operation. The maximum catch of good fish was of 44.4 per cent and the minimum was 4.9 per cent in the shallow area.

For the deep-sea area, the maximum yield of useful fish was 29.60 per cent, the minimum was 10.70 per cent, while the trash fish still showed very high (70.40-89.30 per cent).

In addition, decapod and cephalopod group specimens were also caught in the deep area. The crustacean species consist of shrimps, spiny lobster and crab. The deep-sea shrimp and crab species were very interesting because these groups are expected to become a new fishery resource in the near future.

With regard to the crustacean groups especially the deep-sea shrimp. Their value of catch per unit effort was between 3.69-14.07 kg./hr. This figure showed rather low catchability, the cause may be the limited number of fishing operations so, the data cannot be presented as significant. Therefore, there is a need for more surveying in the future in order to get additional information.

The topography surveys were made in order to know the sea-bed characteristics. The floor shallower than 400 metres was rather rough and steeply sloping (Figures 3 and 4), the floor deeper than 400 metres was generally very smooth and slightly sloping (Figures 5 and 6). These details were very useful and provided guidance is selecting a suitable place for a fishing operation.

Since, the relatively unexploited deep-sea water species are potentially of great importance to the economy of the country as a partial replacement of the over-harvested inshore species it is hoped that the fisheries authorities will undertake a well planned, comprehensive survey of the aquatic fauna in the future.

Due to the lack of literature available, especially on deep-sea species some specimens could only be classified at the genus level. However, it is hoped that this report will be useful to persons interested in the study of ichthyology.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Dr. Veravat Hongskul, SEAFDEC Secretary-General and Mr. Kazuo Inoue, Deputy Secretary-General, for their continued support of training and research activities, and my appreciation to the Captain and crew of the training vessel 'M.V. PAKNAM' for their cooperation during this survey.

Special thanks go to Mr. Somnuk Pornpatimakorn and Mr. Somboon Siriraksophon who were in charge of the specimens collection and took photographs of the samples. Many thanks also go to Mr. Aussanee Munprasit and Mr. Weera Pokapunt for their guidance in documenting the ichthyology.

Finally, last but not least, thanks go to the 1986-1987 Regular Course Trainees who collaborated in this report.

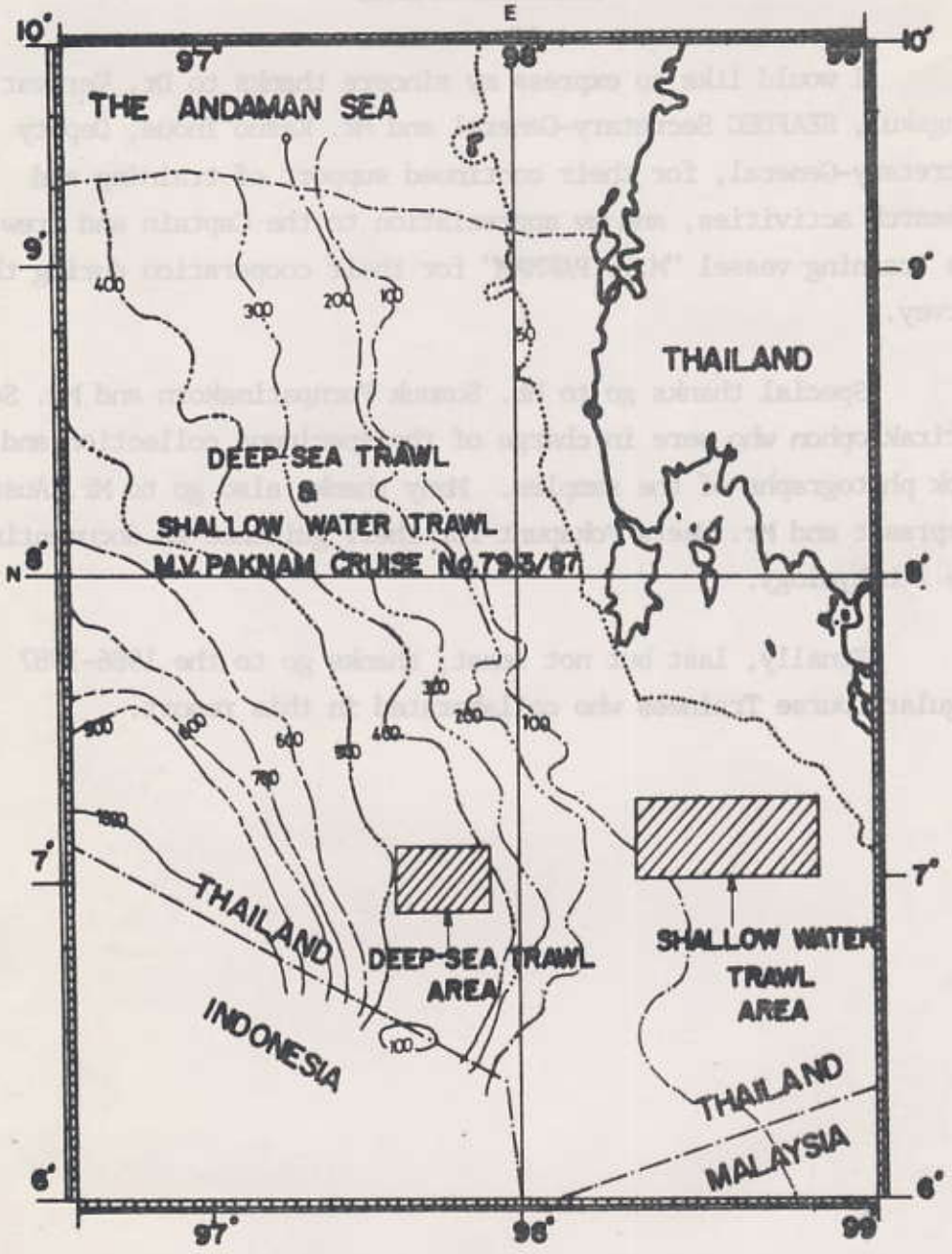

Figure 1. Location of trawl fishing operations by M.V. PAKNAM. in the Andaman sea from 19 August to 24 September 1987 and bathymetric contour lines.

Figure 2. Bottom trawl catch on stern deck, the specimens were separated into three groups, fishes, decapods and cephalopods. The temperatures near the sea-bed observed by net monitoring system showed around 11.4°C at a 403 m. depth, 11.6°C at a 399 m. depth and 14.3°C at a 381 m. depth.

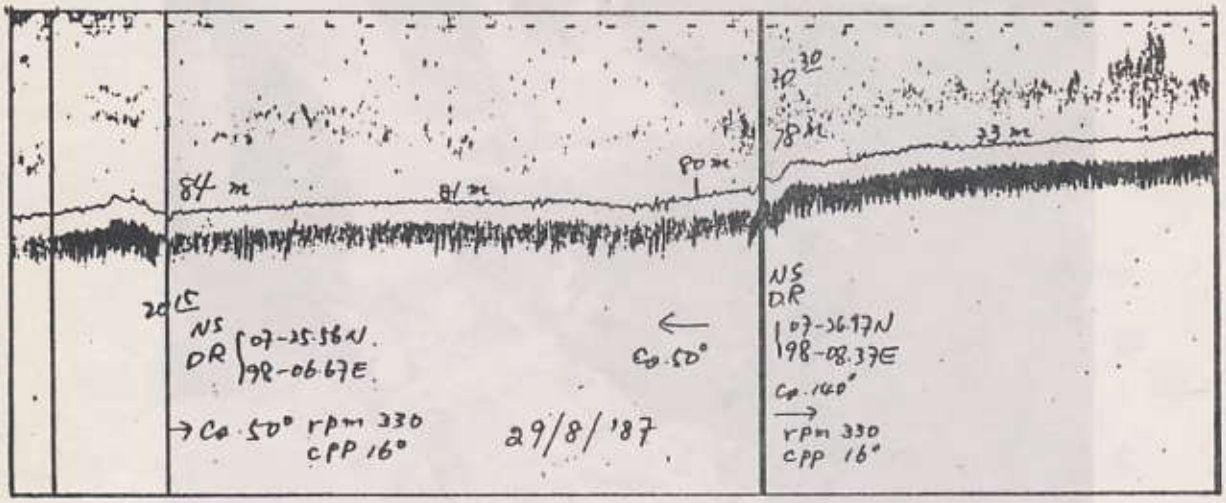

Figure 3. Sea-bed, rather rough at a depth of 73-84 metres.

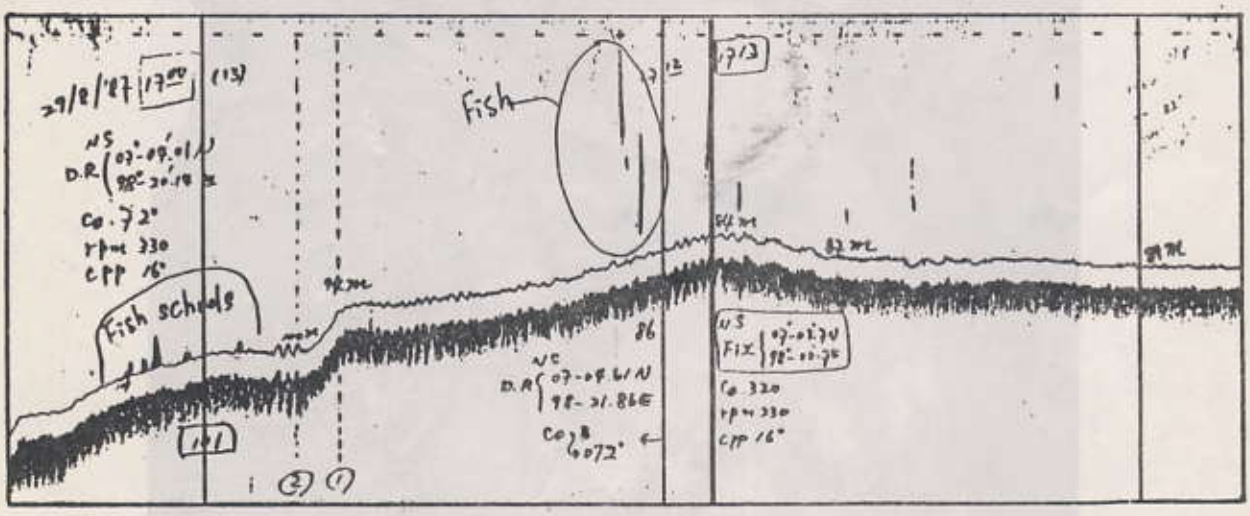

Figure 4. Sea-bed, steep and rough at a depth of 89-101 metres.

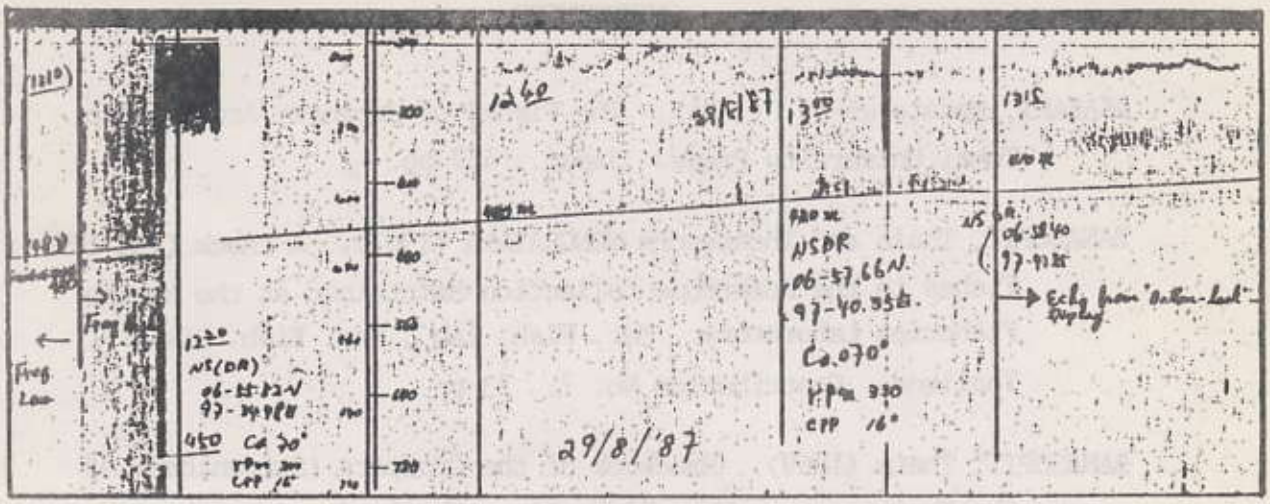

Figure 5. Sea-bed, very smooth and slightly sloping at a depth of 410-480 metres.

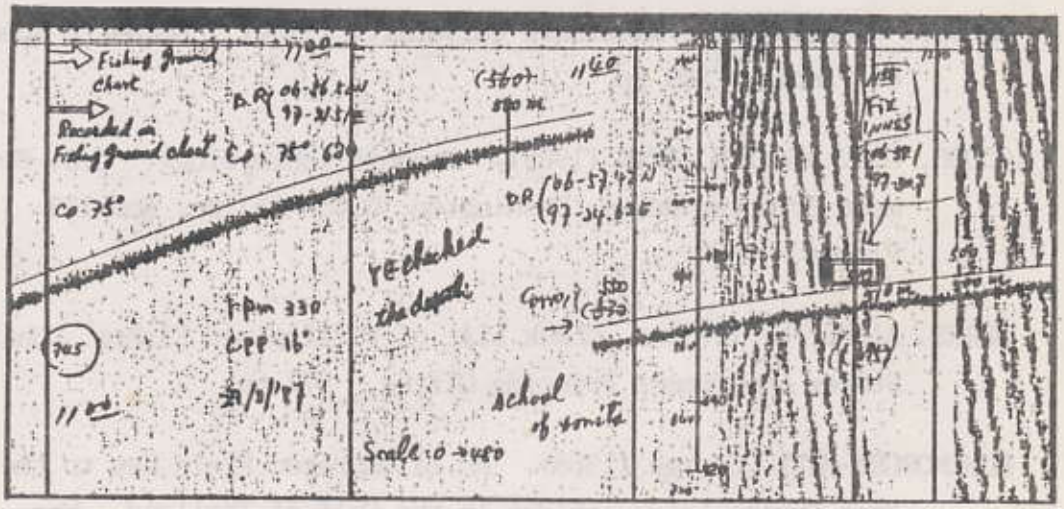

Figure 6. Sea-bed, smooth and sloping at a depth of 500-745 metres.

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APPENDIX

List of some offshore demersal fishes collected in the Andaman Sea from 30 August to 11 September 1987.

	Family	Scientific name
* 1.	Scyliorhinidae	*Halaelurus hispidus*
2.	Carcharhinidae	*Carcharhinus spallanzani*
* 3.	Torpedinidae	*Torpedo nobilianus*
* 4.	Rajidae	*Raja* sp.
* 5.	Urolophidae	*Urotrygon* sp.
6.	Dasyatididae	*Dasyatis* sp.
7.	Chirocentridae	*Chirocentrus dorab*
* 8.	Congridae	*Congriscus* sp. *Diploconger* sp.
9.	Muraenesocidae	*Muraenesox* sp.
* 10.	Nettastomatidae	*Nettastoma* sp.
* 11.	Ophichthidae	*Muraenichthys* sp. *Mystriophis* sp.
* 12.	Sternoptychidae	*Polyipnus spinosus*
* 13.	Astronesthidae	*Astronesthes lucifer*
14.	Plotosidae	*Plotosus* sp.
15.	Synodontidae	*Trachinocephalus myops*
* 16.	Chlorophthalmidae	*Chlorophthalmus acutifrons*
* 17.	Myctophidae	*Myctophum pterotum*

* 18.	Neoscopelidae	*Neoscopelus microchir*
* 19.	Paralepididae	*Lestidium nudum*
20.	Fistulariidae	*Fistularia villosa*
* 21.	Bregmacerotidae	*Bregmaceros nectabanus*
		Bregmaceros japonicus
* 22.	Macrouridae	*Coelorhynchus macrorhynchus*
		Coelorhynchus argentatus
		Coelorhynchus sp.
		Hymefnocephalus sp.
		Nezumia sp.
		Malacocephalus laevis
* 23.	Ophidiidae	*Neobythites sivicola*
		Hypopleuron caninum
		Monomitopus sp.
* 24.	Lophiidae	*Lophiodes* sp.
* 25.	Chaunacidae	*Chaunax fimbrliatus*
		Chaunax sp.
* 26.	Trachichthyidae	*Hoplostethus crassispinus*
* 27.	Diretmidae	*Diretmoides* sp.
28.	Holocentridae	*Holocentrus ruber*
* 29.	Polymixiidae	*Polymixia berndti*
		Polymixia japonicus
* 30.	Zeidae	*Cyttopsis rosea*
31.	Sphyraenidae	*Sphyraena barracuda*
		Sphyraena jello
* 32.	Percichthyidae	*Synagrops japonicus*
		Synagrops philippinensis

* 33.	Ostracoberycidae	*Ostracoberyx triconis*
		Ostracoberyx dorygenys
34.	Serranidae	*Epinephelus fasciatus*
		Epinephelus areolatus
		Epinephelus bleckeri
		Epinephelus tauvina
35.	Priacanthidae	*Priacanthus macracanthus*
		Priacanthus hamrur
36.	Rachycentridae	*Rachycentron canadum*
37.	Carangidae	*Uraspis* sp.
		Seriolina nigrofasciatus
		Selaroides leptolepis
		Decapterus sp.
38.	Formionidae	*Formio niger*
39.	Menidae	*Mene maculatus*
40.	Leiognathidae	*Leiognathus elongatus*
41.	Gerreidae	*Pentaprion longimanus*
42.	Mullidae	*Upeneus tragula*
		Parupeneus heptacentus
43.	Lutjanidae	*Pristipomoides multidens*
		Pristipomoides typus
44.	Nemipteridae	*Nemipterus* sp.
		Pentapodus sp.
45.	Lethrinidae	*Gymnocranius robinsoni*
46.	Champsodontidae	*Champsodon carpensis*
47.	Labridae	*Chaerodon* sp.
48.	Scombridae	*Rastrelliger brachysoma*

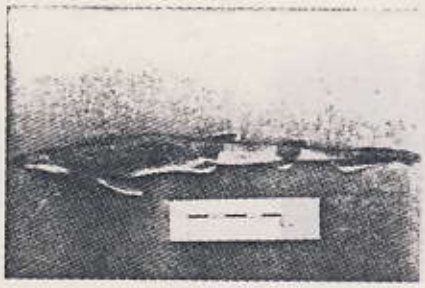
Decapoda

Family name	Scientific name
Shrimps	
1. Solenoceridae	*Solenocera* sp.
2. Pandalidae	*Heterocarpus sibogae* *Heterocarpus* sp.
3. Glyphocrangonidae	*Clyphocrangron* sp.
4. Nephropidae	*Metanephros andamanicus* *Nephropsis stewerti*
5. Polychelidae	*Stereomastic andamanensis*
6. Palinuridae	*Puerulus sewelli* *Linuparus trigoinus*
7. Galatheidae	*Munida squamosa*
Crabs	
1. Homolidae	*Homola megalop*
2. Majidae	*Pleistacentha oryx* *Platymaia alcoski* *Maja kominotoensis*
3. Parthenopidae	? *Lambrus* sp.

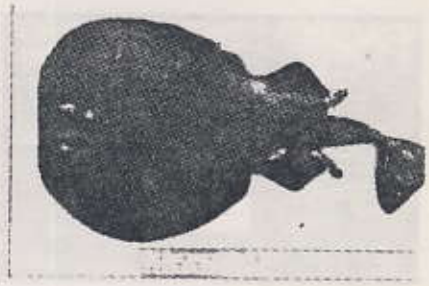
Cephalopoda

Family	Scientific name
1. Loliginidae	*Loligo* sp.
2. Enoploteuthidae	*Abralia* sp.
3. Histioteuthidae	*Histioteuthis* sp.
4. Ommastrephidae	*Todaropsis* sp.
5. Bolitaenidae	*Japetella* sp.
6. Octopodidae	*Octopus* sp.

PHOTOGRAPHS OF THE SAMPLES



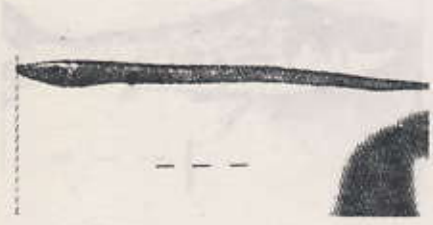
Halaelurus hispidus



Torpedo nobilianus

Raja sp.

Urotrygon sp.



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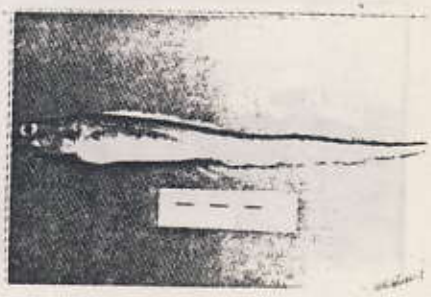

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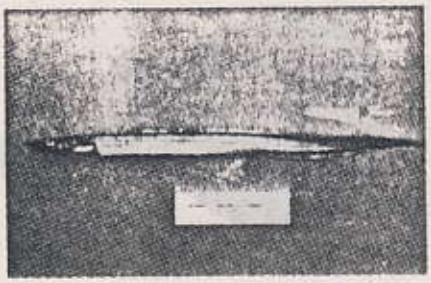

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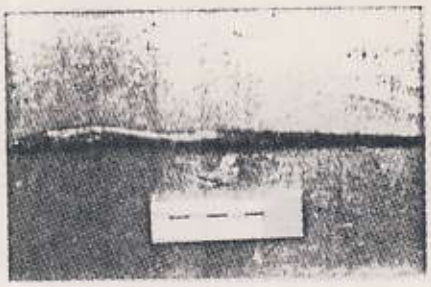

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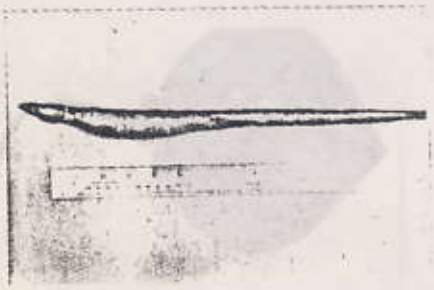

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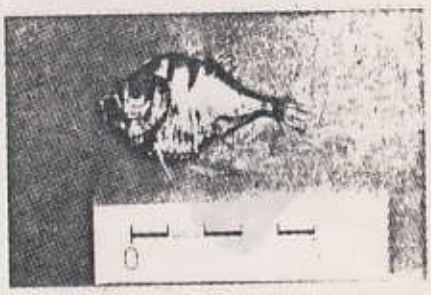
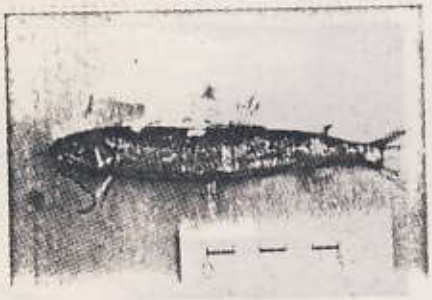
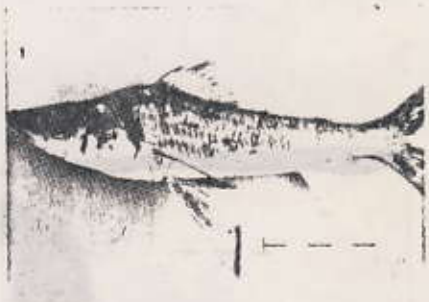


Polyipnus spinosus



Astronesthes lucifer



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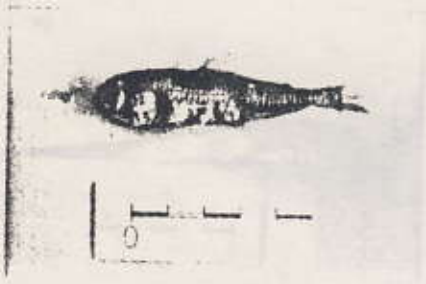
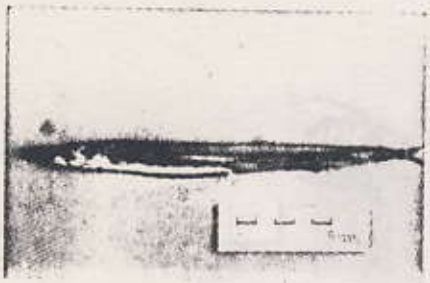


Myctophum pterotum

Neoscopelus microchir



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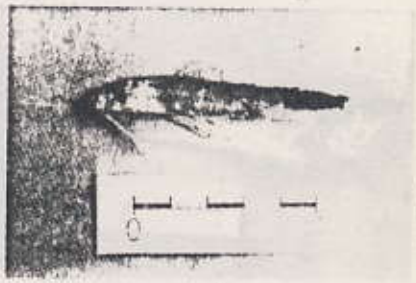

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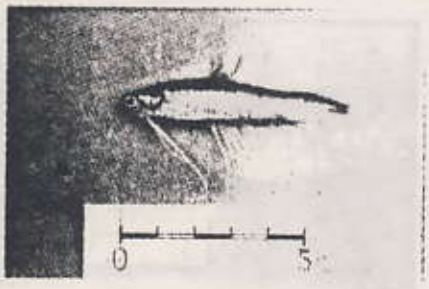

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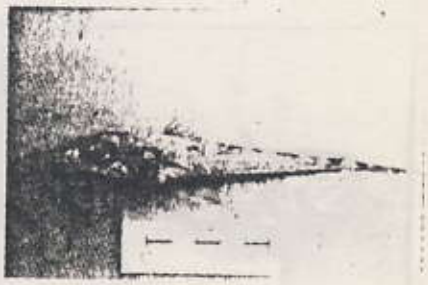
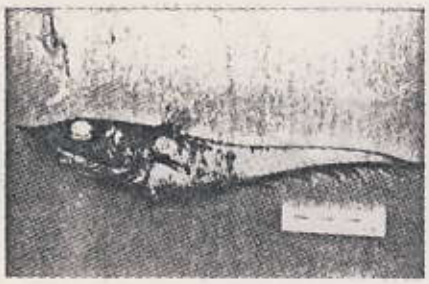
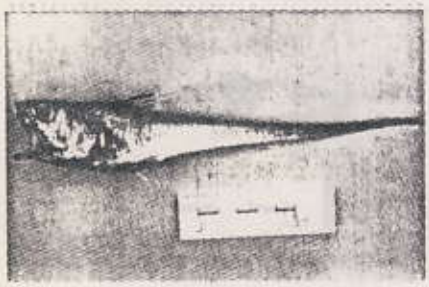


Coelorhynchus macrorhynchus



Coelorhynchus argentatus

Coelorhynchus sp.



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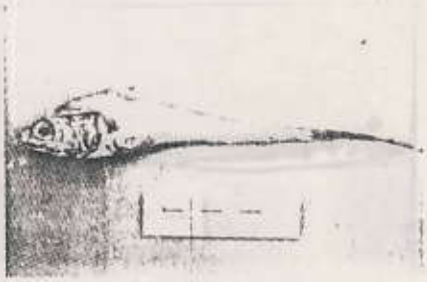

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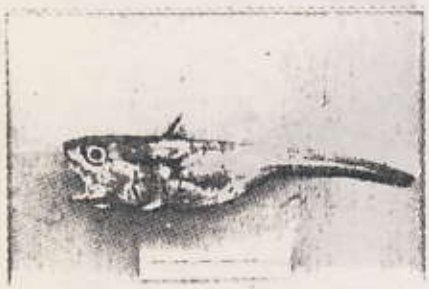
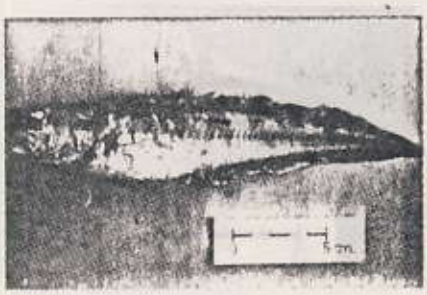
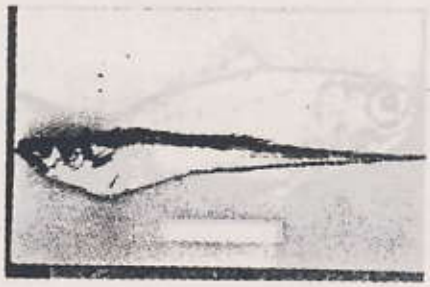


Malacocephalus laevis

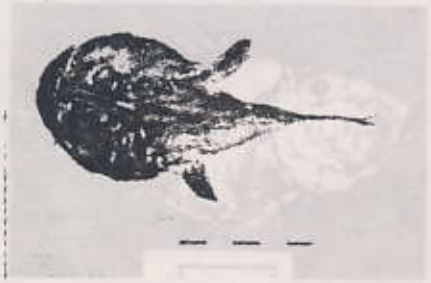


Neobythites sivicola



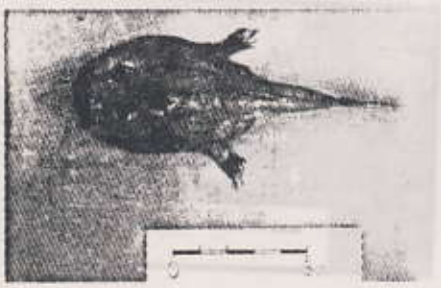
Hypopleuron caninum

Monomitopus sp.

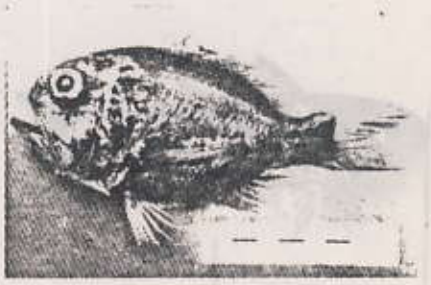


Lophiodes sp.

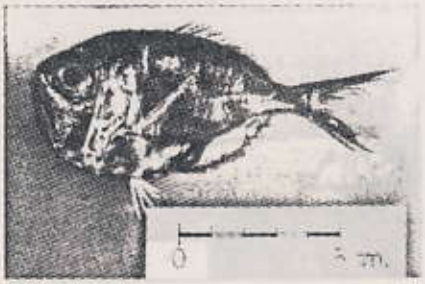
Chaunax fimbrliatus



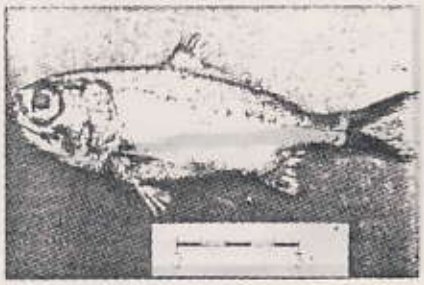
Chaunax sp.



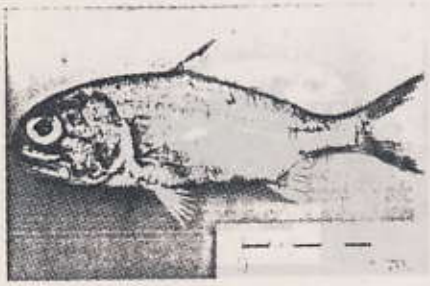
Hoplostethus crassispinus



Diretmoides sp.

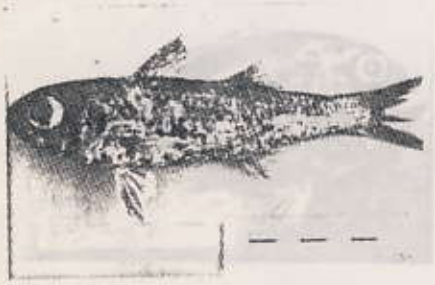


Polymixia berndti

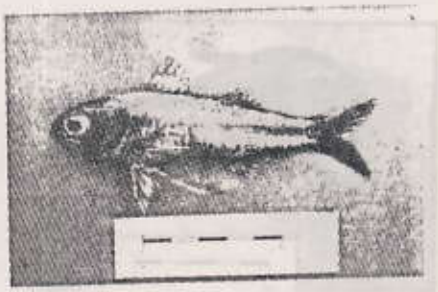


Polymixia japonicus

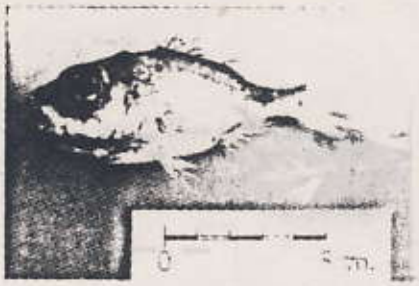
Cyttopsis rosea



Synagrops japonicus

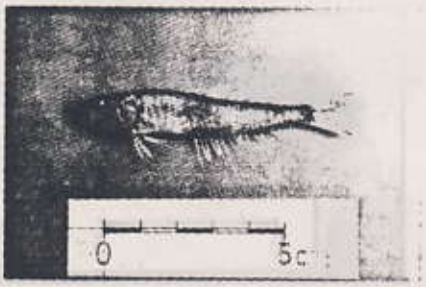


Synagrops philippinensis

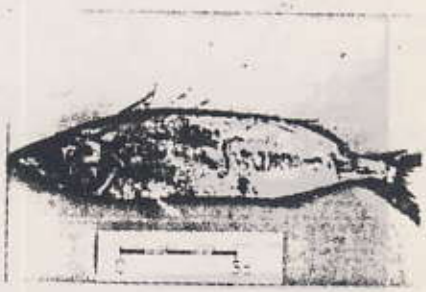


Ostracoberyx triconis

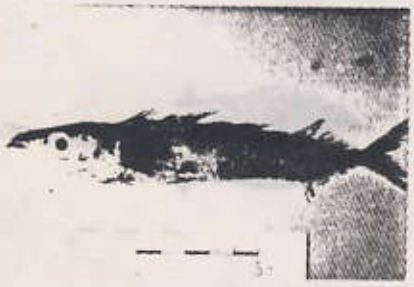
Ostracoberyx dorygenys



Champsodon carpensis

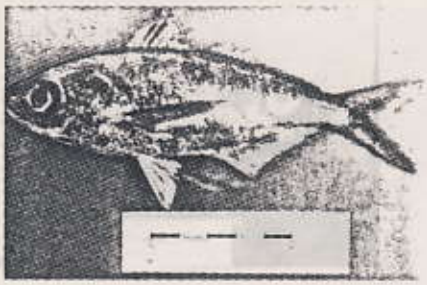


Epinnula orientalis

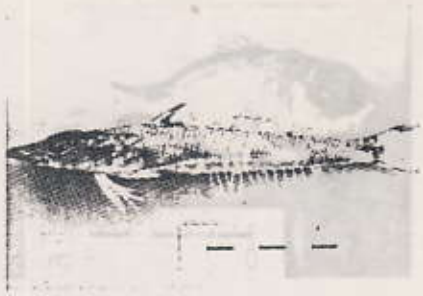


Jordanidia prometheoides

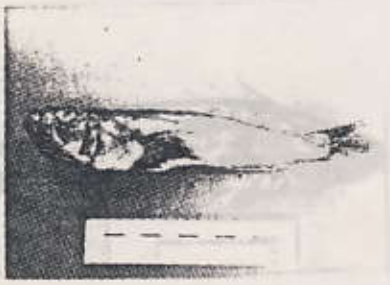
Psenopsis anomala



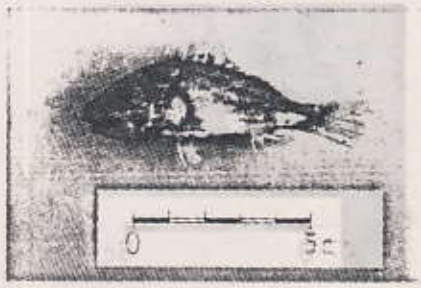
Cubiceps squamiceps



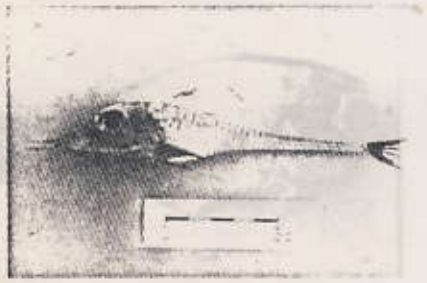
Bembrops caudimaculatus



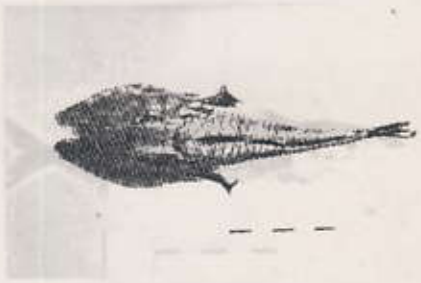
Gnathagnus elongatus



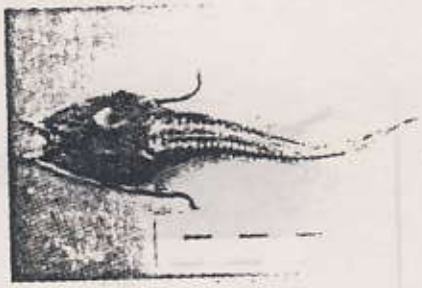
Setarches sp.



Peristedion liorhynchus

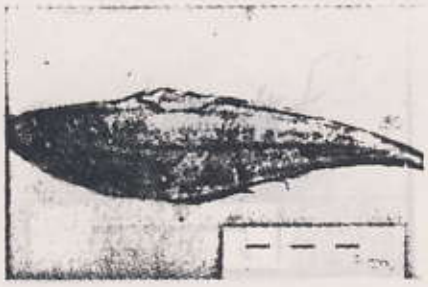


Peristedion molluccense

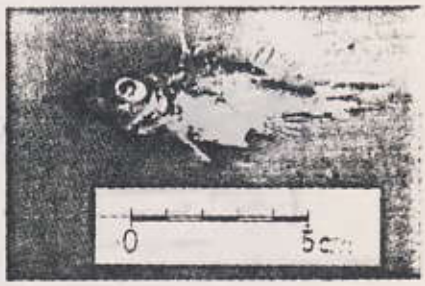


Satyrichthys hians

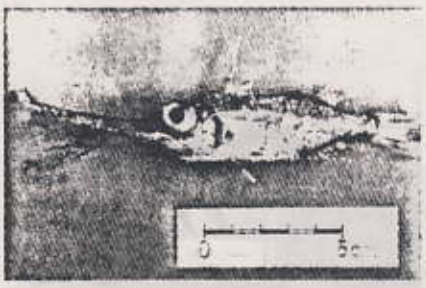
Chascanopsetta lugubris



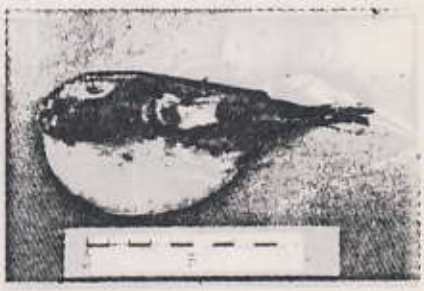
Cynoglossus sp.



Tydemania navigatoris



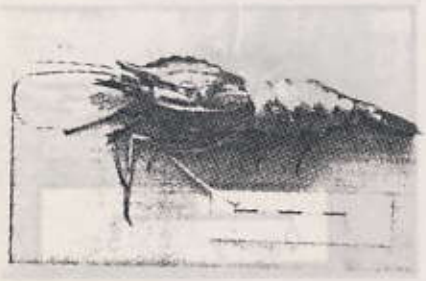
Halimochirurgus alcocki



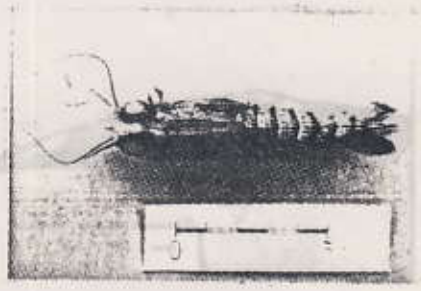
Sphoeroides pachygaster

Solenocera sp.

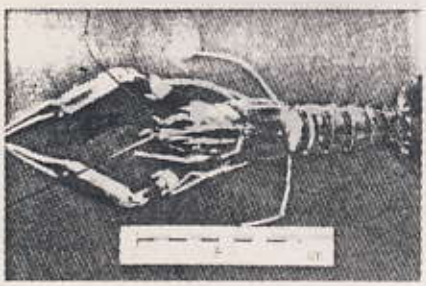
Heterocarpus sibogae



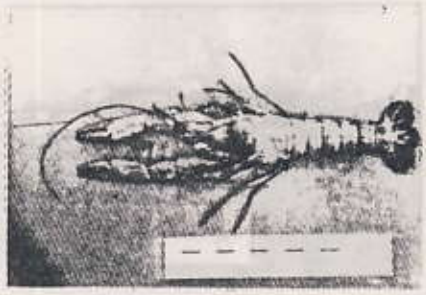
Heterocarpus sp.



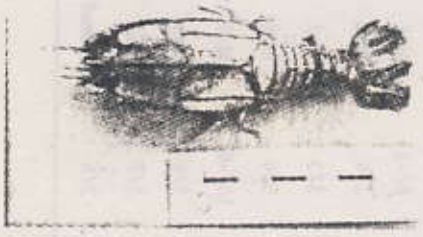
Glyphocrangron sp.



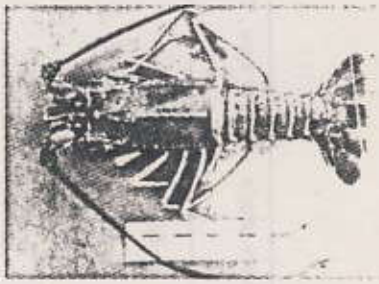
Metanephros andamanicus



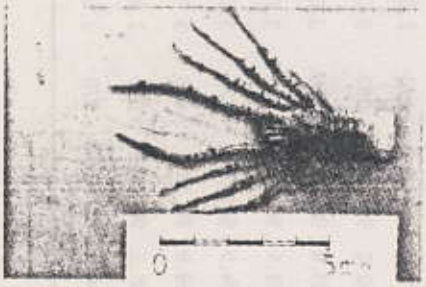
Nephropsis stewerti



Stereomastic andamanensis



Puerulus sewelli



Munida squamosa

Homola megalop

Maja kominotoensis

? Lambrus sp.

Table: Bottom Trawl Operations and Total Catch.

Operation no.	Date	Time Start	Time Finish	Trawling time (min.)	Position Start	Position Finish	course	Speed (kt)	Depth (m)	Warp/length	Wire/angle	Bottom type	Total catch (kg)
1.	30 Aug. '87	0500	0550	50	07 12.7 98 15.16	07 06.0 98 26.9	140	2.3	91	300	-8/10	Mud	18.7
2.	30 Aug. '87	0724	1025	181	07 10.6 98 17.7	07 06.0 98 26.9	100	2.5	90	300	-3/8	Mud	49.5
3.	30 Aug. '87	1300	1552	172	07 10.05 98 27.5	07 04.6 98 13.9	270	2.5	92	300	10/-8	Mud	51.4
4.	31 Aug. '87	.436	0655	139	07 11.2 99 0.1	07 04.6 98 59.4	200	2.0	59	250	5/3	Mud	202.5
5.	31 Aug. '87	0911	1114	123	07 03.6 99 00.2	07 04.6 98 53.4	265	3.0	60	250	5/4	Mud	552.0
6.	31 Aug. '87	1500	1730	150	07 13.5 99 00.8	07 04.8 98 59.2	200	3.2	62	250	10/-5	Mud	321.9
7.	6 Sep. '87	1516	1845	209	06 57.9 97 38.9	06 57.3 97 50.3	080	2.0	404	800	-5/9	-	294.2
8.	7 Sep. '87	0730	1002	152	06 57.6 97 40.7	06 55.3 97 49.4	070	2.0	421	800	-7/10	Muddy	460.5
9.	7 Sep. '87	1314	1700	226	07 00.9 97 41.04	07 01.2 97 48.5	090	2.0	419	800	5/5	Mud	521.3
10.	7 Sep. '87	2043	2245	122	07 03.89 97 42.4	07 02.5 97 48.2	090	2.0	400	850	6/-5	Mud	145.5
11.	8 Sep. '87	0656	1000	184	07 04.1 98 42.8	07 02.2 98 57.2	085	3.0	88	300	2/4	Mud	646.0
12.	8 Sep. '87	1051	1500	249	07 02.5 98 55.4	07 03.8 98 44.3	286	3.0	72	300	3/5	Mud	806.0
13.	8 Sep. '87	1556	2000	244	07 02.7 98 42.4	07 03.4 98 56.9	090	3.0	83	300	5/4	Mud	1197.0
14.	9 Sep. '87	0536	0940	244	07 03.3 98 57.8	07 04.5 98 43.2	275	3.0	80	300	10/-8	Mud	1285.3
15.	9 Sep. '87	1102	1538	276	07 04.3 98 44.9	06 58.9 98 58.1	095	3.0	75	300	5/4	Mud	452.0
16.	11 Sep. '87	0828	1330	302	07 01.9 98 41.9	06 58.3 99 03.8	090	2.8	77	300	3/7	Mud	1648.7
17.	11 Sep. '87	1537	2003	266	07 01.4 98 56.3	07 04.1 98 41.08	270	3.0	68	300	3/5	Mud-sand	554 0