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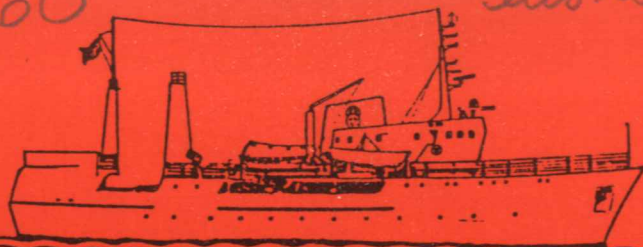
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Reports on Surveys with the

R/V Dr Fridtjof Nansen



NORAD/UNDP/FAO

PROGRAMME GL0/82/001

CRUISE REPORT
"DR. FRIDTJOF NANSEN"

FISHERIES RESOURCES SURVEY

IRAN

21-23 MAY, 30 MAY-2 JUNE,
12 - 15 JUNE

1984

EGIL ONA

JUNE 1984

Institute of Marine Research, Bergen

INTRODUCTION

The research vessel "Dr. Fridtjof Nansen" is scheduled to undertake several fishery resources surveys in the North Arabian Sea during 1983-84. These investigations are part of the UNDP/FAO Global Programme GLO /82/001.

The first cruise in Iranian waters under this programme was carried out in late September 1983. The survey programme included acoustical survey for the purpose of mapping fish distribution and abundance estimation, trawling for identification of echo recordings, biological sampling and hydrographical work.

The vessel carried out similar surveys in these waters during the North Arabian Sea Programme 1975-1976. These investigations are reported in five cruise reports, and further analysed by Kesteven et al. (1981).

The present survey should, according to the original cruise plan, carry out similar investigations on the shelf of Iran, from Ras al Shir to the Pakistanian border in the period 21 May-2 June 1984.

After about 2 days work on this survey, breakdown in the electric generator made it impossible to operate the trawl gears, and 7 days of the original cruise plan were lost repairing the generator in Dubai. In addition, formal restrictions on travel for the Iranian scientists, reduced the vessels operational time severely. As a consequence the original survey programme had to be reduced and was limited to an acoustic coverage of the mesopelagic resources of the Iranian side of the Oman gulf.

Scientific staff.

Egil Ona (cruise leader), K. Pittman, K. Strømsnes, A. Roald, T. Mørk, all from the Institute of Marine Research, Bergen, Norway.

From Marine Fisheries Departement, Bander Abbas: Bahram Ansari.

NARRATIVE

The cruise started at the western Iranian border in the evening 21 May, but was terminated at trawl station 45 (Figure 1), returning to Dubai for repairs. The vessel entered Iranian waters after the repair on its way to Karachi, Pakistan, and two hydrographical sections were worked on 31 May and 1 June. Echo integration of mesopelagic fish were made during passage of Iranian waters. Returning from the cruise on the Pakistan coast in the morning on 12 June, a complete coverage of the mesopelagic resources, from the edge of the continental shelf to the mid-line in the Oman Gulf was made, using parallel transects 20-30 nautical miles apart. The cruise was terminated at the western Iranian border at 1000 hours on 15 June. The vessel berthed at Dubai on 15 June at 2300 hours.

The distance sailed in the three separate periods and the number of stations worked were as follows -

Sailing distance	1340 nautical miles
Hydrographical stations	10
Pelagic trawl hauls	2
Bottom trawl hauls	1

Weather conditions were good. Except for the generator breakdown, instruments and gears functioned satisfactorily.

RESULTS

Hydrography

Two hydrographical sections were worked, together with one section, just over the border of Pakistan, (Figure 1), which also will be representative for the general hydrographical conditions on the eastern Iranian coast. (Figure 2 and 3).

The temperature in the surface layers was measured to 30-31°C at the head of the Gulf, decreasing eastwards to 28-29°C. Surface salinity also show a similar decreasing trend from Ras al Kuh, - eastwards. A sharp thermocline was found at 30-40 m

in the western section and at about 50 m off Ras Maidani. An intermediate layer, most prominent in the salinity profiles can be identified as Persian Gulf water. It's depth increases eastwards to about 250 m in the Ras Maidani section. A tendency of a shallow rise of the isolines of temperature, density and oxygen, particularly in the Ras al Kuh-section, indicates a local upwelling. This was also seen in the western section of Pakistan.

Bottom fish

As the planned survey on the shelf area was terminated at the first trawl station, no distribution maps are presented. Trawl station no. 45 indicated a high diversity of demersal fishes, with 27 different species, fairsized Pomadasys hasta being the dominant. The catch rate was about 5 tonnes per hour trawling, but additional 5 tonnes of mud and clay inside the bag indicate that the area was unsuitable for trawling with heavy otter-boards and bobbins. The catch data is presented in ANNEX I.

Mesopelagic fish

Recordings of mesopelagic fish were made at and off the edge of the continental shelf in the entire area covered. (Figure 4). The vertical migration pattern was as expected from previous cruises, with two separate scattering layers both at day and night. The vertical migrations were fast, the downward movement at sunrise often completed within 20 minutes.

The recordings were generally scattered to dense, but belts with higher densities, 30-60 nautical miles wide, were found all along the covered area. The DAY-II scattering layer, below 200 meters depth, gave weak and blurred recordings, but very high integrator values. The recordings of mesopelagic fish were easily identified, and two pelagic trawl stations were worked to check the length frequency distribution of the predominant species; Benthoosema pterotum. Estimates of total biomass of mesopelagic fish in the area will be made in the final reports.

Plankton

The distribution of plankton in the covered area is shown in Figure 5. The recordings were mainly scattered with three limited areas of higher density. As jellyfish and small shrimps were found in the pelagic trawl stations, these were probably the main contributors to the integrated echo intensity in the plankton layer. No plankton net samples were collected.

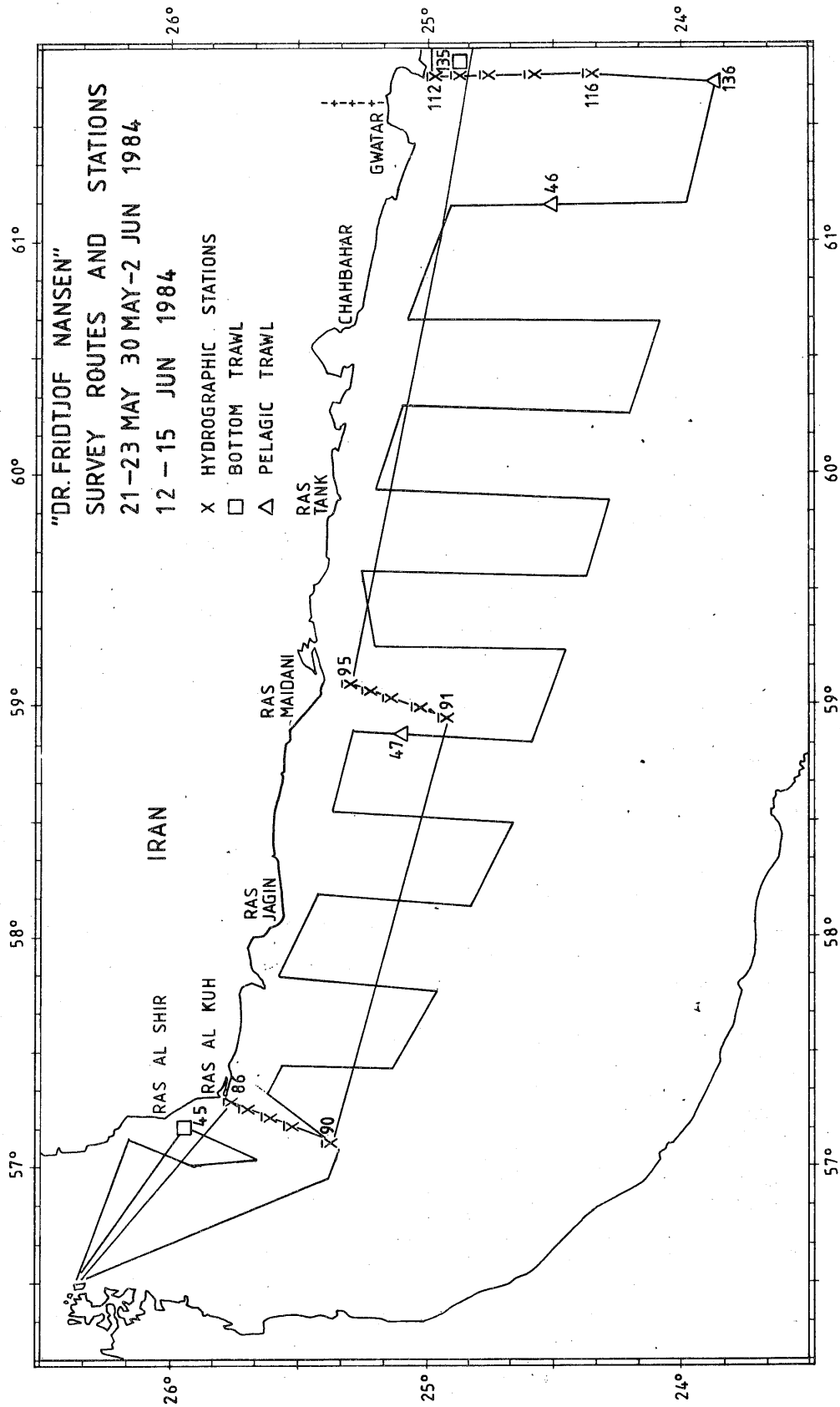
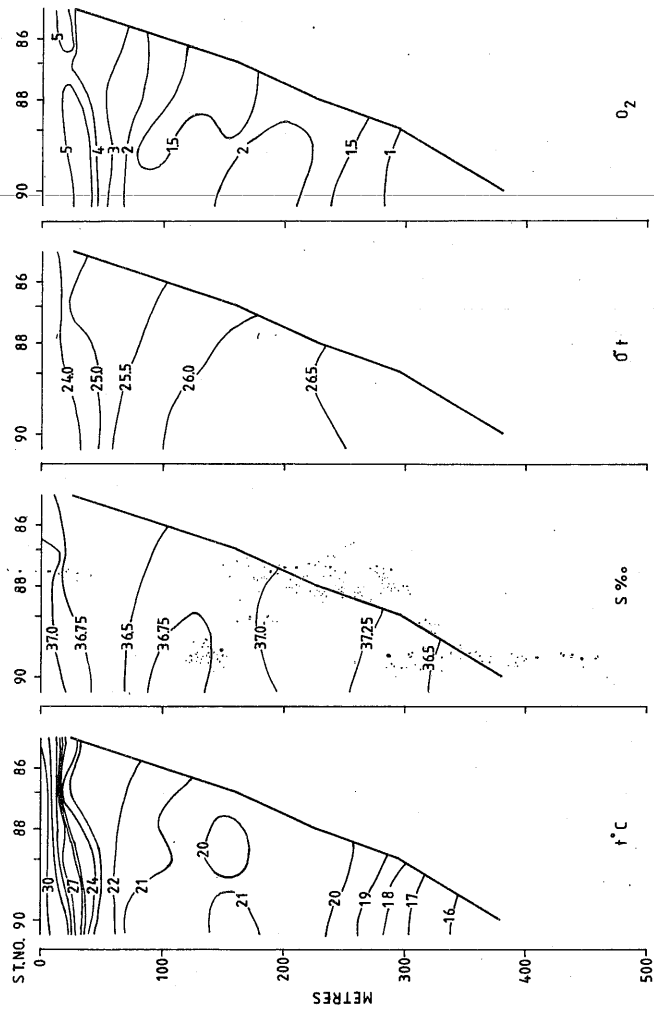


Fig. 1. Survey routes and stations. "Dr. Fridtjof Nansen's fisheries resources survey, Iran, 21-23 May, 30 May-2 June, 12-15 June 1984.



RAS AL KUH - S 31 MAY 1984

Fig.2. Section I: Ras al Kuh - South, 31 May 1984. Temperature, salinity, density and oxygen contents.

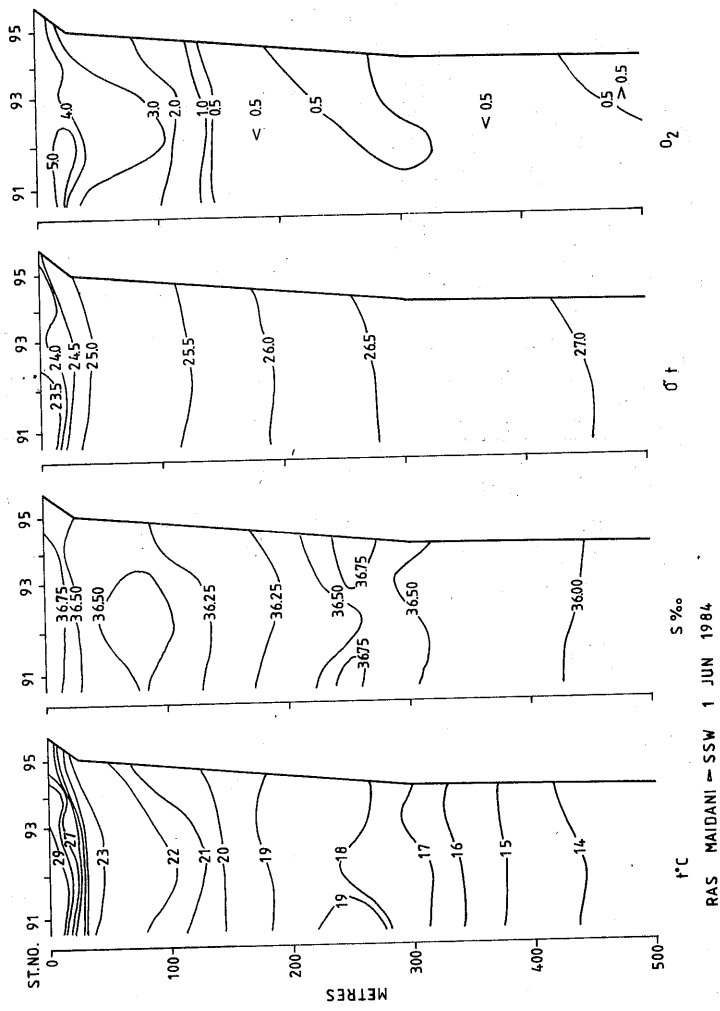


Fig.3. Section II: Ras Maidani - SSW, 1 June 1984. Temperature, salinity, density and oxygen contents.

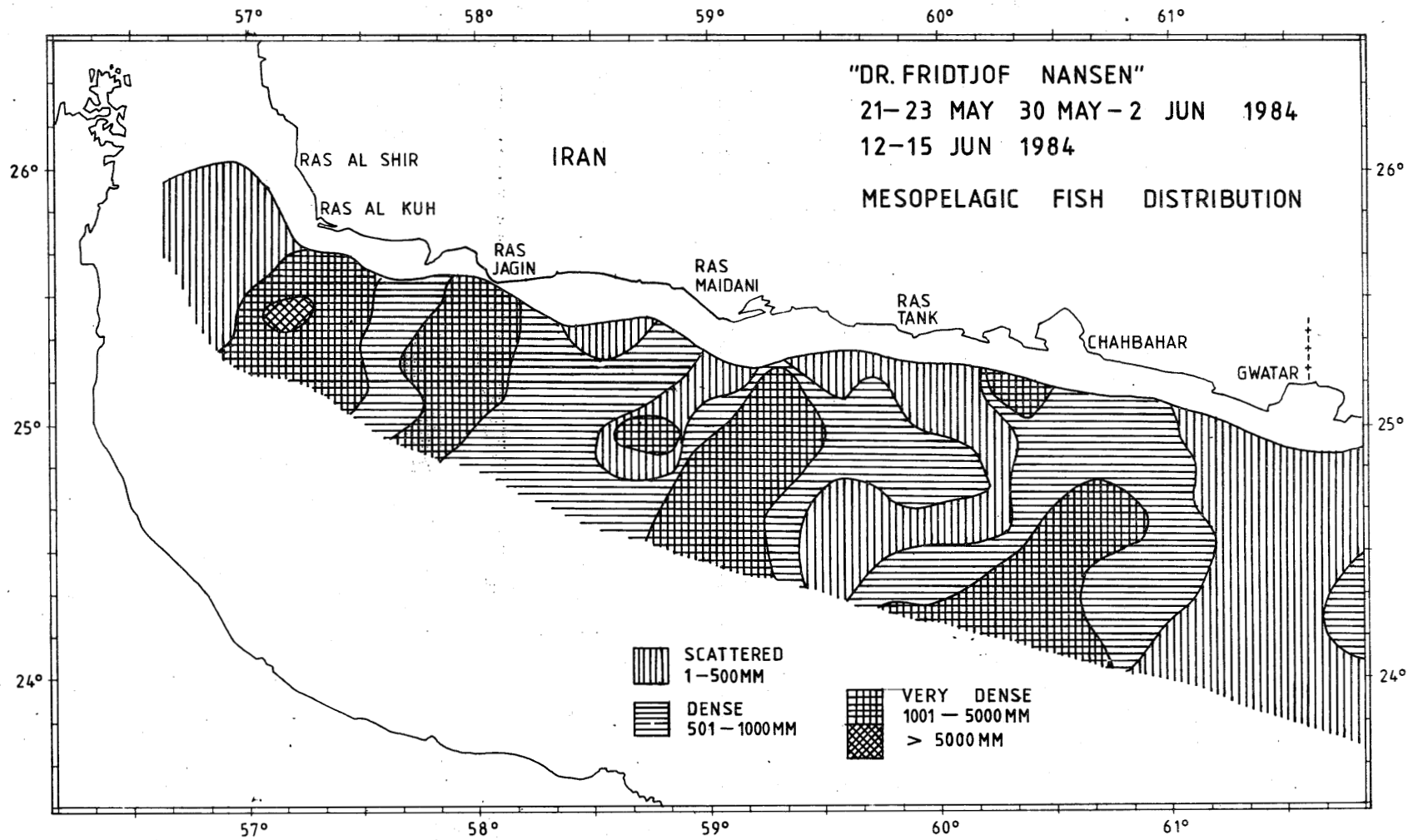


Fig. 4. Mesopelagic fish distribution. "Dr. Fridtjof Nansen"s fisheries resources survey, Iran, 21-23 May, 30 May-2 June, 12-15 June 1984.

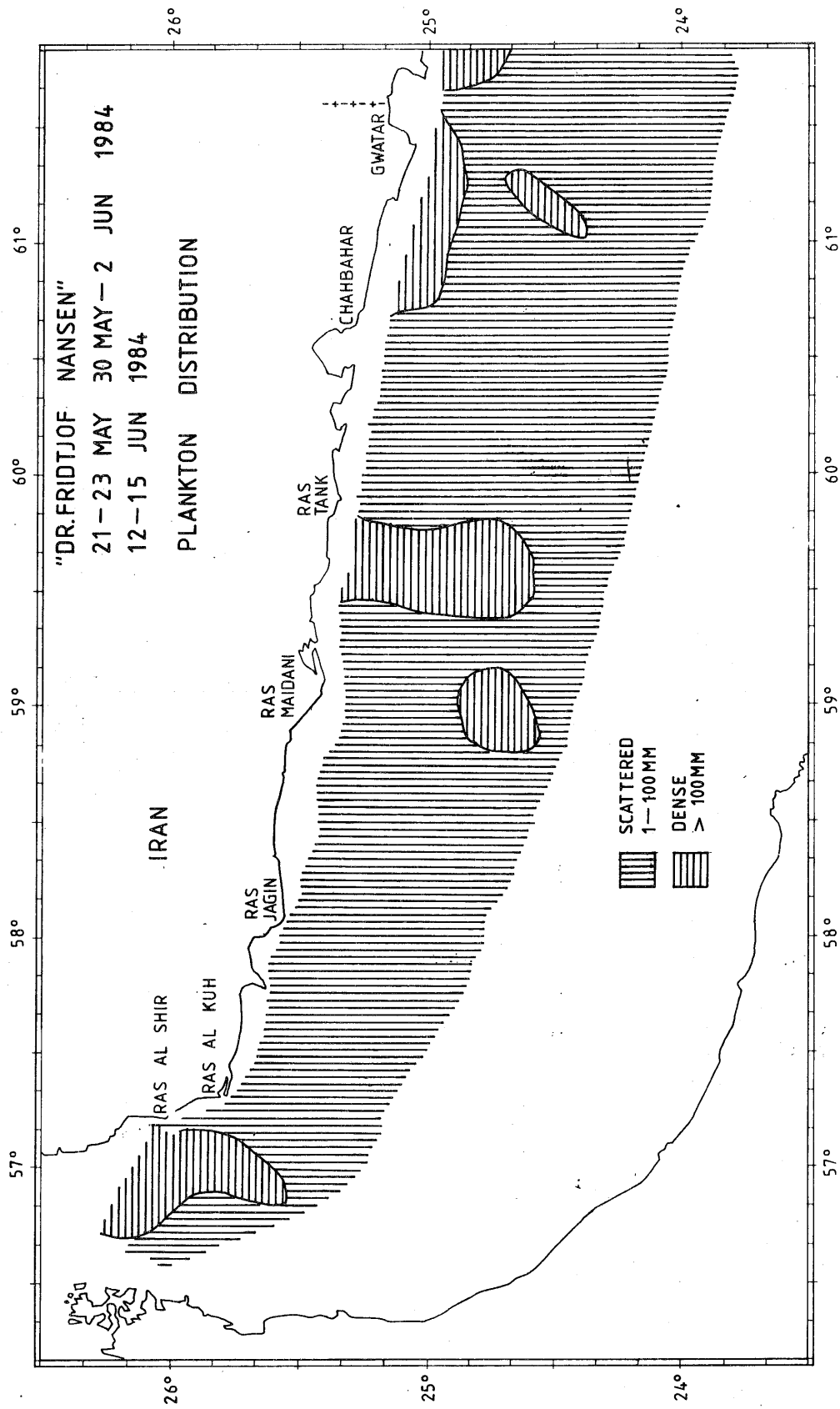


Fig. 5. Plankton distribution. "Dr. Fridtjof Nansen"s fisheries resources survey, Iran, 21-23 May, 30 May-2 June, 12-15 June 1984.

ANNEX I: Details of fishing stations with dominant species.

R/V DR. FRIDTJOF NANSEN CATCH DATA FISHING STATION NO.:243
 PROJECT STATION NO.:045

PROJECT:AS
 DATE: 22/05 1984 GEAR TYPE:BT No:1 POSITION:Lat N 2556
 start stop duration Long E 05711

TIME : 0710 0740 030(min) Purpose code:1
 LOG : 6491 6492 1,5 TOWING DIR:210
 FDEPTH: 042 071 WIRE OUT :0300m SPEED:3,0
 BDEPTH: 0042 0071

TOTAL CATCH: 02501,1KG. CATCH/HOUR: 05002,2KG. SORTED:064,3KG.

SPECIES	CATCH PER HOUR		% OF TOT.C.	SAMP.NO
	weight	numbers		
Pomadasys hasta	774,00	700	15,4	
Lutjanus malabaricus	466,80	156	9,3	
Epinephelus malabaricus	459,00	78	9,1	
Carangoides talamparoides	451,20	156	9,0	
Nemipterus japonicus	427,80	2566	8,5	1
CARCHARHINIDAE	389,00	156	7,7	
Ilisha melastoma	311,20	9258	6,2	3
Carangoides malabaricus	303,40	2566	6,0	2
Arius thalassinus	245,00	312	4,8	
Saurida tumbil	186,60	544	3,7	
DASYATIDAE	143,80	78	2,8	
Trichiurus lepturus	116,80	232	2,3	
Argyrops spinifer	116,80	232	2,3	
Pomadasys macracanthus	78,00	544	1,5	4
Pampus sp.	78,00	78	1,5	
Psettodes erumei	73,80	78	1,4	
Leiognathus berbis	62,20	6768	1,2	
Selar crumenophthalmus	54,40	156	1,0	
Synagrops sp.	54,40	5678	1,0	
Leiognathus sp	46,60	1244	,9	
Loligo sp	46,60	466	,9	
Ariomma indica	31,20	78	,6	
Megalaspis cordyla	27,20	78	,5	
Platycephalus sp.	23,40	156	,4	
Therapon theraps	19,40	156	,3	
Upeneus sulphureus	11,60	78	,2	
Leiognathus bindus	3,90	78	,0	
	5002,10		98,5	

R/V DR. FRIDTJOF NANSEN

CATCH DATA

FISHING STATION NO.:285

PROJECT STATION NO.:046

PROJECT:AS

DATE: 12/06 1984

GEAR TYPE:PT No:2

POSITION:Lat N 2431

start stop duration

Long E 06109

TIME : 1630 1645 015(min)

Purpose code:1

LOG : 9115 9115 0,6

TOWING DIR:180

FDEPTH: 170 170

WIRE OUT :0450m SPEED:2,4

BDEPTH: 0999 0999

TOTAL CATCH: 00090,0KG.

CATCH/HOUR: 00360,0KG.

SORTED:030,0KG.

SPECIES	CATCH PER HOUR		% OF TOT.C.	SAMP.NO
	weigth	numbers		
Benthoosema pterotum	360,00	0	100,0	27
	<u>360,00</u>		<u>100,0</u>	

R/V DR. FRIDTJOF NANSEN

CATCH DATA

FISHING STATION NO.:286

PROJECT STATION NO.:047

PROJECT:AS

DATE: 14/06 1984

GEAR TYPE:PT No:2

POSITION:Lat N 2506

start stop duration

Long E 05852

TIME : 0835 0905 030(min)

Purpose code:1

LOG : 9574 9576 1,5

TOWING DIR:195

FDEPTH: 250 250

WIRE OUT :0650m SPEED:3,0

BDEPTH: 0600 0600

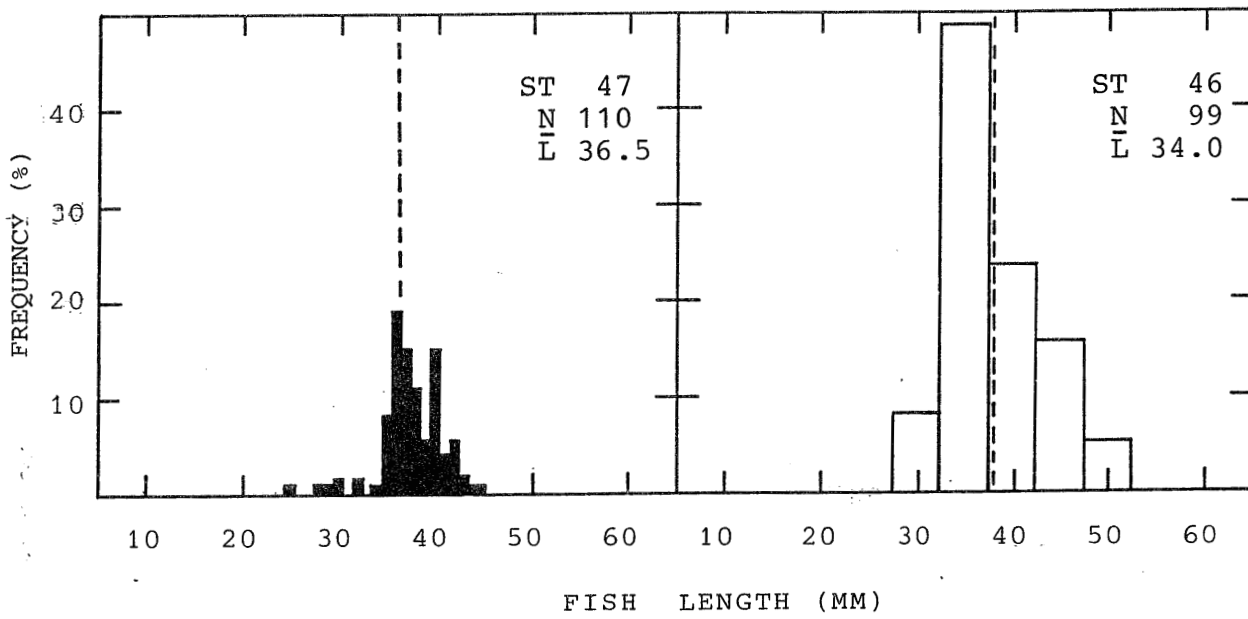
TOTAL CATCH: 00027,5KG.

CATCH/HOUR: 00055,0KG.

SORTED:027,5KG.

SPECIES	CATCH PER HOUR		% OF TOT.C.	SAMP.NO
	weigth	numbers		
Benthoosema pterotum	30,00	0	54,5	28
JELLYFISH	20,00	0	36,3	
Trichiurus lepturus	4,00	8	7,2	
SHRIMPS	1,00	0	1,8	
	<u>55,00</u>		<u>99,8</u>	

ANNEX II: Length frequency distribution of the lantern fish BENTHOSEMA PTEROTUM.



ANNEX III

Settings and performance of acoustic instruments

Echo sounders

Frequency	38 kHz	120 kHz
Basic range	0-100/0-250+250	0-100
* Bandwidth	3.3 kHz	3.3 kHz
* Pulse length	1.0 ms	1.0 ms
TVG and gain	20 log R-20 dB	20 log R-0 dB
Recorder gain	7	5/6
* Transmitter power	4813 W	233 W
Transducer dimension (Ceramic)	8° x 8° (30 x 30 cm)	10° (Circular)
Discriminator	4-7	5-6
* Source level + voltage response	140.7 dB	114.9 dB
Measured	May 1984	August 1983

Integrators	QD/38 kHz	QM/120 kHz
* Integrator threshold(All ch.)	10 mV	10 mV
* Integrator gain	30 dB	10 dB x 10
* Depth intervals	/4-25/25-50/50-75/ /75-100/100-125/ /125-150/150-200/ /200-250/250-400/	A: 4-50 B: 50-100
Bottom channels	/ BI 6.0 m BII 0.1-0.4 m	
Bottom stop	On	On
xx) Calculated instrumental constant (C_I)	0.082	

* Parameters changed or new from previous cruises on R/V "Dr. Fridtjof Nansen" due to installation of Simrad EK-400 echo sounders and QD-integrator. Parallell integration on QD and QM ("old settings") were made for reference purposes.

Sonar ST (18 kHz) was operated in areas with schooling activity. Sonar S 109 was not used due to malfunctions.

XX) Scaling factor - 10.0(Used for mapping purposes)

ANNEX IV

Fishing gear

Bottom trawl:

High opening shrimp and fish trawl with rubber bobbins of 50 cm diameter. Headrope 41 m. Opening height during trawling approximately 6 m. Mesh size in the wings 40 mm, gradually reduced to 20 mm in the cod end.

Pelagic trawl:

Capelin trawl with four equal panels, approximately 30 x 30 m at opening. Height during trawling varying between 12 and 15 m, the larger when trawling with extra floats at the surface. Mesh size at cod end 20 mm.

The pelagic trawl is monitored with a cable connected net sonde.