

**West Madagascar: Pelagic
Ecosystem Survey**

SWIOFP/ASCLME / FAO 2009 Cruise 2

25 August– 03 October 2009

Preliminary report

Institute of Marine Research

Norway

CRUISE REPORTS "DR. FRIDTJOF NANSEN"

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Preliminary report

by

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**Institute of Marine Research
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1. INTRODUCTION

In August-October 2009 the R/V 'DR. Fridtjof Nansen' in collaboration with Agulhas & Somali Current Large Marine Ecosystems project (ASCLME) and South West Indian Ocean Fisheries Project (SWIOFP), undertook a 6 week survey in Western and Northern Madagascar to study the pelagic ecosystem.

1.1. AIMS AND OBJECTIVES

The aim of the R/V 'Dr. Fridtjof Nansen' survey was to establish the physical, chemical and biological characteristics of the Western Madagascar shelf region as a whole. South West Indian Ocean Fisheries Project (SWIOFP) has identified small pelagic fishes (scads, mackerels, herrings and sardines) as a potential future source in west Madagascar waters.

The main objectives of the survey were as follows:

- To carry out a multi-disciplinary cruise that investigates the physico-chemical processes and fisheries potential of small pelagic fishes along the southern and west Madagascar Shelf.
- To determine the distribution and abundance of small pelagic fish shoals along the southern and West Madagascar shelf using acoustics methods and a systematic grid survey strategy.
- To use regular midwater trawls on target fish aggregations for species composition, biological information and genetic material of selected small pelagic fishes for fisheries resource assessment purposes.
 - To establish the distribution, abundance and composition of organisms at a number of trophic levels along the shelf.
- To establish, as far as possible, the productivity, biodiversity and biomass of the pelagic ecosystem.
- To establish the role of the shelf region and terrestrial input in linking coastal and pelagic biomes (coupling).
- To investigate the role of coastal currents as dispersal agents.
- To investigate mesopelagic and, if trawlable conditions exist, demersal fish species diversity and abundance
- To link various sources of energy and nutrition to different food-web compartments.

- Capacity building of ASCLME and SWIOFP trainees and young scientists.
- To fulfil the data management agreement contained in Annex IX.

1.2 PARTICIPATION

A total of 29 scientists and technicians participated in the two legs of the survey. The full list of the participants, their affiliations and the stages of the survey where they participated is given in Table 1.1 below:

Table 1.1 List of participants

Participants	Institution	Period
Hermann Benivary	SWIOFP, Madagascar	25.08-03.10
Roberto Komeno	SWIOFP, Madagascar	25.08-03.10
Faustinato Behivoke	SWIOFP, Madagascar	25.08-18.09
Thomas Razafimanambina	SWIOFP, Madagascar	25.08-03.10
Eugene Ranaivoson	SWIOFP, Madagascar	25.08-03.10
Emmanuel Kakunde Mbaru	SWIOFP, Kenya	25.08-18.09
Johan Groeneveld (Local Cruise Leader)	SWIFOP, South Africa	25.08-18.09
Sean Fennessy (Local Cruise Leader)	SWIFOP, South Africa	18.09-03.10
Morgane Perri	SWIOFP, France	25.08-03.10
Dany Ramantosa	ASCLME, Madagascar	25.08-18.09
Felicite Ahitantsoa	ASCLME, Madagascar	25.08-18.09
Bebe Raharinosy	ASCLME, Madagascar	25.08-18.09
Alan Foulis	ASCLME, South Africa	25.08-03.10
John Bemiasa	ASCLME, Madagascar	25.08-03.10
Jean Charles Lope	ASCLME, Madagascar	25.08-03.10
Gildas Todinanahary	ASCLME, Madagascar	25.08-18.09
Fiona MacKay	SWIFOP, South Africa	18.09-03.10
Thomas Mkare Kalama	SWIOFP, Madagascar	18.09-03.10
Anasvaler Mbelomanana	SWIOFP, Madagascar	18.09-03.10
Soambola Amelie Landy	SWIOFP, Madagascar	18.09-03.10
Rabary Andriantsilvao	SWIOFP, Madagascar	18.09-03.10
Luy George Razanamalala	ASCLME, Madagascar	18.09-03.10
Oddgeir Alvheim (Cruise Leader 1 st leg)	IMR, Norway	25.08-18.09
Else Torstensen (Cruise Leader 2 nd leg)	IMR, Norway	18.09-03.10
Diana Zaera	IMR, Norway	25.08-03.10
Tore Mørk	IMR, Norway	25.08-29.09
Martin Dahl	IMR, Norway	25.08-29.09
Ole Sverre Fossheim	IMR, Norway	29.09-03.10
Terje Hovland	IMR, Norway	29.09-03.10

List of institution abbreviations:

ASCLME; Agulas and Somali Current Large Marine Ecosystems Project

IMR; Institute of Marine Research, Norway

SWIOFP; South West Indian Ocean Fisheries Project

1.3 NARRATIVE

The Vessel left Tuléar (Toliara), in the southwest of Madagascar, on 26th August at 14:00, local time. The weather was rough, with near gale force wind. The vessel sailed to the south and started the survey off the southern shelf area and seamounts before crossing from the south and towards the north. The first hydrographic transect on the seamounts was taken the 28th of August, and the 30th the survey started the acoustic transects and fishing operations on Madagascar's southern shelf. The weather improved gradually, as we moved towards the west. By September the 5th, the boat had to make a short stop at Tuléar to disembark one of the crew members. The work was resumed the same day. September the 18th, the boat docked in Majunga (Mahajanga) for a scheduled change of scientific personnel. The work was continued late the same day. The 27th of September the boat anchored off Hell Ville, Nosy Be, for a scheduled change of the maritime crew. The 3rd of October the survey finished at Antsiranana (Diego Suárez) in northern Madagascar.

Continuous acoustic recording and analyses were carried out along preset course track through out the survey. Pelagic and demersal trawling was carried out to identify acoustic target species and to obtain information on fish abundance and species composition in the area. Eleven environmental transects consisting of CTD-stations were taken to the bottom or to a maximum of 3000 m depth on predefined stations along selected hydrographical transects and water samples were collected with Niskin bottles at predefined depths on these. Zooplankton samples were taken from 200 m depth to the surface with Hydrobios Multinet plankton sampler on the hydrographical stations of the transects. Grab samples for sediment macrobenthos were taken at a series of depths along transects running perpendicular to the coast.

1.4 SURVEY EFFORT

For the purpose of acoustic abundance estimation the coast was divided into three areas; The South coast, south of 25° S, the Southwest coast between 25° S and 20° S and the Northwest coast between 20° S and 12° S. Figures 1.1-1.3 show the cruise tracks with bottom trawls, pelagic trawls, hydrographic stations, grab and plankton stations.

Table 1.2 summarises the survey effort in each region.

Table 1.2 Number of hydrographic (CTD), plankton (PL), pelagic trawl (PT), bottom trawl (BT) and grab (GR) stations as well as the distance surveyed (NM) during the survey, by regions.

Region	CTD	PL	PT	BT	GR	NM
South coast	38	25	6	10		1235.9
South west coast 25°-20°	36	24	2	7	11	876.8
North west coast 20°-12°	108	40	23	35	25	3121.3

Total	182	89	31	52	36	5234.0
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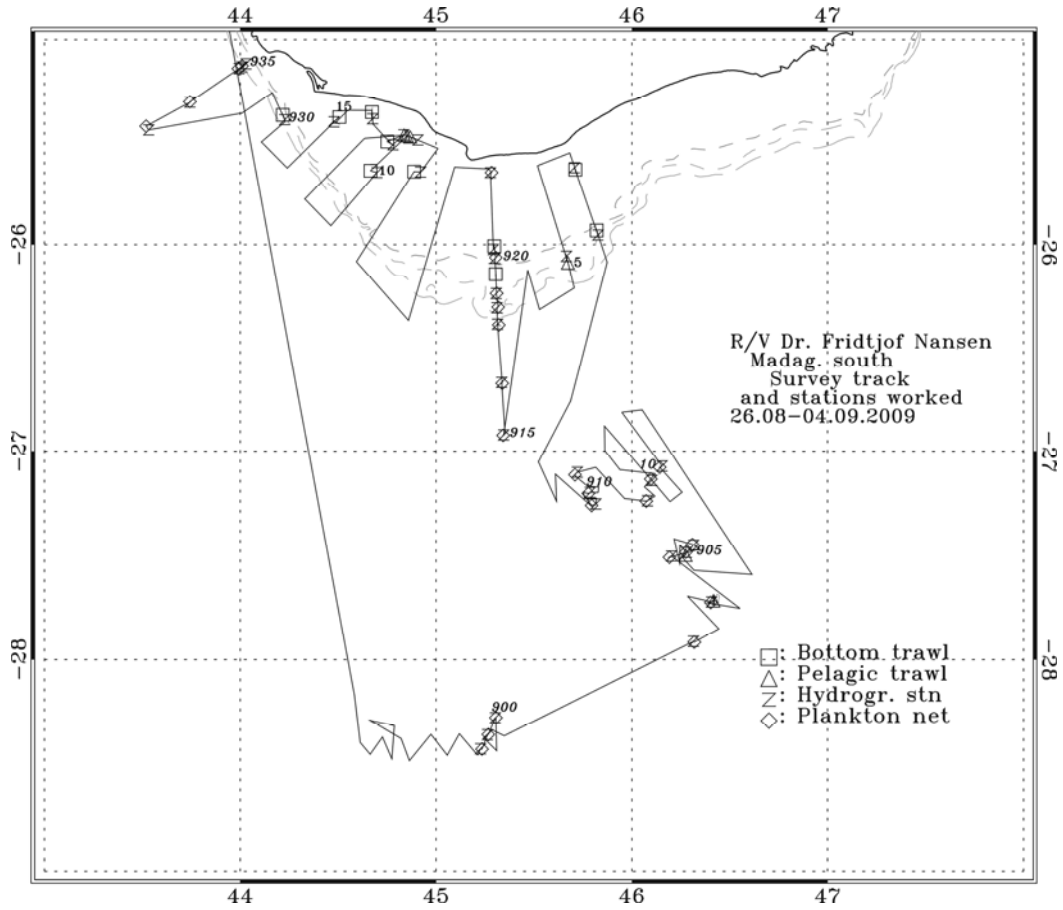


Figure 1.1. Southern region. Course track with bottom trawl, pelagic trawl, plankton and hydrographic stations. The 100, 500 and 1000 m depth contours are indicated.

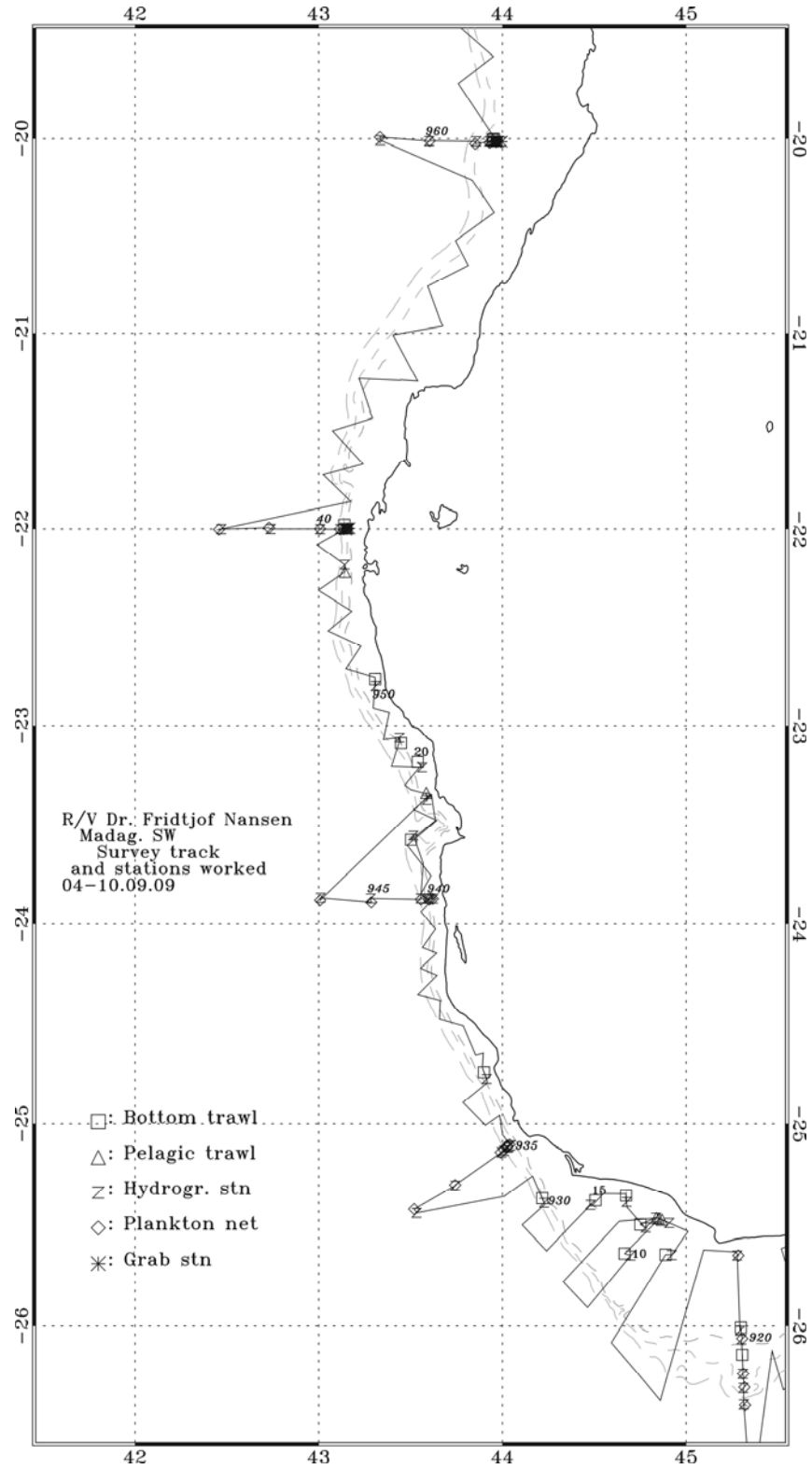


Figure 1.2. South-western coast. Course track with bottom trawl, pelagic trawl, plankton, grab and hydrographic stations. The 100, 500 and 1000 m depth contours are indicated.

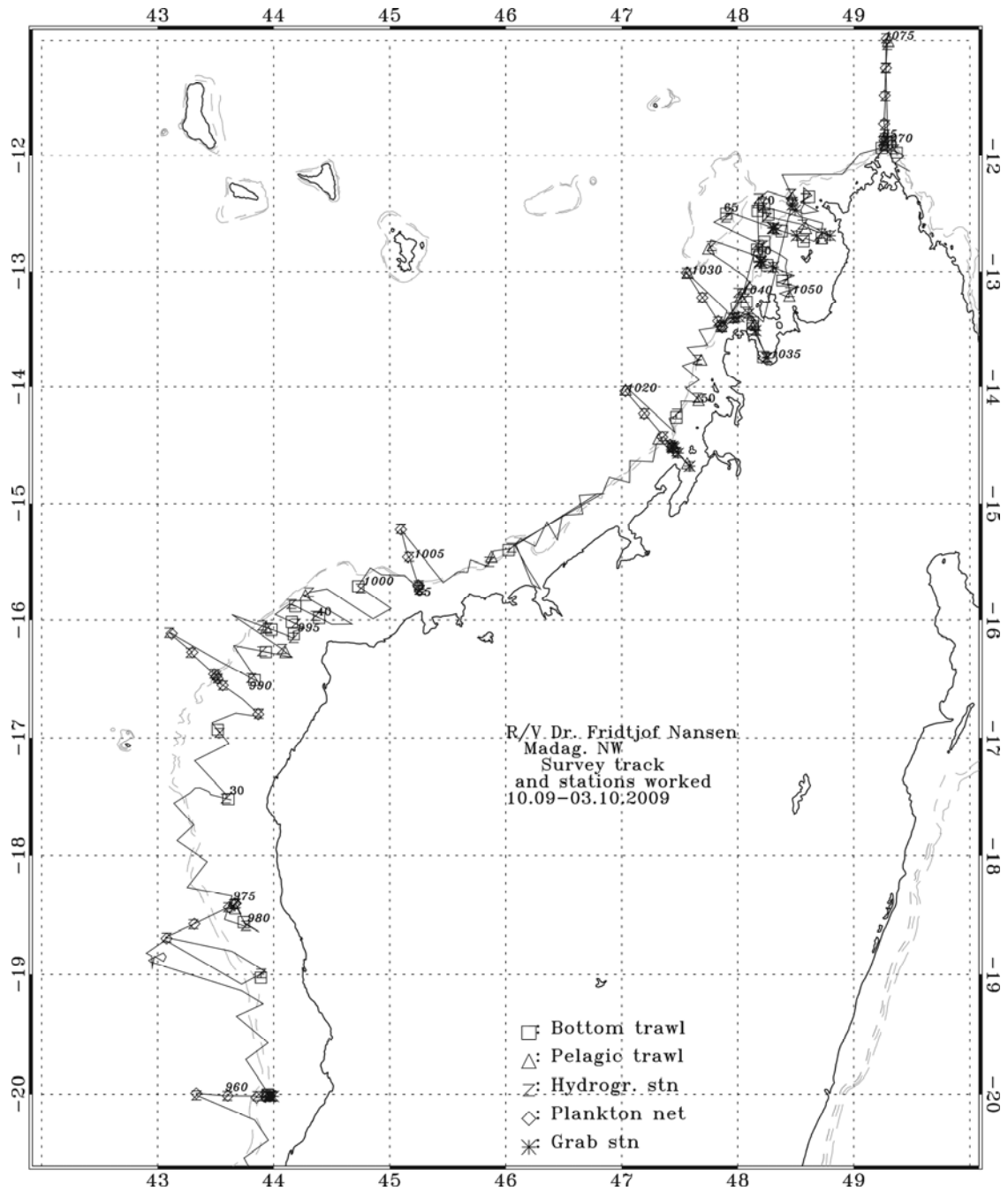


Figure 1.3. North-western coast. Course track with bottom trawl, pelagic trawl, plankton, and hydrographic stations. The 100, 500 and 1000 m depth contours are indicated.

2. METHODS

2.1 METEOROLOGICAL AND HYDROGRAPHICAL SAMPLING

2.1.1 CTD profiles

A total of 182 CTD stations were conducted along selected hydrographical transects (Figures 1.1-1.3). A Seabird 911plus CTD plus was used to obtain vertical profiles of temperature, salinity and oxygen. Real time plotting and logging was done using the Seabird Seasave software installed on a PC. The profiles along the Madagascar shelf and slope were usually taken down to a few metres above the bottom, whilst offshore, due to instrument restrictions, the maximum sampling depth was 3000 m. Water samples were normally taken at 5 standard depths; below fmax (maximum fluorescence detected during the CTD downcast and bottles triggered on the upcast), at fmax, two between fmax and the surface and at the surface (4-5 m) for nutrient analysis. Nutrient samples were frozen onboard for analysis on land.

Also attached to the CTD was a Chelsea Mk III Aquatracka fluorometer. It measures chlorophyll-a concentration in microgram per litre with an uncertainty of 3%. Factory slope and offset were 0.921 and -0.02.

2.1.2 Fluorescence: Chl-a

Water samples were taken from up to 5 depths from Niskin bottles on the CTD rosette: a sample from below fmax (maximum fluorescence noted during the CTD downcast), one at fmax, one over fmax, one at 20 m and one at the surface.

500 ml of water from each depth was filtered through a 2.5 cm diameter Whatman GF/F filter. This paper was then placed in a foil and in a ziplock bag properly labelled.

2.1.3 Phytoplankton

At each CTD station, water samples from fMax (maximum fluorescence noted during the CTD downcast) and the surface were taken.

1 liter marked milk bottles were used to collect samples. They were preserved with buffered formaldehyde. The samples will be analysed on shore for species composition.

2.1.4 Thermosalinograph

The SBE 21 Seacat thermosalinograph was running routinely during the survey, obtaining samples of sea surface salinity and relative temperature and fluorescence (5 m depth) every 10 seconds. An attached in-line Turner Design SCUFA Fluorometer continuously measured

Chlorophyll A levels [RFU] at 5 m below the sea surface while underway during the entire cruise.

2.1.5 Current speed and direction measurements (ADCP)

A vessel-mounted Acoustic Doppler Current Profiler (VMADCP) from RD Instruments was run continuously during the survey in broadband mode shallower than about 400 m and in narrow band mode in deeper waters. The frequency of the VMADCP is 150 kHz and data were averaged and stored in 3 m or 4 m vertical bins. All data were stored on files for post survey processing.

2.1.6 Meteorological observations

Wind direction and speed, air temperature, air pressure, relative humidity, and sea surface temperature (5 m depth) were logged automatically every 1 min. on an WIMDA meteorological station.

2.2 ZOOPLANKTON SAMPLING

Zooplankton samples (Figures 1.1-1.3) were collected with Hydrobios Multinet at all environmental stations. The multinet was equipped with 5 nets for depth-stratified sampling. The nets were fitted with 180 μm mesh size and the water flow through the nets was measured. The multinet was deployed and retrieved at a rate of ~ 1.5 m per second and was obliquely hauled. The five nets were triggered at the pre-selected depth intervals 0-25m, 25-50m, 50-80m, 80-120m and 120-200m.

The nets were rinsed well and the samples stored in marked bottles and preserved with buffered formaldehyde of 4%.

2.3 BIOLOGICAL FISH SAMPLING

Trawl hauls were sampled for species composition by weight and number. The deck sampling procedure is described in more detail by Strømme (1992). Length measurements were taken for most target species on most stations. An Electronic Fish Meter (SCANTROL) coupled to a customised data acquisition system (Nansis) running on a Windows PC was used for length measurement. The total length of each fish was recorded to the nearest 1 cm, rounding down when this was between sizes. Sex, maturity stage and otoliths for age determination were collected from the first randomly selected 20 individuals of target species. The maturity stages used were according to the following five stages: Inactive, active, ripe, ripe-running, spent.

Pelagic hauls at surface at the beginning and end of environmental transects were taken and the catches were frozen for further identification.

The carapace length for crustaceans was measured to the nearest 0.1, again rounding down. Basic information recorded at each fishing station, *i.e.* trawl hauls, is presented in Annex I. Pooled length frequency distributions, raised to catch per hour, of selected species by area are shown in Annex II.

Three individuals of each species were sampled for DNA and isotopes. These specimens were measured (total length), sexed (when possible) and a picture taken.

DNA: Muscle tissue was always taken from the right hand side of the fish, or from the ventral in the case of flatfish. This was done in order to keep left side in good condition for a reference picture (sample tag, ruler and colour chart). Muscle tissue was cut and placed into 1.5 ml Eppendorf tubes containing 95% ethanol. In most cases, specimens that were used for DNA sampling were also kept as vouchers by fixing them in 10% formalin. A label with the same identification number used for the DNA tube was attached to the specimens through the mouth and gills for future reference.

Isotope sampling: White muscle tissue was collected on selected individuals for isotope analyses ($\delta^{15}\text{N}$ and $\delta^{13}\text{C}$). A 1cm^3 piece of muscle tissue was taken from behind the head, above the lateral line of the fish. The tissue sample was placed in a 1.5 ml Eppendorf tube, placed in a 50°C oven and dried with the lid open at this temperature for 48 hours. When possible, 3 individuals of the same species from each trawl were sampled. Once dried, the tubes were closed and stored in a “cryobox”. Full cryoboxes were wrapped in clingfilm for moisture protection and stored in a bin for subsequent analysis on shore.

Voucher specimens were kept for every species that DNA samples were collected. All specimens were fixed in formalin until the end of the leg and then rinsed in freshwater and finally transferred to 80% Ethanol.

2.4 Multibeam echo sounder for bottom mapping

The EM 710 multibeam echo sounder is a high to very high-resolution seabed mapping system. Acquisition depth is approximately 3 m below the transducers, and the maximum acquisition depth is in practice limited to 1500 m on Dr. Fridtjof Nansen. Across track coverage (swath width) is up to 5.5 times water depth and may be limited by the operator either in angle or in swath width without reducing the number of beams. The operating frequencies are between 70 to 100 kHz. There are 128 beams with dynamic focusing employed in the near field. The transmitting fan is divided into three sectors to maximize range capability and to suppress interference from multiples of strong bottom echoes. The sectors are transmitted sequentially within each ping, and use distinct frequencies or

waveforms. The along track beam width is 1 degree. Ping rate is set (manually) according to depth. The receiving beam width is 2 degrees.

2.5 BIOMASS ESTIMATES

2.5.1 Acoustic abundance estimation

A SIMRAD ER 60 Echo sounder was used to survey the water column and the echograms were stored on files. The acoustic biomass estimates were based on the integration technique. The Large Scale Survey System (LSSS) from MAREC (www.marec.no) was used for integration and allocation of the integrated s_A -values (average area back scattering coefficient in m^2/NM^2) The splitting and allocation of the integrator outputs (s_A -values) was based on a combination of a visual scrutiny of the behaviour pattern as deduced from echo diagrams, LSSS analysis and the catch composition. The mean integrator value in each sampling unit (s_A -values) was divided between the following standard categories/groups of fish: PEL 1 (Clupeoid species), PEL 2 (Carangids, Scombrids, Leiognathids and associated pelagic like barracudas and hairtails), ODFI (Demersal species), Mesfi (Meseopelagic species), Plank (Plankton) and Other.

The following target strength (TS) function was applied to convert s_A -values (mean integrator value for a given area) to number of fish by category:

$$TS = 20 \log L - 72 \text{ dB} \quad (1)$$

or in the form

$$C_F = 1.26 \cdot 10^6 \cdot L^{-2} \quad (2)$$

where L is the total length and C_F is the reciprocal back scattering strength, or the so-called fish conversion factor. Generally, in order to split and convert the allocated s_A -values (m^2/NM^2) to fish densities (number per length group per NM^2) the following formula was used

$$N_i = A \cdot s_A \cdot \frac{P_i}{\sum_{i=1}^n \frac{P_i}{C_{Fi}}} \quad (3)$$

where:

- N_i = number of fish in length group i
- A = area (NM^2) of fish concentration
- s_A = mean integrator value (echo density) in area A (m^2/NM^2)
- p_i = proportion of fish in length group i in samples from the area
- C_{Fi} = fish conversion factor for length group i

$$N = \sum_{i=1}^n N_i \quad (4)$$

Further, the traditional method is to sum the number per length group (N_i) to obtain the total number of fish:

The length distribution of a given species within an area is computed by simple addition of the length frequencies obtained in the pelagic trawl samples within the area. In the case of co-occurrence of target species, the s_A value is split in accordance with length distribution and catch rate in numbers in the trawl catches. Biomass per length group (B_i) is estimated by applying measured weights by length (W_i) when available or theoretical weights (calculated by using condition factors), multiplied with number of fish in the same length group (N_i). The total biomass in each area is obtained by summing the biomass of each length group:

$$B = \sum_{i=1}^n N_i \bar{W}_i \quad (5)$$

The number and biomass per length group in each concentration are then added up to obtain totals for each region.

However, the combination of low s_A value recorded, few PEL1 and PEL2 in the bottom trawl catch and few pelagic trawls made the splitting by length groups unreliable. Therefore, a theoretic mean length of 23 cm was used to convert the s_A values by stratum (Equation 3) to number of fish. Equation 5 was used to convert the number of fish in the defined average length class (23 cm) to total estimated biomasses of PEL1 and PEL2.

A description of the fishing gears used, acoustic instruments and their standard settings is given in Annex III.

2.6 COLLECTION OF SOFT SEDIMENT MACROBENTHOS

Samples were collected by a Van Veen sediment grab with a sample volume of 1000cm³, at a series of depths along transects running perpendicular to the coast. At all transects, six stations at depth intervals of 20m, 40m, 60m, 100m, 150m and 200m were sampled in triplicate. Prior to deployment of the sediment grab, a single CTD cast was lowered to the maximum depth of the station for parameter profiles including dissolved oxygen readings.

After the collection of each grab and prior to emptying of contents for washing, the sediment depth in the grab was measured to the nearest cm by means of a graduated ruler inserted

between the grab flaps. Without disturbing the sample top layers, two 175ml core samples were collected to a depth of 5cm for sediment grain size distribution and total organic content analyses. The content of each grab was emptied into a bin for washing through graduated sieves. Each sample was rinsed through three sieves of mesh sizes 0.5cm, 1mm and 0.5mm, arranged along a washing table until rinse water turned clear. The 0.5cm sieve was emptied onto a sorting table and all live material and intact mollusc shells were handpicked and placed in the appropriately labelled sample jar, discarding reef rubble, gravel and crushed bioclastic material. Samples retained in the two larger sieves were bottled together and labelled accordingly. The sample retained on the 0.5mm aperture mesh was bottled separately. This process was repeated for each replicate sample. All samples were fixed with 4% formaldehyde solution and stored for later analyses.

2.7 VISUAL OBSERVATIONS OF CETACEANS AND SEABIRDS

Observations have been done by a single observer (always the same) by naked eyes. Binoculars were only used to confirm a sighting and to follow animals. The viewing height above sea level was approximately 6m. Both sides of the vessel were covered alternatively. To have only one observer does not permit a qualitative abundance estimation. Attention was to focus on cetaceans, but sea birds sightings were also recorded. When possible (distance, weather conditions), photos of individuals were taken to confirm or help on precise identification. A special focus has been done on humpback whales (*Megaptera novaeangliae*) to try to do some photo-identification through internal face of dorsal fin.

When cetaceans' identification was not sure and when it was possible, the boat changed its course to go closer. At the beginning and the end of each session, and when it seems necessary, environmental conditions were collected: GPS position, sea state (Beaufort scale), swell, wind speed (in knots) and direction, clouds cover. For each sighting of cetaceans it was also recorded cue, angle and distance with the boat at the first time of detection, species, number of animals (minimum, maximum and best estimation), presence or not of calves and immature, activity, behaviours, reaction to the boat, photos' reference and other comments.

3. RESULTS

3.1 OCEANOGRAPHIC CONDITIONS

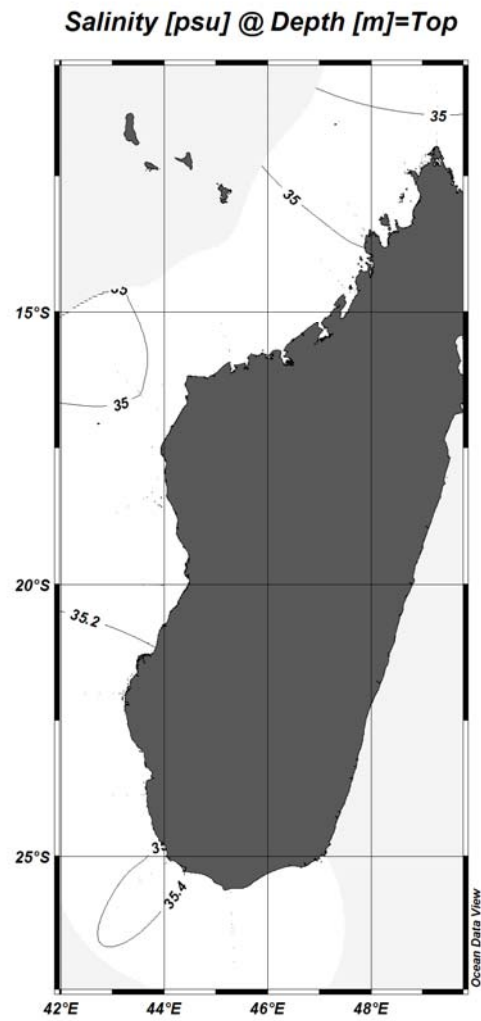


Figure 3.1. Madagascar West. Horizontal distribution of surface salinities (5 m depth).

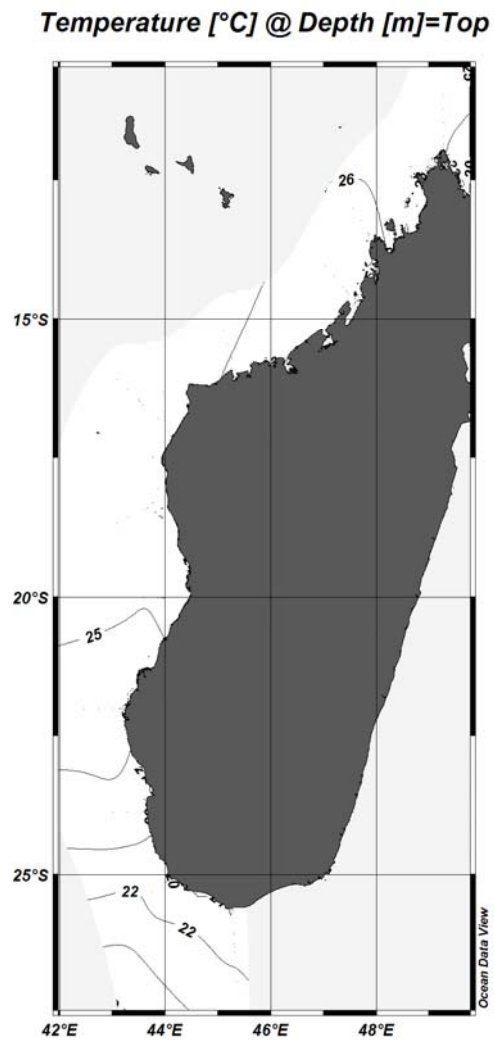


Figure 3.2. Madagascar West. Horizontal distribution of surface temperatures (5 m depth).

Hydrographic sections

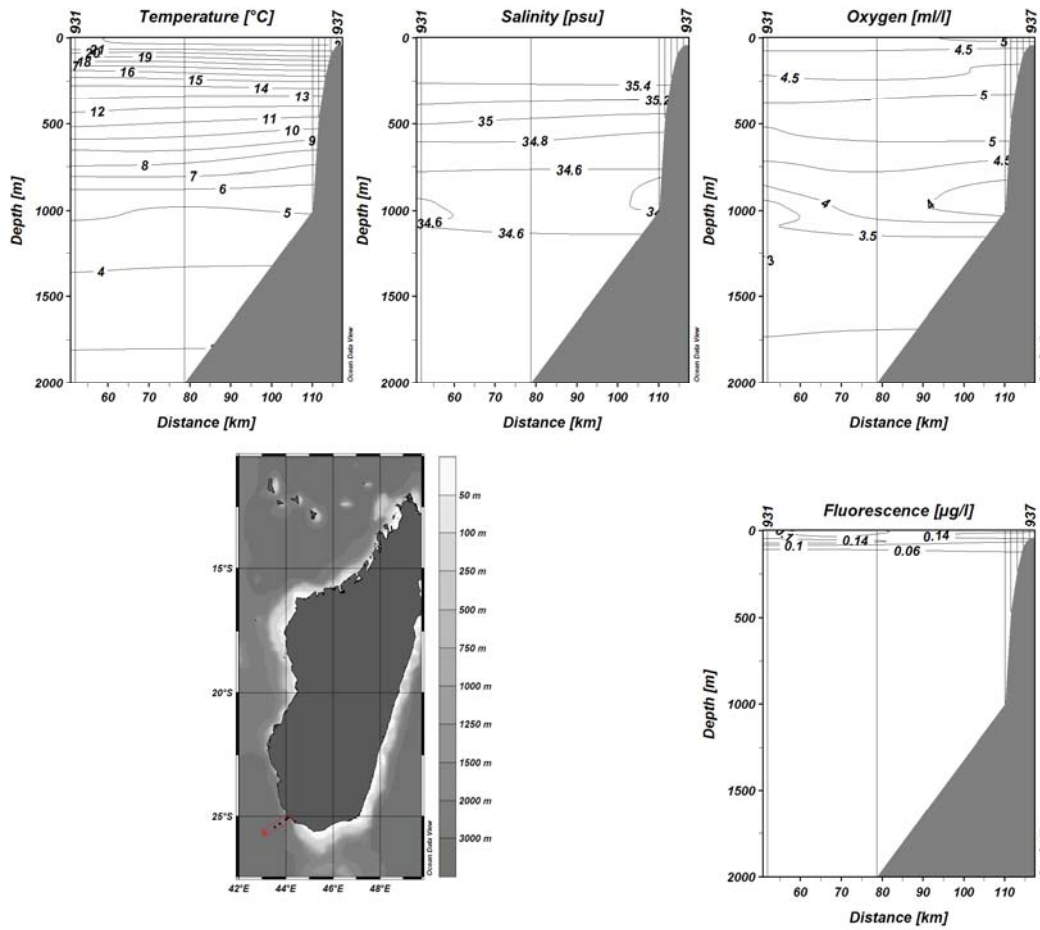


Figure 0.3 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 1 (position shown in the figure)

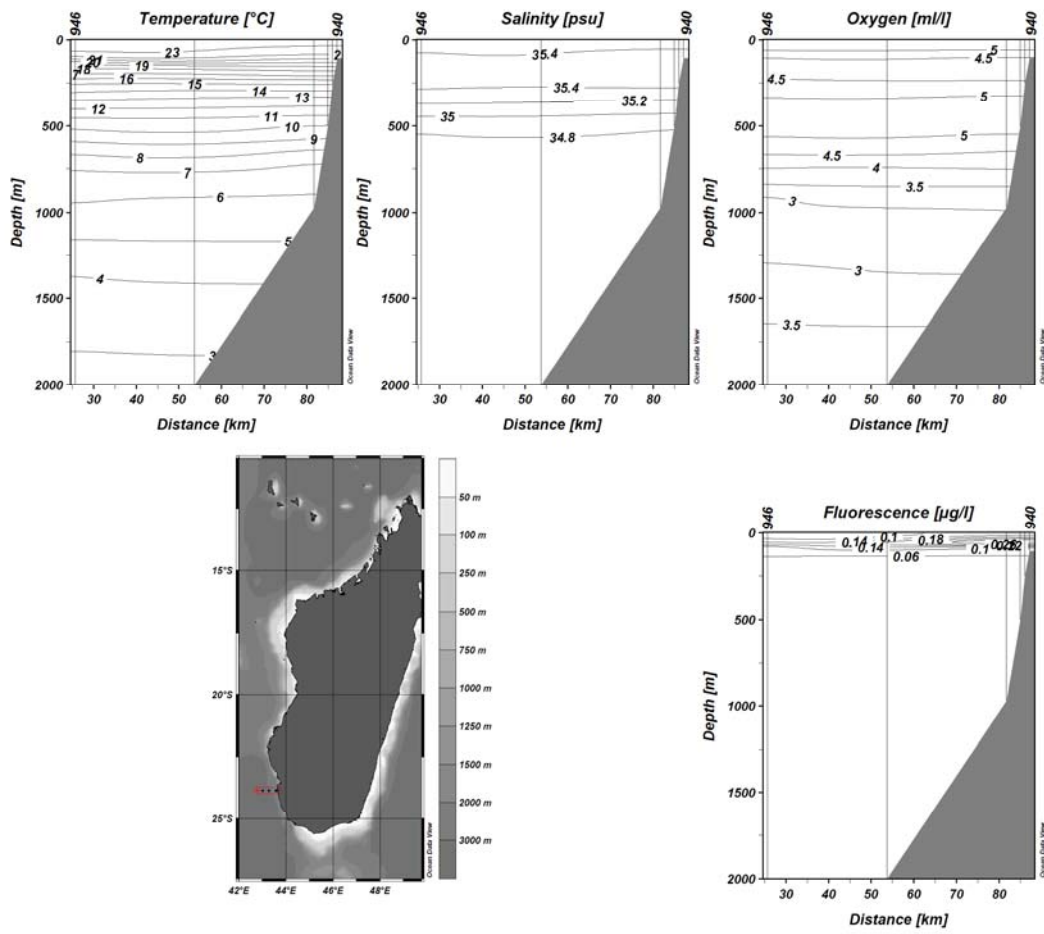


Figure 0.4 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 2 (position shown in the figure)

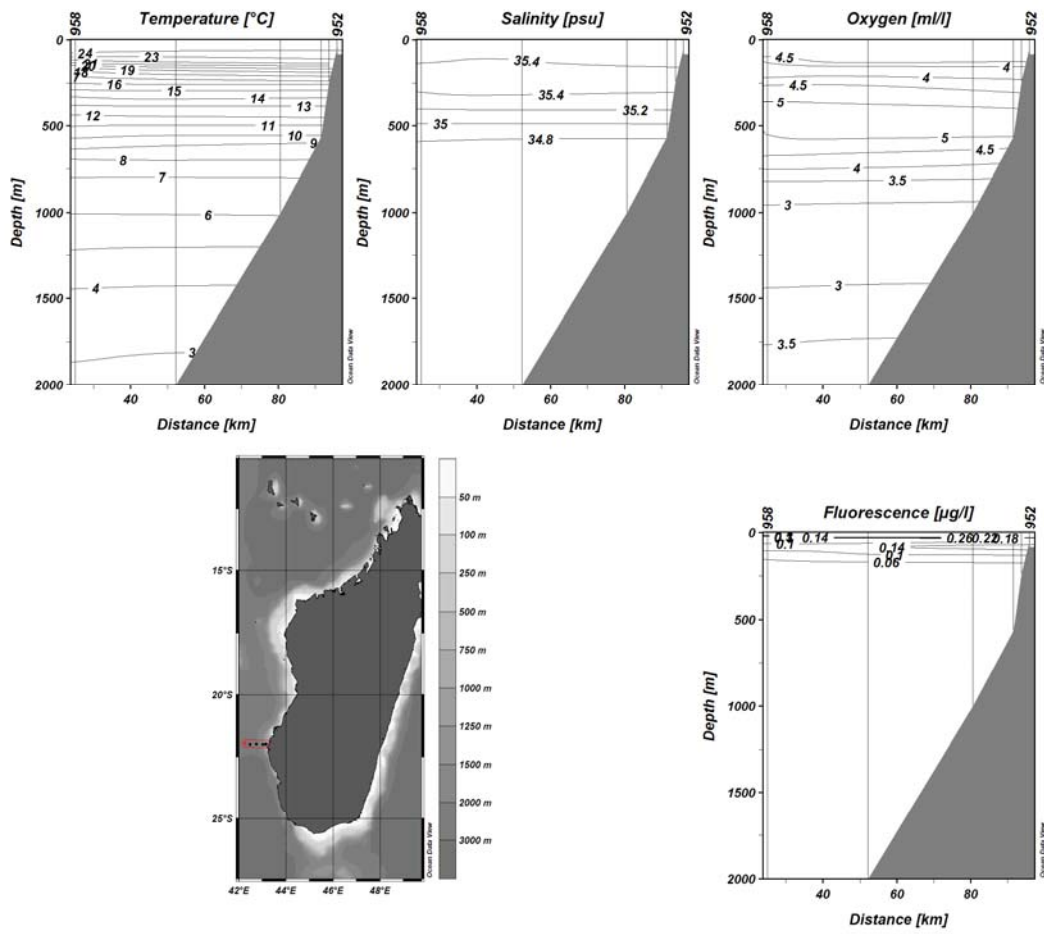


Figure 0.5 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 3 (position shown in the figure)

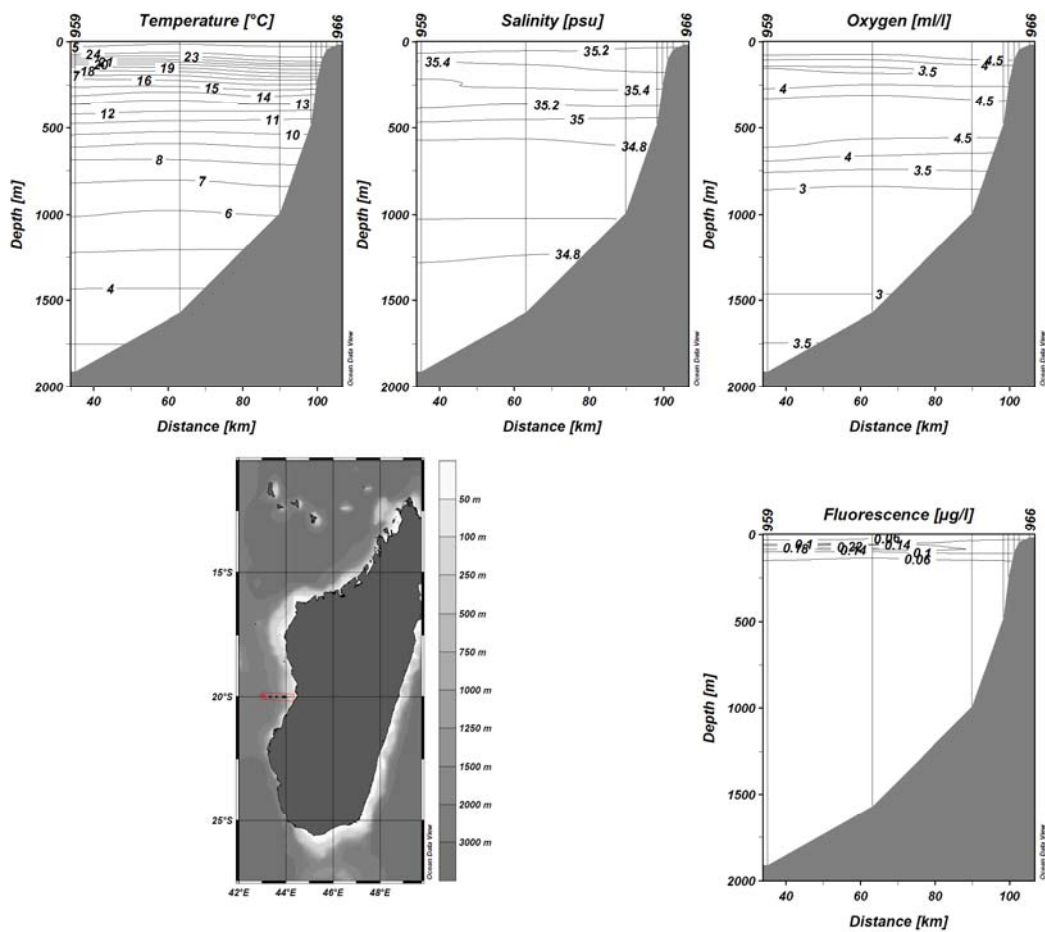


Figure 0.6 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 4 (position shown in the figure)

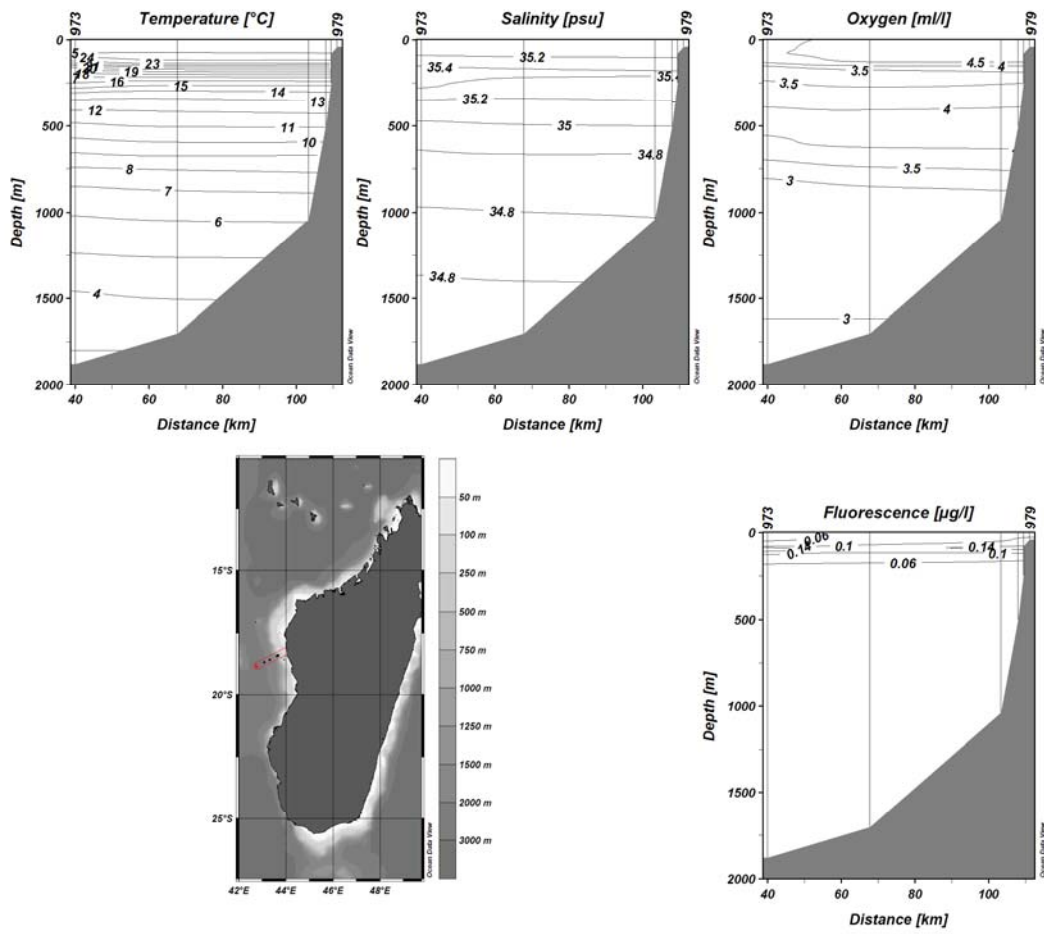


Figure 0.7 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 5 (position shown in the figure)

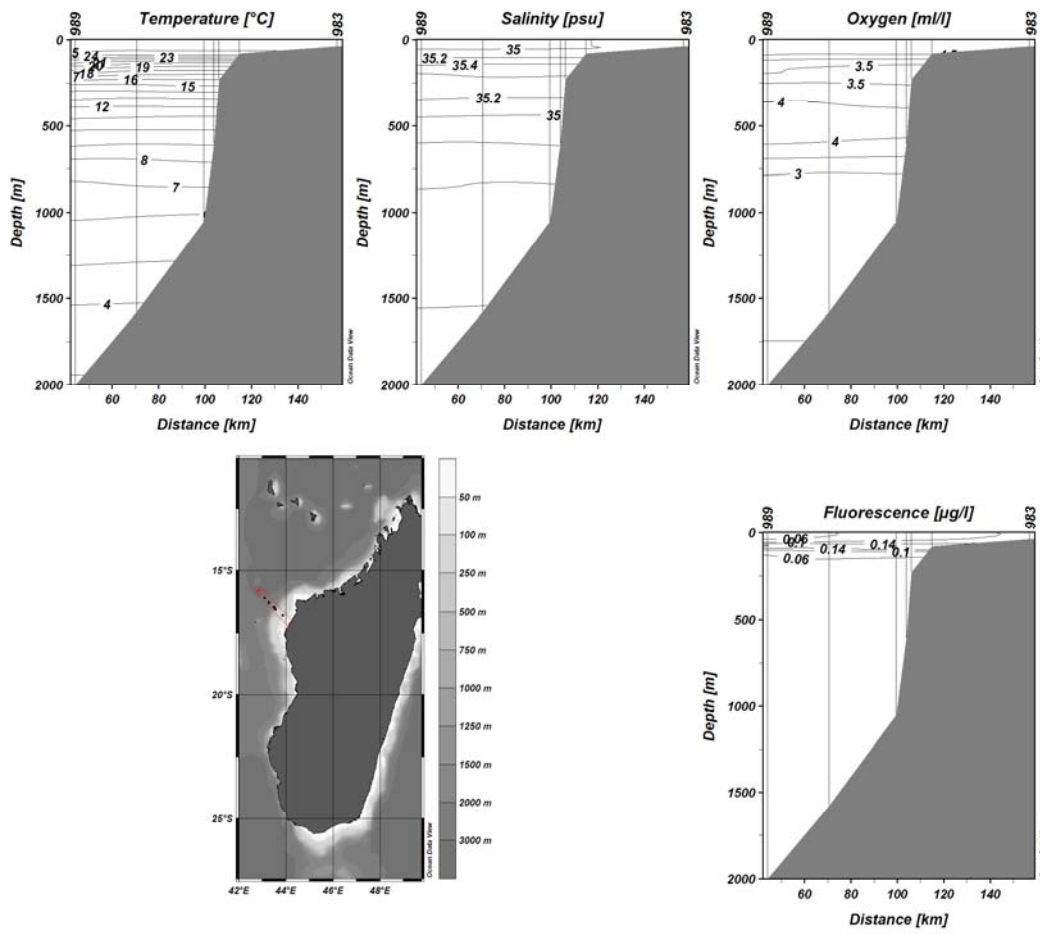


Figure 0.8 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 6 (position shown in the figure)

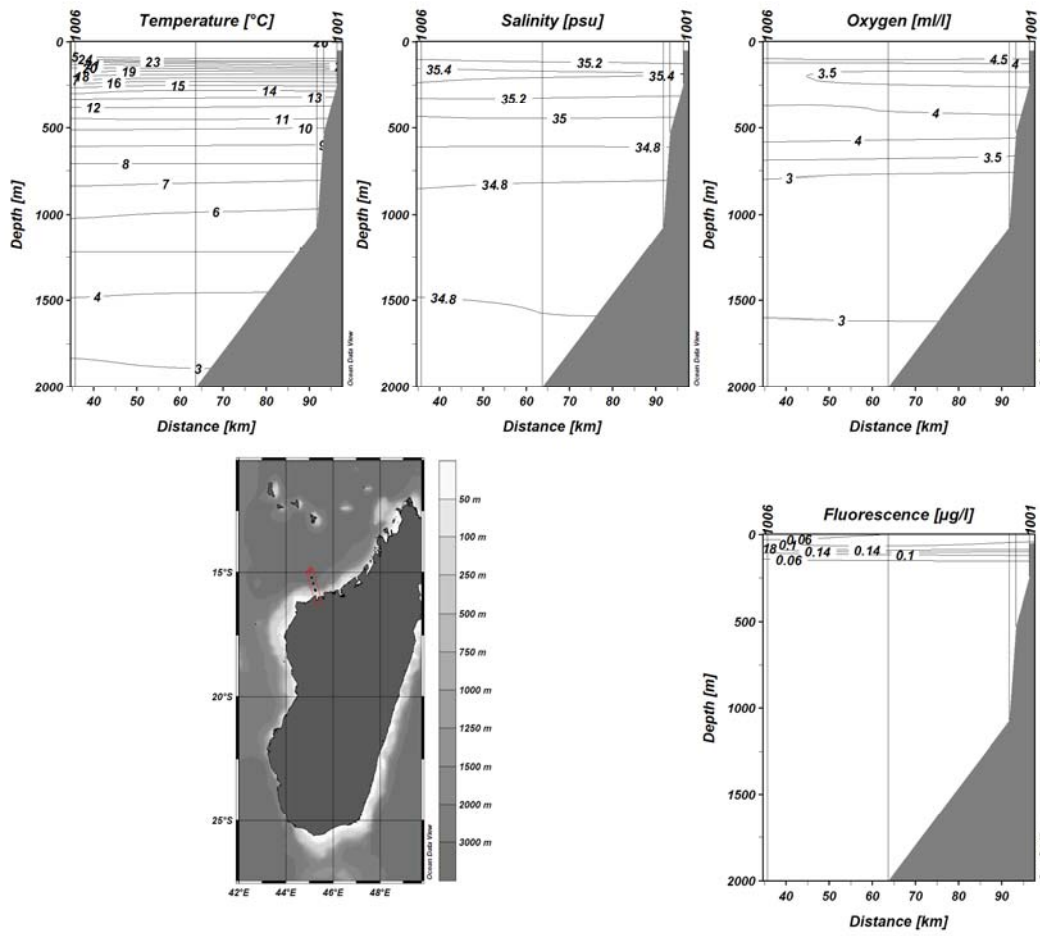


Figure 0.9 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 7 (position shown in the figure)

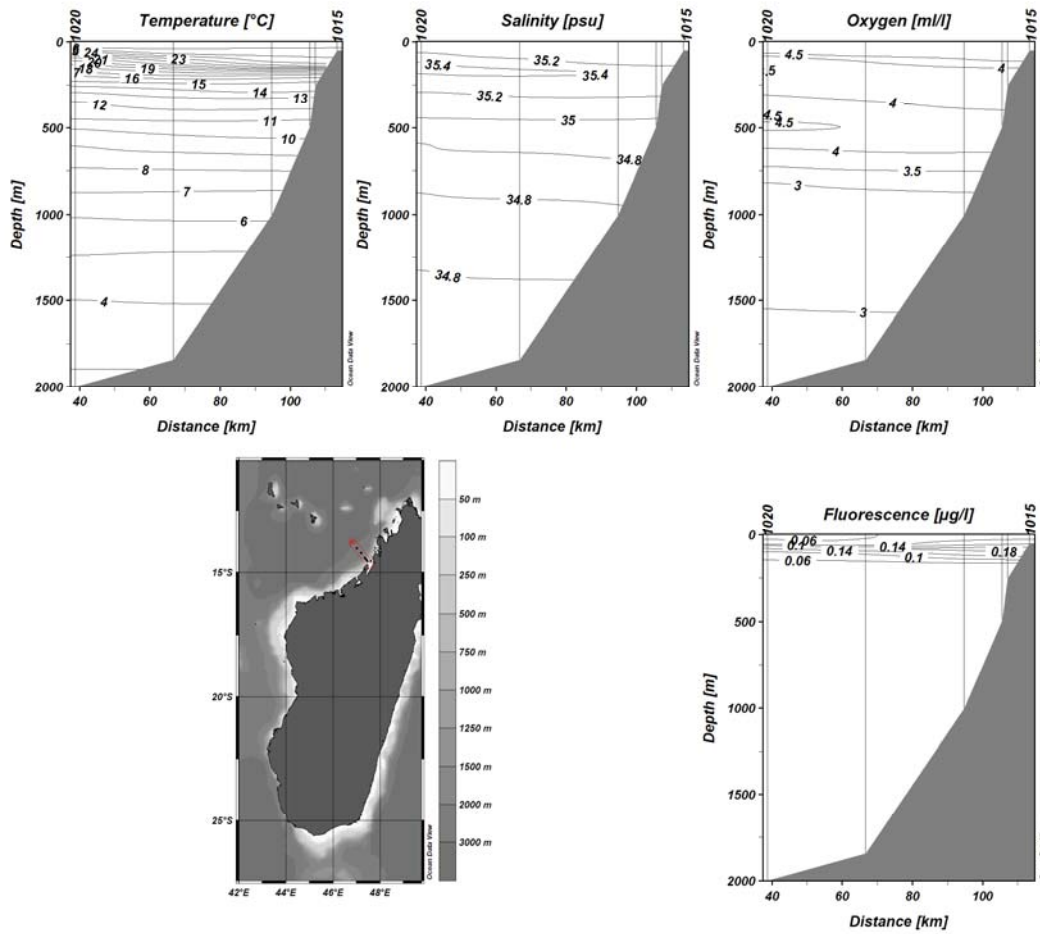


Figure 0.10 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 8 (position shown in the figure)

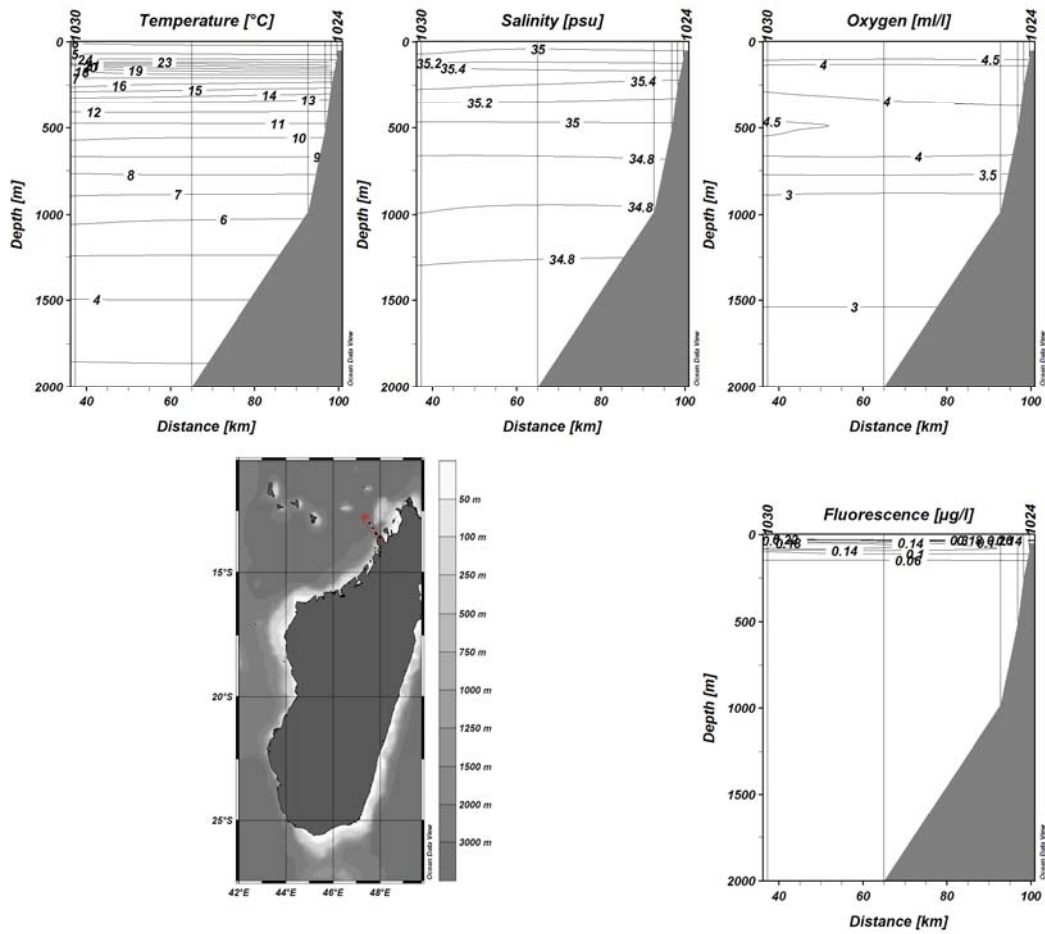


Figure 0.11 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 9 (position shown in the figure)

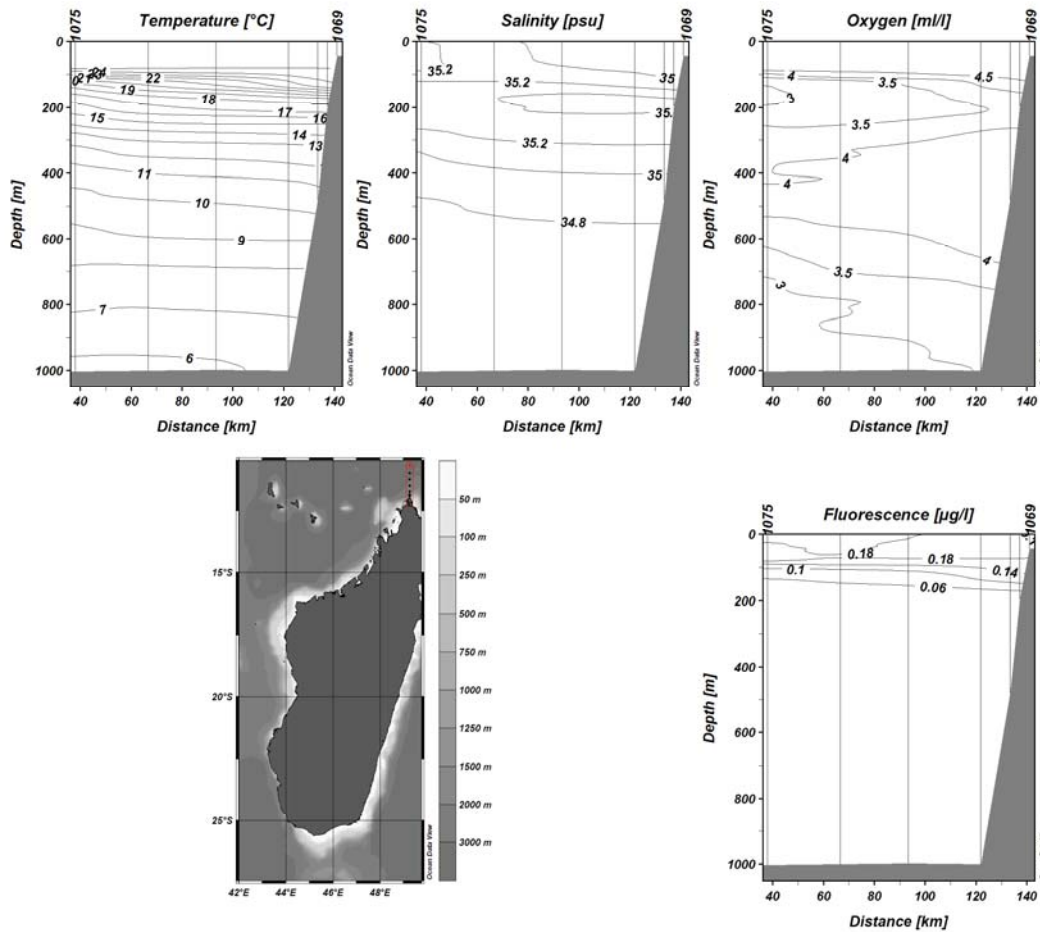


Figure 0.12 Madagascar. Temperature, salinity, dissolved oxygen and fluorescence observed on Transect 10 (position shown in the figure)

3.2 ZOOPLANKTON

A total of 88 multinet stations were taken (Annex IV). The samples were preserved for further analyses on land.

3.3 HYDROACOUSTIC

The hydroacoustic survey covered the shelf and slope to about 1000 m bottom depth. Continuous acoustic recording and analysis were carried out throughout the survey. The southern shelf was covered with parallel transects about 20 NM apart, while the western and north western shelf was covered with zigzag transects with 15-20 NM between turning points on the coast. This was done due to the narrowness of the shelf and to reduce the effect of the

current and weather on working conditions. In addition to bottom trawling during daylight hours and a few in deeper water (>300 m depth) during night time, pelagic trawling was carried out for pelagic species identification, either as random blind trawl hauls, or on registrations noted on the echo sounder. Generally low acoustic densities were found over most of the shelf and only plankton and mesopelagic fish were found in the water column from the shelf break and further offshore.

3.4 ACOUSTIC ABUNDANCE AND DISTRIBUTION

Biomass estimation were carried out separately for the three areas of the shelf; the South coast south of 25°S, the South West coast between 25°S and 20°S and the North West coast between 20°S and 12°S. Biomass estimates are given for each of these regions separately.

Acoustic biomass estimates were calculated for two species groups of pelagic fish. The first group consisted of clupeoids (PEL 1), and the second group consisted mainly of carangids, but included also leiognathids, scombrids and associated pelagic like barracudas (PEL 2). As discussed. The estimates of biomass are presented in Table 3.1 a-b.

The distribution areas of the main groups of pelagic fish by regions are depicted in Figures 3.13-3.16 using acoustic integrator values from the LSSS echo-integration system.

In the southern region the Pelagic 1 species (PEL 1) were found in one small low density area, (1-300 m²/NM²) west off Cape Ste. Marie (Figure 3.13). The main species found were *Sardinella gibbosa* and *Etrumeus teres* which were caught mainly at one station although not in big quantities. A total biomass of 2 500 tons was estimated (Table 3.2a). Pooled length frequencies of the species can be found in Annex II.

The Pelagic 2 species (PEL 2) were also found west off Cape Ste. Marie, mainly in a patch of low density (1-300 m²/NM²), but with an area of medium-low (301-1 000 m²/NM²) and another of medium-high (1 001-3000 m²/NM²) densities (Figure 3. 3.14). The biomass for the southern coast, was estimated at 28 000 tons (Table 3.2b). The most abundant Pelagic 2 species were *Decapterus macrosoma*, *Trachurus delagoa* and *Scomber japonicus*, while *D. kurroides* was more common but not abundant. Length frequencies of the species are presented in Annex II.

This year's survey overlaps, in the south, with the one carried out during 2008 between 44° and 46°E. Comparing the areas where both PEL 11 and PEL 22 were found in the overlapping area, we can see that, this year for both groups the areas are smaller, as well as the estimated biomass. Last year's estimates were of 15 000 tonnes and 46 000 tonnes for PEL 1 and PEL 2 respectively. In particular for the PEL 2 group, although this year's area is smaller than last year, we found small patches of higher fish concentration (Fig 3.16).

In the south west region (up to 20°S) almost no pelagic fish were either registered acoustically or caught.

In the north western region two small, low density areas (0-300 sA) of PEL 1 were observed. One was located between 17° and 16° South and the other north of Nosy Be. The dominant and most common species was *Herklotsichthys quadrimaculatus*. PEL 2 were observed in an area between about 17°30' S and 15°30' S and two small areas north of Nosy Be, all with low densities (0-300 sA). Two groups of PEL 2 fish were abundant, the carangides and a group consisted of the scombridae and barracuda. Among the carangides the *Selar crumenophthalmus* occurred in most samples but in small numbers. It was followed by *Carangoides caeruleopinnatus* that was the most abundant, but never in large numbers. The highest catches were of *Carngoides fulvoguttatus*, *Caranx speciosus* and *Decapterus kurroides*, but only in a few hauls. In the second PEL 2-group, the barracudas represented the highest numbers, mainly due to one large catch of around 650 kg. Two species of barracuda were dominant, *Sphyræna forsteri* and *S. helleri*. The most common Scombridae was *Scomberomorus commerson*.

Table 3.2a Acoustic estimates of clupeoids (Pelagic-1) in tonns (t).

Area	Biomass (t)
South coast	2 500
South West coast to 20°S	-
North West coast from 20°S	

Table 3.2b Acoustic estimates of carangids, scombrids and associated pelagic (Pelagic -2) in tonns (t).

Area	Biomass (t)
South coast	28 000
South West coast to 20°S	-
North West coast from 20°S	

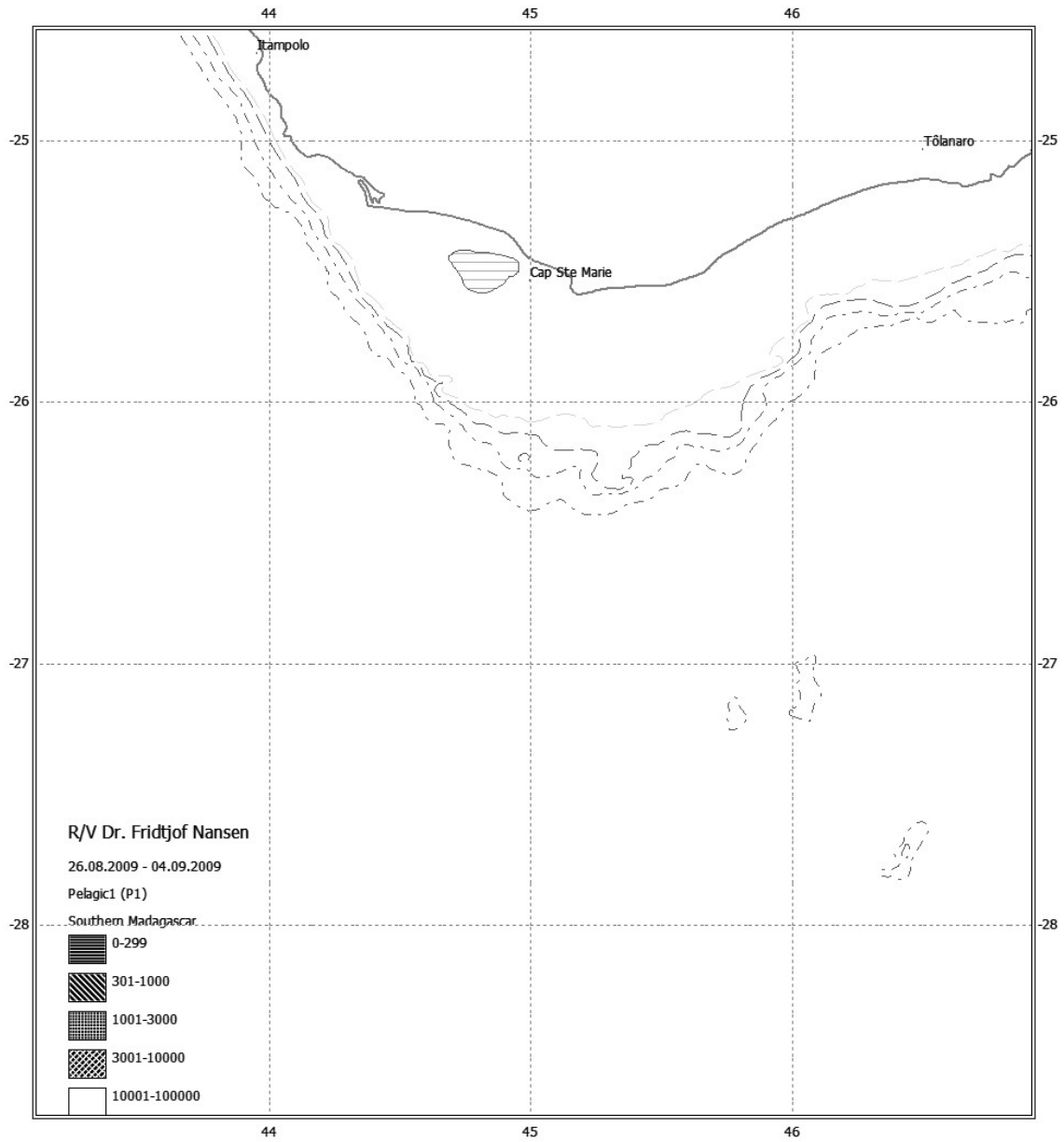


Figure 3.13 Distribution of PEL 1 (Clupeoids) on the Southern shelf of Madagascar.

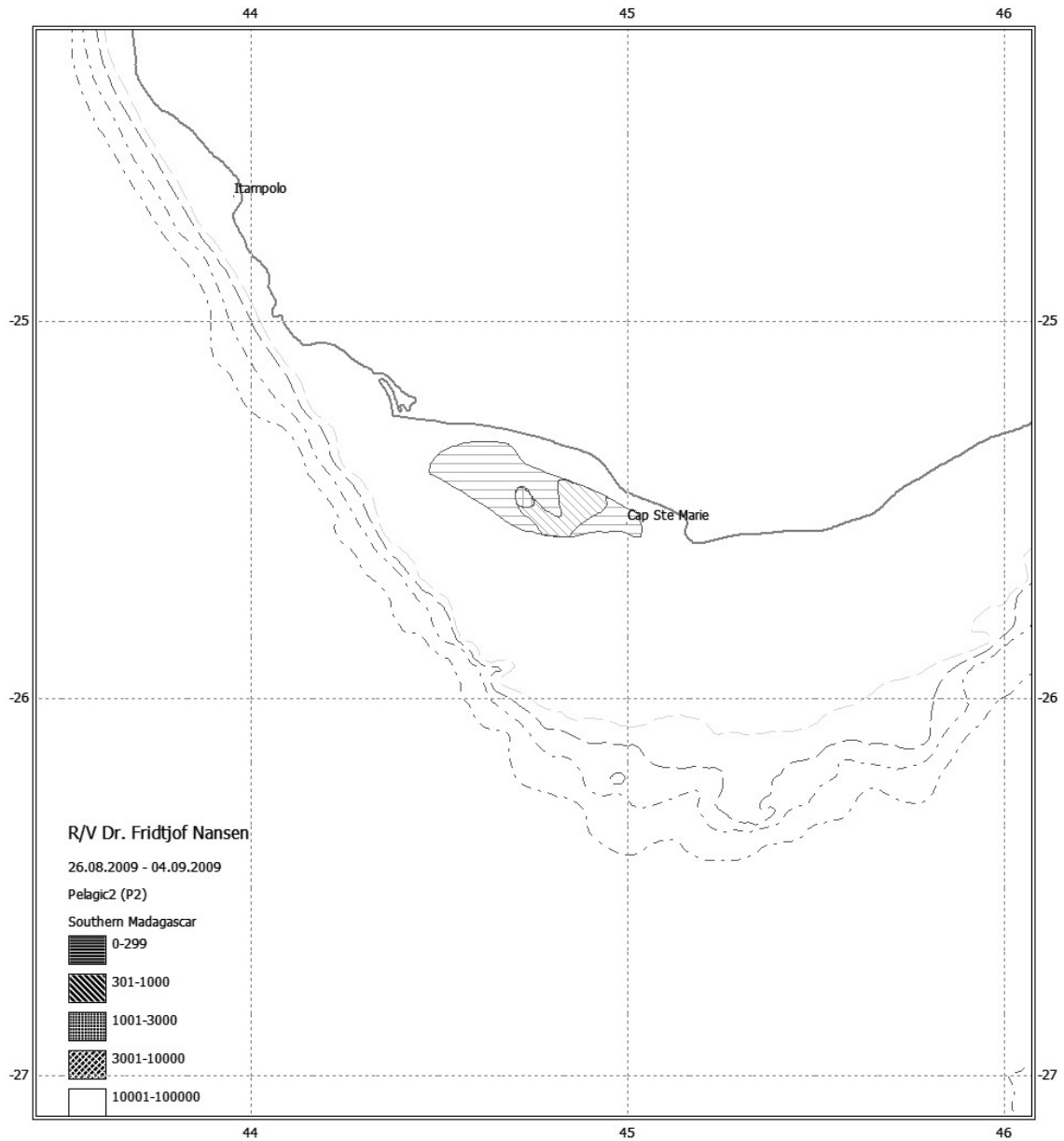


Figure 3.14 Distribution of PEL 2 (carangids and associated pelagic species) on the southern shelf of Madagascar.

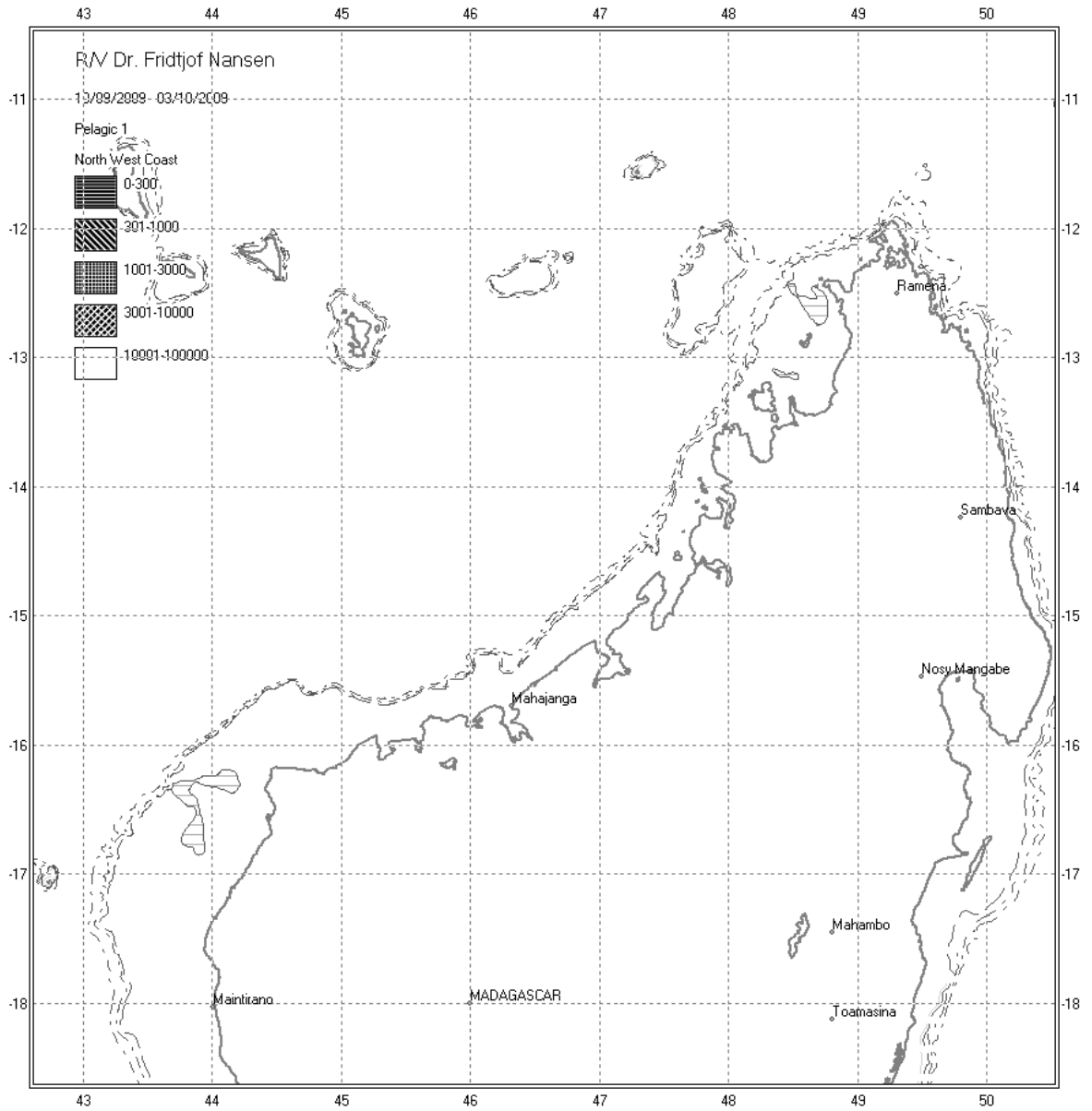


Figure 3.15 Distribution of PEL 1 (clupeoids) on the northwestern shelf of Madagascar

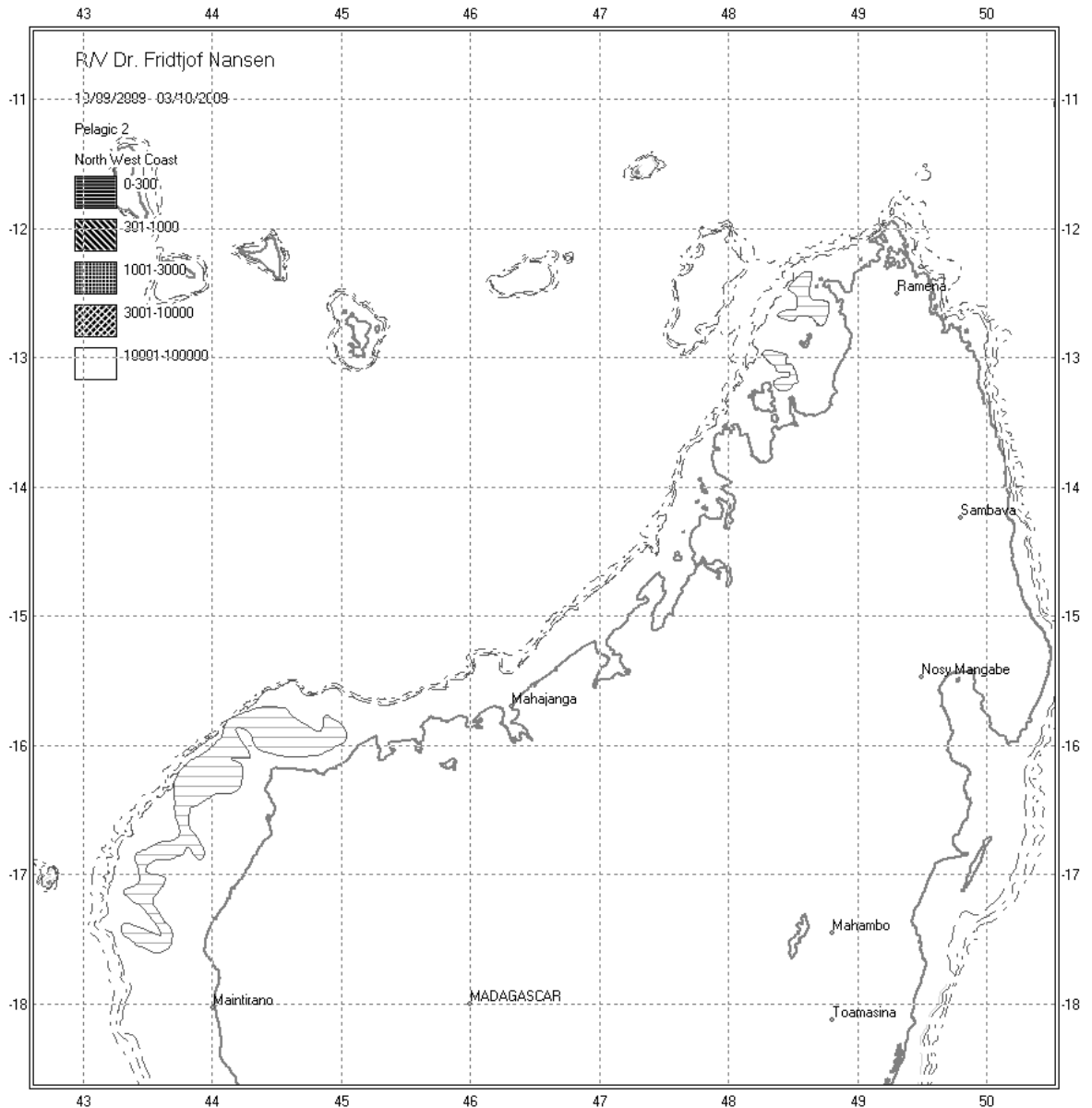


Figure 3.16 Distribution of PEL 2 (carangids and associated pelagic species) on the northwestern shelf of Madagascar

3.5 Seamounts acoustic recordings

Generally no commercial pelagic fish were found. Some low concentrations of mesopelagic fish were recorded. Bottom mapping of some offshore seamounts was done as part of the survey on the southern shelf of Madagascar. No large schools were observed on the acoustic transects.

3.6 BIOLOGICAL SAMPLING

A list of priority species was identified before the cruise for biological sampling (sex, maturity, otoliths, genetic samples for stock separation), but very few of these were caught. A list of the biological samples, together with the list of specimens collected for various museums and taxonomists, is included in the appendix (Annex VII).

Genetics

A total of 760 tissue samples were taken for DNA analyses to be further processed on land (see Annexes VI and VII).

Isotope samples

A total of 408 white muscle samples from pelagic demersal and mesopelagic fish were taken. They were processed and stored for further analyses in South Africa. The list of samples are given in Annex V.

Stomach contents of demersal and pelagic fish

A total of 207 stomachs have been examined. Of these, 18 were empty. Weight and numbers of all food items in the stomachs are given in the following table:

Family	Number of stomachs examined	Number of preys identified
LUTJANIDAE	27	28
RACHYCENTRIDAE	13	16
SPHYRAENIDAE	21	26
CARANGIDAE	101	89
SCOMBRIDAE	45	36

Most of the prey items were easily identified because of their size.

Stomach contents of mesopelagic fish

Of mesopelagic fish, 217 stomachs were examined of which 34 were empty. The weight and numbers of all food items in the stomachs are presented in the following table:

Family	Number of stomachs examined	Number of preys identified
MYCTOPHIDAE	79	13 taxa have been identified
BRAMIDAE	9	None because of regurgitation
CHAULIODONTIDAE	32	7 items were identified, most of them are myctophids
PARALEPIDIDAE	19	Most of the preys were of genus <i>bregmaceros</i> , fish larvae
ASTRONHESTIDAE	11	8 items

Some of the preys were difficult to identify as they were well digested.

Biodiversity on the shelf

The south and southwest coast of Madagascar (south of 20° S) has large areas of rough bottom, unsuitable for trawling. The outer shelf edge is a continuous reef, while the shelf has areas of variable hard and sandy substrate with patches of coral reef. The numbers of bottom trawls were limited due to difficult trawling conditions. Thus, the bottom trawls only give an indication of the most common species within the region.

The catches in the demersal hauls on both the south and west coast of Madagascar, though small, were highly diverse. Among the most commonly caught species in the south were *Decapterus kurroides* (with a percentage of incidence in the catches of around 56%), *D. macrosoma*, *Teixeirichthys jordani*, *Chaetodon dolosus*, *Fistularia petimba*, *Stethojulis interrupta*, *Gymnocranius griseus*, different Mullidae species as well as the cephalopod family Ommastrephidae. *D. macrosoma* had the highest catch rate in the region, followed by *Sardinella gibbosa*. Table 3.3 shows the catch rates (kg/h) for the main groups by depths in the southern region.

Table 3.3. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Southern region. A: 20-50 m, B: 51-100 m, C: >101.

A. 20-50 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Letrinidae	Scombrids	Snappers	Other	Total
8	39.5	19.0	1.8			1.4	13.9		243.8	279.9
10	44.5	0.7	3.2		0.2	44.1			114.7	162.9
13	36.0	2665.8	61.1	22.8			369.5		32.8	3152.1
14	26.0	23.2	3.4				0.6		0.2	27.5
15	33.5	17.5	0.6	0.6					2.7	21.4
Mean	35.9	545.2	14.0	4.7		9.1	76.8		78.8	728.8
Std dev	6.9	1185.5	26.3	10.1	0.1	19.6	163.7		103.2	1358.9

%Catch	74.8	1.9	0.6	1.2	10.5	10.8
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B. 51-100 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Letrinidae	Scombrids	Snappers	Other	Total
4	55.5	0.1	1.2		41.7	0		20.8	47.9	111.8
7	83.0		0.4		7.3	2.5		29.7	13.6	53.5
16	92.5	18.3	3.6		0.0				10.1	32.0
Mean	77.0	6.2	1.7		16.3	0.8		16.8	23.9	65.8
Std dev	19.2	10.5	1.7		22.3	1.5		15.2	20.9	41.3
%Catch		9.4	2.6		24.8	1.2		25.5	36.3	

C. >101 m.

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Letrinidae	Scombrids	Snappers	Other	Total
3	108.5		0.1		50.4	1.7		17.0	47.5	116.8
6	123.0		0.1		3.5			12.1	52.9	68.5
Mean	115.8		0.1		26.9	0.9		14.6	50.2	92.6
Std dev	10.3		0.1		33.2	1.2		3.5	3.8	34.2
%Catch			0.1		29.0	1.0		15.8	54.2	

In the southwest region among the most common species caught we can mention *D. kurroides*, *Selar crumenophthalmus*, *Chaetodon dolosus*, *Rexea promethoides*, *Priacanthus hamrur*, *Polysteganus coeruleopunctatus* and different species of both cephalopods and Mullidae. No species was noted as being very abundant, but the family Lutjanidae was the most represented. Table 3.4 shows the catch rates (kg/h) for the main groups by depths in the southern region.

Table 3.4. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Southwest region. A: 50-100 m, B: 101-200 m, C: 201-300 m, D: 301-600 m.

A: 50-100 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Snappers	Other	Total
17	74	10				13			31.2	54.2
22	73.5	5.1				26.8		157.3	56.3	245.5
Mean	73.8	7.6				19.9		78.7	43.7	149.9
Std dev	0.4	3.5				9.8		111.2	17.7	135.3
%Catch		5.1				13.3		52.5	29.2	

B: 101-200 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Snappers	Other	Total
20	144	14.8	0.2						80.5	95.5
%Catch		15.5	0.2						84.3	

C: 201-300 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Snappers	Other	Total
24	237	2.8	0.3					8.8	234.2	246
25	261.5	45.2	1.3						58.2	104.7
26	203	1.8	0.5						111.4	113.7
Mean	233.8	16.6	0.7					2.9	134.6	154.8
Std dev	29.4	24.8	0.5					5.1	90.2	79.1

%Catch	10.7	0.5	1.9	87.0
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D: 301-600 m.

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Snappers	Other	Total
18	541		1.5						292.1	293.6
21	326		1						345.7	346.7
Mean	433.5		1.3						318.9	320.1
Std dev	152		0.4						37.9	37.5
%Catch			1.1						101.1	

On the northwest coast (north of 20° S), similar difficulties were experienced in locating trawlable areas. Nevertheless, 36 bottom trawls were undertaken between 20°S and 12 °S, and between depths of ~20m and 650m. In the absence of recent charts for this region, and because of the unpredictable nature of the sea floor, a cautious approach was adopted, and no trawling was attempted in depths < 20m. Trawl catches were generally small (< 20 kg) with a few exceptions. In terms of overall abundance in terms of weight, *Sphyraena forsteri* and *S. helleri* were the most dominant, although these were due almost entirely to a single 8 minute trawl at ~40m depth in which about 600kg of these species were caught. *Himantura uarnak*, *Himantura cf gerrardi* and a turtle (*Chelonia midas*) also featured strongly, owing to their very large size and despite their low numbers, and sponges also formed a large part of catches. Thereafter, *Upeneus moluccensis* and *Carangoides fulvoguttatus* made the greatest contributions. In terms of frequency of occurrence, *Saurida undosquamis*, *Nemipterus japonicus*, Ommastrephid squid and *Abalistes stellatus* occurred in almost 40% of trawls, while *Rexea prometheus* and *U. moluccensis* occurred in about 30% of trawls. Of the main species groups, the sphyraenids contributed the greatest amount to catches, followed by batoids, sharks and lutjanids.

On a depth basis, the sphyraenids dominated catches from 20 to 100m (because of the single trawl referred to above), followed by carangids (Table 3.5), while between 200 and 500m, the lutjanids (*Etelis* spp and *Pristipomoides* spp) made a substantial contribution (~15 % of catch weight) as a group. From 500 – 700m, prawns and shrimps (*Aristaomorpha foliaca*, *Penaeopsis balssi* and *Heterocarpus* spp) contributed about 10% to overall catch.

Table 3.5. Catch rates (kg/hour) by main groups caught in valid swept area bottom trawl hauls. Northwest region. A: 20-50 m, B: 51-100 m, C: 201-500 m, D: 501-700 m. Note that there were no trawls possible between 101-200m

A: 50-100 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Shrimps	Snappers	Other	Total
30	39									0.9	0.9
32	44		0.1				0.9			1.6	2.6
33	39	0.1		0.2						4.4	4.7
36	40.5	1.8					0.1			0.6	2.5

37	22.5	1.1								0.2	1.3
38	31.5	1.5			1.1	0.1	1.7		3	3	10.3
39	31	0.9	0.2			0.2	0.3		1.1	1.3	3.9
40	28	1		0.3				0.2	0.5	6	7.9
42	41.5	0.6	0.1				0.3			8.3	9.3
55	47.5									5.3	5.4
56	25.5	0.8		0.1	1					6.8	8.7
57	42.5	1.5					0.1			6.9	8.6
62	40.5	1.1					0.1			1	2.3
67	43.5	0.3								3	3.3
69	27.5	0.8		0.2			0.1	0.3		11.1	12.6
77	50						0.3			2.2	2.5
79	34									129.4	129.4
Mean	36.9	0.7			0.1		0.2		0.3	11.3	12.7
Std dev	8.1	0.6		0.1	0.3	0.1	0.4	0.1	0.8	30.6	30.3
% of catch		5.3	0.2	0.4	1.0	0.3	1.7	0.2	2.1	88.8	

B: 101-200 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Shrimps	Snappers	Other	Total
31	58.5	0.1				0.1	0.1			0.6	0.9
61	77	10.6								6.6	17.2
66	76.5									0.3	0.3
71	57									5.5	5.5
77	50					0.3				2.2	2.5
Mean	63.8	2.1				0.1				3	5.3
Std dev	12.3	4.7				0.1				2.9	7
% of catch		40.5				1.5	0.4			57.6	

C: 201-300 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Lethrinidae	Scombrids	Shrimps	Snappers	Other	Total
25	261.5	1.3								1.7	3
26	203	0.1						0.1		3.4	3.6
27	339.5							0.2		2.1	2.3
29	225							0.5		4	4.5
44	245								0.5	0.8	1.4
49	261				0.6				5.7	2.4	8.7
60	399.5		0.1							1	1.1
64	343							0.2		0.6	0.9
65	372.5		0.1							2.1	2.2
73	416.5									1.7	1.8
82	323.5									9.6	9.6
83	454									1.6	1.6
Mean	320.3	0.1			0.1			0.1	0.5	2.6	3.4
Std dev	81.2	0.4			0.2			0.1	1.6	2.4	2.9
% of catch		3.4	0.5		1.5			2.5	15.2	76.2	

D: 301-600 m

Station	Gear depth	Carangids	Cephalopods	Clupeoids	Groupers	Letrinidae	Scombrids	Shrimps	Snappers	Other	Total
74	554							0.2		2.1	2.3
75	661.5							0.5		5.2	5.7
76	560							0.3		2	2.3
Mean	591.8							0.3		3.1	3.4
Std dev	60.4							0.2		1.8	2
% of catch								6.0		56.0	

Diversity on the sea mount

Catches on the two pelagic trawls made in this area were so small that very little can be said about the diversity in the area. The catches comprised jellyfish (the most abundant group), Myctophidae, some small shrimps and different groups of small squids (*Ancistrocherius sp*, *Ornithoteuthis sp*, *Abraliopsis sp*) all in very small quantities.

Soft sediments and macrobenthos

Approximately six transects were sampled. Two transects were sampled on the west coast of Madagascar at approximately 20°S and 22°S. Transects three to six were sampled on the north-west coast between Mahajunga and just east of Nosy Be. Due to errors in the sampling protocol and inappropriate preservation of material, all samples collected along Transect 1 were discarded. Samples from Transect 2 can only be used as a species inventory of soft sediment fauna as samples were not processed and treated quantitatively. Further study on the soft sediment environment will therefore concentrate only on samples collected on the north-west coast of Madagascar. Not all remaining transects were sampled to completion and not all samples were collected from each depth stratum, due to sampling difficulties associated with the substrate type. Fine grained sand (<0.5mm) and mud was only found at shallow depths, close to the coast. The substrate for the area was primarily large grained coralline sands with or without bioclastic material interspersed with low relief reef. Samples collected from 20m and 40m along transect six did not have associated CTD measurements due to instrument failure. An inventory of samples collected is listed in Annex VIII.

Whale and sea birds observations

The results of whale observations are presented in the following figures:

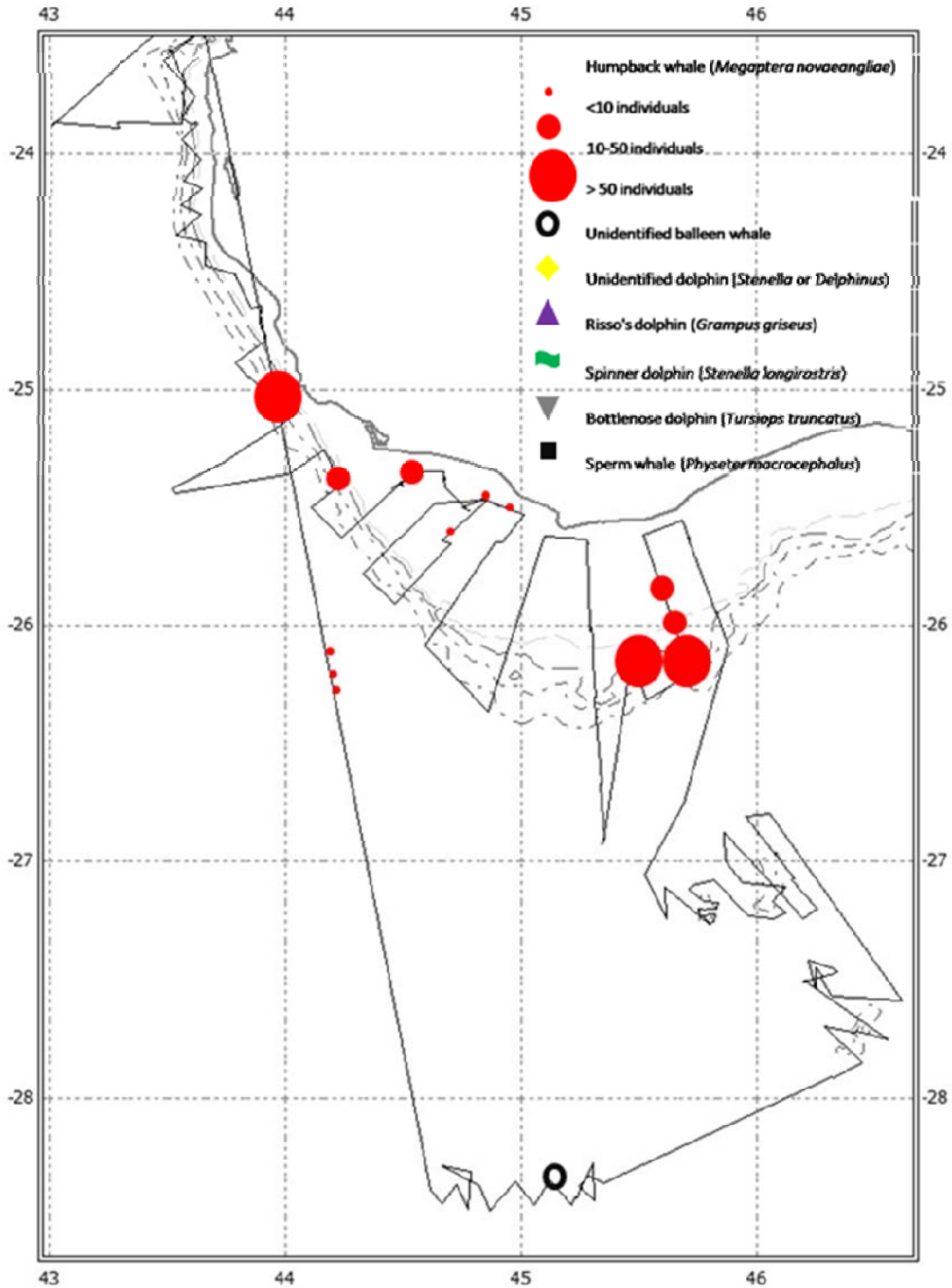


Figure 3.17 Whale observations in southern Madagascar

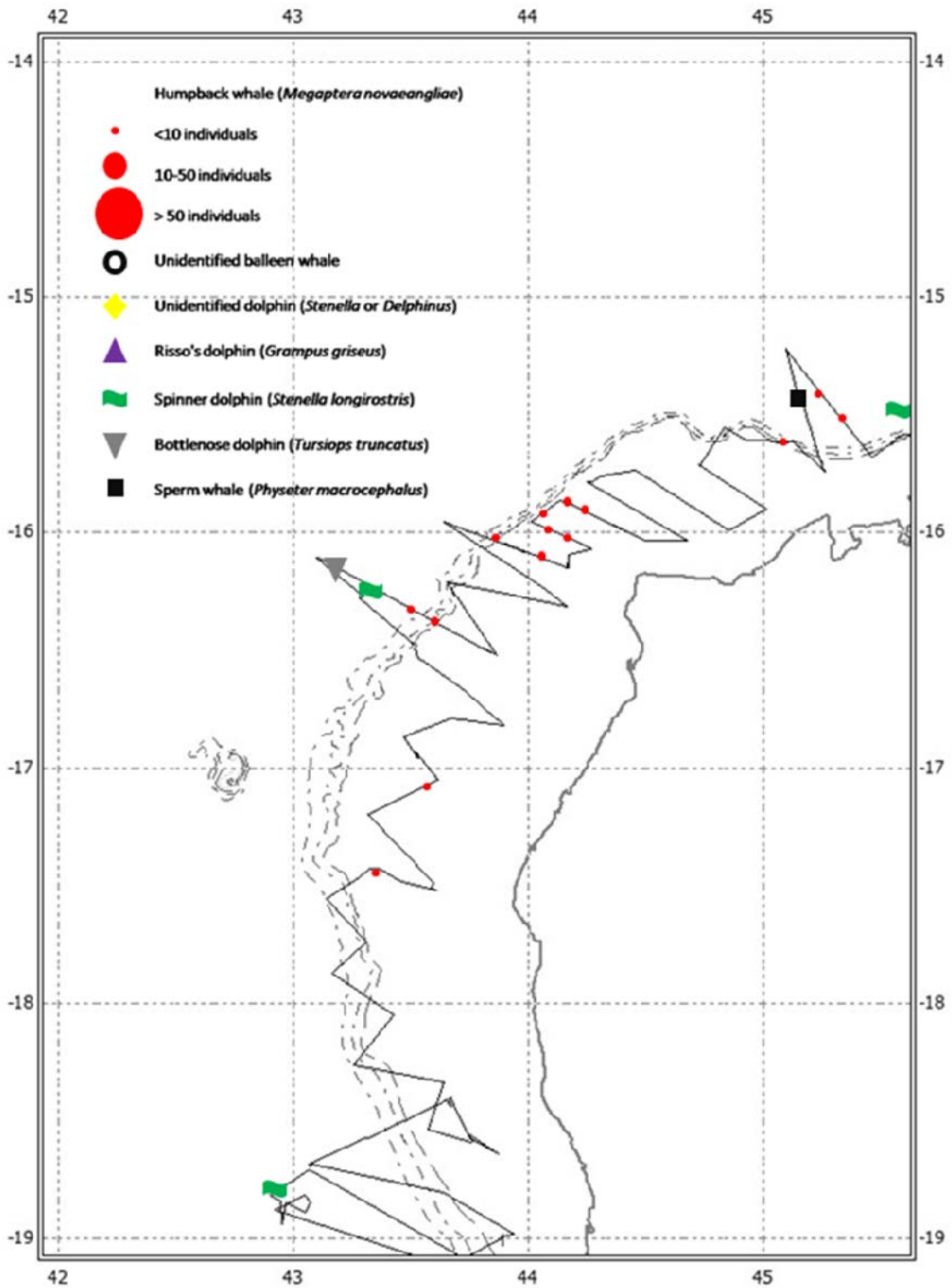


Figure 3.18 Whale observations in southwest Madagascar

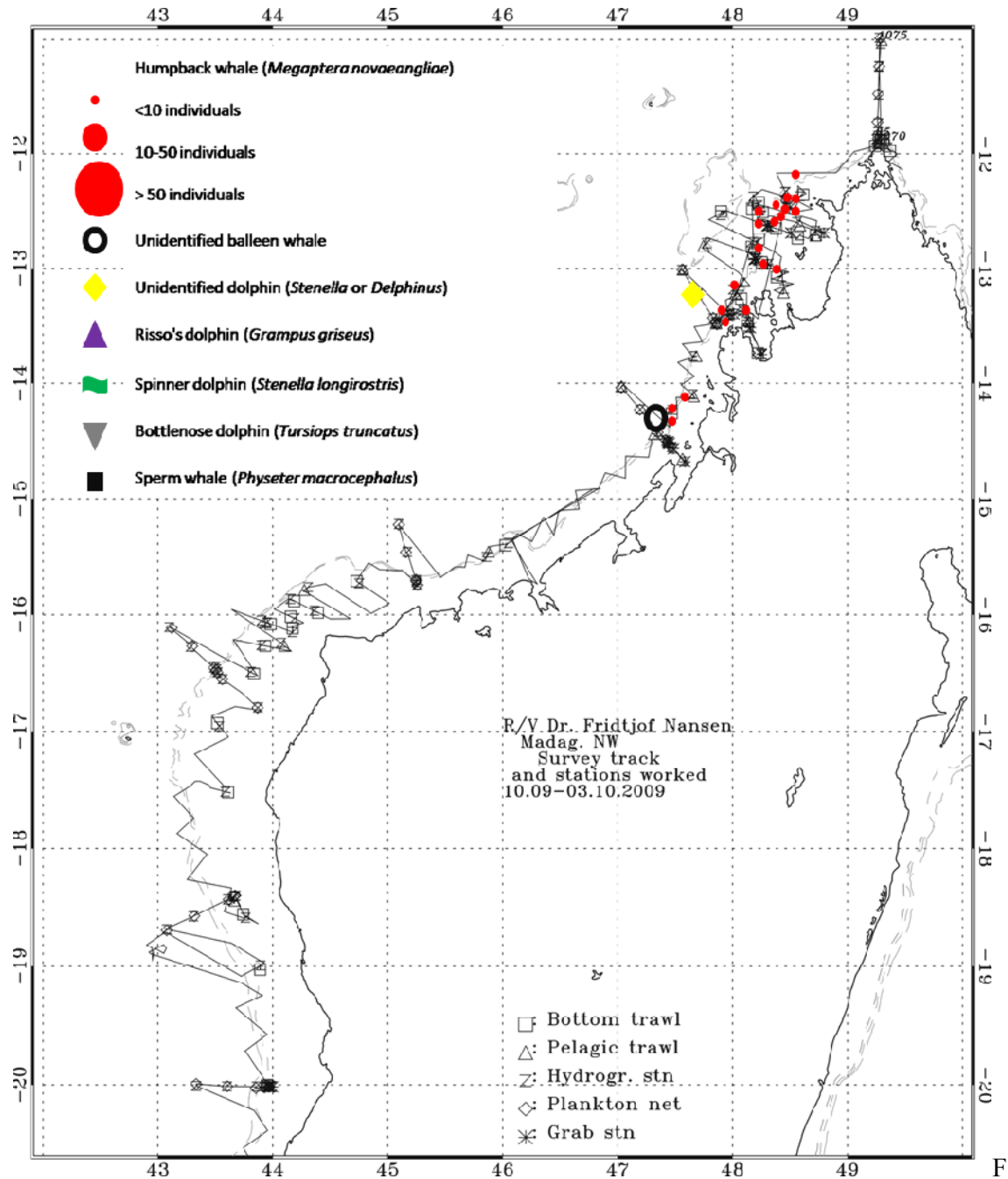


Figure 3.19 Whale observations in northwest Madagascar

The following species of sea birds were observed:

Shy or yellow nose albatross (*Diodemea cauta* or *D. chlororhynchus*), pintado petrels (*Faption capense*), skua (*Stercorarius sp.*), wift terns (*Sterna bergii*), sooty terns (*Sterna fuscata*), bridled terns (*Sterna anaethetus*), fregatebirds (*Fregata minor* and *F. ariel*), sandwich terns

(*Sterna sandvicensis*), plover (*Charadrius sp.*), boobies (*Sula sp.*). Terns are the most common species.

4. SUMMARY AND REFERENCES

Previously, two surveys have been conducted off the South and East coast of Madagascar in June 1983 (Sætre *et al.* 1983) and in August-October 2008 (Krakstad *et al.* 2008). The area covered during these two surveys were the same. The western coast of Madagascar was explored for the first time during the present survey. In general low acoustic densities were observed consisting mainly of plankton and mesopelagic fish. In all three surveys, the catch rates have been low. No commercial quantities of small pelagic fish were recorded. North of Nosy Be it seemed that the distribution of pelagic fish in general was more inshore than what could be covered by the vessel. Most of the shelf was inaccessible due to a reeflike ridge and the maps were not precise enough for the vessel to go into shallower areas.

The result from the previous surveys indicated pelagic stocks of approximately 85 000 tons which was the same as estimated last year (92 000 tons). Carangids were the most common pelagic fish groups in all three surveys.

5. REFERENCES

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Strømme, T. 1992. NAN-SIS: Software for fishery survey data logging and analysis. User's manual. *FAO Computerized Information Series (Fisheries)*. No. 4. Rome, FAO. 1992. 103.

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ANNEX I Records of fishing station

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 1
 DATE :28.08.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°43.05
 start stop duration Purpose : 1
 TIME :23:16:13 23:46:50 30.6 (min) Region : 7510
 LOG : 8724.13 8725.95 1.8 Gear cond.: 0
 FDEPTH: 90 80 Validity : 0
 BDEPTH: 945 1263 Speed : 3.6 kn
 Towing dir: 0° Wire out : 140 m Catch/hour: 6.37
 Sorted : 3 Total catch: 3.25

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
J E L L Y F I S H	4.31	0	67.69
MYCTOPHIDAE	1.27	247	20.00
Ancistrocheirus sp.	0.39	2	6.15
S H R I M P S	0.29	143	4.62
Abraolopsis sp.	0.10	78	1.54
Ornithoteuthis sp.	0.00	2	0.00
Total	6.37		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 2
 DATE :29.08.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°29.91
 start stop duration Purpose : 1
 TIME :11:19:46 11:40:55 21.2 (min) Region : 7510
 LOG : 8802.00 8803.20 1.2 Gear cond.: 0
 FDEPTH: 220 230 Validity : 0
 BDEPTH: 248 268 Speed : 3.4 kn
 Towing dir: 0° Wire out : 520 m Catch/hour: 0.00
 Sorted : 0 Total catch: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 3
 DATE :31.08.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°55.87
 start stop duration Purpose : 1
 TIME :06:43:17 07:04:57 21.7 (min) Region : 7510
 LOG : 9151.67 9152.75 1.1 Gear cond.: 0
 FDEPTH: 107 110 Validity : 1
 BDEPTH: 107 110 Speed : 3.0 kn
 Towing dir: 0° Wire out : 280 m Catch/hour: 116.79
 Sorted : 42 Total catch: 42.18

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Epinephelus flavocaeruleus	28.66	3	24.54
Mustelus mosis, female	22.98	3	19.68
Epinephelus morrhua	21.74	6	18.61
Parupeneus rubescens	13.84	44	11.85
Paracasio xanthurus	10.38	25	8.89
Pristipomoides filamentosus	6.65	11	5.69
Agyrops spinifer	2.77	6	2.37
Arothron incognitus	2.66	3	2.28
Scorpaena scrofa	1.88	3	1.61
Gymnocranius griseus	1.72	8	1.47
Choerodon robustus	1.50	6	1.28
Polysteganus coeruleopunctatus	1.05	3	0.90
Fistularia petimba	0.42	8	0.36
Chaetodon dolosus	0.30	8	0.26
Loligo sp.	0.14	6	0.12
Parupeneus fraserorum	0.11	3	0.09
Total	116.79		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 4
 DATE :31.08.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°38.13
 start stop duration Purpose : 1
 TIME :09:50:09 10:19:30 29.3 (min) Region : 7510
 LOG : 9174.65 9176.08 1.4 Gear cond.: 0
 FDEPTH: 53 58 Validity : 0
 BDEPTH: 53 58 Speed : 2.9 kn
 Towing dir: 0° Wire out : 150 m Catch/hour: 111.80
 Sorted : 55 Total catch: 54.67

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Epinephelus multinotatus	41.31	4	36.95
Teixeirichthys jordani	22.60	877	20.21
Lutjanus sebae	20.14	2	18.02
Rhinobatos leucospilus*, female	8.08	2	7.23
Pomacanthus imperator	4.91	4	4.39
Sufflamen fraenatus	2.80	2	2.51
Ostracion cubicus	2.19	2	1.96
Pristotis cf. cyanostigma	1.64	55	1.46
Pagellus bellottii natalensis	1.37	70	1.23
Dascyllus trimaculatus	1.27	55	1.13
OMMASTREPHIDAE	1.00	35	0.90
Priacanthus hamrur	0.84	4	0.75
Paracasio xanthurus	0.67	2	0.60
Chaetodon dolosus	0.53	16	0.48
Saurida undosquamis	0.47	2	0.42
Scolopsis bimaculatus	0.47	4	0.42
Chaetodon blackburnii	0.29	12	0.26
Pseudanthias cooperi	0.22	14	0.20
Choerodon sp.	0.18	2	0.16

SEPIIDAE 0.18 4 0.16
 Pseudanthias cf townsendi 0.14 8 0.13
 Trachurus delagoa 0.14 10 0.13
 Cyprinocirrhites polyactis 0.12 6 0.11
 Stethojulis interrupta 0.08 2 0.07
 SERRANIDAE 0.06 2 0.05
 APOGONIDAE 0.04 4 0.04
 Upeneus bensasi 0.02 2 0.02
 Labroides dimidiatus 0.02 4 0.02
 Total 111.80 100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 5
 DATE :31.08.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 26°5.23
 start stop duration Purpose : 1
 TIME :15:34:03 15:51:38 17.6 (min) Region : 7510
 LOG : 9223.63 9224.75 1.1 Gear cond.: 0
 FDEPTH: 55 22 Validity : 0
 BDEPTH: 116 114 Speed : 3.9 kn
 Towing dir: 0° Wire out : 120 m Catch/hour: 3.40
 Sorted : 1 Total catch: 1.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Bregmaceros sp.	3.38	6754	99.40
Priacanthus sp.	0.01	3	0.20
Unidentified fish	0.01	3	0.20
Nemichthys curvirostris	0.01	7	0.20
Total	3.40		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 6
 DATE :01.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 26°8.53
 start stop duration Purpose : 1
 TIME :12:07:04 12:36:34 29.5 (min) Region : 7510
 LOG : 9367.41 9368.91 1.5 Gear cond.: 0
 FDEPTH: 119 127 Validity : 0
 BDEPTH: 119 127 Speed : 3.1 kn
 Towing dir: 0° Wire out : 310 m Catch/hour: 68.46
 Sorted : 34 Total catch: 33.66

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Polysteganus coeruleopunctatus	23.49	69	34.31
Mustelus mosis	14.03	2	20.50
Pristipomoides filamentosus	12.08	24	17.65
Chelimerius nufar	5.90	2	8.62
Epinephelus morrhua	3.42	2	4.99
Pomacanthus imperator	2.46	2	3.59
Dead coral	2.24	0	3.27
Cantherhines dumerilii	1.73	4	2.53
Fistularia petimba	1.42	8	2.08
Parupeneus rubescens	1.00	2	1.46
Teixeirichthys jordani	0.24	12	0.36
Dascyllus trimaculatus	0.10	6	0.15
Stethojulis interrupta	0.08	2	0.12
Chaetodon dolosus	0.06	2	0.09
Antigonia rubescens	0.06	4	0.09
OMMASTREPHIDAE	0.06	2	0.09
Pseudanthias cooperi	0.04	2	0.06
Lactoria diaphana	0.02	2	0.03
SCORPAENIDAE	0.02	2	0.03
Total	68.46		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 7
 DATE :01.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 26°0.47
 start stop duration Purpose : 1
 TIME :14:43:27 14:59:54 16.5 (min) Region : 7510
 LOG : 9381.76 9382.57 0.8 Gear cond.: 0
 FDEPTH: 82 84 Validity : 0
 BDEPTH: 82 84 Speed : 2.9 kn
 Towing dir: 0° Wire out : 230 m Catch/hour: 53.55
 Sorted : 15 Total catch: 14.69

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lutjanus sebae	29.71	4	55.48
Rhizoprionodon acutus, female	10.57	4	19.74
Epinephelus morrhua	7.29	4	13.61
Gymnocranius griseus	2.52	7	4.70
Polysteganus coeruleopunctatus	1.46	4	2.72
Loligo sp.	0.40	15	0.75
Parupeneus fraserorum	0.40	4	0.75
Teixeirichthys jordani	0.29	0	0.54
Chaetodon dolosus	0.29	11	0.54
Galappa sp.	0.22	4	0.41
Cyprinocirrhites polyactis	0.11	7	0.20
Synodus dermatogenys	0.11	4	0.20
Antigonia sp.	0.07	4	0.14
Champsodon sp.	0.04	4	0.07
Decapterus sp.	0.04	7	0.07
Scyllarus batei, male	0.04	4	0.07
Gorgonians	0.00	0	0.00
Total	53.55		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 8
 DATE :02.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°38.73
 start stop duration Purpose : 1
 TIME :06:31:43 07:03:36 31.9 (min) Region : 7510
 LOG : 9520.63 9522.22 1.6

FDEPTH: 40 39 Gear cond.: 0
 BDEPTH: 40 39 Validity: 0
 Towing dir: 0° Wire out : 130 m Speed : 3.0 kn
 Sorted : 149 Total catch: 148.78 Catch/hour: 279.92

Total 162.90 100.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Rachycentron canadum	174.98	19	62.51	30
Carcharhinus obscurus, male	30.95	2	11.06	31
Caranx ignobilis	19.00	2	6.79	32
Scomberomorus commerson	13.92	4	4.97	33
Caesio caeruleaurea	11.76	179	4.20	39
Siganus sutor	5.21	58	1.86	
Parupeneus fraserorum	5.02	77	1.79	36
Parupeneus rubescens	4.73	28	1.69	37
Teixeirichthys jordani	4.20	139	1.50	
Cheilimeris nufar	1.92	2	0.69	34
Octopus cyaneus	1.81	2	0.65	
Scolopsis bimaculatus	1.47	11	0.52	38
Parupeneus indicus	1.22	4	0.44	
Lethrinus crocineus	0.98	8	0.35	35
Scolopsis vosmeri	0.51	6	0.18	
Gymnocranius griseus	0.41	2	0.15	
Parupeneus macronema	0.34	4	0.12	
Priacanthus hamrur	0.32	4	0.11	
Fistularia petimba	0.26	2	0.09	
Dascyllus trimaculatus	0.23	4	0.08	
Chaetodon blackburnii	0.23	11	0.08	
Stethojulis interrupta	0.11	2	0.04	
Echeneis naucrates	0.11	8	0.04	
Macropharyngodon choati	0.06	2	0.02	
Pagellus bellottii natalensis	0.06	2	0.02	
Zanclus canescens	0.04	2	0.01	
Macropharyngodon kuiteri	0.04	2	0.01	
Sea urchins (strong spines)	0.04	2	0.01	
ISOPODS	0.02	6	0.01	
Total	279.93		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 9
 DATE :02.09.2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 25°28.50
 start stop duration Purpose : 1
 TIME :09:51:42 10:18:33 26.9 (min) Region : 7510
 LOG : 9541.46 9542.91 1.5 Gear cond.: 0
 FDEPTH: 10 10 Validity: 0
 BDEPTH: 32 34 Speed : 3.2 kn
 Towing dir: 0° Wire out : 130 m Catch/hour: 0.00
 Sorted : 0 Total catch: 0.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
N O C A T C H	0.00	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 10
 DATE :02.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°38.44
 start stop duration Purpose : 1
 TIME :12:57:50 13:27:08 29.3 (min) Region : 7510
 LOG : 9563.40 9564.94 1.5 Gear cond.: 0
 FDEPTH: 45 44 Validity: 0
 BDEPTH: 45 44 Speed : 3.2 kn
 Towing dir: 0° Wire out : 130 m Catch/hour: 162.90
 Sorted : 80 Total catch: 79.52

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Drepane longimana	52.13	25	32.00	41
Lethrinus crocineus	22.33	127	13.71	46
Lethrinus nebulosus	19.05	4	11.70	40
Abalistes stellatus	16.59	6	10.19	
Parupeneus rubescens	13.03	100	8.00	
Cheilimeris nufar	10.96	14	6.73	42
Scolopsis bimaculatus	7.80	55	4.79	43
Parupeneus fraserorum	4.61	117	2.83	
OMMASTREPHIDAE	3.24	137	1.99	
Oplegnathus robinsoni	2.36	2	1.45	
Pomacanthus imperator	1.95	2	1.19	
Chaetodon dolosus	1.45	23	0.89	
Gymnocranius griseus	1.45	20	0.89	
Gymnocranius grandoculis	1.31	4	0.80	
Ctenochaetus strigosus	0.84	14	0.52	
Caesio caeruleaurea	0.72	20	0.44	
Sufflamen fraenatus	0.59	2	0.36	
Decapterus macarellus	0.55	57	0.34	45
Fistularia petimba	0.39	4	0.24	
Lactoria diaphana	0.31	4	0.19	
Chaetodon blackburnii	0.25	14	0.15	
Pseudanthias connelli	0.20	18	0.13	
Siganus sutor	0.18	2	0.11	
Teixeirichthys jordani	0.14	6	0.09	
Decapterus kurroides	0.10	8	0.06	44
Stethojulis interrupta	0.10	2	0.06	
Labroides dimidiatus	0.08	6	0.05	
Halichoeres sp.	0.04	2	0.03	
Chelio sp.	0.04	2	0.03	
Stethojulis sp.	0.04	2	0.03	
Upeneus bensasi	0.04	2	0.03	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 11
 DATE :02.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 25°27.98
 start stop duration Purpose : 1
 TIME :23:03:37 23:23:10 19.6 (min) Region : 7510
 LOG : 9635.67 9636.88 1.2 Gear cond.: 0
 FDEPTH: 5 5 Validity: 0
 BDEPTH: 32 32 Speed : 3.7 kn
 Towing dir: 0° Wire out : 140 m Catch/hour: 4.24
 Sorted : 1 Total catch: 1.38

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Sufflamen fraenatus	4.08	3	96.38	
Selar crumenophthalmus	0.15	3	3.62	47
Total	4.24		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 12
 DATE :02.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 25°28.16
 start stop duration Purpose : 1
 TIME :23:55:15 23:58:42 3.5 (min) Region : 7510
 LOG : 9639.00 9639.21 0.2 Gear cond.: 0
 FDEPTH: 10 10 Validity: 0
 BDEPTH: 31 31 Speed : 3.6 kn
 Towing dir: 0° Wire out : 150 m Catch/hour: 5868.52
 Sorted : 100 Total catch: 337.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Decapterus macrosoma	3095.65	148104	52.75	51
Sardinella gibbosa	1593.04	39496	27.15	50
Mobula japonica	1096.52	70	18.68	
Naso fageni	25.04	17	0.43	
Lethrinus crocineus	17.04	17	0.29	49
Scomberomorus commerson	14.78	17	0.25	48
Decapterus kurroides	6.96	278	0.12	
Rastrelliger kanagurta	6.96	139	0.12	
Selar crumenophthalmus	6.96	139	0.12	
Etrumeus teres	5.57	139	0.09	
Total	5868.52		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 13
 DATE :03.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°29.87
 start stop duration Purpose : 1
 TIME :03:23:20 03:43:04 19.7 (min) Region : 7510
 LOG : 9654.53 9655.58 1.1 Gear cond.: 0
 FDEPTH: 36 36 Validity: 0
 BDEPTH: 36 36 Speed : 3.2 kn
 Towing dir: 0° Wire out : 120 m Catch/hour: 3150.68
 Sorted : 34 Total catch: 1036.05

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Decapterus macrosoma	2162.19	97867	68.63	56
Trachurus delagoa	497.21	30572	15.78	53
Scomber japonicus	369.49	7663	11.73	52
Sepia sp.	59.30	182	1.88	
Etrumeus teres	22.81	639	0.72	54
Upeneus bensasi	15.51	639	0.49	55
Sphyræna acutipinnis	10.04	91	0.32	
Decapterus kurroides	6.39	91	0.20	57
Trachinocephalus myops	3.65	91	0.12	
Pagellus bellottii	3.65	91	0.12	
Loligo sp.	1.82	91	0.06	
Total	3152.05		100.04	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 14
 DATE :03.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°21.25
 start stop duration Purpose : 1
 TIME :05:49:39 06:20:13 30.6 (min) Region : 7510
 LOG : 9670.12 9671.66 1.5 Gear cond.: 0
 FDEPTH: 25 27 Validity: 0
 BDEPTH: 25 27 Speed : 3.0 kn
 Towing dir: 0° Wire out : 100 m Catch/hour: 27.49
 Sorted : 14 Total catch: 14.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Decapterus macrosoma	21.79	891	79.29	58
Loligo duvauceli	2.40	65	8.71	
Decapterus kurroides	1.43	18	5.21	59
Sepia cf latinanus	0.94	6	3.43	
Scomber japonicus	0.61	10	2.21	60
Echeneis naucrates	0.24	2	0.86	
Loligo sp.	0.08	2	0.29	
Total	27.49		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 15
 DATE :03.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°22.70
 start stop duration Purpose : 1
 TIME :09:20:24 09:50:21 30.0 (min) Region : 7510
 LOG : 9697.19 9698.86 1.7 Gear cond.: 0
 FDEPTH: 32 35 Validity: 0
 BDEPTH: 32 35 Speed : 3.3 kn
 Towing dir: 0° Wire out : 115 m Catch/hour: 21.44
 Sorted : 11 Total catch: 10.72

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Decapterus kurroides	17.54	352	81.81	61
Saurida sp.	1.34	16	6.25	
Pterois miles	1.08	2	5.04	
OMMASTREPHIDAE	0.62	44	2.89	
Sardinella gibbosa	0.62	12	2.89	62
Upeneus bensasi	0.22	8	1.03	
Lagocephalus guntheri	0.02	2	0.09	

Total 21.44 100.00

Lophiodes sp. 0.10 6 0.03
Zenion sp. 0.06 6 0.02
Brama orcinii 0.06 10 0.02
Total 293.59 100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 16
DATE :03.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 25°22.07
start stop duration Lon E 44°13.01
TIME :14:47:03 15:09:34 22.5 (min) Purpose : 1
LOG : 9743.69 9744.81 1.1 Region : 7510
FDEPTH: 94 91 Gear cond.: 0
BDEPTH: 94 91 Validity : 0
Towing dir: 0° Wire out : 223 m Speed : 3.0 kn
Sorted : 12 Total catch: 12.02 Catch/hour: 32.03

Table with columns: SPECIES, CATCH/HOUR weight numbers, % OF TOT. C, SAMP. Lists species like Decapterus kurroides, Upeneus taeniopterus, Loligo duvauceli, etc.

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 19
DATE :06.09.2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 23°20.15
start stop duration Lon E 43°35.11
TIME :03:24:39 03:55:19 30.7 (min) Purpose : 1
LOG :10151.17 10153.17 2.0 Region : 7510
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 173 177 Validity : 0
Towing dir: 0° Wire out : 130 m Speed : 3.9 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

Table with columns: SPECIES, CATCH/HOUR weight numbers, % OF TOT. C, SAMP. Shows N O C A T C H with 0.00 values.

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 20
DATE :06.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 23°11.01
start stop duration Lon E 43°32.33
TIME :06:53:57 07:24:13 30.3 (min) Purpose : 1
LOG : 175.69 177.31 1.6 Region : 7510
FDEPTH: 145 143 Gear cond.: 0
BDEPTH: 145 143 Validity : 0
Towing dir: 0° Wire out : 380 m Speed : 3.2 kn
Sorted : 48 Total catch: 48.17 Catch/hour: 95.48

Table with columns: SPECIES, CATCH/HOUR weight numbers, % OF TOT. C, SAMP. Lists species like Dasyatis sp., Squatina africana, Carangoides caeruleopinnatus, etc.

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 17
DATE :04.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 24°44.45
start stop duration Lon E 43°53.95
TIME :12:25:21 12:55:12 29.9 (min) Purpose : 1
LOG : 9878.34 9879.92 1.6 Region : 7510
FDEPTH: 73 75 Gear cond.: 0
BDEPTH: 73 75 Validity : 0
Towing dir: 0° Wire out : 195 m Speed : 3.2 kn
Sorted : 27 Total catch: 26.98 Catch/hour: 54.21

Table with columns: SPECIES, CATCH/HOUR weight numbers, % OF TOT. C, SAMP. Lists species like Mustelus mosia, Gymnocephalus grandoculis, Seriola rivoliana, etc.

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 18
DATE :05.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 23°34.49
start stop duration Lon E 43°30.14
TIME :09:59:08 10:29:07 30.0 (min) Purpose : 1
LOG :10044.71 10046.31 1.6 Region : 7510
FDEPTH: 526 556 Gear cond.: 0
BDEPTH: 526 556 Validity : 0
Towing dir: 0° Wire out : 1410 m Speed : 3.2 kn
Sorted : 91 Total catch: 146.65 Catch/hour: 293.59

Table with columns: SPECIES, CATCH/HOUR weight numbers, % OF TOT. C, SAMP. Lists species like Centrophorus moluccensis, Chlorophthalmus sp., Rexea prometheoides, etc.

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 21
DATE :06.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 23°5.31
start stop duration Lon E 43°26.82
TIME :10:29:33 10:59:29 29.9 (min) Purpose : 1
LOG : 201.36 203.01 1.7 Region : 7510
FDEPTH: 324 328 Gear cond.: 0
BDEPTH: 324 328 Validity : 0
Towing dir: 0° Wire out : 860 m Speed : 3.3 kn
Sorted : 173 Total catch: 172.99 Catch/hour: 346.67

Table with columns: SPECIES, CATCH/HOUR weight numbers, % OF TOT. C, SAMP. Lists species like Trichurus lepturus, Rexea prometheoides, Polysteganus coeruleopunctatus, etc.

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 22
DATE :06.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 22°45.99
start stop duration Lon E 43°18.42
TIME :15:55:03 16:22:38 27.6 (min) Purpose : 1
LOG : 239.17 240.68 1.5 Region : 7510
FDEPTH: 71 76 Gear cond.: 0
BDEPTH: 71 76 Validity : 0

Towing dir: 0° Wire out : 200 m Speed : 3.3 kn
 Sorted : 113 Total catch: 112.91 Catch/hour: 245.55

BDEPTH: 259 264 Validity : 0
 Towing dir: 0° Wire out : 690 m Speed : 3.5 kn
 Sorted : 54 Total catch: 54.24 Catch/hour: 104.68

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Lutjanus bohar	110.91	22	45.17 78
Lutjanus lentjan	20.33	17	8.28 86
Lutjanus cf. fluviflamma	12.07	80	4.92 85
Lutjanus kasmira	9.22	70	3.76 81
Aprion virescens	9.03	2	3.68
Naso thynnoides	8.05	52	3.28
Naso hexacanthus	6.74	9	2.75
Naso tuberosus	6.15	2	2.51
Lutjanus lutjanus	5.55	57	2.26 84
Carangoides caeruleopinnatus	5.11	7	2.08 79
Myripristis cf. murdjan	4.68	20	1.90
Acanthurus mata	3.96	4	1.61
Arothron hispidus	3.52	2	1.43
Pterocaesio pisang	3.48	94	1.42
Gymnoceanius grandoculis	3.37	13	1.37 0
Lutjanus gibbus	3.31	4	1.35
Lutjanus fulviflamma	3.24	9	1.32 82
Caesio caeruleaurea	2.78	15	1.13
Heniochus acuminatus	2.41	11	0.98
Pristipomoides filamentosus	2.37	26	0.97
Neotrygon kuhlii	2.26	4	0.92
Parupeneus roundhead-yellow 1	2.24	26	0.91
Myripristis berndti	2.17	9	0.89
Priacanthus hamrur	1.85	11	0.75
Lethrinus microdon	1.65	2	0.67
Paracaesio xanthurus	1.63	7	0.66
Apogon apogonides	1.30	104	0.53
MYCTOPHIDAE	1.09	0	0.44
Rexea prometheoides	0.85	11	0.35
Gymnoceanius grandoculis	0.85	4	0.35
Tetrosomus concatenatus	0.83	2	0.34
Sargocentron sp.	0.80	7	0.33
Lethrinus rubrioperculatus	0.63	2	0.26
Upeneus vittatus	0.30	7	0.12
Sargocentron microstoma	0.20	2	0.08
Chlorophthalmus agassizi	0.17	2	0.07
Sargocentron ittoidai	0.17	4	0.07
Peristedion adeni	0.13	4	0.05
Anthias sp.	0.04	2	0.02
Citharichthys sp.	0.04	2	0.02
Pseudorhombus elevatus	0.04	2	0.02
Total	245.55		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 23
 DATE :06.09.2009 GEAR TYPE: BT NO: 4 POSITION:Lat S 22°13.21
 start stop duration Lon E 43°8.55
 TIME :23:43:31 00:14:06 30.6 (min) Purpose : 1
 LOG : 306.56 308.22 1.7 Region : 7510
 FDEPTH: 10 10 Gear cond.: 0
 BDEPTH: 82 85 Validity : 0
 Towing dir: 0° Wire out : 130 m Speed : 3.3 kn
 Sorted : 0 Total catch: 0.19 Catch/hour: 0.37

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
SALPS	0.00	2	0.00
MYCTOPHIDAE	0.20	55	0.00
Lactoria sp.	0.00	2	0.00
Priacanthus sp.	0.04	2	0.00
OMMASTREPHIDAE	0.04	2	0.00
Torquigener hypselogenion	0.02	10	0.00
TRIPTERYGLIDAE	0.04	2	0.00
Dipterygonotus balteatus	0.04	41	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 24
 DATE :07.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 21°58.79
 start stop duration Lon E 43°8.38
 TIME :09:23:20 09:53:27 30.1 (min) Purpose : 1
 LOG : 343.60 345.34 1.7 Region : 7510
 FDEPTH: 239 235 Gear cond.: 0
 BDEPTH: 239 235 Validity : 0
 Towing dir: 0° Wire out : 650 m Speed : 3.5 kn
 Sorted : 123 Total catch: 123.46 Catch/hour: 246.02

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Polysteganus coeruleopunctatus	59.48	76	24.18 87
Pilotrema warreni	48.02	14	19.52
Apogon sp.	30.79	1421	12.51
Squatina africana	25.11	4	10.21
Johnius dussumieri	22.82	20	9.27
Leiognathus equulus	11.78	620	4.79
Aphareus furca	8.77	2	3.56 88
Trichurus lepturus	7.45	116	3.03
Sphyræna flavicauda	7.19	72	2.92
Mustelus manazo	5.38	2	2.19
Fistularia petimba	3.89	4	1.58
Chaunax sp.	3.79	6	1.54
Decapterus tabl	2.79	24	1.13 90
Upeneus vittatus	1.99	20	0.81
Naso hexacanthus	1.77	2	0.72
Histioporus typus	1.45	2	0.59
Saurida undosquamis	1.22	2	0.49
Ibacus novemdentatus	0.78	4	0.32 89
Rexea prometheoides	0.66	10	0.27
Uranoscopus archionema	0.36	6	0.15
Sepia orbignyana	0.30	2	0.12
Chlorophthalmus agassizi	0.18	4	0.07
S H R I M P S	0.04	36	0.02
Neobythites sp.	0.02	2	0.01
Champsodon capensis	0.00	2	0.00
ISOPODS	0.00	2	0.00
Total	246.02		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 25
 DATE :09.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 20°0.37
 start stop duration Lon E 43°56.74
 TIME :09:19:13 09:50:18 31.1 (min) Purpose : 1
 LOG : 690.73 692.52 1.8 Region : 7510
 FDEPTH: 259 264 Gear cond.: 0

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Decapterus kurroides	45.16	297	43.14 93
Squalus megalops	35.70	91	34.11
Sphyræna acutispinis	5.21	50	4.98 91
Polysteganus coeruleopunctatus	4.30	14	4.11 92
Ibacus novemdentatus	3.88	25	3.71 94
Chaunax sp.	2.99	12	2.86
Satyricthys adeni	2.10	2	2.01
Loligo sp.	1.27	15	1.22
Rexea prometheoides	1.24	25	1.18
Citharus linguatula	0.87	14	0.83
Priacanthus hamrur	0.69	12	0.66
Upeneus cf. vittatus	0.50	6	0.48
Lepidotrigla sp.	0.44	2	0.42
Apogon apogonides	0.23	21	0.22
Argentina euchus	0.06	4	0.06
Champsodon capensis	0.02	4	0.02
Total	104.68		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 26
 DATE :09.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 20°0.11
 start stop duration Lon E 43°57.18
 TIME :17:08:29 17:38:01 29.5 (min) Purpose : 1
 LOG : 706.66 708.30 1.6 Region : 7510
 FDEPTH: 202 204 Gear cond.: 0
 BDEPTH: 202 204 Validity : 0
 Towing dir: 0° Wire out : 530 m Speed : 3.3 kn
 Sorted : 59 Total catch: 58.73 Catch/hour: 119.33

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
MYCTOPHIDAE	44.70	3779	37.46
Squalus megalops	26.72	39	22.39
Pilotrema warreni	9.04	6	7.58
Chelidonichthys sp.	5.16	33	4.32
Johnius amblycephalus	5.12	16	4.29
Lepidotrigla sp.	4.27	87	3.58
Tylerius spinosissimus	2.91	63	2.43
Priacanthus hamrur	2.91	28	2.43
Gonorrhynchus gonorrhynchus	2.11	55	1.77
Aristaeomorpha foliacea	1.89	124	1.58
Apogon apogonides	1.87	79	1.57
Decapterus kurroides	1.77	10	1.48
Neopinnula orientalis	1.71	12	1.43
Trichurus lepturus	1.10	8	0.92
Chirocentrodon bleekeriianus	0.75	146	0.63
Cibicides capensis	0.69	10	0.58
Ibacus novemdentatus	0.59	4	0.49
Citharus linguatula	0.55	14	0.46
Polysteganus coeruleopunctatus	0.51	10	0.43
Epinephelus septemfasciatus	0.51	2	0.43
Aristeus antennatus	0.49	14	0.41
Rexea prometheoides	0.43	8	0.36
Caelorinchus braueri	0.39	16	0.32
Uroconger lepturus	0.37	4	0.31
Oplophorus sp.	0.33	163	0.27
Etmopterus sentosus	0.33	85	0.27
Saurida gracilis	0.30	20	0.26
Synaphobranchus affinis	0.24	8	0.20
Sepia bertheloti	0.22	12	0.19
Upeneus vittatus	0.18	4	0.15
Solenocera cf. algoensis	0.18	41	0.15
Sepia orbignyana	0.14	18	0.12
ARISTEIDAE	0.12	20	0.10
Ommastrephes bartrami	0.12	4	0.10
Nettastoma sp.	0.12	6	0.10
UNIDENTIFIED FISH	0.10	0	0.09
Hoplostethus atlanticus	0.10	2	0.09
Coloconger sp.	0.06	2	0.05
Starfish	0.04	2	0.03
Serranus sp.	0.04	4	0.03
Champsodon capensis	0.04	6	0.03
Polyipnus indicus	0.04	8	0.03
Isopod	0.02	6	0.02
SQUILLIDAE	0.02	2	0.02
Uranoscopus sp.	0.02	2	0.02
Lestrolepis intermedia	0.02	2	0.02
Total	119.33		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 27
 DATE :10.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 19°1.69
 start stop duration Lon E 43°53.31
 TIME :18:00:46 18:31:28 30.7 (min) Purpose : 1
 LOG : 947.76 949.33 1.6 Region : 7510
 FDEPTH: 342 337 Gear cond.: 0
 BDEPTH: 342 337 Validity : 0
 Towing dir: 0° Wire out : 880 m Speed : 3.1 kn
 Sorted : 36 Total catch: 36.18 Catch/hour: 70.73

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Squalus megalops	19.75	45	27.92
Chlorophthalmus agassizi	7.23	72	10.23
Centrophorus moluccensis	5.87	4	8.29
Trigla sp.	5.63	37	7.96
Diaphus effulgens	4.22	151	5.97
Beryx splendens	3.62	80	5.11
Pilotrema warreni	2.83	2	4.01
Citharus linguatula	2.13	14	3.01
Chaunax sp.	2.01	22	2.85
Caelorinchus braueri	1.97	59	2.79
Aristeus antennatus	1.96	156	2.76
Rexea prometheoides	1.52	20	2.16
Aristaeomorpha foliacea	1.15	53	1.63
Ommastrephes bartrami	1.08	6	1.52
Neobythites sp.	0.84	16	1.19
Neopinnula orientalis *	0.72	4	1.02
Solenocera sp.	0.70	33	1.00
Polymixia berndti	0.65	16	0.91
Trichurus lepturus	0.65	4	0.91
Peristedion weberi	0.61	22	0.86
Lepidotrigla multispinosus	0.59	6	0.83
Physiculus natalensis	0.51	4	0.72
Ateleopus natalensis	0.49	4	0.69
Antigonia sp.	0.39	18	0.55

Haliporoides triarthrus	0.35	18	0.50
Branchiostegus doliiatus	0.35	2	0.50
Heterocarpus ensifer	0.33	41	0.47
Parazen pacificus	0.33	16	0.47
Zenion leptolepis	0.31	98	0.44
Penaeopsis balssi	0.27	16	0.39
Argentina euchus	0.25	16	0.36
Margrethia sp.	0.22	35	0.30
Small shrimps	0.20	0	0.28
Halleutaea sp.	0.20	2	0.28
Minilabrus sp.	0.20	4	0.28
Lagocephalus guntheri	0.18	2	0.25
Etmopterus sentosus	0.08	4	0.11
Paramola cuvieri	0.08	2	0.11
Poecilopsetta zanzibarensis	0.04	4	0.06
Parapandalus spinifer	0.04	2	0.06
Neobythides cf somaliaensis	0.04	2	0.06
Sepia orbignyana	0.04	4	0.06
Squilla sp.	0.02	2	0.03
OCCOCEPHALIDAE	0.02	2	0.03
Ectreposebastes sp.	0.02	2	0.03
Myctophid sp. A	0.00	0	0.00
Total	70.67		99.92

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 28
 DATE :11.09.2009 GEAR TYPE: BT NO: 4 POSITION:Lat S 18°26.52
 start stop duration Purpose : 1
 TIME :10:36:38 11:06:15 29.6 (min) Region : 7510
 LOG : 1049.53 1051.19 1.7 Gear cond.: 0
 FDEPTH: 0 0 Validity : 0
 BDEPTH: 718 826 Towing dir: 0° Wire out : 150 m Speed : 3.4 kn
 Sorted : 0 Total catch: 0.08 Catch/hour: 0.16

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
CARANGIDAE, juvenile	0.04	71	0.00
Dactyloptena orientalis, juvenile	0.00	2	0.00
Fistularia petimba, juvenile	0.02	12	0.00
FISH LARVAE	0.02	59	0.00
Gempylus cf serpens, juvenile	0.00	4	0.00
SALPS	0.08	0	0.00
Pervagor janthinosoma, juvenile	0.00	2	0.00
Pseudalutarius nasicornis, juvenile	0.00	4	0.00
OSTRACIIDAE, juvenile	0.00	8	0.00
Loligo sp., juvenile	0.00	4	0.00
Trichiurus lepturus, juvenile	0.00	2	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 29
 DATE :11.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 18°33.53
 start stop duration Purpose : 1
 TIME :17:32:39 18:03:55 31.3 (min) Region : 7510
 LOG : 1093.62 1095.21 1.6 Gear cond.: 0
 FDEPTH: 226 224 Validity : 0
 BDEPTH: 226 224 Towing dir: 0° Wire out : 590 m Speed : 3.0 kn
 Sorted : 72 Total catch: 71.58 Catch/hour: 137.39

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Diaphus effulgens	28.98	1449	21.10
Squalus megalops	18.23	23	13.27
Aponogon aponogonides	15.93	580	11.60
Centrophorus moluccensis	14.11	2	10.27
Upeneus cf vittatus	12.36	2	9.00
Uranoscopus archionema	8.18	29	5.95
Coelorrhinus cf carnifer	5.05	186	3.67
ARISTEIDAE	4.36	482	3.17
Aristeus antennatus	4.22	154	3.07
Neocyttus orientalis	4.13	58	3.00
Aristaeomorpha foliacea	3.17	253	2.31
Solenocera agoensis	3.07	38	2.24
SOFT SPONGES	2.11	15	1.54
Citharoides macrolepis	1.92	23	1.40
Satyrichthys adeni	1.54	2	1.12
Cubiceps whitleggi	1.04	12	0.75
Johnius dussumieri	1.02	4	0.74
Rhechias flava	0.71	12	0.52
Ommastrephes bartrami	0.67	4	0.49
Neobythides cf somaliaensis	0.65	23	0.47
Laemonema globiceps	0.56	13	0.41
Priacanthus hamrur	0.52	8	0.38
Chlorophthalmus agassizi	0.44	2	0.32
Urocyon lepturus	0.42	4	0.31
Pareques sp.	0.42	35	0.31
Sepia orbignyana	0.40	12	0.29
Polysteganus coeruleopunctatus	0.40	12	0.29
Squatina africana	0.36	2	0.27
Chaunax sp.	0.31	48	0.22
PERISTEIIDAE	0.29	13	0.21
Heterocarpus ensifer	0.29	23	0.21
Champsodon capensis	0.25	21	0.18
Etmopterus sentosus	0.25	21	0.18
Serranus cabrilla *	0.23	12	0.17
Poecilopsetta zanzibarensis	0.19	12	0.14
Halleutaea fitzsimonsi	0.17	2	0.13
Squilla sp.	0.15	6	0.11
Parapandalus spinifer	0.13	19	0.10
Parapriacanthus ransomneti	0.04	8	0.03
Heterocarpus woodmasoni	0.04	2	0.03
Diretmoides parini	0.02	2	0.01
MACROURIDAE	0.02	2	0.01
Antigonia cf rubescens	0.02	2	0.01
Saurida gracilis	0.02	2	0.01
Antigonia sp.	0.00	0	0.00
Total	137.39		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 30
 DATE :13.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 17°31.28
 start stop duration Purpose : 1
 TIME :06:43:28 07:03:17 19.8 (min) Region : 7510
 LOG : 1255.46 1256.53 1.1 Gear cond.: 0
 FDEPTH: 38 40 Validity : 0
 BDEPTH: 38 40

Towing dir: 0° Wire out : 120 m Speed : 3.2 kn
 Sorted : 10 Total catch: 9.65 Catch/hour: 29.21

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
JELLYFISH	24.73	869	84.66
Nemipterus bipunctatus	2.66	42	9.12
Echeneis naucrates	1.51	6	5.18
Ommastrephes bartrami	0.30	58	1.04
Total	29.21		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 31
 DATE :13.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 16°55.81
 start stop duration Purpose : 1
 TIME :13:18:06 13:48:45 30.7 (min) Region : 7510
 LOG : 1312.32 1313.85 1.5 Gear cond.: 0
 FDEPTH: 59 58 Validity : 0
 BDEPTH: 59 58 Towing dir: 0° Wire out : 160 m Speed : 3.0 kn
 Sorted : 14 Total catch: 14.41 Catch/hour: 28.21

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Loxodon macrorhinus	12.92	6	45.79
Carangoides coeruleopinnatus	3.41	16	12.07
Gymnocranius griseus	3.09	14	10.96
Scomberomorus commerson	2.62	2	9.30
Balistes capricus	2.08	4	7.35
Nemipterus japonicus	1.35	16	4.79
Ommastrephes bartrami	1.31	72	4.65
Lactoria cornuta	1.23	4	4.37
Saurida undosquamis	0.20	10	0.71
Total	28.21		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 32
 DATE :14.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 16°30.54
 start stop duration Purpose : 1
 TIME :13:23:20 13:53:43 30.4 (min) Region : 7510
 LOG : 1476.67 1478.22 1.5 Gear cond.: 0
 FDEPTH: 43 45 Validity : 0
 BDEPTH: 43 45 Towing dir: 0° Wire out : 145 m Speed : 3.1 kn
 Sorted : 40 Total catch: 39.95 Catch/hour: 78.87

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Upeneus moluccensis	28.13	1125	35.67
Scomberomorus commerson	26.85	6	34.04
JELLYFISH	7.01	2	8.89
Abalistes stellatus	5.82	8	7.38
Nemipterus japonicus	3.06	57	3.88
Upeneus bensasi	2.72	152	3.45
Ommastrephes bartrami	1.86	174	2.35
Saurida tumbil	1.42	4	1.80
Carangoides malabaricus	0.79	4	1.00
Saurida undosquamis	0.55	14	0.70
Sepia orbignyana	0.45	2	0.58
Pseudalutarius nasicornis	0.12	2	0.15
Lagocephalus scleratus	0.06	2	0.08
Synodus hoshinonis	0.02	4	0.03
Total	78.87		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 33
 DATE :14.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 16°16.05
 start stop duration Purpose : 1
 TIME :18:45:21 19:16:46 31.4 (min) Region : 7510
 LOG : 1522.52 1524.06 1.5 Gear cond.: 0
 FDEPTH: 39 39 Validity : 0
 BDEPTH: 39 39 Towing dir: 0° Wire out : 120 m Speed : 2.9 kn
 Sorted : 72 Total catch: 72.49 Catch/hour: 138.47

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Upeneus moluccensis	103.34	3203	74.63
Gazza minuta	9.57	638	6.91
Nemipterus japonicus	4.39	122	3.17
Herklotsichthys quadrimaculata	4.30	96	3.10
Saurida tumbil	4.15	27	2.99
Decapterus macrostoma	2.35	69	1.70
Saurida undosquamis	2.27	69	1.64
Sphyrna putnamie	1.09	2	0.79
Ommastrephes bartrami	0.96	23	0.69
Abalistes stellatus	0.90	2	0.65
Decapterus russelli	0.90	10	0.65
Aponogon cf quattuor	0.74	96	0.54
Aponogon nitidus	0.55	69	0.40
Upeneus bensasi	0.52	32	0.37
Paetodes erumei	0.40	2	0.29
S H R I M P S	0.38	38	0.28
Carangoides malabaricus	0.34	2	0.25
Stolephorus indicus	0.32	11	0.23
Penaeus semisulcatus	0.21	6	0.15
Megalaspis cordyla	0.21	2	0.15
Upeneus cf vittatus	0.15	2	0.11
Dussumieria acuta	0.15	4	0.11
Lutjanus lutjanus	0.11	10	0.08
Sphyrna chrysoaenia	0.06	2	0.04
Apistus carinatus	0.04	4	0.03
Tentoriceps cristatus	0.04	2	0.03
Rhechias cf wallacei	0.02	2	0.01
Total	138.47		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 34
 DATE :14.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 16°16.05
 start stop duration Purpose : 1
 TIME :21:47:51 22:18:18 30.5 (min) Region : 7510
 LOG : 1544.85 1546.69 1.8 Gear cond.: 0
 FDEPTH: 0 0 Validity : 0
 BDEPTH: 31 33 Towing dir: 0° Wire out : 120 m Speed : 3.6 kn
 Sorted : 13 Total catch: 12.68 Catch/hour: 24.99

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Gazza minuta	9.54	357	38.17
Scomberomorus lineolatus	4.55	2	18.22
Pellona ditchea	3.31	110	13.25
Chirocentrus dorab	2.96	14	11.83
Rastrilliger kanagurta	2.11	18	8.44
Selar crumenophthalmus	0.89	8	3.55
J E L Y F I S H	0.65	0	2.60
Ommastrephes bartrami	0.37	37	1.50
Dussumieria acuta	0.24	6	0.95
Upeneus moluccensis	0.20	6	0.79
Sphyræna chrysoaenia	0.10	2	0.39
Saurida undosquamis	0.06	2	0.24
Decapterus russelli	0.02	2	0.08
Total	24.99		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 35
 DATE :15.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 16°3.85
 start stop duration start stop duration
 TIME :04:10:06 04:41:46 31.7 (min) Purpose : 1
 LOG : 1598.93 1600.64 1.7 Region : 7510
 FDEPTH: 0 0 Gear cond.: 0
 BDEPTH: 40 34 Validity : 0
 Towing dir: 0° Wire out : 0 m Speed : 3.2 kn
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 36
 DATE :15.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 16°4.86
 start stop duration start stop duration
 TIME :05:46:55 06:21:29 34.6 (min) Purpose : 1
 LOG : 1607.42 1609.16 1.7 Region : 7510
 FDEPTH: 40 41 Gear cond.: 0
 BDEPTH: 40 41 Validity : 0
 Towing dir: 0° Wire out : 130 m Speed : 3.0 kn
 Sorted : 43 Total catch: 43.39 Catch/hour: 75.29

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Caranx (Gnathanodon) speciosus	44.85	7	59.58
Scomberoides commersonianus	8.50	2	11.29
Abalistes stellatus	7.55	10	10.03
Upeneus moluccensis	7.43	187	9.86
Nemipterus japonicus	2.29	59	3.04
Scomberomorus commerson	2.17	2	2.88
Decapterus russelli	0.82	12	1.08
Psettodes erumei	0.78	2	1.04
Saurida tumbil	0.62	3	0.83
Ommastrephes bartrami	0.12	7	0.16
Saurida undosquamis	0.05	2	0.07
Fistularia petimba	0.03	2	0.05
Apogon quadrifasciatus	0.03	7	0.05
Upeneus bensasi	0.03	2	0.05
Total	75.29		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 37
 DATE :15.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 16°6.93
 start stop duration start stop duration
 TIME :08:23:41 08:54:26 30.8 (min) Purpose : 1
 LOG : 1626.57 1628.18 1.6 Region : 7510
 FDEPTH: 23 22 Gear cond.: 0
 BDEPTH: 23 22 Validity : 0
 Towing dir: 0° Wire out : 105 m Speed : 3.1 kn
 Sorted : 21 Total catch: 20.90 Catch/hour: 40.78

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Alepes kleinii	33.46	308	82.06
Abalistes stellatus	4.43	4	10.86
Carangoides coeruleopinnatus	0.80	2	1.96
Carangoides armatus	0.39	4	0.96
Drepane longimana	0.35	2	0.86
Nemipterus bipunctatus	0.33	4	0.81
Decapterus russelli	0.27	6	0.67
Alepes djedaba	0.27	2	0.67
Leiognathus fasciatus	0.25	6	0.62
Stolephorus indicus	0.12	4	0.29
Leiognathus leuciscus	0.10	2	0.24
Total	40.78		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 38
 DATE :15.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 16°0.96
 start stop duration start stop duration
 TIME :11:09:04 11:39:16 30.2 (min) Purpose : 1
 LOG : 1646.57 1648.19 1.6 Region : 7510
 FDEPTH: 32 31 Gear cond.: 0
 BDEPTH: 32 31 Validity : 0
 Towing dir: 0° Wire out : 105 m Speed : 3.2 kn
 Sorted : 167 Total catch: 167.21 Catch/hour: 332.21

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Lutjanus sanguineus	77.19	22	23.23
Scomberomorus commerson	53.54	16	16.12
Epinephelus coioides	35.17	10	10.59
Sphyræna putnamie	32.78	40	9.87
Diagramma centurio	26.92	8	8.10
Lutjanus argentimaculatus	19.17	4	5.77
Caranx (Caranx) sexfasciatus	17.28	10	5.20
Tripteronodon orbis	14.70	14	4.43
Alectis ciliaris	13.13	4	3.95
Carangoides coeruleopinnatus	13.11	54	3.95
Scarus ghobban	8.30	2	2.50
Carangoides chrysofrys	4.05	4	1.22
Lethrinus lentjan	2.56	2	0.77
Gerres filamentosus	2.54	12	0.77
Canthigaster jantinopectera	2.34	159	0.71

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Abalistes stellatus	2.26	2	0.68
Ostracion cubicus	1.89	2	0.57
Argyrops spinifer	1.77	4	0.53
Saurida tumbil	1.39	12	0.42
Drepane longimana	0.70	2	0.21
Upeneus vittatus	0.60	6	0.18
Carangoides armatus	0.34	2	0.10
Gymnocranius griseus	0.22	2	0.07
Parupeneus cf nansen	0.12	2	0.04
Upeneus moluccensis	0.10	4	0.03
Remora remora	0.02	2	0.01
Total	332.21		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 39
 DATE :15.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 15°53.01
 start stop duration start stop duration
 TIME :14:38:38 15:09:22 30.7 (min) Purpose : 1
 LOG : 1673.39 1675.23 1.8 Region : 7510
 FDEPTH: 30 32 Gear cond.: 0
 BDEPTH: 30 32 Validity : 0
 Towing dir: 0° Wire out : 110 m Speed : 3.6 kn
 Sorted : 71 Total catch: 71.25 Catch/hour: 139.07

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Lutjanus sanguineus	36.79	10	26.46
Carangoides coeruleopinnatus	30.06	316	21.61
Diagramma centurio	27.23	8	19.58
Scomberomorus commerson	11.03	6	7.93
Platax teira	6.54	2	4.70
Ommastrephes bartrami	5.64	275	4.06
Abalistes stellatus	5.23	6	3.76
Lutjanus lutjanus	4.49	107	3.23
Lethrinus olivaceus	3.81	2	2.74
Ostracion cubicus	3.06	2	2.20
Gymnocranius griseus	1.60	6	1.15
Apogon 'black spot'	1.35	632	0.97
Sphyræna putnamie	0.68	2	0.49
Decapterus kurroides	0.51	4	0.36
Scolopsis bimaculatus	0.27	2	0.20
Sphyræna forsteri	0.23	2	0.17
Parupeneus nansen	0.16	2	0.11
Canthigaster jantinopectera	0.08	4	0.06
Saurida undosquamis	0.06	4	0.04
Echeneis naucrates	0.06	2	0.04
Upeneus bensasi	0.06	2	0.04
Apogon aureus	0.04	2	0.03
Stolephorus indicus	0.04	2	0.03
Apogon sp.	0.04	2	0.03
Pseudalutarius nasicornis	0.02	2	0.01
Total	139.07		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 40
 DATE :15.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 15°58.96
 start stop duration start stop duration
 TIME :17:14:08 17:45:00 30.9 (min) Purpose : 1
 LOG : 1692.11 1693.67 1.6 Region : 7510
 FDEPTH: 28 28 Gear cond.: 0
 BDEPTH: 28 28 Validity : 0
 Towing dir: 0° Wire out : 115 m Speed : 3.0 kn
 Sorted : 36 Total catch: 123.37 Catch/hour: 239.79

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Himantura cf gerrardi	48.59	2	20.26
Upeneus sulphureus	36.93	896	15.40
Terapon theraps	24.63	684	10.27
Carangoides coeruleopinnatus, juvenile	22.43	1121	9.35
Lutjanus sanguineus	15.94	4	6.65
Upeneus moluccensis	14.05	414	5.86
Upeneus vittatus	13.62	257	5.68
Saurida tumbil	10.05	82	4.19
Sphyræna chrysoaenia	7.23	124	3.02
Nemipterus japonicus	7.06	216	2.94
CLUPEIDAE	6.43	276	2.68
Polynemus sextarius	6.10	154	2.55
Leiognathus leuciscus	5.71	435	2.38
Alepes kleinii	4.66	134	1.95
Metapenaeus monoceros	3.38	241	1.41
Psettodes erumei	2.41	14	1.01
Carangoides coeruleopinnatus	1.34	10	0.56
Fenacis semiculatus	1.24	33	0.52
Thryssa vitrirostris	1.09	117	0.45
Decapterus russelli	0.99	14	0.41
Lagocephalus guntheri	0.86	29	0.36
Stolephorus indicus	0.86	21	0.36
Abalistes stellatus	0.80	2	0.33
Trichiurus lepturus	0.76	19	0.32
Apogon quadrifasciatus	0.62	86	0.26
Pellona ditchea	0.39	29	0.16
Apogon sp.	0.33	33	0.14
Squilla sp.	0.29	25	0.12
Herklotsichthys quadrimaculat.	0.29	10	0.12
Secutor insidiator	0.19	10	0.08
Trachinocephalus myops	0.14	4	0.06
Rhechias cf wallacei	0.14	10	0.06
Pomadourys maculatus	0.14	4	0.06
Trachyrhamphus sp	0.06	6	0.02
Lutjanus lutjanus	0.04	4	0.02
Total	239.79		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 41
 DATE :15.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 15°47.20
 start stop duration start stop duration
 TIME :23:11:00 23:41:07 30.1 (min) Purpose : 1
 LOG : 1744.18 1746.07 1.9 Region : 7510
 FDEPTH: 10 10 Gear cond.: 0
 BDEPTH: 37 36 Validity : 0
 Towing dir: 0° Wire out : 120 m Speed : 3.8 kn
 Sorted : 8 Total catch: 8.27 Catch/hour: 16.47

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Selar crumenophthalmus	7.27	54	44.14
Small squids unident.	1.45	165	8.83
Leiognathus lineolatus	1.37	34	8.34
Megalaspis cordyla	1.35	6	8.22
Sphyræna putnamie	1.21	4	7.38
Herklotsichthys quadrimaculat.	1.14	26	6.89
Sphyræna chrysoaenia	1.02	14	6.17

Stolephorus indicus	0.62	24	3.75	
Terapon theraps	0.62	16	3.75	
Decapterus russelli	0.14	6	0.85	
Pseudalutarius nasicornis	0.12	2	0.73	
Apogon sp.	0.08	52	0.48	
Hemiramphus sp.	0.06	2	0.36	
Polynemus sextarius	0.02	4	0.12	
Saurida tumbil	0.00	2	0.00	
Emmelichthys nitidus	0.00	2	0.00	
MYCTOPHIDAE	0.00	2	0.00	
Total	16.47		100.00	

Carangoides sp.	0.00	3	0.00	
Total	16260.16		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 42
 DATE :16.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 15°42.65
 start stop duration
 TIME :07:12:38 07:38:35 26.0 (min) Purpose : 1
 LOG : 1815.24 1816.57 1.3 Region : 7510
 FDEPTH: 41 42 Gear cond.: 0
 BDEPTH: 41 42 Validity : 0
 Towing dir: 0° Wire out : 130 m Speed : 3.1 kn
 Sorted : 125 Total catch: 125.25 Catch/hour: 289.60

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 46
 DATE :19.09.2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°30.79
 start stop duration
 TIME :11:47:42 12:18:34 30.9 (min) Purpose : 3
 LOG : 2347.31 2349.27 2.0 Region : 7510
 FDEPTH: 5 5 Gear cond.: 0
 BDEPTH: 92 271 Validity : 0
 Towing dir: 0° Wire out : 140 m Speed : 3.8 kn
 Sorted : 0 Total catch: 0.41 Catch/hour: 0.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Himantura uarnak	173.41	2	59.88
Mobula sp.	37.69	2	13.01
Hemipristis elongata	36.88	2	12.73
Carangoides coeruleopinnatus	17.57	18	6.07
Scomberomorus commerson	10.64	5	3.67
Loxodon macrorhinus	5.55	2	1.92
Pseudalutarius nasicornis	2.73	382	0.94
Selar crumenophthalmus	2.22	14	0.77
Loligo forbesi	1.62	74	0.56
Nemipterus japonicus	0.42	9	0.14
Herklotsichthys quadrimaculat.	0.16	5	0.06
Pterois sp.	0.14	2	0.05
Sphyrnaena chrysotaenia	0.14	2	0.05
Nemipterus bipunctatus	0.12	7	0.04
Saurida undosquamis	0.09	16	0.03
Gazza minuta	0.07	2	0.02
Stolephorus indicus	0.07	2	0.02
Terapon theraps	0.07	2	0.02
Teixeirichthys jordani	0.02	2	0.01
Total	289.60		100.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Leptocephalus	0.08	37	0.00
Apogon sp.	0.00	10	0.00
Carangoides sp.	0.00	2	0.00
Unident. crustacean rems	0.00	31	0.00
Fistularia sp.	0.00	10	0.00
FISH LARVAE	0.41	7485	0.00
Leiognathus elongatus	0.01	544	0.00
Paramonacanthus sp.	0.00	2	0.00
Eurpegasus draconis	0.00	2	0.00
Loligo sp.	0.00	8	0.00
Sepia sp.	0.00	2	0.00
Saurida sp.	0.00	134	0.00
Lagocephalus guntheri	0.29	449	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 43
 DATE :17.09.2009 GEAR TYPE: PT NO: 2 POSITION:Lat S 15°27.36
 start stop duration
 TIME :06:37:17 07:23:59 46.7 (min) Purpose : 1
 LOG : 1974.62 1976.89 2.3 Region : 7510
 FDEPTH: 180 250 Gear cond.: 0
 BDEPTH: 764 783 Validity : 0
 Towing dir: 0° Wire out : 560 m Speed : 2.9 kn
 Sorted : 4 Total catch: 3.61 Catch/hour: 4.64

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 47
 DATE :19/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°26.30
 start stop duration
 TIME :20:10:03 20:43:28 33.4 (min) Purpose : 1
 LOG : 2370.83 2372.62 1.8 Region : 7510
 FDEPTH: 5 5 Gear cond.: 0
 BDEPTH: 801 985 Validity : 0
 Towing dir: 0° Wire out : 140 m Speed : 3.2 kn
 Sorted : 4 Total catch: 4.34 Catch/hour: 7.78

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Polyipnus polli	4.37	0	94.16
J E L L Y F I S H	0.15	0	3.32
Leptocephalus	0.06	32	1.38
Rossia sp.	0.01	8	0.28
Trichurus sp.	0.01	8	0.28
Canthigaster sp.	0.01	3	0.28
C R U S T A C E A N S	0.01	13	0.28
Sternopyx sp.	0.00	1	0.03
Total	4.64		100.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Myctophum sp.	5.38	2154	69.17
Myctophum asperum	0.63	108	8.07
Leptocephalus	0.54	183	6.92
Loligo forbesi	0.45	332	5.76
J E L L Y F I S H	0.45	9	5.76
OPHLOPHORIDAE	0.18	732	2.35
Biceps pauciradiatus	0.06	2	0.71
Squilla sp.	0.04	185	0.58
SCYLLARIDAE	0.03	63	0.32
Balistidae juvenile	0.01	2	0.18
Gonostoma sp.	0.01	2	0.07
Cantherhines cf. fronticinctus	0.00	7	0.05
Euleptorhamphus viridis	0.00	2	0.05
Samaris costae	0.00	11	0.00
Bothus sp.	0.00	18	0.00
Total	7.78		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 44
 DATE :17.09.2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 15°24.14
 start stop duration
 TIME :10:44:26 11:15:11 30.8 (min) Purpose : 1
 LOG : 1999.56 2001.21 1.7 Region : 7510
 FDEPTH: 242 248 Gear cond.: 0
 BDEPTH: 242 248 Validity : 0
 Towing dir: 0° Wire out : 630 m Speed : 3.2 kn
 Sorted : 22 Total catch: 22.44 Catch/hour: 43.79

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 48
 DATE :20/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°14.11
 start stop duration
 TIME :04:24:00 04:59:46 35.8 (min) Purpose : 1
 LOG : 2407.61 2409.06 1.5 Region : 7510
 FDEPTH: 5 5 Gear cond.: 0
 BDEPTH: 2608 2617 Validity : 0
 Towing dir: 0° Wire out : 140 m Speed : 2.4 kn
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Pristipomoides multidens	17.66	4	40.33
Rexea prometheoides	5.66	74	12.92
Apogon 'black spot'	5.19	1153	11.85
Idacus novemdentatus	3.75	27	8.56
Polysteganus coeruleopunctatus	3.36	2	7.66
Squalus megalops	3.32	4	7.58
Sphyrnaena acutipinnis	1.78	10	4.06
Satyricthys adeni	1.01	2	2.32
Ommastrephes bartrami	0.49	16	1.11
Peneaus indicus	0.41	31	0.94
Citharoides macrolepis	0.39	8	0.89
Champsodon capensis	0.33	78	0.76
Pseudalutarius nasicornis	0.14	27	0.31
Chaunax sp.	0.12	4	0.27
Neobythides cf. somaliaensis	0.06	2	0.13
Serranus sp.	0.04	2	0.09
Tylerius spinosissimus	0.04	2	0.09
Lepidotrigla cy alcocki	0.04	2	0.09
SEPIIDAE	0.02	4	0.04
Torquigener hypselogenion	0.00	10	0.00
Saurida sp.	0.00	14	0.00
Total	43.79		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 49
 DATE :20/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 14°15.64
 start stop duration
 TIME :12:30:20 12:55:46 25.4 (min) Purpose : 1
 LOG : 2463.32 2464.74 1.4 Region : 7510
 FDEPTH: 234 288 Gear cond.: 0
 BDEPTH: 234 288 Validity : 0
 Towing dir: 0° Wire out : 650 m Speed : 3.4 kn
 Sorted : 123 Total catch: 122.96 Catch/hour: 290.10

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Etelis coruscans	107.59	101	37.09
Etelis carbunculus	63.94	14	22.04
Glass sponge	58.99	0	20.33
Epinephelus magniscuttis	20.06	2	6.91
Polysteganus coeruleopunctatus	15.69	17	5.41
Pristipomoides filamentosus	13.21	14	4.55
Pristipomoides argyrogrammicus	5.69	26	1.96
Zenion sp.	1.06	566	0.37
Satyricthys adeni	0.99	2	0.34
Antigonia rubescens	0.54	9	0.19
Fistularia petimba	0.47	2	0.16
Chlorophthalmus agassizi	0.31	28	0.11
Champsodon capensis	0.28	92	0.10
Hermits, mixed	0.24	26	0.08
Idacus novemdentatus	0.24	5	0.08
Rexea prometheoides	0.14	14	0.05
Grammatonotus sp. 'plintail'	0.14	28	0.05
Xenophera sp.	0.12	2	0.04
Scorpaenid sp.	0.09	5	0.03
Plectranthias sp.	0.07	7	0.02
Shrimps, small, non comm.	0.07	45	0.02
'Undidentified crab2'	0.05	5	0.02
Small crabs	0.05	104	0.02
Paratrachichthys sp	0.02	7	0.01
'vase sponge blue'	0.02	2	0.01
Sea urchins (strong spines)	0.01	2	0.00
Munida sp.	0.01	90	0.00
Sepia sp.	0.01	2	0.00
Starfish small	0.00	9	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 45
 DATE :19.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 14°39.24
 start stop duration
 TIME :07:21:45 07:43:54 22.1 (min) Purpose : 3
 LOG : 2330.47 2331.54 1.1 Region : 7510
 FDEPTH: 5 5 Gear cond.: 0
 BDEPTH: 27 22 Validity : 0
 Towing dir: 0° Wire out : 155 m Speed : 2.9 kn
 Sorted : 6000 Total catch: 6000.00 Catch/hour: 16260.16

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
J E L L Y F I S H	16260.16	0	100.00
Decapterus punctatus	0.00	3	0.00

Pelagocephalus marki	0.00	2	0.00
Tylerius spinosissimus	0.00	2	0.00
Small shrimps	0.00	7	0.00
Lutjanus sp.	0.00	2	0.00
Total	290.10		100.00

Loligo sp.	0.00	16	0.00
Fistularia sp.	0.00	8	0.00
Invertebrate	0.00	8	0.00
Total	100.00		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 50
 DATE :20/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°6.77 Lon E 47°39.72
 start stop duration Purpose : 1
 TIME :15:54:40 16:25:27 30.8 (min) Region : 7510
 LOG : 2485.34 2487.17 1.8 Gear cond.: 0
 FDEPTH: 5 5 Validity : 0
 BDEPTH: 366 538 Speed : 3.5 kn
 Towing dir: 0° Wire out : 140 m Catch/hour: 29.70
 Sorted : 15 Total catch: 15.24

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Sphyræna putnamie	12.28	2	41.33	
MYCTOPHIDAE	11.63	624	39.17	
Leptocephalus	4.03	1664	13.58	
Selar crumenophthalmus	0.86	6	2.89	145
PARALEPIDIDAE	0.37	66	1.25	
ASTRONESTHIDAE	0.23	398	0.79	
Squilla sp.	0.20	0	0.68	
Dipterygocotus balteatus	0.06	8	0.20	
Ommastrephes bartramii	0.02	10	0.07	0
Champsodon capensis	0.02	6	0.07	
Carangoides sp.	0.00	16	0.00	
PRIACANTHIDAE	0.00	16	0.00	
SCOMBRIDAE	0.00	78	0.00	
Bregmaceros sp.	0.00	16	0.00	
Fistularia sp.	0.00	31	0.00	
MONACANTHIDAE	0.00	16	0.00	
Sepia sp.	0.00	2	0.00	
Saurida undosquamis	0.00	16	0.00	
Unidentified fish	0.00	109	0.00	
Total	29.70		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 51
 DATE :20/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 13°45.83 Lon E 47°41.08
 start stop duration Purpose : 1
 TIME :21:20:26 21:50:49 30.4 (min) Region : 7510
 LOG : 2527.90 2529.65 1.8 Gear cond.: 0
 FDEPTH: 5 5 Validity : 0
 BDEPTH: 432 383 Speed : 3.5 kn
 Towing dir: 0° Wire out : 140 m Catch/hour: 2.03
 Sorted : 1 Total catch: 1.03

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Myctiphid 'fully scaled'	0.89	395	43.82	
EGGS	0.38	0	18.50	
Ibacus novemdentatus	0.24	4	11.68	
Leptocephalus	0.17	83	8.47	
J E L L Y F I S H	0.16	24	7.79	
Small squids	0.06	14	2.92	
Invertebrate	0.04	0	1.95	
Lestrolepis intermedia	0.04	6	1.95	
FISH LARVAE	0.02	81	0.97	
Astronesthes martensii	0.02	4	0.97	
Myctophum spinosum	0.02	4	0.97	
Lactoria sp.	0.00	2	0.00	
Palinurus sp.	0.00	4	0.00	
Samaris costae	0.00	2	0.00	
Bregmaceros mcellelandii	0.00	4	0.00	
Bothus sp.	0.00	14	0.00	
Onychoteuthis banksi	0.00	4	0.00	
Sepia sp.	0.00	2	0.00	
Saurida undosquamis	0.00	4	0.00	
Total	2.03		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 52
 DATE :21/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 13°28.56 Lon E 47°51.43
 start stop duration Purpose : 1
 TIME :04:28:03 04:58:36 30.6 (min) Region : 7510
 LOG : 2573.75 2575.36 1.6 Gear cond.: 0
 FDEPTH: 5 5 Validity : 0
 BDEPTH: 365 820 Speed : 3.2 kn
 Towing dir: 0° Wire out : 140 m Catch/hour: 0.33
 Sorted : 0 Total catch: 0.17

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Leptocephalus	0.12	57	0.00	
APOGONIDAE	0.00	8	0.00	
Juvenile flatfish	0.00	2	0.00	
Tsaniopsetta ocellata	0.00	4	0.00	
CLUPEIDAE	0.00	18	0.00	
Squilla sp.	0.10	363	0.00	
EGGS	0.00	0	0.00	
Fistularia sp.	0.00	2	0.00	
FISH LARVAE	0.02	71	0.00	
Invertebrate	0.02	12	0.00	
Ibacus novemdentatus	0.02	4	0.00	
Amanses scopas	0.00	6	0.00	
Priacanthus sp.	0.00	4	0.00	
SCORPAENIDAE	0.00	4	0.00	
Ommastrephes bartramii	0.04	16	0.00	
Saurida undosquamis	0.02	20	0.00	
TETRAODONTIDAE	0.00	2	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 53
 DATE :21/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 13°0.63 Lon E 47°34.12
 start stop duration Purpose : 1
 TIME :15:35:06 16:05:19 30.2 (min) Region : 7510
 LOG : 2620.28 2621.67 1.4 Gear cond.: 0
 FDEPTH: 5 5 Validity : 0
 BDEPTH: 2264 2446 Speed : 2.8 kn
 Towing dir: 0° Wire out : 140 m Catch/hour: 10.00
 Sorted : 5 Total catch: 5.04

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Lampadena speculigera	3.65	778	36.54	
Diaphus effulgens	3.18	1866	31.77	
Cubiceps cf. pauciradiatus	2.08	77	20.85	
Euphausiacea	0.24	1350	2.38	
Leptocephalus	0.24	32	2.38	
Diaphus sp.	0.16	16	1.59	
MYCTOPHIDAE	0.16	484	1.59	0
Ommastrephes bartramii	0.14	6	1.39	
Lestrolepis intermedia	0.08	16	0.79	
MISCELLANEOUS	0.06	0	0.64	
J E L L Y F I S H	0.01	0	0.08	
Squilla sp.	0.00	111	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 54
 DATE :22/09/2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 13°27.49 Lon E 48°8.42
 start stop duration Purpose : 1
 TIME :05:06:11 05:23:21 17.2 (min) Region : 7510
 LOG : 2733.58 2734.78 1.2 Gear cond.: 0
 FDEPTH: 20 28 Validity : 0
 BDEPTH: 46 51 Speed : 4.2 kn
 Towing dir: 0° Wire out : 80 m Catch/hour: 0.00
 Sorted : 0 Total catch: 0.00

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
TETRAODONTIDAE	0.00	7	0.00	
APOGONIDAE	0.00	3	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 55
 DATE :22/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 13°26.52 Lon E 48°7.87
 start stop duration Purpose : 1
 TIME :05:45:47 06:16:27 30.7 (min) Region : 7510
 LOG : 2735.91 2737.31 1.4 Gear cond.: 0
 FDEPTH: 50 45 Validity : 0
 BDEPTH: 50 45 Speed : 2.8 kn
 Towing dir: 0° Wire out : 150 m Catch/hour: 146.76
 Sorted : 75 Total catch: 74.97

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Hypolophus sephen	97.88	2	66.69	146
Arothron stellatus	28.09	8	19.14	
Nemipterus bipunctatus	12.18	12	8.30	
Nemipterus japonicus	6.05	0	4.12	
Echeneis naucrates	1.17	2	0.80	
Loligo sp.	0.39	94	0.27	
Theraps orientalis	0.35	2	0.24	
Saurida undosquamis	0.33	0	0.23	
MULLIDAE	0.22	20	0.15	
Canthigaster jantinoxoptera	0.08	6	0.05	
Synodus hoshinonis	0.01	2	0.01	
Teixeirichthys jordani	0.01	2	0.01	
Unidentified fish	0.00	2	0.00	
SOFT SPONGES	0.00	0	0.00	
Total	146.76		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 56
 DATE :22/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 13°44.39 Lon E 48°13.18
 start stop duration Purpose : 1
 TIME :09:42:58 10:12:05 29.1 (min) Region : 7510
 LOG : 2760.49 2762.05 1.6 Gear cond.: 0
 FDEPTH: 24 27 Validity : 0
 BDEPTH: 24 27 Speed : 3.2 kn
 Towing dir: 0° Wire out : 85 m Catch/hour: 279.16
 Sorted : 136 Total catch: 135.53

SPECIES	weight	CATCH/HOUR numbers	% OF TOT. C	SAMP
Upeneus moluccensis	71.16	200	25.49	
Himantura cf gerrardi	37.49	2	13.43	147
Epinephelus coioides	31.82	4	11.40	
Leiognathus equulus	25.44	779	9.11	
Saurida undosquamis	25.44	95	9.11	
Upeneus vittatus	19.67	157	7.05	
Rachycentron canadum	18.02	2	6.46	
Carangoides coeruleopinnatus	11.33	31	4.06	
Psettodes erumei	9.37	8	3.36	
Gerres filamentosus	4.02	78	1.44	
Carangoides ferdau	3.81	2	1.36	
Carangoides sp.	3.40	19	1.22	
Stolephorus sp.	3.19	132	1.14	
Carangoides chrysophrys	3.19	8	1.14	
Abalistes stellatus	2.47	2	0.89	
Nemipterus japonicus	1.96	37	0.70	
Leiognathus leuciscus	1.44	82	0.52	
Alepes kleinii	1.44	14	0.52	
Secutor insidiator	0.93	68	0.33	
Carangoides fulvoguttatus	0.62	4	0.22	
Rastrelliger kanagurta	0.41	2	0.15	
Selar crumenophthalmus	0.41	4	0.15	
Carangoides hedlandensis	0.31	2	0.11	
Carangoides oblongus	0.31	4	0.11	
Sphyræna obtusata	0.31	4	0.11	
Gazza minuta	0.21	6	0.07	
Oxyurichthys papuensis	0.21	2	0.07	
Sepia sp.	0.13	2	0.05	
Gnathopis capensis	0.10	4	0.04	
Nemipterus bipunctatus	0.10	2	0.04	
Fistularia commersonii	0.10	4	0.04	
Pomadasyss maculatus	0.10	2	0.04	
Penaeus semisulcatus	0.08	4	0.03	
Metapenaeus monoceros	0.07	6	0.03	
Loligo sp.	0.07	12	0.02	
Starfish (pentagon)	0.04	4	0.02	
Penaeus canaliculatus	0.04	2	0.01	
Apogon quadrifasciatus	0.02	16	0.01	
Total	279.24		100.03	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 57
 DATE :23/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 13°29.83
 start stop duration Lon E 48°7.69
 TIME :08:33:44 09:06:32 32.8 (min) Purpose : 1
 LOG : 2786.95 2788.66 1.7 Region : 7510
 FDEPTH: 41 44 Gear cond.: 0
 BDEPTH: 41 44 Validity : 0
 Towing dir: 0° Wire out : 140 m Speed : 3.1 kn
 Sorted : 146 Total catch: 146.22 Catch/hour: 267.39

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Himantura cf gerrardi	109.72	2	41.03 148
PORIFERA (Sponges)	102.41	5	38.30
Caranx (Gnathanodon) speciosus	42.88	7	16.04 149
Scomberomorus commerson	3.66	2	1.37
Carangoides coeruleopinnatus	3.00	2	1.12
Loligo sp.	1.10	198	0.41
Paetodes erumei	1.01	2	0.38
Nemipterus japonicus	0.99	24	0.37
Protoreaster sp	0.69	2	0.26
Dactyloptena orientalis	0.55	2	0.21
Canthigaster jantinoptera	0.38	18	0.14
MULLIDAE	0.24	20	0.09
Sepia sp	0.18	2	0.07
Nemipterus bipunctatus	0.11	2	0.04
Carybdis sp.	0.09	2	0.03
Saurida undosquamis	0.05	4	0.02
MURICIDAE	0.05	2	0.02
Epinephelus chlorostigma	0.05	2	0.02
B I V A L V E S	0.05	2	0.02
Fistularia commersonii	0.04	2	0.01
Ophiuroidea	0.04	5	0.01
Starfish	0.04	2	0.01
Small crabs	0.03	22	0.01
URCHINS	0.02	2	0.01
Teixeirichthys jordani	0.00	2	0.00
Total	267.39	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 58
 DATE :23/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 13°13.11
 start stop duration Lon E 48°1.51
 TIME :15:24:42 15:55:16 30.6 (min) Purpose : 1
 LOG : 2823.99 2825.80 1.8 Region : 7510
 FDEPTH: 0 0 Gear cond.: 0
 BDEPTH: 698 812 Validity : 0
 Towing dir: 0° Wire out : 140 m Speed : 3.6 kn
 Sorted : 3 Total catch: 3.13 Catch/hour: 6.14

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Hygophum reinhardtii	3.69	1825	60.06
Hygophum proximum	1.28	575	20.77
Ommastrephes bartrami	0.71	530	11.50
Myctophum asperum	0.26	65	4.15
Leptocephalus	0.20	82	3.19
Lestrolepis intermedia	0.02	4	0.32
EUPHASIDAE	0.00	2	0.00
SALPS	0.00	8	0.00
Diaphus efulgens	0.00	24	0.00
Fistularia sp.	0.00	2	0.00
Squilla sp.	0.00	39	0.00
Myctophum spinosum	0.00	2	0.00
BOTHIDAE	0.00	14	0.00
Symbolophorus evermanni	0.00	2	0.00
Rexea prometheoides	0.00	14	0.00
APOGONIDAE	0.00	8	0.00
Lagocephalus scleratus	0.00	2	0.00
Unidentified fish	0.00	6	0.00
Total	6.14	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 59
 DATE :23/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 12°48.20
 start stop duration Lon E 47°44.80
 TIME :21:36:12 22:06:26 30.2 (min) Purpose : 1
 LOG : 2869.77 2871.47 1.7 Region : 7510
 FDEPTH: 0 0 Gear cond.: 0
 BDEPTH: 44 45 Validity : 0
 Towing dir: 0° Wire out : 130 m Speed : 3.4 kn
 Sorted : 5 Total catch: 4.75 Catch/hour: 9.43

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Diaphus taaningi	6.35	659	67.37
Apogon 'pale-stripe'	1.19	913	12.63
Dipterygonotus balteatus	0.60	85	6.32
Loligo sp.	0.50	236	5.26
Symbolophorus evermanni	0.24	111	2.53
Sphyræna obtusata	0.12	2	1.26
Leptocephalus	0.10	48	1.05
Juvenile flatfish	0.08	12	0.84
Parapræacanthus ransonneti	0.08	14	0.84
Lestrolepis intermedia	0.06	8	0.63
Unid. juvenile fishes	0.05	75	0.55
Squilla sp.	0.04	248	0.42
Saurida undosquamis	0.01	28	0.13
Sphyræna sp.	0.01	12	0.06
Shrimps, small, non comm.	0.01	28	0.06
Canthigaster sp.	0.00	6	0.04
Panulirus sp.	0.00	2	0.00
Chaetodon sp.	0.00	2	0.00
Ibaeus novemdentatus	0.00	8	0.00
Unidentified invertebrate	0.00	8	0.00
BALISTIDAE	0.00	2	0.00
Total	9.43	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 60

DATE :24/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°52.49
 start stop duration Lon E 48°11.08
 TIME :02:58:42 03:28:13 29.5 (min) Purpose : 1
 LOG : 2907.66 2909.17 1.5 Region : 7510
 FDEPTH: 399 400 Gear cond.: 0
 BDEPTH: 399 400 Validity : 0
 Towing dir: 0° Wire out : 1100 m Speed : 3.1 kn
 Sorted : 17 Total catch: 16.62 Catch/hour: 33.80

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Squilla sp.	9.66	4	28.58
Chlorophthalmus agassizi	5.35	65	15.82
Diaphus watasei	4.68	199	13.84
Beryx splendens	2.99	73	8.84
Zenion sp.	2.07	118	6.14
Ommastrephes bartrami	1.87	14	5.53
Hygophum reinhardtii	1.46	380	4.31
Diaphus sp.	1.14	581	3.38
Sepia sp	0.96	39	2.83
Torpedo nobiliana	0.77	2	2.29
Ommastrephes pteropus	0.77	8	2.29
Hygophum hanseni	0.76	228	2.25
TRIGLIDAE	0.41	2	1.20
Ophiuroidea	0.20	4	0.60
Parazen pacificus	0.19	2	0.56
Xenolepidichthys dagleishi	0.12	2	0.36
Astronesthes martensii	0.10	4	0.30
PALAEMONIDAE	0.10	22	0.30
Cynoglossus lida	0.06	2	0.18
Peristedion cf weberi	0.04	2	0.12
Plesionika sp.	0.03	6	0.10
Neobythites cf somaliensis	0.02	2	0.06
Rossia macrosomia	0.02	2	0.06
SCORPAENIDAE	0.01	2	0.02
Polydipnus indicus	0.01	4	0.02
Sepiella rondeleti	0.01	2	0.02
Etmopterus sentosus	0.00	2	0.01
Ceratoscopelus warmingii	0.00	279	0.00
Rexea prometheoides	0.00	4	0.00
Lestidium sp.	0.00	2	0.00
Unidentified fish	0.00	2	0.00
Total	33.80	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 61
 DATE :24/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°56.75
 start stop duration Lon E 48°15.22
 TIME :08:51:53 09:22:07 30.2 (min) Purpose : 1
 LOG : 2921.31 2922.96 1.7 Region : 7510
 FDEPTH: 75 79 Gear cond.: 0
 BDEPTH: 75 79 Validity : 0
 Towing dir: 0° Wire out : 220 m Speed : 3.3 kn
 Sorted : 286 Total catch: 285.60 Catch/hour: 566.85

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Carangoides fulvoguttatus	280.45	0	49.47 150
PORIFERA (Sponges)	206.42	0	36.41
Caranx (Gnathanodon) speciosus	40.89	6	7.21 151
Carangoides cf. equula	15.48	4	2.73 154
Caranx ignobilis	11.91	2	2.10 152
Abalistes stellatus	5.06	8	0.89
Loxodon macrorhinus	4.37	2	0.77 153
Satyrichthys adeni	2.18	4	0.39
OMMASTREPHIDAE	0.10	2	0.02
Dascyllus trimaculatus	0.00	2	0.00
Total	566.85	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 62
 DATE :24/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 13°4.53
 start stop duration Lon E 48°23.15
 TIME :13:11:39 13:42:06 30.5 (min) Purpose : 1
 LOG : 2952.64 2954.25 1.6 Region : 7510
 FDEPTH: 37 44 Gear cond.: 0
 BDEPTH: 37 44 Validity : 0
 Towing dir: 0° Wire out : 130 m Speed : 3.2 kn
 Sorted : 37 Total catch: 36.82 Catch/hour: 72.55

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Caranx ignobilis	36.26	4	49.97
Sphyræna barracuda	9.50	4	13.09
Abalistes stellatus	7.90	8	10.89
Arothron stellatus	7.78	2	10.73
Loxodon macrorhinus	4.63	2	6.38
Scomberomorus commerson	3.78	2	5.21
Saurida undosquamis	0.45	26	0.62
Nemipterus japonicus	0.45	10	0.62
Nemipterus bipunctatus	0.43	18	0.60
Upeneus bensasi	0.33	43	0.46
Sea cucumbers	0.30	2	0.41
Lagocephalus cf scleratus	0.24	150	0.33
Canthigaster jantinoptera	0.20	2	0.27
Loligo sp.	0.18	28	0.24
Teixeirichthys jordani	0.08	146	0.11
Leiognathus elongatus	0.02	2	0.03
Sorsogona prionota	0.02	2	0.03
Total	72.55	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 63
 DATE :24/09/2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 13°12.58
 start stop duration Lon E 48°26.70
 TIME :17:42:24 18:12:30 30.1 (min) Purpose : 1
 LOG : 2989.22 2990.90 1.7 Region : 7510
 FDEPTH: 0 0 Gear cond.: 0
 BDEPTH: 35 37 Validity : 0
 Towing dir: 0° Wire out : 150 m Speed : 3.3 kn
 Sorted : 3 Total catch: 2.72 Catch/hour: 5.42

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight numbers			
Selar crumenophthalmus	2.51	34	46.32
Amblygaster sirm	2.05	46	37.87
Herklotsichthys quadrimaculat.	0.50	16	9.19
Gazza minuta	0.10	4	1.84
Ommastrephes bartrami	0.10	18	1.84
Unident. crustacean rems	0.06	2	1.10
Engraulis sp.	0.04	2	0.74
Decapterus russelli	0.04	2	0.74
PORTUNIDAE	0.02	6	0.37
Total	5.42	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 64
 DATE :24/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°44.65
 start stop duration Lon E 48°13.74
 TIME :22:36:01 23:06:24 30.4 (min) Purpose : 1

LOG : 3030.25 3031.85 1.6
 FDEPTH: 342 344
 BDEPTH: 342 344
 Towing dir: 0° Wire out : 900 m
 Sorted : 14 Total catch: 13.79

Region : 7510
 Gear cond.: 0
 Validity : 0
 Speed : 3.2 km
 Catch/hour: 27.23

Towing dir: 0° Wire out : 140 m Speed : 2.8 km
 Sorted : 48 Total catch: 47.93 Catch/hour: 94.66

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Centrophorus moluccensis	8.94	2	32.99	
Chlorophthalmus agassizi	3.85	178	14.14	
Penaeopsis balssi	3.16	336	11.60	
Diaphus watasei	2.09	71	7.69	
J E L L Y F I S H	1.78	0	6.53	
Aristeus antennatus	1.58	43	5.80	
Chaunax sp.	0.99	8	3.63	
Aristaeomorpha foliacea	0.99	122	3.63	
Plesionika longirostris	0.81	95	2.97	
Glass sponge	0.47	32	1.74	
Emtoperus sentosus	0.39	79	1.45	
Zenion sp	0.38	32	1.38	
Peristedion cf weberi	0.24	10	0.87	
Myctophid sp. A	0.16	12	0.58	
Diaphus cf. brachycephalus	0.16	47	0.58	
Malacocephalus laevis	0.12	14	0.44	
Cynoglossus lida	0.10	4	0.36	
Oplophorus gracilirostris	0.10	59	0.36	
Margrethia sp.	0.10	34	0.36	
Cubiceps sp.	0.10	4	0.36	
Neocyprinella orientalis	0.08	2	0.29	
Laeops nigromaculatus	0.06	2	0.22	
Parazen pacificus	0.06	6	0.22	
Polymetme corythaeola	0.06	8	0.22	
Solenocera sp.	0.04	4	0.15	
EGGS	0.04	24	0.15	
Loligo sp.	0.04	12	0.15	
Caelorinchus braueri	0.04	2	0.15	
Astronesthes martensii	0.04	2	0.15	
Rossia sp.	0.04	2	0.15	
Sepia sp	0.04	2	0.15	
CARIDEA	0.02	20	0.07	
Argentina euchus	0.02	2	0.07	
Polyipnus indicus	0.02	2	0.07	
Rexea prometheoides	0.02	2	0.07	
Small crabs	0.02	6	0.07	
Electrona sp	0.02	8	0.07	
Heterocarpus sp.	0.02	2	0.07	
Unidentified demersal fish	0.02	2	0.07	
Tetraodon sp.	0.00	2	0.00	
Unidentified fish	0.00	2	0.00	
Saurida undosquamis	0.00	2	0.00	
Palinurus sp.	0.00	2	0.00	
Total	27.23		100.00	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
MULLIDAE	15.66	908	16.54	
Nemipterus bipunctatus	15.29	379	16.15	0
Nemipterus bipunctatus	13.57	255	14.33	
J E L L Y F I S H	11.20	0	11.83	
Abalites stellatus	10.88	14	11.50	
Apogon lineatus	5.92	2	6.26	
Selar crumenophthalmus	4.68	32	4.94	
Nemipterus japonicus	4.23	101	4.46	
Decapterus macrosoma	3.10	61	3.28	
Sphyrana putnamie	1.97	6	2.09	
Saurida undosquamis	1.30	55	1.38	
Rastrelliger kanagurta	1.22	8	1.29	
Apogon 'dorsal spot'	1.22	282	1.29	
Lagocephalus cf sceleratus	1.18	36	1.25	
Synodus hoshinomis	0.85	101	0.90	
Teixeirichthys jordani	0.55	65	0.58	
Gazza minuta	0.30	8	0.31	
Carangoides malabaricus	0.28	2	0.29	
Apistus carinatus	0.24	22	0.25	
Sepia officinalis hierredda	0.18	2	0.19	
Sphyrana pinguis	0.16	2	0.17	
Rossia macrosomia	0.14	28	0.15	
Loligo forbesi	0.10	2	0.10	
Penaeus latisulcatus	0.08	2	0.08	
Trachinocephalus myops	0.06	2	0.06	
Fistularia commersonii	0.04	2	0.04	
Rhechias wallacei	0.04	8	0.04	
Cociella sp.	0.04	2	0.04	
Bregmaceros maclellandi	0.04	55	0.04	
Loligo vulgaris	0.04	4	0.04	
Leiocnathus elongatus	0.04	8	0.04	
Paramonacanthus pusillus	0.04	2	0.04	
Sand dollar	0.02	2	0.02	
PORTUNIDAE	0.00	2	0.00	
ISOPODS	0.00	2	0.00	
Apogon 'black spot'	0.00	20	0.00	
Lagocephalus sp.	0.00	10	0.00	
Cheilodipterus artus	0.00	16	0.00	
Trachypenaeus curvirostris	0.00	2	0.00	
Total	94.66		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 68
 DATE :25/09/2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 12°42.84
 start stop duration Lon E 48°43.35
 TIME :17:50:00 18:20:52 30.9 (min) Purpose : 1
 LOG : 3148.03 3149.80 1.8 Region : 7510
 FDEPTH: 0 0 Gear cond.: 0
 BDEPTH: 28 28 Validity : 0
 Towing dir: 0° Wire out : 170 m Speed : 3.4 km
 Sorted : 6 Total catch: 6.27 Catch/hour: 12.19

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 65
 DATE :25/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°30.23
 start stop duration Lon E 47°54.01
 TIME :04:45:03 05:08:49 23.8 (min) Purpose : 1
 LOG : 3079.65 3080.79 1.1 Region : 7510
 FDEPTH: 372 373 Gear cond.: 0
 BDEPTH: 372 373 Validity : 0
 Towing dir: 0° Wire out : 960 m Speed : 2.9 km
 Sorted : 25 Total catch: 25.50 Catch/hour: 64.39

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Dalatias licha	45.45	5	70.59	
Zenion sp	7.80	942	12.12	
Satyricthys adeni	3.16	5	4.90	
Rexea prometheoides	3.08	15	4.78	
Ommastrephes bartrami	1.46	25	2.27	
Etelis carbunculus	1.31	3	2.04	
Peristedion cf weberi	0.68	23	1.06	
Champsodon capensis	0.53	91	0.82	
Sepia officinalis hierredda	0.38	33	0.59	
Argentina euchus	0.15	8	0.24	
Chlorophthalmus agassizi	0.10	5	0.16	
Pocillosetta zanzibarensis	0.10	3	0.16	
Laeops nigromaculatus	0.05	3	0.08	
Caelorinchus braueri	0.05	3	0.08	
Sepiola rondeleti	0.03	3	0.04	
RAJIDAE	0.03	8	0.04	
Plesionika sp.	0.01	3	0.02	
CARIDEA	0.01	3	0.02	
Oplophorus gracilirostris	0.00	3	0.00	
Total	64.39		100.00	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Gazza minuta	3.01	95	24.72	
Decapterus kurroides	1.79	78	14.67	155
Sphyrana pinguis	1.48	31	12.12	
Selar crumenophthalmus	1.42	19	11.64	156
Rastrelliger kanagurta	1.40	14	11.48	158
Chirocentrus dorab	1.15	6	9.41	159
Lactoria cornuta	0.62	2	5.10	
Herklotichthys quadrimaculata	0.43	14	3.51	157
Loligo forbesi	0.25	8	2.07	
Loligo duvauceli	0.21	4	1.75	
Loligo vulgaris	0.16	10	1.28	
Nemipterus bipunctatus	0.10	2	0.80	
Engraulis sp.	0.10	4	0.80	
Lagocephalus cf sceleratus	0.08	2	0.64	
Charybdis annulata	0.00	2	0.00	
Total	12.19		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 69
 DATE :25/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°42.73
 start stop duration Lon E 48°43.47
 TIME :18:56:40 19:26:57 30.3 (min) Purpose : 1
 LOG : 3153.23 3154.98 1.8 Region : 7510
 FDEPTH: 28 27 Gear cond.: 0
 BDEPTH: 28 27 Validity : 0
 Towing dir: 0° Wire out : 110 m Speed : 3.5 km
 Sorted : 220 Total catch: 219.89 Catch/hour: 435.71

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 66
 DATE :25/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°39.13
 start stop duration Lon E 48°22.67
 TIME :12:40:42 13:10:16 29.6 (min) Purpose : 1
 LOG : 3116.87 3118.47 1.6 Region : 7510
 FDEPTH: 74 79 Gear cond.: 0
 BDEPTH: 74 79 Validity : 0
 Towing dir: 0° Wire out : 200 m Speed : 3.2 km
 Sorted : 5 Total catch: 4.80 Catch/hour: 9.74

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Loxodon macrorhinus	9.54	4	97.92	
Loligo sp.	0.14	26	1.46	
Peristedion cf weberi	0.04	2	0.42	
Teixeirichthys jordani	0.02	4	0.21	
Upeneus sp.	0.00	2	0.00	
Total	9.74		100.00	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Leiocnathus leuciscus	91.55	6523	21.01	
Hyplophonus sephen	89.17	2	20.46	160
Upeneus sulphureus	49.06	2410	11.26	
Upeneus moluccensis	45.26	1871	10.39	
Rachycentron canadum	36.56	6	8.39	
Saurida undosquamis	22.19	254	5.09	
Decapterus kurroides	19.18	705	4.40	
Nemipterus japonicus	10.15	262	2.33	
Metapenaeus monoceros	9.59	697	2.20	
Gerres filamentosus	8.56	214	1.96	
Paetodes erumei	8.42	6	1.93	
Herklotichthys quadrimaculata	7.37	254	1.69	
Carangoides malabaricus	6.90	135	1.58	
Sphyrana pinguis	5.94	111	1.36	
Sphyrna lewini	5.45	2	1.25	161
Upeneus cf vittatus	4.20	87	0.96	
Pomadasyds stridens	3.41	103	0.78	
Rastrelliger kanagurta	3.09	32	0.71	
Penaeus japonicus	2.14	48	0.49	
Chirocentrus dorab	1.27	8	0.29	
Loligo sp.	1.27	24	0.29	
Megalaspis cordyla	1.11	16	0.25	
Leiocnathus equulus	0.79	16	0.18	
Pomadasyds maculatus	0.71	24	0.16	
Terapon theraps	0.63	24	0.15	
Apogon sp.	0.48	40	0.11	
Apogon quadrifasciatus	0.40	111	0.09	
Fistularia commersonii	0.40	24	0.09	
Amblygaster sirm	0.32	8	0.07	
Engraulis sp.	0.16	8	0.04	
Total	435.71		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 70
 DATE :26/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 12°24.16
 start stop duration Lon E 48°10.94
 TIME :00:04:56 00:35:12 30.3 (min) Purpose : 1
 LOG : 3198.01 3200.10 2.1 Region : 7510
 FDEPTH: 0 0 Gear cond.: 0
 BDEPTH: 684 675 Validity : 0
 Towing dir: 0° Wire out : 140 m Speed : 4.1 km
 Sorted : 1 Total catch: 0.72 Catch/hour: 1.42

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 67
 DATE :25/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°44.38
 start stop duration Lon E 48°34.00
 TIME :15:47:01 16:17:24 30.4 (min) Purpose : 1
 LOG : 3136.37 3137.81 1.4 Region : 7510
 FDEPTH: 43 44 Gear cond.: 0
 BDEPTH: 43 44 Validity : 0

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Symbolophorus evermanni	0.32	77	22.32	
Leptocephalus	0.20	89	13.95	
Myctophum spinosum	0.20	34	13.95	
Hygophum proximum	0.18	44	12.55	
J E L Y F I S H	0.14	4	9.76	
Brama orcinii	0.12	4	8.37	
MYCTOPHIDAE	0.10	161	6.97	
Ommastrephes sp.	0.08	10	5.58	
Cubiceps sp.	0.04	2	2.79	
Diaphus efulgens	0.02	4	1.39	
Acetes sp.	0.02	95	1.12	
Ibacus novemdentatus	0.00	12	0.28	
Squilla sp.	0.00	30	0.28	
Unid. juvenile fishes	0.00	18	0.28	
GONOSTOMATIDAE	0.00	10	0.14	
Saurida undosquamis	0.00	12	0.14	
Small squids	0.00	2	0.14	
UNIDENTIFIED FISH	0.00	2	0.00	
Juvenile flatfish	0.00	2	0.00	
TETRAODONTIDAE	0.00	2	0.00	
Total	1.42		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 71
DATE :26/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°21.48
start stop duration Purpose : 1
TIME :08:15:27 08:45:36 30.2 (min) Region : 7510
LOG : 3257.29 3258.82 1.5 Gear cond.: 0
FDEPTH: 54 60 Validity : 0
BDEPTH: 54 60 Speed : 3.0 kn
Towing dir: 0° Wire out : 160 m Catch/hour: 168.52
Sorted : 85 Total catch: 84.68

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Himantura uarnak	99.50	2	59.05	168
Himantura cf gerrardi	49.75	2	29.52	167
Sphyræna putnamie	5.97	2	3.54	169
Abalistes stellatus	5.97	6	3.54	
Saurida undosquamis	4.38	8	2.60	
Upeneus moluccensis	0.98	28	0.58	
Nemipterus japonicus	0.62	22	0.37	
Loligo sp.	0.58	68	0.34	
Nemipterus zysron	0.34	12	0.20	
Upeneus sp.	0.26	8	0.15	
Decapterus russelli	0.06	2	0.04	
Metapenæus monoceros	0.04	2	0.02	
Secutor ruconius	0.04	2	0.02	
Canthigaster jantinoptera	0.04	2	0.02	
Paramonacanthus pusillus	0.00	2	0.00	
Neptunus trituberculatus *	0.00	2	0.00	
Total	168.52		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 72
DATE :26/09/2009 GEAR TYPE: BT NO: 4 POSITION:Lat S 12°37.45
start stop duration Purpose : 1
TIME :15:25:08 15:55:13 30.1 (min) Region : 7510
LOG : 3316.13 3317.89 1.8 Gear cond.: 0
FDEPTH: 0 0 Validity : 0
BDEPTH: 52 56 Speed : 3.5 kn
Towing dir: 0° Wire out : 140 m Catch/hour: 298.38
Sorted : 150 Total catch: 149.54

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Herklotsichthys quadrimaculat.	138.08	5188	46.28	166
Decapterus kurroides	92.18	2548	30.89	165
Scomberomorus commerson	30.43	8	10.20	
Rastrelliger kanagurta	12.45	132	4.17	164
Gazza minuta	9.46	251	3.17	
Selar crumenophthalmus	7.10	80	2.38	163
Amblygaster sirm	4.07	60	1.36	162
Scolecophorus sp.	3.23	116	1.08	
Sphyræna putnamie	1.10	2	0.37	
Loligo sp.	0.28	64	0.09	
Arothron sp.	0.00	4	0.00	
Total	298.38		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 73
DATE :26/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°30.58
start stop duration Purpose : 1
TIME :19:10:18 19:41:48 31.5 (min) Region : 7510
LOG : 3343.63 3345.10 1.5 Gear cond.: 0
FDEPTH: 417 416 Validity : 0
BDEPTH: 417 416 Speed : 2.8 kn
Towing dir: 0° Wire out : 1050 m Catch/hour: 49.52
Sorted : 26 Total catch: 25.99

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chlorophthalmus agassizi	29.46	274	59.48	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Chaunax sp.	5.62	17	11.35	
Hygophum proximum	2.65	194	5.35	
Zenion sp	2.42	109	4.89	
Diaphus watasei	2.19	130	4.42	
Squalus megalops	2.17	6	4.39	
Ommastrephes bartrami	1.12	6	2.27	
Plesionika longirostris	0.55	57	1.12	
Parazen pacificus	0.42	11	0.85	
Antigonia sp.	0.36	10	0.73	
Ophiorhynchus gracilirostris	0.27	128	0.54	
Lophodes insidiator	0.25	2	0.50	
Selachophidium guentheri	0.19	6	0.38	
Margrethia sp.	0.17	29	0.35	
Penaepsis balssi	0.15	69	0.31	
Lestrolepis intermedia	0.11	4	0.23	
Malacocephalus laevis	0.11	2	0.23	
Benthodesmus sp.	0.11	8	0.23	
Peristedion cf weberi	0.11	4	0.23	
Polymetme corythaeola	0.11	11	0.23	
Polyipnus indicus	0.11	27	0.23	
Heterocarpus woodmasoni	0.10	21	0.19	
Sepia sp	0.10	2	0.19	
Sepia elegans	0.08	4	0.15	
Diaphus richardsoni	0.08	63	0.15	
Etmopterus sentosus	0.06	4	0.12	
Poecilopsetta natalensis	0.06	2	0.12	
Synchropus marmoratus	0.06	2	0.12	
Callionymus sp.	0.06	2	0.12	
OPHICHTHIDAE	0.04	2	0.08	
Hoplichthys acanthopleurus	0.04	2	0.08	
Uroconger lepturus	0.04	2	0.08	
CARDIIDAE	0.04	8	0.08	
Loligo sp.	0.04	6	0.08	
Unidentified fish	0.04	4	0.08	
MAJIDAE	0.02	2	0.04	
Macrorhamphosodes uradoi	0.02	4	0.04	
MULLIDAE	0.00	2	0.00	
Diaphus efulgens	0.00	2	0.00	
Halaerulus sp.	0.00	2	0.00	
Total	49.52		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 74
DATE :26/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°25.48
start stop duration Purpose : 1
TIME :22:15:04 22:45:22 30.3 (min) Region : 7510
LOG : 3358.59 3360.11 1.5 Gear cond.: 0
FDEPTH: 556 552 Validity : 0
BDEPTH: 556 552 Speed : 3.0 kn
Towing dir: 0° Wire out : 1300 m Catch/hour: 69.24
Sorted : 35 Total catch: 34.98

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Photichthys sp	14.15	629	20.44	
Urotrygon daviesi	14.05	2	20.30	
Etmopterus lucifer	6.61	99	9.55	
Centropomus moluccensis	5.34	2	7.72	
Malacocephalus laevis	4.53	20	6.55	
Benthodesmus tenuis	4.00	73	5.78	
Chlorophthalmus agassizi	2.77	28	4.00	
Aristaeomorpha foliacea	2.30	115	3.32	
Penaepsis balssi	2.16	65	3.12	
Setarches guentheri	2.08	8	3.00	
URCHINS	1.78	2	2.57	
CARDIIDAE	1.50	376	2.17	
Deania quadrispinosum	1.39	2	2.00	
Chaunax sp.	0.77	4	1.12	
Diaphus watasei	0.75	22	1.09	
Heterocarpus woodmasoni	0.65	32	0.94	
Peristedion cf weberi	0.63	22	0.91	
Bathyluopea sp.	0.48	14	0.69	
Heterocarpus tricarinatus	0.46	28	0.66	
Polyipnus indicus	0.38	40	0.54	
Zenion sp	0.30	14	0.43	
Diaphus richardsoni	0.24	22	0.34	
B I V A L V E S	0.20	46	0.29	
Heterocarpus sp.	0.20	16	0.29	
Small squids unident.	0.18	4	0.26	
Aristeus antennatus	0.16	6	0.23	
ZEIDAE	0.14	2	0.20	
Antigonia cf rubescens	0.14	4	0.20	
Hymnocephalus sp.	0.12	18	0.17	
Lophodes sp.	0.12	2	0.17	
Margrethia sp.	0.08	10	0.11	
GRAMMICOLEPIDIDAE	0.08	2	0.11	
Ophiorhynchus gracilirostris	0.08	28	0.11	
Solenocera sp.	0.08	6	0.11	
Poecilopsetta natalensis	0.06	2	0.09	
Pterygotrigla hemisticata	0.06	2	0.09	
Astronesthes martensii	0.04	2	0.06	
Physiculus natalensis	0.04	2	0.06	
Polymetme corythaeola	0.04	4	0.06	
Myctophum sp.	0.02	4	0.03	
Munida sp.	0.02	4	0.03	
Symbolophorus evermanni	0.02	4	0.03	
Sepia sp	0.02	2	0.03	
Argyrolepeus aculeatus	0.02	6	0.03	
Macrorhamphosus sp.	0.01	2	0.02	
TETRAODONTIDAE	0.00	2	0.00	
TRIGLIDAE	0.00	2	0.00	
Small crabs	0.00	2	0.00	
Diaphus efulgens	0.00	2	0.00	
Diplophos taenia	0.00	2	0.00	
J E L Y F I S H	0.00	404	0.00	
Total	69.24		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 75
DATE :27/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°28.71
start stop duration Purpose : 1
TIME :00:50:44 01:21:13 30.5 (min) Region : 7510
LOG : 3369.96 3371.52 1.6 Gear cond.: 0
FDEPTH: 662 661 Validity : 0
BDEPTH: 662 661 Speed : 3.1 kn
Towing dir: 0° Wire out : 1520 m Catch/hour: 175.49
Sorted : 89 Total catch: 89.15

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Bathyluopea sp. *	43.01	226	24.51	
holocentridae	36.71	236	20.92	
SOFT SPONGES	21.16	10	12.06	
Photichthys sp	19.29	482	10.99	

Dalatias licha	7.38	10	4.21
Aristaeomorpha foliacea	6.99	276	3.98
Chaunax pictus	6.69	30	3.81
Ranina ranina	6.69	128	3.81
Heterocarpus tricarlinatus	5.91	394	3.37
Coloconger scholesi	3.54	20	2.02
Hydrolagus africanus	2.76	2	1.57
Setarches guentheri	2.66	10	1.51
Benthodesmus sp.	2.56	30	1.46
Hoplostethus cf tenebricus	2.66	2	1.35
Penaeopsis balssi	2.07	49	1.18
Hoplostethus mediterraneus	1.67	20	0.95
Nephropsis stewarti	0.79	30	0.45
Dicrolene nigricauda	0.79	20	0.45
Aristeus antennatus	0.69	20	0.39
Tydemania navigatoris	0.49	10	0.28
Nansenia macrolepis	0.30	10	0.17
Unidentified fish	0.30	10	0.17
HALOSAUROIDAE	0.20	10	0.11
Halosaurus sp.	0.20	10	0.11
Bathylagus sp.	0.10	30	0.06
Anemones, white	0.10	30	0.06
Unidentified fish	0.10	10	0.06
Total	175.49		100.00

Lactoria cornuta	0.94	2	1.21
Epinephelus chlorostigma	0.14	4	0.18
Abalistes stellatus	0.10	2	0.13
Nemipterus japonicus	0.08	2	0.10
Peristedion cf weberi	0.04	2	0.05
Dipterygonotus balteatus	0.04	6	0.05
Loligo sp.	0.02	4	0.03
Canthigaster jantinopectera	0.02	2	0.03
Small crabs	0.02	2	0.03
Total	77.82		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 76
DATE :27/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 12°48.75
start stop duration Lon E 48°10.03
TIME :05:11:45 05:43:07 31.4 (min) Purpose : 1
LOG : 3400.45 3402.07 1.6 Region : 7510
FDEPTH: 555 565 Gear cond.: 0
BDEPTH: 555 565 Validity : 0
Towing dir: 0° Wire out : 1350 m Speed : 3.1 kn
Sorted : 37 Total catch: 36.96 Catch/hour: 70.69

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Diaphus watasei	15.15	432	21.43
SOFT SPONGES	10.65	0	15.07
Beryx splendens	8.07	109	11.42
Chlorophthalmus agassizi	6.62	107	9.36
HOLOCENTRIDAE	5.36	136	7.58
Penaeopsis balssi	3.90	170	5.52
HIPPOLYTIDAE	2.47	740	3.49
Gonostoma sp.	2.03	15	2.87
OPHIIDIDAE	1.55	4	2.19
Neocopelus macrolepidotus	1.53	29	2.16
Heterocarpus tricarlinatus	1.47	122	2.08
TRICHIURIDAE	1.38	19	1.95
Neopinnula orientalis	1.26	11	1.79
MACROURIDAE	0.99	10	1.41
Malacocephalus laevis	0.92	4	1.30
Bathyclupea sp.	0.84	21	1.19
Lestrolepis intermedia	0.75	34	1.06
Astronesthes martensii	0.73	4	1.03
Bathylagus sp.	0.59	105	0.84
Histioteuthis reversa	0.57	11	0.81
Ommastrephes bartrami	0.55	4	0.78
PHOTICHTHYIDAE	0.48	149	0.68
Xenolepidichthys dagleishi	0.44	10	0.62
Cubiceps sp.	0.40	6	0.57
Peristedion cf weberi	0.27	8	0.38
Aristaeomorpha foliacea	0.21	8	0.30
Oreosoma cf atlanticum	0.19	6	0.27
Cubiceps whitleggi	0.13	2	0.19
Satyrichthys sp.	0.13	6	0.19
Sepia sp.	0.13	4	0.19
Heterocarpus sp.	0.11	8	0.16
Invertebrate	0.11	50	0.16
Tydemania navigatoris	0.10	2	0.14
Satyrichthys adeni	0.08	2	0.11
Polymetme corythaeola	0.08	11	0.11
CORAL	0.06	6	0.08
Rexea prometheoides	0.06	4	0.08
Munida sp.	0.06	10	0.08
Argyropelecus aculeatus	0.06	6	0.08
Heterocarpus woodmasoni	0.04	2	0.05
Ceratoscopelus sp.	0.04	8	0.05
Nansenia macrolepis	0.04	2	0.05
Zenion sp.	0.04	4	0.05
Nephropsis stewarti	0.04	2	0.05
Small crabs	0.02	2	0.03
Total	70.69		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 78
DATE :29/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 12°21.93
start stop duration Lon E 48°28.22
TIME :23:11:05 23:41:09 30.1 (min) Purpose : 1
LOG : 3543.36 3545.24 1.9 Region : 7510
FDEPTH: 0 0 Gear cond.: 0
BDEPTH: 334 365 Validity : 0
Towing dir: 0° Wire out : 100 m Speed : 3.8 kn
Sorted : 1 Total catch: 1.04 Catch/hour: 2.08

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Myctophum asperum	0.86	140	41.19
Selar crumenophthalmus	0.72	4	34.48
MYCTOPHIDAE	0.10	246	4.79
Leptocephalus	0.08	32	3.83
Loligo sp.	0.07	12	3.26
Hygophum proximum	0.05	12	2.39
J E L L Y F I S H	0.05	2	2.30
Dipterygonotus balteatus	0.04	6	1.92
Hygophum sp.	0.03	8	1.34
Diaphus perspicillatus	0.02	18	0.96
Ceratoscopelus warmingii	0.02	32	0.96
Symbolophorus evermanni	0.02	8	0.96
Squilla sp.	0.01	52	0.67
Ophiophis gracilirostris	0.01	18	0.57
Diaphus effulgens	0.01	2	0.29
Saurida undosquamis	0.00	24	0.05
JUVENILE FISHES	0.00	16	0.03
Juvenile flatfish	0.00	2	0.00
SCYLLARIDAE	0.00	24	0.00
Total	2.08		99.98

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 79
DATE :30/09/2009 GEAR TYPE: BT NO: 21 POSITION:Lat S 11°55.83
start stop duration Lon E 49°14.40
TIME :13:59:49 14:07:56 8.1 (min) Purpose : 1
LOG : 3636.75 3637.33 0.6 Region : 7510
FDEPTH: 31 37 Gear cond.: 0
BDEPTH: 31 37 Validity : 0
Towing dir: 0° Wire out : 100 m Speed : 4.3 kn
Sorted : 750 Total catch: 750.30 Catch/hour: 5537.27

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Sphyræna forsteri	3307.01	7100	59.72
Sphyræna helleri	1455.35	3299	26.28
Chelonia mydas	442.80	7	8.00
Himantura uarnak	332.10	7	6.00
Total	5537.27		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 80
DATE :30/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 11°54.46
start stop duration Lon E 49°16.14
TIME :15:29:33 15:59:16 29.7 (min) Purpose : 1
LOG : 3641.35 3643.40 2.1 Region : 7510
FDEPTH: 0 0 Gear cond.: 0
BDEPTH: 53 262 Validity : 0
Towing dir: 0° Wire out : 100 m Speed : 4.1 kn
Sorted : 2 Total catch: 1.80 Catch/hour: 3.63

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
J E L L Y F I S H	1.98	0	54.44
Symbolophorus evermanni	0.69	97	18.89
Ceratoscopelus warmingii	0.63	117	17.22
Loligo sp.	0.16	8	4.44
Lagocephalus sp.	0.04	44	1.11
MYCTOPHIDAE	0.04	10	1.11
Squilla sp.	0.04	242	1.11
TETRAODONTIDAE	0.02	8	0.56
Leptocephalus	0.02	8	0.56
Unid. juvenile fishes	0.02	79	0.56
Rossia sp.	0.00	2	0.00
Saurida undosquamis	0.00	8	0.00
SALPS	0.00	16	0.00
Fistularia sp.	0.00	8	0.00
Paramonacanthus pusillus	0.00	2	0.00
Priacanthus sp.	0.00	8	0.00
Total	3.63		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 77
DATE :27/09/2009 GEAR TYPE: BT NO: 19 POSITION:Lat S 13°15.79
start stop duration Lon E 48°4.49
TIME :10:29:21 10:59:51 30.5 (min) Purpose : 1
LOG : 3436.50 3438.09 1.6 Region : 7510
FDEPTH: 50 50 Gear cond.: 0
BDEPTH: 50 50 Validity : 0
Towing dir: 0° Wire out : 140 m Speed : 3.1 kn
Sorted : 40 Total catch: 39.56 Catch/hour: 77.82

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Scarurus blue chin	24.00	4	30.84
Glass sponge	23.61	2	30.33
Scarurus yellow chin	7.87	2	10.11
Naso cf. tuberosus	6.51	2	8.37
Diagramma pictum	6.14	2	7.89
Lethrinus nebulosus	4.70	2	6.04
Gymnocranius grandoculis	3.60	2	4.63

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 81
DATE :01/10/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 11°0.07
start stop duration Lon E 49°17.84
TIME :06:39:35 07:07:51 28.3 (min) Purpose : 1
LOG : 3714.06 3715.62 1.6 Region : 7510
FDEPTH: 0 10 Gear cond.: 0
BDEPTH: 3359 3445 Validity : 0
Towing dir: 0° Wire out : 100 m Speed : 3.3 kn
Sorted : 0 Total catch: 0.01 Catch/hour: 0.02

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Unid. juvenile fishes	0.02	17	0.00
J E L L Y F I S H	0.00	8	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 82
DATE :01/10/2009 GEAR TYPE: BT NO: 21 POSITION:Lat S 11°53.19
start stop duration Lon E 49°17.55
TIME :19:25:10 19:42:36 17.4 (min) Purpose : 1
LOG : 3785.43 3786.36 0.9 Region : 7510

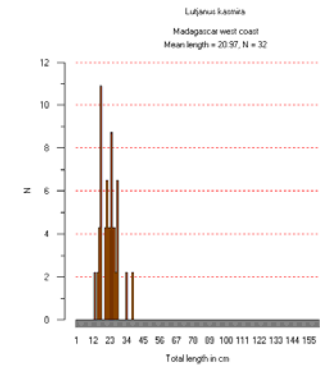
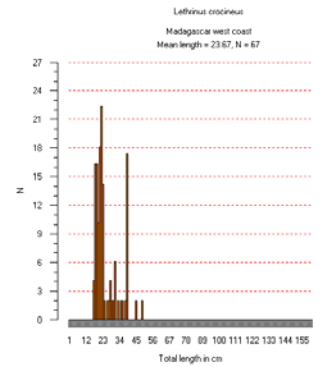
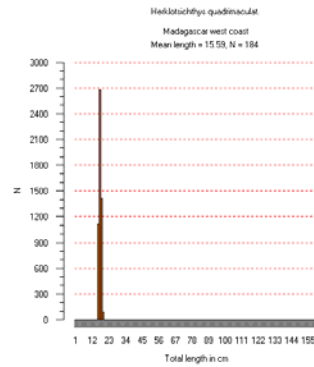
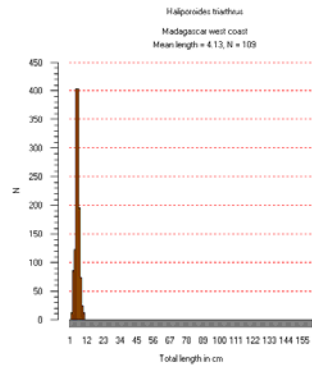
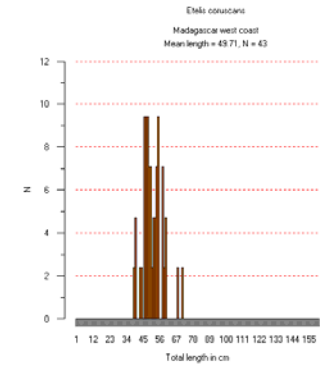
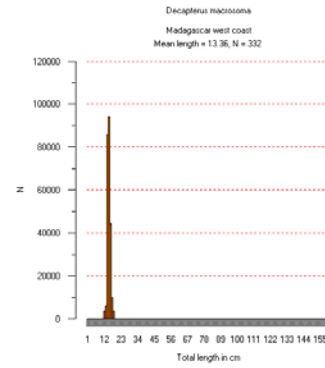
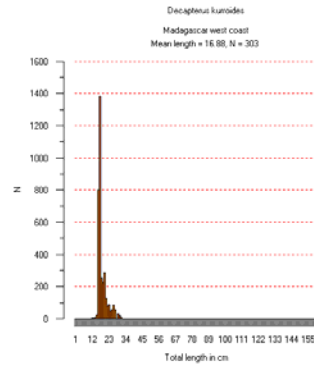
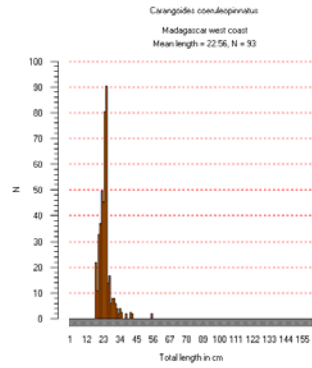
FDEPTH: 328 319 Gear cond.: 0
 BDEPTH: 328 319 Validity : 0
 Towing dir: 0° Wire out : 800 m Speed : 3.2 kn
 Sorted : 89 Total catch: 89.39 Catch/hour: 307.71

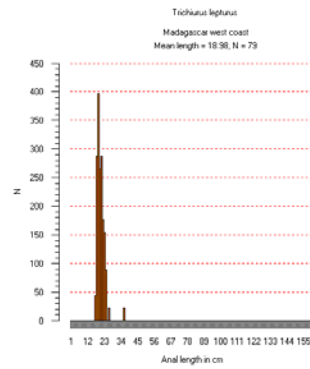
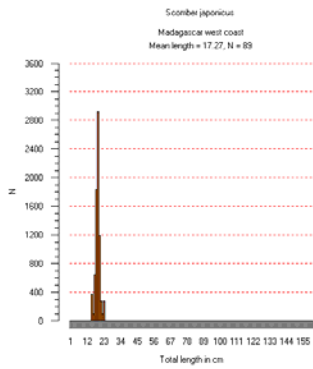
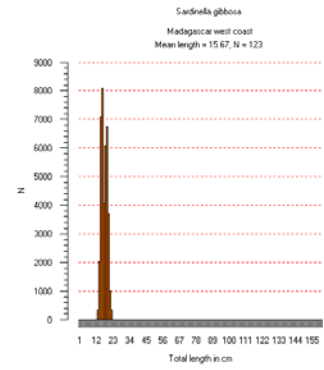
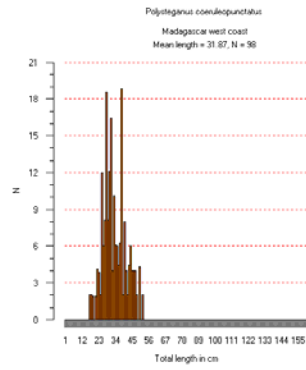
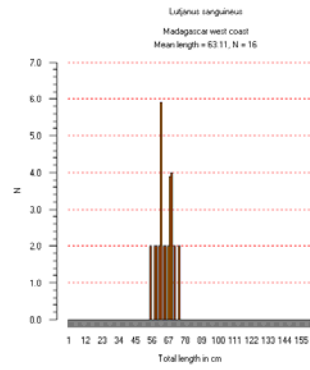
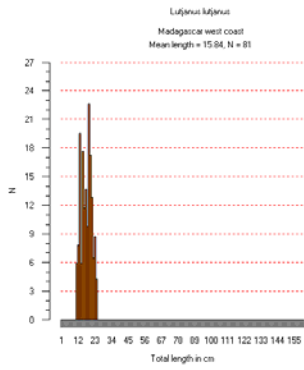
SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Glass sponge	275.39	0	89.50	
Laemonema globiceps	5.27	124	1.71	
Synagrops japonicus	5.27	10	1.71	
Symbolophorus evermanni	5.27	826	1.71	
G A S T R O P O D S	2.89	31	0.94	
Squalus megalops	2.17	3	0.70	
Antigonia rubescens	2.07	155	0.67	
Rexea prometheoides	1.96	31	0.64	
Diaphus watasei	1.55	52	0.50	
J E L L Y F I S H	1.14	21	0.37	
Lucibrotula bartschi	1.03	23	0.34	
Acropoma sp.	0.72	52	0.23	
Oplophoria gracilirostris	0.62	217	0.20	
XANTHIDAE	0.41	10	0.13	
Polymixia berndti	0.31	10	0.10	
Scorpaenid sp.	0.31	41	0.10	
Gnathopis sp.	0.21	10	0.07	
Platycephalus sp.	0.21	52	0.07	
Pontinus nigerimm	0.21	10	0.07	
Emmelichthys nitidus	0.10	10	0.03	
Heterocarpus sp.	0.10	10	0.03	
Bathyclupea sp.	0.10	10	0.03	
Sand doller	0.10	10	0.03	
Chlorophthalmus agassizi	0.10	21	0.03	
Arnoglossus sp.	0.10	10	0.03	
Diaphus cf. thiollieri	0.08	62	0.03	
Synchropus sp.	0.01	10	0.00	
Triacanthodes ethiops	0.00	10	0.00	
Chaunax 'pink'	0.00	10	0.00	
Total	307.71		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 83
 DATE :01/10/2009 GEAR TYPE: BT NO: 21 POSITION:Lat S 11°58.41
 start stop duration Purpose : 1
 TIME :23:06:17 23:28:04 21.8 (min) Region : 7510
 LOG : 2807.39 3808.39 1.0 Gear cond.: 0
 FDEPTH: 453 455 Validity : 0
 BDEPTH: 453 455 Speed : 2.8 kn
 Towing dir: 0° Wire out : 1200 m Catch/hour: 45.25
 Sorted : 16 Total catch: 16.43

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Glass sponge	19.01	0	42.01	
Chlorophthalmus agassizi	8.26	325	18.26	
Starfish	3.86	77	8.52	
ETMOPTERUS lucifer	2.29	19	5.05	
Zenion sp	2.20	165	4.87	
Diaphus watasei	1.52	72	3.35	
Unidentified fish	1.24	8	2.74	
Invertebrate	0.83	3	1.83	
Callionymus sp.	0.69	58	1.52	
Callionymus sp.	0.61	52	1.34	0
Polymetme corythaeola	0.55	25	1.22	
Margrethia sp.	0.47	63	1.03	
Synagrops japonicus	0.36	8	0.79	
Heterocarpus sp.	0.33	99	0.73	
L O B S T E R S	0.28	3	0.61	
Epigonus sp.	0.25	3	0.55	
Penaeopsis balssi	0.25	28	0.55	
Aristaeomorpha foliacea	0.25	11	0.55	
Lucibrotula bartschi	0.22	3	0.49	
Neobythites analis	0.17	6	0.37	
Owstonia sp	0.14	3	0.30	
Polyipnus indicus	0.14	44	0.30	
P O L Y C H A E T A	0.14	3	0.30	
Polymixia berndti	0.14	3	0.30	
Monomitopus nigripinnis	0.11	3	0.25	
MISCELLANEOUS	0.11	8	0.24	
Shrimps, small, non comm.	0.08	30	0.18	
CARIDEA	0.08	52	0.18	
Loligo sp.	0.08	3	0.18	
Laemonema globiceps	0.08	6	0.18	
Parabenbras sp	0.07	6	0.15	
Rexea prometheoides	0.06	3	0.12	
Diaphus sp.	0.06	36	0.12	
Parapagurus sp.	0.06	6	0.12	
Symbolophorus evermanni	0.06	8	0.12	
Small crabs	0.06	3	0.12	
Antigonia rubescens	0.03	3	0.06	
Symphurus ocellatus	0.03	3	0.06	
Caelorinchus braueri	0.03	3	0.06	
Macrorhamphosus scolopax	0.03	3	0.06	
Triacanthodes ethiops	0.03	3	0.06	
Foecilopsetta zanzibarensis	0.03	3	0.06	
Munida sp.	0.03	14	0.06	
Total	45.25		100.00	

ANNEX II. Length distribution of main species





ANNEX III. Instruments and fishing gear used

Echo sounder

The SIMRAD ER60/38 kHz scientific sounder was used during the survey for fish abundance estimation. The lowering keel was only submerged during the last days of the survey. The LSSS Integrator system was used to scrutinise the acoustic records. System calibration using a standard copper sphere was performed 14.06.2009. The settings of 38 kHz echo sounder were as follows:

Transceiver-1 menu (38 kHz lowering keel)

Transducer depth	5.50 m
Absorbtion coeff.	8.5 dB/km
Pulse length	medium (1.02ms)
Bandwidth	wide (2.43 kHz)
Max power	2000 Watt
2-way beam angle	-20.6 dB
Transducer gain	25.9 dB
Angle sensitivity	21.9
3 dB beamwidth	6.95° alongship 6.99° athwardship
Alongship offset	0.11°
Athwardship offset	0.04°

Display menu

Echogram	1 (38 kHz)
Bottom range	15 m
Bottom range start	10 m

Fishing gear

The vessel has both "Harstad" and "Åkrahamn" pelagic trawls and a "Gisund super bottom trawl".

The bottom trawl has a headline of 31 m, footrope 47 m and 20 mm mesh size in the cod end with an inner net of 10 mm mesh size (see drawings below). The estimated opening is 6 m (observed 5.7) and distance between wings during towing about 18 m. The sweeps are 40 m long. The trawl is equipped with a 12" rubber bobbins gear. The doors are of 'Thyborøn' combi type, 7.81 m², 1670 kg, their distance while trawling about 45 - 55 m on average, depending on the depth (least distance at low depths). This distance can be kept constant (about 50 m) at all depths by the use of a 9.5 m strap between the wires at 130 m distance from the doors, normally applied at depths greater than 80 m.

The SCANMAR system was used on all trawl hauls. This equipment consists of sensors, a hydrophone, a receiver, a display unit and a battery charger. Communication between sensors and ship is based on acoustic transmission. The doors are fitted with sensors to provide information on their distance and the trawl with a trawl eye that provides information on the trawl opening, the distance of the footrope to the bottom, bottom contact and fish entering the trawl.

ANNEX V. List of species for Isotope analyses

Trawl station	code	Species	Length (cm)	Weight (g)	Sex	Trawl station	code	Species	Length (cm)	Weight (g)	Sex
4	M001	<i>Pseudanthias cooperi</i>	15	48	J	12	M048	<i>Lethrinus nebulosus</i>	16	77	J
4	M002	<i>Pseudanthias cooperi</i>	15	50	J	12	M049	<i>Gymno cranius griseus</i>	18	126	J
4	M003	<i>Pseudanthias cooperi</i>	15.5	60	J	12	M050	<i>Gymno cranius griseus</i>	12	30	J
4	M004	<i>Pristotis cf. cyanostigma</i>	11.5	20	J	12	M051	<i>Gymno cranius griseus</i>	10.5	22	X
4	M005	<i>Pristotis cf. cyanostigma</i>	11.5	23	J	12	M052	<i>Drepane longimana</i>	52	2850	J
4	M006	<i>Pristotis cf. cyanostigma</i>	12	26	J	12	M053	<i>Drepane longimana</i>	58	3850	J
4	M007	<i>Dasycyllus trimaculatus</i>	10	29	F	12	M054	<i>Drepane longimana</i>	61	4050	J
4	M008	<i>Dasycyllus trimaculatus</i>	11	39	M	12	M055	<i>Decapterus macrosoma</i>	11	35	J
4	M009	<i>Dasycyllus trimaculatus</i>	11	38	J	12	M056	<i>Decapterus macrosoma</i>	13	46	M
4	M010	<i>Trachurus delagoa</i>	13	19	J	12	M057	<i>Decapterus macrosoma</i>	15	52	F
4	M011	<i>Trachurus delagoa</i>	11.5	17	J	12	M058	<i>Herklotsichthys quadrimaculatus</i>			M
4	M012	<i>Trachurus delagoa</i>	13	19	J	15	M059	<i>saurida undoscomis</i>	23	89	F
4	M013	<i>Chaetodon blackburnii</i>	8.5	15	F	15	M060	<i>saurida undoscomis</i>	20	41	F
4	M014	<i>Chaetodon blackburnii</i>	10	25	J	15	M061	<i>saurida undoscomis</i>	18	19	F
4	M015	<i>Chaetodon blackburnii</i>	10	25	J	15	M062	<i>decapterus kuroides</i>	18	49	M
4	M016	<i>Lutjanus sebae</i>	81	9700	M	15	M063	<i>decapterus kuroides</i>	17	45	M
6	M017	<i>Polysteganus coeruleopunctatus</i>	28	32	F	15	M064	<i>decapterus kuroides</i>	15	35	M
6	M018	<i>Polysteganus coeruleopunctatus</i>	27	26	M	15	M065	<i>Herklotsichthys quadrimaculatus</i>	16	31	F
6	M019	<i>Polysteganus coeruleopunctatus</i>	27	25	F	15	M066	<i>Herklotsichthys quadrimaculatus</i>	15	28	F
6	M020	<i>Pristipomoides filamentosus</i>	38	55	F	15	M067	<i>Herklotsichthys quadrimaculatus</i>	16	31	F
6	M021	<i>Pristipomoides filamentosus</i>	35	46	M	15	M068	<i>Upeneus taenopterus</i>	12	30	F
6	M022	<i>Pristipomoides filamentosus</i>	36	48	F	16	M069	<i>Upeneus taenopterus</i>	9	11	F
6	M023	<i>Cantherhines dumerilii</i>	33	44	M	16	M070	<i>Upeneus taenopterus</i>	8	16	F
6	M024	<i>Cantherhines dumerilii</i>	32	42	J	16	M071	<i>Decaptrus kurroides</i>	25	182	F
10	M025	<i>Caesio caerulea</i>	16	79	F	16	M072	<i>Decaptrus kurroides</i>	19	80	F
10	M026	<i>Caesio caerulea</i>	18	95	F	16	M073	<i>Decaptrus kurroides</i>	16	61	M
10	M027	<i>Caesio caerulea</i>	16	63	F	17	M074	<i>seriola rivoliana</i>	35	779	F
10	M028	<i>Parupeneus rubescens</i>	28	349	M	17	M075	<i>seriola rivoliana</i>	32	635	M
10	M029	<i>Parupeneus rubescens</i>	21	152	F	17	M076	<i>seriola rivoliana</i>	32	632	F
10	M030	<i>Parupeneus rubescens</i>	16	81	F	20	M077	<i>Carangoides caeruleolineatus</i>	35	915	F
10	M031	<i>Parupeneus indicus</i>	15	67	F	20	M078	<i>Carangoides caeruleolineatus</i>	29	522	F
10	M032	<i>Parupeneus indicus</i>	13	57	M	20	M079	<i>Carangoides caeruleolineatus</i>	20	181	F
10	M033	<i>Parupeneus indicus</i>	15	68	J	20	M080	<i>Nemipterus japonicus</i>	20	135	M
10	M034	<i>Teixeirichthys jordani</i>	11	31	M	20	M081	<i>Sphyræna forsteri</i>	43	287	F
10	M035	<i>Teixeirichthys jordani</i>	11	30	J	20	M082	<i>Rexea prometheoides</i>	27	146	F
10	M036	<i>Teixeirichthys jordani</i>	10	28	F	20	M083	<i>Rexea prometheoides</i>	23	117	F
10	M037	<i>suganus sutor</i>	25	261	J	20	M084	<i>Rexea prometheoides</i>	19	59	F
10	M038	<i>suganus sutor</i>	25	259	F	21	M085	<i>Trichiurus lepturus</i>	160	7000	F
10	M039	<i>suganus sutor</i>	22	182	J	21	M086	<i>Trichiurus lepturus</i>	23	180	M
12	M040	<i>Parupeneus rubescens</i>	30	437	F	21	M087	<i>Trichiurus lepturus</i>	19	70	M
12	M041	<i>Parupeneus rubescens</i>	22	161	F	21	M088	<i>Trichiurus lepturus</i>	30	60	F
12	M042	<i>Parupeneus rubescens</i>	14	45	F	21	M089	<i>Polysteganus coeruleopunctatus</i>	50	2040	M
12	M043	<i>Lethrinus crocineus</i>	33	728	M	21	M090	<i>Polysteganus coeruleopunctatus</i>	40	1044	M
12	M044	<i>Lethrinus crocineus</i>	21	168	F	21	M091	<i>Polysteganus coeruleopunctatus</i>	42	1040	F
12	M045	<i>Lethrinus crocineus</i>	15	15	M	24	M092	<i>Decapterus table</i>	26	251	M
12	M046	<i>Lethrinus nebulosus</i>	28	382	M	24	M093	<i>Decapterus table</i>	21	117	F
12	M047	<i>Lethrinus nebulosus</i>	20	147	F	24	M094	<i>Decapterus table</i>	28	286	F

Trawl station	code	Species	Length (cm)	Weight (g)	Sex	Trawl station	code	Species	Length (cm)	Weight (g)	Sex
24	M095	Decapterus table	24	196	F	26	M142	Diaphus efulgens	11	19	F
24	M096	Decapterus table	20	116	F	26	M143	Diaphus efulgens	10	14	M
24	M097	Sphyaena flavicauda	26	87	F	26	M144	Diaphus efulgens	10	19	J
24	M098	Sphyaena flavicauda	26	88	M	26	M145	Diaphus richardsoni	10	17	J
24	M099	Sphyaena flavicauda	28	93	F	26	M146	Myctophum asperum	10	16	J
24	M100	Sphyaena flavicauda	28	95	M	26	M147	Ceratoscopelus warmingii	10	15	J
24	M101	Sphyaena flavicauda	28	87	FF	26	M148	Diaphus thiollieri	10	16	F
24	M102	Pliotrema warreni	98	3021	M	26	M149	Diaphus problematicus	10	13	J
24	M103	Pliotrema warreni	95	3010	M	26	M150	Myctophum spinosum	12	21	J
24	M104	Pliotrema warreni	91	3000	M	26	M151	Diaphus efulgens	10	15	M
24	M105	Pliotrema warreni	90	2841	M	26	M152	Diaphus problematicus	9	10	F
24	M106	Pliotrema warreni	82	2800	F	26	M153	Diaphus garmani	9	11	M
24	M107	Pliotrema warreni	62	2610	M	26	M154	Diaphus jenseni	10	14	F
25	M108	Sphyaena flavicauda	26	91	J	26	M155	Diaphus malayanus	12	23	F
25	M109	Sphyaena flavicauda	27	118	J	26	M156	Diaphus efulgens	10	13	M
25	M110	Sphyaena flavicauda	27	122	J	26	M157	Diaphus efulgens	10	11	F
25	M111	Sphyaena flavicauda	24	90	J	26	M158	Diaphus efulgens	10	11	M
25	M112	Sphyaena flavicauda	27	146	J	26	M159	Diaphus efulgens	10	11	J
25	M113	Sphyaena flavicauda	26	109	J	26	M160	Diaphus efulgens	10	12	F
25	M114	Sphyaena flavicauda	27	92	F	26	M161	Diaphus richardsoni	10	13	F
25	M115	Sphyaena flavicauda	24	95	M	26	M162	Myctophum asperum	9	11	F
25	M116	Decapterus kurroides	25	103	J	26	M163	Ceratoscopelus warmingii	10	14	M
25	M117	Decapterus kurroides	27	252	J	26	M164	Diaphus thiollieri	11	14	F
25	M118	Decapterus kurroides	23	178	J	26	M165	Diaphus problematicus	9	10	F
25	M119	Decapterus kurroides	26	251	J	26	M166	Myctophum spinosum	10	13	F
25	M120	Decapterus kurroides	25	208	F	26	M167	Diaphus efulgens	11	13	M
25	M121	Decapterus kurroides	21	135	J	26	M168	Diaphus problematicus	10	11	J
25	M122	Decapterus kurroides	26	255	J	26	M169	Diaphus garmani	10	11	M
25	M123	Decapterus kurroides	20	91	J	26	M170	Diaphus jenseni	9	13	J
25	M124	Decapterus kurroides	22	133	F	26	M171	Ceratoscopelus warmingii	9	10	F
25	M125	Decapterus kurroides	20	114	M	26	M172	Diaphus efulgens	9	8	J
25	M126	Decapterus kurroides	21	108	F	26	M173	Diaphus efulgens	9	10	F
25	M127	Decapterus kurroides	22	144	F	26	M174	Diaphus efulgens	9	8	J
25	M128	Decapterus kurroides	19	97	M	26	M175	Diaphus efulgens	8	7	F
25	M129	Decapterus kurroides	19	95	F	26	M176	Diaphus efulgens	10	10	F
25	M130	Decapterus kurroides	20	103	M	26	M177	Diaphus richardsoni	23	45	J
25	M131	Decapterus kurroides	23	155	J	26	M178	cubiceps cubiceps	21	46	F
25	M132	Rexea pomethoides	18	37	F	26	M179	cubiceps cubiceps	29	46	F
25	M133	Rexea pomethoides	19	52	F	26	M180	cubiceps cubiceps	25	47	M
25	M134	Rexea pomethoides	21	64	F	26	M181	cubiceps cubiceps	26	25	J
25	M135	Rexea pomethoides	22	72	M	26	M182	cubiceps cubiceps	23	30	J
25	M136	Rexea pomethoides	21	58	F	26	M183	cubiceps cubiceps	24	54	J
25	M137	Rexea pomethoides	19	45	F	26	M184	cubiceps cubiceps	21	49	J
25	M138	Rexea pomethoides	18	41	J	26	M185	cubiceps cubiceps	20	21	F
25	M139	Rexea pomethoides	18	41	F	27	M186	Rexea pomethoides	21	70	J
26	M140	Diaphus efulgens	13	29	J	27	M187	Rexea pomethoides	18	48	J
26	M141	Diaphus efulgens	11	20	J	27	M188	Rexea pomethoides	27	146	M

Trawl station	code	Species	Length (cm)	Weight (g)	Sex	Trawl station	code	Species	Length (cm)	Weight (g)	Sex
27	M189	Rexea promethoides	21	70	F	29	M214	Lestrolepis japonica	10	15	M
27	M190	Rexea promethoides	22	78	M	29	M215	Lestrolepis japonica	12	11	F
27	M191	Astronesthes triibulatis	13	17	F	29	M216	argyropelacusa	11	10	M
27	M192	Astronesthes triibulatis	12	16	F	29	M217	Melanostomias barbatombeani	19	18	F
27	M193	Astronesthes triibulatis	13	14	F	29	M218	Melanostomias barbatombeani	20	19	F
27	M194	Astronesthes triibulatis	11	13	F	29	M219	Melanostomias barbatombeani	25	21	F
27	M195	Astronesthes triibulatis	6	2	J	29	M220	Melanostomias barbatombeani	23	23	F
27	M196	Lestrolepis japonica	14	5	M	29	M221	Melanostomias barbatombeani	17	17	J
29	M197	upenaeus vittatus	13	40	m	29	M222	Melanostomias barbatombeani	18	17	M
29	M198	upenaeus vittatus	14	40	f	29	M223	Melanostomias barbatombeani	19	18	J
29	M199	upenaeus vittatus	14	41	m	29	M224	Melanostomias barbatombeani	21	20	J
29	M200	upenaeus vittatus	14	42	f	29	M225	Melanostomias barbatombeani	26	25	M
29	M201	upenaeus vittatus	14	41	J	29	M226	Melanostomias barbatombeani	24	23	F
29	M202	bregmaceros maccellelandi	7	3	J	29	M227	Melanostomias barbatombeani	24	22	M
29	M203	Diaphus garmani	13	29	M	30	M228	Nemipterus bipunctatus	21	131	M
29	M204	Diaphus garmani	13	27	F	30	M229	Nemipterus bipunctatus	16	62	F
29	M205	Diaphus thollieri	14	17	M	30	M230	Nemipterus bipunctatus	15	60	F
29	M206	Diaphus jenseni	18	36	F	30	M231	Nemipterus bipunctatus	15	65	F
29	M207	Cerastoscopus warmingii	19	41	F	30	M232	Nemipterus bipunctatus	11	27	F
29	M208	Astronesthes triibulatis	14	13	F	30	M233	Nemipterus bipunctatus	10	17	F
29	M209	Astronesthes triibulatis	20	27	F	31	M234	Nemipterus japonicus	14	46	M
29	M210	Rexea promethoides	17	19	J	31	M235	Nemipterus japonicus	16	49	F
29	M211	Rexea promethoides	19	17	M	31	M236	Nemipterus japonicus	15	63	F
29	M212	Rexea promethoides	21	30	J	31	M237	Nemipterus japonicus	19	96	F
29	M213	Lestrolepis japonica	13	17	J						

ANNEX VI. List of species for DNA analyses and conservation

Trawl station	DNA	Specimen		Formalin/Frozen	ACEP #	Species
		Kept	Photo			
1	yes	yes	yes	Formalin	141	Malacostidae
1	yes	yes	yes	Formalin	142	Chauliodontidae
3	yes	yes	yes	Formalin	161	Epinephelus morrua
3	yes	yes	yes	Formalin	162	Epinephelus morrua
3	yes	yes	yes	Formalin	155	Chaetodon dolosus
3	yes	yes	yes	Formalin	156	Chaetodon dolosus
3	yes	yes	yes	Formalin	165	Parupeneus cf seychellensis
3	yes	yes	yes	Formalin	166	Fistularia petimba
3	yes	yes	yes	Formalin	167	Fistularia petimba
3	yes	yes	yes	Formalin	157	Argyrops filamentosus
3	yes	yes	yes	Formalin	158	Argyrops filamentosus
3	yes	yes	yes	Formalin	159	Choerodon robustus
3	yes	yes	yes	Formalin	160	Choerodon robustus
3	yes	yes	yes	Formalin	151	Parupeneus rubescens
3	yes	yes	yes	Formalin	152	Parupeneus rubescens
3	yes	yes	yes	Formalin	179	Gymnocraneus griseus
3	yes	yes	yes	Formalin	180	Gymnocraneus griseus
3	yes	yes	yes	Formalin	168	Scorpaena scrofa
3	yes	yes	yes	Formalin	163	Paracaesio xanthurus
3	yes	yes	yes	Formalin	164	Paracaesio xanthurus
3	yes	yes	yes	Formalin	153	Pristipomoides filamentosus
3	yes	yes	yes	Formalin	154	Pristipomoides filamentosus
3	yes	yes	yes	Formalin	178	Epinephelus flavoaceruleus
3	yes	yes	yes	Formalin	169	Polysteganus coeruleopunctatus
5	yes	yes	yes	Formalin	172	Nemichthys curvirostris
5	yes	yes	yes	Formalin	170	Priacanthus sp
5	yes	yes	yes	Formalin	171	Unid
5	yes	yes	yes	Formalin	173	Bregmaceros sp.
6	yes	no	yes		174	Mustelus diasp
6	yes	yes	yes	Formalin	194	Lactoria diaphana
6	yes	yes	yes	Formalin	192	Teixerichthys jordani
6	yes	yes	yes	Formalin	193	Teixerichthys jordani
6	yes	yes	yes	Formalin	188	Antigonia rubenensis
6	yes	yes	yes	Formalin	189	Antigonia rubenensis
6	yes	yes	yes	Formalin	187	Stethojulis interrupta
6	yes	yes	yes	Formalin	185	Dascyllus trimaculatus
6	yes	yes	yes	Formalin	186	Dascyllus trimaculatus
6	yes	no	yes		182	Epinephelus morrua
6	yes	yes	yes	Formalin	181	Polysteganus coeruleopunctatus
6	yes	no	yes		197	Cantherhines dumerilli
6	yes	no	yes		198	Cantherhines dumerilli
6	yes	yes	yes	Formalin	175	Pristipomoides filamentosus
6	yes	yes	yes	Formalin	176	Pristipomoides filamentosus
6	yes	yes	yes	Formalin	183	Pomacanthus imperator
6	yes	yes	yes	Formalin	184	Parupeneus rubescens
6	yes	yes	yes	Formalin	190	Fistularia petimba
6	yes	yes	yes	Formalin	195	Pseudocanthias cornelli
6	yes	yes	yes	Formalin	196	Scorpaena scrofa
6	yes	yes	yes	Formalin	191	Cheimerus nufar
7	yes	yes	yes	Frozen	200	Lutjanus sebae
7	no	no	yes		NA	Rhizoprionodon acutus
7	yes	yes	yes	Formalin	207	Decapterus sp
7	yes	yes	yes	Formalin	208	Decapterus sp
7	yes	yes	yes	Formalin	199	Antigonia cf rubenensis
7	yes	yes	yes	Formalin	206	Synodus dermatogenys
7	yes	yes	yes	Formalin	201	Parupeneus
7	yes	yes	yes	Formalin	202	Parupeneus
7	yes	yes	yes	Formalin	203	Champsodon sp
7	yes	yes	yes	Formalin	204	Cyprinocirrhites polyactis
7	yes	yes	yes	Formalin	205	Cyprinocirrhites polyactis
8	yes	yes	yes	Formalin	211	Lethrinus crocineus
8	yes	yes	yes	Formalin	212	Lethrinus crocineus
8	yes	yes	yes	Formalin	210	Pagellus bellotti
8	yes	yes	yes	Formalin	209	Zanclus canescens
8	yes	yes	Frozen		213	Cheimerus nufar
8	yes	yes	yes	Formalin	221	Caesio caerulea
8	yes	yes	yes	Formalin	223	Scolopsis bimaculatus
8	yes	yes	yes	Formalin	225	Scolopsis vosmeri
8	yes	yes	yes	Formalin	226	Scolopsis vosmeri
8	yes	yes	yes	Formalin	224	Echeneis naucrates

Trawl station	DNA	Specimen		Formalin/Frozen	ACEP #	Species
		Kept	Photo			
8	yes	yes	yes	Formalin	222	Parupeneus indicus
8	yes	yes	yes	Formalin	220	Parupeneus macronemus
8	yes	yes	yes	Formalin	218	Chaetodon blackburnii
8	yes	yes	yes	Formalin	219	Parupeneus cf seychellensis
8	yes	yes	yes	Formalin	214	Priacanthus hamrur
8	yes	yes	yes	Formalin	216	Signanus sutor
8	yes	yes	yes	Formalin	217	Macropharyngodon kuiteri
8	yes	yes	yes	Formalin	231	Caranx ignobilis
8	yes	yes	yes	Formalin	229	Rachcentron canadum
8	yes	yes	yes	Frozen	230	Rachcentron canadum
8	yes	yes	yes	Frozen	227	Scomberomus commerson
8	yes	yes	yes	Frozen	228	Scomberomus commerson
10	yes	yes	yes	Formalin	262	Chaetodon dolosus
10	yes	yes	yes	Formalin	263	Chaetodon dolosus
10	yes	yes	yes	Formalin	260	Chaetodon blackburnii
10	yes	yes	yes	Formalin	261	Chaetodon blackburnii
10	yes	yes	yes	Formalin	256	Gymnocraneus grandoculis
10	yes	yes	yes	Formalin	255	Gymnocraneus grandoculis
10	yes	yes	yes	Formalin	295	Scolopsis bimaculatus
10	yes	yes	yes	Formalin	296	Scolopsis bimaculatus
10	yes	yes	yes	Formalin	297	Cheimerus nufar
10	yes	yes	yes	Formalin	298	Cheimerus nufar
10	yes	yes	yes	Formalin	246	Parupeneus rubescens
10	yes	yes	yes	Formalin	247	Parupeneus rubescens
10	yes	yes	yes	Formalin	250	Parupeneus cf seychellensis
10	yes	yes	yes	Formalin	239	Parupeneus cf seychellensis
10	yes	yes	yes	Formalin	253	Halichoeres sp (Labridae)
10	yes	yes	yes	Formalin	254	Cheilinus sp (Labridae)
10	yes	yes	yes	Formalin	290	Anthias squamipinnis
10	yes	yes	yes	Formalin	291	Anthias squamipinnis
10	yes	yes	yes	Formalin	294	Pomacanthus imperator
10	yes	yes	yes	Formalin	292	Gymnocraneus griseus
10	yes	yes	yes	Formalin	293	Gymnocraneus griseus
10	yes	yes	yes	Formalin	240	Ctenochaetus stugosus
10	yes	yes	yes	Formalin	241	Ctenochaetus stugosus
10	yes	yes	yes	Formalin	258	Fistularia petimba
10	yes	yes	yes	Formalin	259	Fistularia petimba
10	yes	yes	yes	Formalin	264	Anthias cornelli
10	yes	yes	yes	Formalin	265	Anthias cornelli
10	yes	yes	yes	Formalin	248	Decapterus macarellus
10	yes	yes	yes	Formalin	249	Decapterus macarellus
10	yes	yes	yes	Formalin	243	Caesio caerulea
10	yes	yes	yes	Formalin	245	Caesio caerulea
10	yes	yes	yes	Formalin	251	Lethrinus crocineus
10	yes	yes	yes	Formalin	252	Lethrinus crocineus
10	yes	yes	yes	Formalin	257	Teixerichthys jordani
10	yes	yes	yes	Formalin	242	Decapterus punctatus
10	yes	yes	yes	Formalin	244	Decapterus punctatus
10	yes	yes	yes	Formalin	238	Labroides dimidiatus
10	yes	yes	yes	Formalin	237	Stethojulis sp (Labridae)
10	yes	yes	yes	Formalin	236	Stethojulis interrupta
10	yes	yes	yes	Formalin	235	Signanus sutor
10	yes	yes	yes	Formalin	234	Sufflamen frenatus
10	yes	yes	yes	Formalin	266	Lactoria diaphana
10	yes	yes	yes	Formalin	267	Lactoria diaphana
10	yes	yes	yes	Formalin	268	Oplegnathus robinsoni
10	yes	yes	yes	Formalin	232	Lethrinus nebulosus
10	yes	yes	yes	Formalin	233	Lethrinus nebulosus
10	yes	yes	yes	Formalin	299	Abalistes stellatus
10	yes	yes	yes	Formalin	300	Abalistes stellatus
10	yes	yes	yes	Formalin	269	Drepane longimanus
10	yes	yes	yes	Formalin	270	Drepane longimanus
12	yes	yes	yes	Formalin	277	Naso fageni
13	yes	yes	yes	Formalin	278	Sphyrna acutipinnis
13	yes	yes	yes	Formalin	279	Decapterus sp
13	yes	yes	yes	Formalin	280	Decapterus sp
13	yes	yes	yes	Formalin	282	Decapterus sp
13	yes	yes	yes	Formalin	283	Decapterus sp
13	yes	yes	yes	Formalin	284	Decapterus sp
13	yes	yes	yes	Formalin	285	Upeneus bensasi

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species	Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
13	yes	yes	yes	Formalin	281	Scomber japonicus	18	yes	yes	yes	Formalin	326	Coloconger sp
14	yes	yes	yes	Formalin	273	Decapterus kurroides	18	yes	yes	yes	Formalin	339	Haliutaea sp
14	yes	yes	yes	Formalin	274	Decapterus kurroides	18	yes	yes	yes	Formalin	340	Haliutaea sp
14	yes	yes	yes	Formalin	275	Scomber japonicus	18	yes	yes	yes	Formalin	329	Halocephalus laevis
14	yes	yes	yes	Formalin	276	Scomber japonicus	18	yes	yes	yes	Formalin	351	Chaunax sp
14	yes	yes	yes	Formalin	286	Decapterus macronemus	18	yes	yes	yes	Formalin	365	Gonorynchus gonorynchus
14	yes	yes	yes	Formalin	287	Decapterus macronemus	18	yes	yes	yes	Formalin	356	Unidentified
15	yes	yes	yes	Formalin	320	Pterois miles	18	yes	yes	yes	Formalin	363	Bathyclueta sp
15	yes	yes	yes	Formalin	321	Lagocephalus guentheri	18	yes	yes	yes	Formalin	364	Bathyclueta sp
15	yes	yes	yes	Formalin	322	Sardinella gibbosa	18	yes	yes	yes	Formalin	369	Hymenocephalus sp
16	yes	yes	yes	Formalin	271	Saurida undosquamis	18	yes	no	yes	Formalin	370	Hymenocephalus sp
16	yes	yes	yes	Formalin	272	Saurida undosquamis	18	yes	yes	yes	Formalin	374	Neoscopelus macrolepidotus
16	yes	yes	yes	Formalin	288	Saurida undosquamis	18	yes	yes	yes	Formalin	375	Neoscopelus macrolepidotus
16	yes	yes	yes	Formalin	309	Decapterus kurroides	18	yes	yes	yes	Formalin	366	Zenion sp
16	yes	yes	yes	Formalin	310	Decapterus kurroides	18	yes	yes	yes	Formalin	371	Macrorhamphosodes uradoi
16	yes	yes	yes	Formalin	305	Zeus faber	18	yes	yes	yes	Formalin	345	Etmopterus sentosus
16	yes	yes	yes	Formalin	307	Priacanthus hamrur	18	yes	yes	yes	Formalin	346	Etmopterus sentosus
16	yes	yes	yes	Formalin	306	Sphyræna acutipinnis	18	yes	yes	yes	Formalin	323	Taractichthys steindachneri
16	yes	yes	yes	Formalin	304	Synodus dermatogenys	18	yes	yes	yes	Formalin	341	Taractichthys steindachneri
16	yes	yes	yes	Formalin	303	Synodus sp	18	yes	yes	yes	Formalin	377	Centrophorus molluccensis
16	yes	yes	yes	Formalin	301	Torquigener hypselogonion	18	yes	yes	yes	Formalin	378	Centrophorus molluccensis
16	yes	yes	yes	Formalin	302	Torquigener hypselogonion	18	yes	yes	yes	Formalin	382	Centrophorus molluccensis
16	yes	yes	yes	Formalin	289	Upeneus molluccensis	18	yes	yes	yes	Formalin	383	Centrophorus molluccensis
16	yes	yes	yes	Formalin	308	Upeneus cf vittatus	18	yes	yes	yes	Formalin	381	Centrophorus molluccensis
16	yes	yes	yes	Formalin	311	Upeneus cf vittatus	18	yes	yes	yes	Formalin	384	Pteraclis cf velifera
17	yes	no	yes		144	Mustelus mosis	20	yes	yes	yes	Formalin	387	Carangoides Caeruleopinnatus
17	yes	no	yes		145	Mustelus mosis	20	yes	yes	yes	Formalin	388	Carangoides Caeruleopinnatus
17	yes	yes	yes	Formalin	316	Echeneis naucrates	20	yes	yes	yes	Formalin	389	Sphyræna forsteri
17	yes	no	yes		314	Seriola rivoliana	20	yes	yes	yes	Formalin	390	Nemipterus japonicus
17	yes	no	yes		315	Seriola rivoliana	20	yes	yes	yes	Formalin	391	Nemipterus japonicus
17	yes	yes	yes	Formalin	317	Abalistes stellatus	20	yes	yes	yes	Formalin	393	Argyrops filamentosus
17	yes	yes	yes	Formalin	318	Abalistes stellatus	20	yes	yes	yes	Formalin	392	Tetrasonus concatenatus
17	yes	yes	yes	Formalin	319	Pseudobalistes fuscus	20	yes	yes	yes	Formalin	395	Gazza minuta
17	yes	yes	yes	Formalin	312	Tetrasonus concatenatus	20	yes	yes	yes	Formalin	394	Upeneus sp.
17	yes	yes	yes	Formalin	313	Tetrasonus concatenatus	20	yes	yes	yes	Formalin	385	Squatina africana
18	yes	yes	yes	Formalin	372	Tetraodontidae sp	20	yes	yes	yes	Formalin	386	Squatina africana
18	yes	yes	yes	Formalin	361	Lophius sp	21	yes	yes	yes	Formalin	423	Neobythites sp
18	yes	yes	yes	Formalin	347	Polymixia berndti	21	yes	yes	yes	Formalin	421	Hoplostethus atlanticus
18	yes	yes	yes	Formalin	348	Polymixia berndti	21	yes	yes	yes	Formalin	422	Hoplostethus atlanticus
18	yes	yes	yes	Formalin	334	Peristedion cf weberi	21	yes	yes	yes	Formalin	431	Synchirops monacanthus
18	yes	yes	yes	Formalin	335	Peristedion cf weberi	21	yes	yes	yes	Formalin	424	Neobythites cf somalensis
18	yes	yes	yes	Formalin	333	Coelorrinchus sp	21	yes	yes	yes	Formalin	425	Neobythites cf somalensis
18	yes	yes	yes	Formalin	332	Rexea promethoides	21	yes	yes	yes	Formalin	426	Polysteganus coeruleopunctatus
18	yes	yes	yes	Formalin	344	Rexea promethoides	21	yes	yes	yes	Formalin	427	Citharoides macrolepis
18	yes	yes	yes	Formalin	330	Scorpaena sp	21	yes	yes	yes	Formalin	428	Citharoides macrolepis
18	yes	yes	yes	Formalin	343	Scorpaena sp	21	yes	yes	yes	Formalin	417	Champsodon capensis
18	yes	yes	yes	Formalin	331	Chlorophthalmus sp	21	yes	yes	yes	Formalin	418	Champsodon capensis
18	yes	yes	yes	Formalin	342	Chlorophthalmus sp	21	yes	yes	yes	Formalin	419	Zenion sp
18	yes	yes	yes	Formalin	336	Xenolepidichthys dalgleishi	21	yes	yes	yes	Formalin	420	Zenion sp
18	yes	yes	yes	Formalin	337	Xenolepidichthys dalgleishi	21	yes	yes	yes	Formalin	409	Rexea promethoides
18	yes	yes	yes	Formalin	338	Xenolepidichthys dalgleishi	21	yes	yes	yes	Formalin	410	Rexea promethoides
18	yes	yes	yes	Formalin	349	Paratriacanthus retrospinus	21	yes	yes	yes	Formalin	435	Apogon sp
18	yes	yes	yes	Formalin	350	Paratriacanthus retrospinus	21	yes	yes	yes	Formalin	436	Apogon sp
18	yes	yes	yes	Formalin	373	Polyipnus indicus	21	yes	yes	yes	Formalin	411	Triglidæ sp
18	yes	yes	yes	Formalin	354	Symphurus ocellus	21	yes	yes	yes	Formalin	429	Carangoides Caeruleopunctatus
18	yes	yes	yes	Formalin	355	Symphurus ocellus	21	yes	yes	yes	Formalin	430	Carangoides Caeruleopunctatus
18	yes	yes	yes	Formalin	352	Lepidotrigla '2 dark blotches'	21	yes	yes	yes	Formalin	399	Satyrichthyes adeni
18	yes	yes	yes	Formalin	353	Lepidotrigla '2 dark blotches'	21	yes	yes	yes	Formalin	400	Satyrichthyes adeni
18	yes	yes	yes	Formalin	357	Synogrops japonicus	21	yes	yes	yes	Formalin	401	Chaunax sp
18	yes	yes	yes	Formalin	358	Synogrops japonicus	21	yes	yes	yes	Formalin	402	Chaunax sp
18	yes	yes	yes	Formalin	324	Neopinnula orientalis	21	yes	yes	yes	Formalin	407	Chlorophthalmus punctatus
18	yes	yes	yes	Formalin	325	Neopinnula orientalis	21	yes	yes	yes	Formalin	408	Chlorophthalmus punctatus
18	yes	yes	yes	Formalin	327	Benthodesmus elongatus	21	yes	yes	yes	Formalin	432	Coloconger sp
18	yes	yes	yes	Formalin	328	Benthodesmus elongatus	21	yes	yes	yes	Formalin	433	Coloconger sp
18	yes	yes	yes	Formalin	359	Brama orcini	21	yes	yes	yes	Formalin	405	Polymixia berndti
18	yes	yes	yes	Formalin	360	Brama orcini	21	yes	yes	yes	Formalin	406	Polymixia berndti
18	yes	yes	yes	Formalin	376	Gymnoscopelus sp	21	yes	yes	yes	Formalin	396	Owstonia weberi
18	yes	yes	yes	Formalin	367	? Polymetme ?	21	yes	yes	yes	Formalin	397	Owstonia weberi
18	yes	yes	yes	Formalin	368	? Polymetme ?	21	yes	yes	yes	Formalin	398	Owstonia weberi
18	yes	yes	yes	Formalin	362	Cubiceps cubiceps	21	yes	yes	yes	Formalin	413	Lepidotrigla sp

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species	Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
21	yes	yes	yes	Formalin	414	Lepidotrigla sp	24	yes	yes	yes	Formalin	499	Chlorophthalmus agassizi
21	yes	yes	yes	Formalin	403	Trichiurus lepturus	24	yes	yes	yes	Formalin	500	Chlorophthalmus agassizi
21	yes	yes	yes	Formalin	404	Trichiurus lepturus	24	yes	yes	yes	Formalin	551	Leiognathus equulus
21	yes	yes	yes	Formalin	415	Poecilopsetta zanzibareni	24	yes	yes	yes	Formalin	552	Leiognathus equulus
21	yes	yes	yes	Formalin	416	Poecilopsetta zanzibareni	24	yes	yes	yes	Formalin	555	Sphyaena flavicauda
21	yes	yes	yes	Formalin	412	Syngnops japonicus	24	yes	yes	yes	Formalin	556	Sphyaena flavicauda
21	yes	yes	yes	Formalin	434	Holohalaelurus sp	24	yes	yes	yes	Formalin	553	Apogon apogonoides
22	yes	yes	yes	Formalin	496	Lutjanus bohar	24	yes	yes	yes	Formalin	554	Apogon apogonoides
22	yes	yes	yes	Formalin	476	Aprion virescens	24	yes	yes	yes	Formalin	557	Trichiurus lepturus
22	yes	yes	yes	Formalin	475	Carangoides Caeruleopinnatus	24	yes	yes	yes	Formalin	558	Trichiurus lepturus
22	yes	yes	yes	Formalin	495	Carangoides Caeruleopinnatus	24	yes	yes	yes	Formalin	560	Champsodon capensis
22	yes	yes	yes	Formalin	466	Lutjanus gibbus	24	yes	yes	yes	Formalin	561	Uranoscopus archionema
22	yes	yes	yes	Formalin	467	Lutjanus gibbus	24	yes	yes	yes	Formalin	562	Neobythites sp
22	yes	yes	yes	Formalin	460	Paracaesio xanthurus	24	yes	yes	yes	Formalin	563	Pilotrema warreni
22	yes	yes	yes	Formalin	461	Paracaesio xanthurus	24	yes	yes	yes	Formalin	564	Pilotrema warreni
22	yes	yes	yes	Formalin	437	Anthias pulcherrimus	24	yes	yes	yes	Formalin	578	Pilotrema warreni
22	yes	yes	yes	Formalin	449	Sargocentron microstoma	24	yes	yes	yes	Formalin	580	Squatina africana
22	yes	yes	yes	Formalin	450	Sargocentron microstoma	24	yes	yes	yes	Formalin	581	Squatina africana
22	yes	yes	yes	Formalin	448	Sargocentron ittoidai	24	yes	yes	yes	Formalin	579	Aphareus furcatus
22	yes	yes	yes	Formalin	449	Sargocentron ittoidai	24	yes	yes	yes	Formalin	572	Fistularia petimba
22	yes	yes	yes	Formalin	479	Lutjanus bouton	24	yes	yes	yes	Formalin	573	Fistularia petimba
22	yes	yes	yes	Formalin	480	Lutjanus bouton	24	yes	yes	yes	Formalin	559	Naso hexacanthus
22	yes	yes	yes	Formalin	481	Lutjanus lutjanus	24	yes	yes	yes	Formalin	567	Upeneus vittatus
22	yes	yes	yes	Formalin	482	Lutjanus lutjanus	24	yes	yes	yes	Formalin	568	Upeneus vittatus
22	yes	yes	yes	Formalin	487	Heniochus acuminatus	24	yes	yes	yes	Formalin	565	Histiopterus typus
22	yes	yes	yes	Formalin	488	Heniochus acuminatus	24	yes	yes	yes	Formalin	566	Histiopterus typus
22	yes	yes	yes	Formalin	489	Heniochus acuminatus	24	yes	yes	yes	Formalin	569	Saurida undosquamis
22	yes	yes	yes	Formalin	440	Upeneus vittatus	24	yes	yes	yes	Formalin	570	Chaunax sp
22	yes	yes	yes	Formalin	441	Upeneus vittatus	24	yes	yes	yes	Formalin	571	Chaunax sp
22	yes	yes	yes	Formalin	446	Pristipomoides filamentosus	24	yes	yes	yes	Formalin	576	Decapterus tabl
22	yes	yes	yes	Formalin	447	Pristipomoides filamentosus	24	yes	yes	yes	Formalin	577	Decapterus tabl
22	yes	yes	yes	Formalin	483	Lutjanus kasmira	24	yes	yes	yes	Formalin	574	Johnius dussimieri
22	yes	yes	yes	Formalin	484	Lutjanus kasmira	24	yes	yes	yes	Formalin	575	Johnius dussimieri
22	yes	yes	yes	Formalin	442	Lethrinus elongatus	24	yes	yes	yes	Formalin	582	Mustelus monazo
22	yes	yes	yes	Formalin	464	Lethrinus rubrioperculatus	25	yes	yes	yes	Formalin	594	Chaunax sp
22	yes	yes	yes	Formalin	465	Lethrinus rubrioperculatus	25	yes	yes	yes	Formalin	599	Chaunax sp
22	yes	yes	yes	Formalin	443	Lethrinus rubrioperculatus	25	yes	yes	yes	Formalin	596	Rexea promethoides
22	yes	yes	yes	Formalin	444	Caesio caerioflavia	25	yes	yes	yes	Formalin	601	Rexea promethoides
22	yes	yes	yes	Formalin	445	Caesio caerioflavia	25	yes	yes	yes	Formalin	595	Decapterus kurroides
22	yes	yes	yes	Formalin	485	Acanthurus mala	25	yes	yes	yes	Formalin	597	Decapterus kurroides
22	yes	yes	yes	Formalin	486	Acanthurus mala	25	yes	yes	yes	Formalin	598	Upeneus vittatus
22	yes	yes	yes	Formalin	492	Dasyatis kuhlii	25	yes	yes	yes	Formalin	600	Upeneus vittatus
22	yes	yes	yes	Formalin	493	Dasyatis kuhlii	25	yes	yes	yes	Formalin	593	Formalin
22	yes	yes	yes	Formalin	490	Rexea promethoides	25	yes	yes	yes	Formalin	590	Formalin
22	yes	yes	yes	Formalin	491	Rexea promethoides	25	yes	yes	yes	Formalin	606	Satyrichthys adeni
22	yes	yes	yes	Formalin	457	Gymnocranius grandoculis	25	yes	yes	yes	Formalin	583	Priacanthus hammur
22	yes	yes	yes	Formalin	458	Gymnocranius grandoculis	25	yes	yes	yes	Formalin	584	Priacanthus hammur
22	yes	yes	yes	Formalin	459	Tetrasomus concatenatus	25	yes	yes	yes	Formalin	585	Sphyaena acutipinnis
22	yes	yes	yes	Formalin	477	Parupeneus 'roundhead yellowstripe'	25	yes	yes	yes	Formalin	586	Sphyaena acutipinnis
22	yes	yes	yes	Formalin	478	Parupeneus 'roundhead yellowstripe'	25	yes	yes	yes	Formalin	587	Argentina euchus
22	yes	yes	yes	Formalin	438	Naso hexacanthus	25	yes	yes	yes	Formalin	591	Apogon apogonoides
22	yes	yes	yes	Formalin	439	Naso hexacanthus	25	yes	yes	yes	Formalin	592	Apogon apogonoides
22	yes	yes	yes	Formalin	472	Chlorophthalmus agassizi	25	yes	yes	yes	Formalin	588	Citharoides macrolepis
22	yes	yes	yes	Formalin	471	Citharichthys sp	25	yes	yes	yes	Formalin	589	Citharoides macrolepis
22	yes	yes	yes	Formalin	470	Pseudorhombus elevatus	25	yes	yes	yes	Formalin	602	Squalus megalops
22	yes	yes	yes	Formalin	?	Pseudorhombus elevatus	25	yes	yes	yes	Formalin	607	Squalus megalops
22	yes	yes	yes	Formalin	462	Pterocaesio pisang	25	yes	yes	yes	Formalin	603	Polysteganus coeruleopunctatus
22	yes	yes	yes	Formalin	463	Pterocaesio pisang	25	yes	yes	yes	Formalin	604	Polysteganus coeruleopunctatus
22	yes	yes	yes	Formalin	468	Satyrichthys adeni	25	yes	yes	yes	Formalin	605	Polysteganus coeruleopunctatus
22	yes	yes	yes	Formalin	469	Satyrichthys adeni	26	yes	yes	yes	Formalin	620	Coelorrinchus braueri
22	yes	yes	yes	Formalin	451	Priacanthus hammur	26	yes	yes	yes	Formalin	621	Coelorrinchus braueri
22	yes	yes	yes	Formalin	453	Lutjanus fulviflamma	26	yes	yes	yes	Formalin	618	Chlorophthalmus agassizi
22	yes	yes	yes	Formalin	454	Lutjanus fulviflamma	26	yes	yes	yes	Formalin	619	Chlorophthalmus agassizi
22	yes	yes	yes	Formalin	473	Sargocentron melanopsis	26	yes	yes	yes	Formalin	614	Neopinnula orientalis
22	yes	yes	yes	Formalin	474	Sargocentron melanopsis	26	yes	yes	yes	Formalin	615	Neopinnula orientalis
22	yes	yes	yes	Formalin	452	Myripristis murdjan	26	yes	yes	yes	Formalin	611	Saurida gracilis
22	yes	yes	yes	Formalin	494	Naso tuberosus	26	yes	yes	yes	Formalin	612	Saurida gracilis
22	yes	yes	yes	Formalin	455	Apogon apogonoides	26	yes	yes	yes	Formalin	610	Gonorynchus gonorhynchus
22	yes	yes	yes	Formalin	456	Apogon apogonoides	26	yes	yes	yes	Formalin	613	Gonorynchus gonorhynchus
24	yes	yes	yes	Formalin	497	Rexea promethoides	26	yes	yes	yes	Formalin	616	Johnius amblycephalus
24	yes	yes	yes	Formalin	498	Rexea promethoides	26	yes	yes	yes	Formalin	617	Johnius amblycephalus

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
26	yes	yes	yes	Formalin	608	Squalus megalops
26	yes	yes	yes	Formalin	609	Squalus megalops
26	yes	yes	yes	Formalin	631	Etmopterus sentosus
26	yes	yes	yes	Formalin	634	Etmopterus sentosus
26	yes	yes	yes	Formalin	624	Epinephelus septemfasciatus
26	yes	yes	yes	Formalin	625	Gnathopis capensis
26	yes	yes	yes	Formalin	626	Gnathopis capensis
26	yes	yes	yes	Formalin	630	Congridae sp
26	yes	yes	yes	Formalin	627	Nettastoma parviceps
26	yes	yes	yes	Formalin	628	Nettastoma parviceps
26	yes	yes	yes	Formalin	638	Lestrolepis intermedia
26	yes	yes	yes	Formalin	636	Serranus sp
26	yes	yes	yes	Formalin	637	Serranus sp
26	yes	yes	yes	Formalin	635	Haplostethus atlanticus
26	yes	yes	yes	Formalin	622	Tylerius spinosissimus
26	yes	yes	yes	Formalin	623	Tylerius spinosissimus
26	yes	yes	yes	Formalin	640	Polyipnus indicus
26	yes	yes	yes	Formalin	641	Polyipnus indicus
26	yes	yes	yes	Formalin	632	Lepidotrigla sp 'yellow dorsal spots'
26	yes	yes	yes	Formalin	633	Lepidotrigla sp 'yellow dorsal spots'
26	yes	yes	yes	Formalin	629	Uroconger lepturus
26	yes	yes	yes	Formalin	639	Uroconger lepturus
27	no	yes	yes	Formalin		Malthopsis sp
27	yes	yes	yes	Formalin	643	Zenion leptolepis
27	yes	yes	yes	Formalin	644	Zenion leptolepis
27	yes	yes	yes	Formalin	661	Ectreposebastes sp
27	yes	yes	yes	Formalin	647	Histioporus typus
27	yes	yes	yes	Formalin	648	Histioporus typus
27	yes	yes	yes	Formalin	657	Neobythites somalensis
27	yes	yes	yes	Formalin	650	Grammatonotus cf macrophamlus
27	yes	yes	yes	Formalin	651	Peristedion weberi
27	yes	yes	yes	Formalin	652	Peristedion weberi
27	yes	yes	yes	Formalin	645	Lagocephalus guentheri
27	yes	yes	yes	Formalin	655	Minous sp
27	yes	yes	yes	Formalin	656	Minous sp
27	yes	yes	yes	Formalin	660	Citharoides macrolepis
27	yes	yes	yes	Formalin	646	Branchiostegus doliatius
27	yes	yes	yes	Formalin	653	Lepidotrigla multispinosus
27	yes	yes	yes	Formalin	654	Lepidotrigla multispinosus
27	yes	yes	yes	Formalin	658	Physiculus natalensis
27	yes	yes	yes	Formalin	659	Physiculus natalensis
27	yes	yes	yes	Formalin	662	Ateleopus natalensis
27	yes	yes	yes	Formalin	663	Ateleopus natalensis
27	yes	yes	yes	Formalin	642	Bregmaceros maccllellandii
28	no	yes	yes	Formalin		Dactyloptena peterseni
28	no	yes	yes	Formalin		Gempylus cf serpens
28	no	yes	yes	Formalin		Pervagor janthinosoma
28	no	yes	yes	Formalin		Pseudalutarius nasicornis
29	yes	yes	yes	Formalin	672	Laemonema cf globiceps
29	yes	yes	yes	Formalin	673	Laemonema cf globiceps
29	yes	yes	yes	Formalin	671	Johnius dussumieri
29	yes	yes	yes	Formalin	670	Johnius dussumieri
29	yes	yes	yes	Formalin	666	Parapriacanthus ransonneti
29	yes	yes	yes	Formalin	668	Parapriacanthus ransonneti
29	yes	yes	yes	Formalin	667	Serranus cabrilla
29	yes	yes	yes	Formalin	669	Serranus cabrilla
29	yes	yes	yes	Formalin	664	Rechias cf wallacei
29	yes	yes	yes	Formalin	665	Rechias cf wallacei
29	yes	yes	yes	Formalin	674	Uranoscopus archionema
29	yes	yes	yes	Formalin	675	Uranoscopus archionema
29	yes	yes	yes	Formalin	676	Diretmoides parini
29	yes	yes	yes	Formalin	677	Macrouridae sp
31	yes	yes	yes	Formalin	678	Carangoides Caeruleopunctatus
31	yes	yes	yes	Formalin	679	Carangoides Caeruleopunctatus
31	yes	yes	yes	Formalin	680	Carangoides Caeruleopunctatus
31	yes	yes	yes	Formalin	681	Lactoria cornuta
31	yes	yes	yes	Formalin	682	Lactoria cornuta
31	yes	yes	yes	Formalin	683	Nemipterus japonicus
31	yes	yes	yes	Formalin	684	Nemipterus japonicus
31	yes	yes	yes	Formalin	685	Loxodon macrorhinus
31	yes	yes	yes	Formalin	686	Loxodon macrorhinus

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
32	yes	yes	yes	Formalin	690	Carangoides malabaricus
32	yes	yes	yes	Formalin	691	Carangoides malabaricus
32	yes	yes	yes	Formalin	692	Synodus hoshinonus
32	yes	yes	yes	Formalin	693	Synodus hoshinonus
32	yes	yes	yes	Formalin	696	Saurida tumbil
32	yes	yes	yes	Formalin	697	Saurida tumbil
32	yes	yes	yes	Formalin	695	Pseudalutarius nasicornis
32	yes	yes	yes	Formalin	694	Lagocephalus scleratus
32	yes	yes	yes	Frozen	687	Scoberomorus commerson
32	yes	yes	yes	Frozen	688	Scoberomorus commerson
32	yes	yes	yes	Frozen	689	Scoberomorus commerson
33	yes	yes	yes	Formalin	698	Sphyræna chrysoaenia
33	yes	yes	yes	Formalin	699	Tentoriceps cristatus
36	yes	yes	yes	Frozen	701	Gnathanodon speciosus
36	yes	yes	yes	Frozen	702	Gnathanodon speciosus
36	yes	yes	yes	Formalin	703	Scomberoides commersonianus
36	yes	yes	yes	Formalin	700	Scomberomorus commerson
36	yes	yes	yes	Formalin	704	Psettodes erumei
37	yes	yes	yes	Formalin	707	Nemipterus bipunctatus
37	yes	yes	yes	Formalin	708	Nemipterus bipunctatus
37	yes	yes	yes	Formalin	709	Carangoides Caeruleopunctatus
37	yes	yes	yes	Formalin	710	Drepane longimanus
37	yes	yes	yes	Formalin	705	Abalistes stellatus
37	yes	yes	yes	Formalin	706	Abalistes stellatus
37	yes	yes	yes	Formalin	711	Leiognathus fasciatus
37	yes	yes	yes	Formalin	712	Leiognathus fasciatus
37	yes	yes	yes	Formalin	713	Leiognathus leuciscus
37	yes	yes	yes	Formalin	714	Stolephorus indicus
37	yes	yes	yes	Formalin	715	Stolephorus indicus
37	yes	yes	yes	Formalin	720	Alepes kleinii
37	yes	yes	yes	Formalin	721	Alepes kleinii
37	yes	yes	yes	Formalin	718	Carangoides armatus
37	yes	yes	yes	Formalin	719	Carangoides armatus
37	yes	yes	yes	Formalin	716	Decapterus russelli
37	yes	yes	yes	Formalin	717	Decapterus russelli
38	yes	yes	yes	Formalin	728	Ostracion cubiceps
38	yes	yes	yes	Formalin	744	Diagramma centurio
38	yes	yes	yes	Formalin	745	Diagramma centurio
38	yes	yes	yes	Formalin	741	Scomberomorus commerson
38	yes	yes	yes	Formalin	743	Scoberomorus commerson
38	yes	yes	yes	Formalin	742	Alectis ciliaris
38	yes	yes	yes	Formalin	726	Scarus ghobban
38	yes	yes	yes	Formalin	729	Upeneus vittatus
38	yes	yes	yes	Formalin	730	Upeneus vittatus
38	yes	yes	yes	Formalin	739	Argyrops spinifer
38	yes	yes	yes	Formalin	740	Argyrops spinifer
38	yes	yes	yes	Formalin	732	Gymnocranius griseus
38	yes	yes	yes	Formalin	727	Longimans drepane
38	yes	yes	yes	Formalin	733	Canthigaster janthinopectera
38	yes	yes	yes	Formalin	734	Canthigaster janthinopectera
38	yes	yes	yes	Formalin	722	Carangoides caeruleopunctatus
38	yes	yes	yes	Formalin	723	Carangoides caeruleopunctatus
38	yes	yes	yes	Formalin	747	Epinephelus coiades
38	yes	yes	yes	Formalin	748	Epinephelus coiades
38	yes	yes	yes	Formalin	735	Geres filamentosus
38	yes	yes	yes	Formalin	736	Geres filamentosus
38	yes	yes	yes	Formalin	724	Tripteron orbis
38	yes	yes	yes	Formalin	725	Tripteron orbis
38	yes	yes	yes	Formalin	737	Carangoides
38	yes	yes	yes	Formalin	738	Carangoides
38	yes	yes	yes	Formalin	731	Lethrinus lentjan
38	yes	yes	yes	Formalin	746	
39	yes	yes	yes	Formalin	743	Ostracion cubiceps
39	yes	yes	yes	Formalin	751	Platax
39	yes	yes	yes	Formalin	750	Sphyræna forsteri
39	yes	yes	yes	Formalin	749	Apogon aureus
40	no	yes	yes	Formalin		Trachyrampus sp
40	yes	yes	yes	Formalin	752	Terapon theraps
40	yes	yes	yes	Formalin	753	Terapon theraps
40	yes	yes	yes	Frozen	754	Lutjanus sanguineus
40	yes	yes	yes	Formalin	755	Himantura gerrardi

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
42	yes	yes	yes	Formalin	756	
42	yes	yes	yes	Formalin	757	Mobula sp
42	yes	yes	yes	Formalin	758	Dasyatis
43	no	yes	yes	Formalin		Decapterus macrosoma
43	no	yes	yes	Formalin		Centrolophus cf niger
43	no	yes	yes	Formalin		Polyipnus polli
43	no	yes	yes	Formalin		Polyipnus polli
43	no	yes	yes	Formalin		Unidentified
43	no	yes	yes	Formalin		Glass eel
43	no	yes	yes	Formalin		Glass eel
44	yes	yes	yes	Formalin	765	Neobythites cf somalensis
44	yes	yes	yes	Formalin	759	Pristipomoides multidens
44	yes	yes	yes	Formalin	760	Pristipomoides multidens
44	yes	yes	yes	Formalin	766	Apogon 'black spot'
44	yes	yes	yes	Formalin	767	Apogon 'black spot'
44	yes	yes	yes	Frozen	763	Squalus megalops
44	yes	yes	yes	Frozen	764	Squalus megalops
44	yes	yes	yes	Formalin	768	Pseudalutarius nasicornis
44	yes	yes	yes	Formalin	769	Pseudalutarius nasicornis
44	yes	yes	yes	Formalin	761	Sphyaena acutipinnis
44	yes	yes	yes	Formalin	762	Sphyaena acutipinnis
46	no	yes	yes	Formalin	-	Eurypegasus draconis
46	no	yes	yes	Formalin	-	Paramonacanthus sp
49	yes	yes	yes	Formalin	780	Etelis coruscans
49	yes	yes	yes	Formalin	781	Etelis coruscans
49	yes	yes	yes	Formalin	782	Epinephelus magniscutis
49	yes	yes	yes	Formalin	776	Scorpaenus sp
49	yes	yes	yes	Formalin	777	Scorpaenus sp
49	yes	yes	yes	Formalin	-	Pelagocephalus marki
49	yes	yes	yes	Formalin	770	Plectranthias sp
49	yes	yes	yes	Formalin	771	Plectranthias sp
49	yes	yes	yes	Formalin	773	Grammatonotus sp 'plintail'
49	yes	yes	yes	Formalin	774	Grammatonotus sp 'plintail'
49	yes	yes	yes	Formalin	775	Etelis carbunculus
49	yes	yes	yes	Formalin	778	Pristipomoides argyrogrammicus
49	yes	yes	yes	Formalin	779	Pristipomoides argyrogrammicus
49	yes	yes	yes	Formalin	772	Fistularia petimba
49	yes	yes	yes	Formalin	783	Pristipomoides filamentosus
49	yes	yes	yes	Formalin	784	Pristipomoides filamentosus
49	no	yes	yes	Formalin	-	Lutjanus sp
49	no	yes	yes	Formalin	-	Paratrachichthys sp
49	no	yes	yes	Formalin	-	Rexea promethoides
50	no	yes	yes	Frozen	-	Sphyaena putnamae
50	yes	yes	yes	Formalin	785	Dipterygonotus balteatus
50	yes	yes	yes	Formalin	786	Dipterygonotus balteatus
50	no	yes	yes	Formalin	-	Dipterygonotus balteatus
50	no	yes	yes	Formalin	-	Dipterygonotus balteatus
50	yes	yes	yes	Formalin	787	Unidentified a
50	yes	yes	yes	Formalin	788	Unidentified a
50	no	yes	yes	Formalin	-	Bregmaceros sp.
50	no	yes	yes	Formalin	-	Astronesthes
50	no	yes	yes	Formalin	-	unidentified b
50	no	yes	yes	Formalin	-	Unidentified c
56	yes	yes	yes	Formalin	789	Oxyrichthys papuensis
56	yes	yes	yes	Formalin	790	Apogonidae sp
57	yes	yes	yes	Formalin	791	Epinephelus chlorostigma
57	yes	yes	yes	Formalin	794	Dactylopterus orientalis
57	yes	yes	yes	Formalin	792	Fistularia petimba
57	yes	yes	yes	Formalin	793	Fistularia commersonii
57	yes	yes	yes	Formalin	795	Psettodes erumei
60	no	yes	yes	Formalin	-	Astronesthes martensii
60	no	yes	yes	Formalin	-	Astronesthes martensii
60	no	yes	yes	Formalin	-	Diaphus sp
60	yes	yes	yes	Formalin	797	Hypsophium zeinhardtii
60	yes	yes	yes	Formalin	798	Hypsophium hanseni
60	yes	yes	yes	Formalin	796	Synagrops japonicus
60	no	yes	yes	Formalin	-	Cynoglossus lida
60	no	yes	yes	Formalin	-	Leptolepis sp
60	no	yes	yes	Formalin	-	Polyipnus indicus

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
60	no	yes	yes	Formalin	-	Polyipnus indicus
60	yes	yes	yes	Formalin	799	Neobythites cf somalensis
60	yes	yes	yes	Formalin	800	Xenolepidichthys dalgleishi
60	yes	yes	yes	Formalin	801	Torpedo nobiliana
61	yes	yes	yes	Frozen	802	Loxodon macrorhinus
61	yes	yes	yes	Frozen	803	Carangoides cf equula
61	yes	yes	yes	Frozen	804	Carangoides fulviguttatus
61	yes	yes	yes	Frozen	805	Carangoides fulviguttatus
62	yes	yes	yes	Frozen	806	Loxodon macrorhinus
62	yes	yes	yes	Frozen	807	Caranx ignobilis
62	yes	yes	yes	Frozen	808	Caranx ignobilis
62	yes	yes	yes	Frozen	809	Sphyaena barracuda
62	yes	yes	yes	Frozen	810	Sphyaena barracuda
62	yes	yes	yes	Frozen	811	Arothron stellatus
62	yes	yes	yes	Formalin	812	Upeneus bensasi
62	yes	yes	yes	Formalin	813	Upeneus bensasi
62	yes	yes	yes	Formalin	816	Sorsogona prionata
62	yes	yes	yes	Formalin	814	Lagocephalus cf scleratus
62	yes	yes	yes	Formalin	815	Lagocephalus cf scleratus
64	yes	yes	yes	Formalin	817	Laepos nigromaculatus
64	yes	yes	yes	Formalin	818	Etmopterus sentosus
64	yes	yes	yes	Formalin	819	Etmopterus sentosus
64	yes	yes	yes	Formalin	820	Etmopterus sentosus
64	no	yes	yes	Formalin	-	Peristidae sp
64	yes	yes	yes	Frozen	823	Centrophorus molluccensis
64	yes	yes	yes	Formalin	822	Unidentified
65	yes	yes	yes	Frozen	824	Dalatias licha
67	yes	yes	yes	Formalin	827	Selar crumenophthalmus
67	yes	yes	yes	Formalin	828	Selar crumenophthalmus
67	yes	yes	yes	Formalin	829	Sphyaena pinguis
67	yes	yes	yes	Formalin	830	Unid little stripey
67	yes	yes	yes	Formalin	831	Apistus carinatus
67	yes	yes	yes	Formalin	832	Apistus carinatus
67	yes	yes	yes	Formalin	833	Rhacias wallace
68	yes	yes	yes	Formalin	825	Chirocentrus dorab
68	yes	yes	yes	Formalin	826	Chirocentrus dorab
73	yes	yes	yes	Formalin	834	Synchirops marmoratus
73	no	yes	yes	Formalin	-	Halaelurus sp
74	yes	yes	yes	Formalin	840	Chaunax sp 2
74	yes	yes	yes	Formalin	838	Setarches guentheri
74	yes	yes	yes	Formalin	839	Setarches guentheri
74	yes	yes	yes	Formalin	837	Unidentified Red pect blotch
74	yes	yes	yes	Formalin	836	Triglidae sp
74	yes	yes	yes	Formalin	842	Centrophorus molluccensis
74	yes	yes	yes	Formalin	841	Deania quadrispinosum
74	yes	yes	yes	Formalin	843	Symblophorus evermanni
74	yes	yes	yes	Formalin	844	Physiculus natalensis
74	yes	yes	yes	Formalin	845	Macrouidae sp
74	yes	yes	yes	Formalin	846	Macrorhamphosus sp
74	yes	yes	yes	Formalin	847	Myctophidae red fins
75	yes	yes	yes	Formalin	848	Unidentified Big red
75	yes	yes	yes	Formalin	850	Holocentridae sp
75	yes	yes	yes	Formalin	851	Bathygadus sp
75	no	yes	yes	Formalin	-	Unid spiny fish
75	no	yes	yes	Formalin	-	Unid red fish
75	yes	yes	yes	Formalin	852	Unid. Big eys
75	no	yes	yes	Formalin	-	Unid. Rat tail
75	yes	yes	yes	Formalin	849	Unid. Spine nose
75	yes	yes	yes	Formalin	853	Dalatias licha
75	yes	yes	yes	Formalin	854	Unid red fin big mouth
75	yes	yes	yes	Formalin	855	Tydemania navigatoris
75	yes	yes	yes	Formalin	856	Hydrolagus africanus
75	yes	yes	yes	Formalin	857	Coloconger scholesi
75	yes	yes	yes	Formalin	858	Coloconger scholesi
76	yes	yes	yes	Formalin	859	Etmopterus lucifer
76	yes	yes	yes	Formalin	860	Etmopterus lucifer
76	yes	yes	yes	Formalin	864	Cubiceps sp
76	yes	yes	yes	Formalin	874	Bathygadus sp
76	yes	yes	yes	Formalin	868	Satyrichthyes sp
76	yes	yes	yes	Formalin	876	Nansenia macrolepis

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
76	yes	yes	yes	Formalin	871	Malacocephalus sp rattail
76	yes	yes	yes	Formalin	867	Cubiceps whiteleggi
76	yes	yes	yes	Formalin	866	Macrouridae sp
76	yes	yes	yes	Formalin	872	Neoscopis macrolepidotus
76	yes	yes	yes	Formalin	865	Lestrolepis intermedia
76	yes	yes	yes	Formalin	870	Trichyuridae sp
76	yes	yes	yes	Formalin	875	Oreosoma cf atlanticum
76	yes	yes	yes	Formalin	873	Argyropelecus sp
76	yes	yes	yes	Formalin	869	Argyropelecus/Polyipnus sp
76	yes	yes	yes	Formalin	877	Argyropelecus/Polyipnus sp
76	yes	yes	yes	Formalin	878	Gonostoma sp
76	yes	yes	yes	Formalin	880	Bathyclupea sp
76	yes	yes	yes	Formalin	879	Beryx splendens
76	yes	yes	yes	Formalin	881	Diaphus watasei
77	yes	yes	yes	Formalin	861	Scarus sp blue chin
77	yes	yes	yes	Formalin	862	Scarus sp yellow chin
77	yes	yes	yes	Formalin	863	Naso cf tuberosus
Aborted	yes	yes	yes	Frozen	882	Emmelichthys sp
Aborted	yes	yes	yes	Frozen	883	Emmelichthys sp
Aborted	yes	yes	yes	Frozen	884	Emmelichthys sp

Trawl station	DNA	Specimen Kept	Photo	Formalin/Frozen	ACEP #	Species
Aborted	yes	yes	yes	Formalin	885	Antigonia sp
Aborted	no	yes	yes	Frozen	-	Emmelichthys sp
79	yes	yes	yes	Frozen	886	Sphyræna forsteri
79	yes	yes	yes	Frozen	887	Sphyræna forsteri
79	yes	yes	yes	Frozen	888	Sphyræna helleri
79	yes	yes	yes	Frozen	889	Sphyræna helleri
82	yes	yes	yes	Formalin	890	Lucibrotula cf bartschi
82	yes	yes	yes	Formalin	891	Acropoma sp Red
82	yes	yes	yes	Formalin	892	Acropoma sp Red
83	yes	yes	yes	Formalin	893	Owstonia sp
83	yes	yes	yes	Formalin	894	Monomitopus cf....
83	yes	yes	yes	Formalin	895	Neobythites analis
83	yes	yes	yes	Formalin	896	Parapembras sp
83	yes	yes	yes	Formalin	897	Epigonus sp
83	yes	yes	yes	Formalin	898	Callionymus sp 1
83	yes	yes	yes	Formalin	899	Callionymus sp 1
83	yes	yes	yes	Formalin	900	Callionymus sp 2
83	yes	yes	yes	Formalin	901	Unide. Eel
83	no	yes	yes	Formalin	-	Callionymus sp 3

ANNEX VII. List of species for biological analyses and conservation (B: biological, G: genetic, M:museum)

Date	Trawl Station	Species	Purpose	No.	Preserved	Photo
06.09.2009	21	Polysteganus coeruleopunctatus	B	9	N/A	
07.09.2009	24	Polysteganus coeruleopunctatus	B	9	N/A	
09.09.2009	25	Polysteganus coeruleopunctatus	B	7	N/A	
09.09.2009	25	Decapterus russelli	B	14	N/A	
20.09.2009	56	Polysteganus coeruleopunctatus	B + G	7	Ethanol	
22.09.2009	56	Sepia sp	M	1	Formalin	
22.09.2009	57	Loligo sp	M	6	Formalin	
23.09.2009	57	Mixed crabs	M	12	Formalin	Yes
23.09.2009	57	Monomia sp	M	1	Formalin	Yes
23.09.2009	57	Murex sp + cowrey	M	1,1	Formalin	Yes
24.09.2009	60	Unidentified natantia	M	6	Formalin	
24.09.2009	60	Unidentified squid (large)	M	2	Formalin	Yes
24.09.2009	60	Unidentified pansy shell	M	1	Formalin	
24.09.2009	60	Unidentified egg/jelly	M	1	Formalin	
24.09.2009	60	Unidentified squid (small)	M	2	Formalin	
24.09.2009	60	Rossia macrosoma	M	1	Formalin	
24.09.2009	60	Munida sp	M	1	Formalin	
24.09.2009	60	Sepiola rondileti	M	1	Formalin	
24.09.2009	60	Bryozoa	M	1	Formalin	
24.09.2009	60	Gorgonian	M	1	Formalin	
24.09.2009	60	Long arm ophiuroida	M	2	Formalin	Yes
24.09.2009	60	Sepia elegans	M	2	Formalin	Yes
24.09.2009	60	Murex	M	1	Formalin	
24.09.2009	64	unidentified crabs	M	3	Formalin	
24.09.2009	64	Palinurus juvenile	M	1	Ethanol	
24.09.2009	64	Penaeopsis balssi	M	8	Formalin	Yes
24.09.2009	64	Oplophorus gracilirostris	M	2	Formalin	Yes
24.09.2009	64	Plesionika longirostris	M	1	Formalin	Yes
24.09.2009	64	Heterocarpus sp	M	1	Formalin	
24.09.2009	64	Solenocera sp	M	2	Formalin	
25.09.2009	66	Loligo sp	M	5	Formalin	
25.09.2009	69	Metapenaeus monoceros	G	10	Ethanol	
25.09.2009	69	Pansy shell	M	1	Formalin	
26.09.2009	71	Loligo sp	M	6	Frozen	
26.09.2009	72	Selar crumenophthalmus	G	3	Ethanol	
26.09.2009	72	Rastrelliger kanagurta	G	3	Ethanol	
26.09.2009	72	Decapterus russelli	G	8	Ethanol	
26.09.2009	73	Isopod	M	1	Formalin	
26.09.2009	73	Gastropods/bivalves	M	~ 6	Formalin	
27.09.2009	74	Hippolytidae	M	5	Formalin	
27.09.2009	74	Heterocarpus sp	M	2	Formalin	
27.09.2009	74	Heterocarpus tricarinata	M	2	Formalin	
27.09.2009	74	Heterocarpus woodmasoni	M	2	Formalin	
27.09.2009	74	Munida sp	M	2	Formalin	
27.09.2009	74	Solenocera sp	M	3	Formalin	
27.09.2009	74	Unidentified crab	M	1	Formalin	
27.09.2009	75	Aristaeomorpha foliacea	G	8	Ethanol	
27.09.2009	76	Mixed cephalopods	M	~ 12	Frozen	
27.09.2009	76	Portunus sp	M	1	Formalin	
01.10.2009	83	Polychaete	M	1	Formalin	
01.10.2009	83	Unidentified carids	M	5	Formalin	
01.10.2009	83	Unidentified prawn	M	3	Formalin	
01.10.2009	83	Unidentified crabs	M	3	Formalin	
01.10.2009	83	Unidentified squid	M	1	Formalin	

ANNEX VIII. Soft sediment macrobenthos and associated sediment samples

Macrobenthos samples

Nansis Grab Station	Nansis CTD Station	Sample Label No.	0.1mm Sample Collected	0.5mm Sample Collected	Comment
X	X	1/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		1/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		1/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
1	No sample	1/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
2	953 (approx. area)	1/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
3	952 (approx. area)	1/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
4	No sample	1/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
5	No sample	1/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/200/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
6	966	2/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		2/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
7	967 (approx. area)	2/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
8	968 (also 965 in approx. area)	2/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY.

Nansis Grab Station	Nansis CTD Station	Sample Label No.	0.1mm Sample Collected	0.5mm Sample Collected	Comment
					Incorrect sampling protocol.
9	964	2/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
10	969 (approx. area)	2/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
11	971 (approx. area)	2/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/200/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
12	1009	3/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
13	1010	3/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
14	1011	3/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
15	1012	3/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
16	1013	3/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
17	1014	3/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
20	1034	4/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
19	1033	4/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
18	1031	4/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
21	1037	4/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.

Nansis Grab Station	Nansis CTD Station	Sample Label No.	0.1mm Sample Collected	0.5mm Sample Collected	Comment
		4/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
22	1038	4/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
23	1039	4/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
29	1049	5/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
28	1046 (approx. area)	5/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
27	1045 (approx. area)	5/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
26	1044	5/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		5/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
25	1043 (approx. area)	5/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
24	1042 (approx. area)	5/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
36	(Not working)	6/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
35	(Not working)	6/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		6/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		6/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
34	(Not working)	6/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
33	1057	6/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
32	1055 (also 1056 in approx. area)	6/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
31	1054	6/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
30	1053	6/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.

Nansis Grab Station	Nansis CTD Station	Sample Label No.	0.1mm Sample Collected	0.5mm Sample Collected	Comment
		6/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.

- Shaded cells – samples discarded or only for species inventory dues to incorrect sampling protocol.
- Labelling of station number: # (transect no.)### (depth strata)# (replicate no.)

Sediment samples

Nansis Grab Station	Nansis CTD Station	Sample Label No.	TOC Sample Collected	GRAIN Sample Collected	Comment
X	X	1/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		1/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		1/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
1	No sample	1/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
2	953 (approx. area)	1/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
3	952 (approx. area)	1/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
4	No sample	1/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
5	No sample	1/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
		1/200/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample discarded. Incorrect sampling protocol & no preservation.
6	966	2/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		2/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
7	967 (approx. area)	2/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.

Nansis Grab Station	Nansis CTD Station	Sample Label No.	TOC Sample Collected	GRAIN Sample Collected	Comment
8	968 (also 965 in approx. area)	2/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
9	964	2/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
10	969 (approx. area)	2/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
11	971 (approx. area)	2/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
		2/200/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for species inventory ONLY. Incorrect sampling protocol.
12	1009	3/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
13	1010	3/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
14	1011	3/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
15	1012	3/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
16	1013	3/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
17	1014	3/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		3/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
20	1034	4/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
19	1033	4/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
18	1031	4/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.

Nansis Grab Station	Nansis CTD Station	Sample Label No.	TOC Sample Collected	GRAIN Sample Collected	Comment
		4/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
21	1037	4/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		4/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
22	1038	4/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
23	1039	4/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		4/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
29	1049	5/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
28	1046 (approx. area)	5/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
27	1045 (approx. area)	5/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
26	1044	5/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		5/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
25	1043 (approx. area)	5/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
24	1042 (approx. area)	5/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		5/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
36	(Not working)	6/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
35	(Not working)	6/20/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		6/20/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
		6/20/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
34	(Not working)	6/40/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/40/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/40/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
33	1057	6/60/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/60/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/60/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
32	1055 (also 1056 in approx. area)	6/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/100/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/100/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample not collected.
31	1054	6/150/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/150/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.

Nansis Grab Station	Nansis CTD Station	Sample Label No.	TOC Sample Collected	GRAIN Sample Collected	Comment
		6/150/3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
30	1053	6/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/200/1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.
		6/200/2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sample retained for quantitative analysis.

- Shaded cells – samples discarded or only for species inventory dues to incorrect sampling protocol.
- ORI station number: # (traverse no.)### (depth strata)# (replicate no.)
- TOC: sediment Total Organic Content GRAIN: sample for grain size distribution of sediments

ANNEX IX. Data Management Agreement for the FAO/ASCLME Cruises

The intention of this Data Management Agreement is to clarify and protect the interests of all scientists and countries. This Agreement is appended to the ToRs for all scientists that are working on the Nansen as part of the 2008 ASCLME Cruise Schedule.

Introduction

Participating countries in the ASCLME Project, and their designated representatives, have the mandate to develop a comprehensive document on principles and guidelines for ASCLME data and information management so that it facilitates the effective collection, use and dissemination of information in support of TDA/SAP development in the short term and the ecosystem approach in the long term. National Data and Information coordinators in particular, have a responsibility for developing mechanisms for reliable long-term storage and use of information collected under the ASCLME Project.

This Agreement is intended to govern the collection, storage and access to data on the ASCLME 2008 Cruises as an interim measure prior to agreement of a more detailed MoU on data access and management which is currently under development as part of the overall ASCLME Programme (particularly as a joint MoU between the ASCLME and SWIOFP projects and their respective countries). In this context, data collected will be shared freely between the ASCLME and the SWIOFP Project with due note being taken of SWIOFP's own MoU with each of its countries regarding Transboundary Marine Scientific Research in Support of the South West Indian Ocean Fisheries Project (SWIOFP). Nothing in this current agreement should jeopardise the ability of SWIOFP scientists on joint research cruises from abiding by their terms of agreement as specified in this SWIOFP MoU.

Bearing in mind that access to new data, associated metadata, information collection **activities and resulting products funded by the FAO/ASCLME Project** shall be free and unrestricted;

The primary owner of data sets shall be the UNDP GEF ASCLME Project, the FAO and the member-countries of the ASCLME Project, and the primary contact points and archive locations for ASCLME-generated data shall be at nationally appointed data centres as well as through the ASCLME Project Coordination Unit and the FAO.

The first right to publish findings from new data, associated metadata, information collection activities and resulting products funded by the ASCLME Project resides with the principal investigator and her/his associated team (in the case of a scientific investigation), the participating country and the ASCLME Project and FAO.

These guidelines for intellectual property assume that adequate opportunity has been given to regional scientists to collaborate on research projects (data collection, processing and paper-writing), particularly from countries in whose territorial waters the research cruises have taken place.

Interim data management guidelines with specific reference to 2008 ASCLME/EAF-Nansen cruises

Detailed documentation will be made of all measurements and samples collected during each cruise. Documentation will include the cruise track, timing, geo-referenced and time-referenced records of every sampling site and station. All specimens and samples collected will be described and documented electronically during each cruise.

Wherever possible, duplicate or triplicate voucher specimens of macrofauna will be preserved.

The IMR Cruise Leader and the ASCLME Chief Scientist will be jointly responsible for ensuring the accurate documentation of activities, preservation of samples and backup of electronic data.

The primary custodians of data sets shall be the Institute of Marine Research, Bergen (on behalf of the FAO EAF-Nansen project,) the UNDP/GEF ASCLME Project and the member-countries of the ASCLME Project. The primary contact points and archive locations for the survey data shall be at nationally appointed data centres as well as through the ASCLME Project Coordination Unit. The intellectual property of new data, associated metadata, information collection activities and resulting products resides with the principal investigator (in the case of a scientific investigation), the Institution to which the scientist belongs, the participating countries, the ASCLME Project and FAO.

Timing of cruise data reports and products

Specimens

Morphological specimens which are preserved as voucher specimens will be fixed in formalin during the cruises. These will be transferred to ethanol after fixing, also during the cruises. At least one voucher will be lodged at each of:

- 1) the South African Institute of Aquatic Biodiversity in South Africa (SAIAB). This is an African collection where specimens will be preserved for the use and study by scientists throughout the region.
- 2) The National collection or National focal point institution for the ASCLME Project of the country from which the collection was made. This will ensure that countries also keep voucher collections. Where feasible, appropriate support will be provided by the ASCLME Project to the countries that do not currently have good capacity for specimen curation.

Specimens will be lodged at institutions within three months of the conclusion of the 2008 cruises (18 March 2009)

Electronic data from the cruises

A provisional cruise report and completed data report (containing documentation of all measurements and samples collected during each cruise, include the cruise track, timing, geo-referenced and time-referenced records of every sampling site and station) will be provided to the ASCLME PCU within 21 days of end of that particular cruise. It is accepted that biological samples may not be identified and sorted before the end of the cruises, but those data that are captured must be included in the report.

Together with this, an electronic version (in Excel) of all activity/site/station records, and video & photographic inventories will be given to the PCU.

The provisional cruise reports and completed data reports will be made available to the ASCLME participating countries within six weeks of the conclusion of the 2008 cruise schedule (21st February 2009).

A final draft cruise report will be made within three months of the completion of the survey. The Cruise Leader and the Chief Scientist are responsible for finalising the report which will be distributed to ASCLME and FAO for final editing and approval. After approval this will be named the Final Cruise Report and will be printed and be available in electronic copies in pdf format.

Processed data from the cruises

A complete set of all processed data collected on the 2008 ASCLME cruises will be made available to the PCU within three months of the conclusion of the cruise (18 March 2009). Examples of these data will include CTD, ADCP, multibeam data sets, as well as inventories of identified specimens. It is recognized that some data sets may not be processed by this time. In that case, any raw electronic data must be provided to the PCU together with a report on the steps (and timing) that will be taken to process the data.

The provision of flagged (data to be published) data sets to the PCU will be safely retained offline until either

- a) Chief scientists agree to the dissemination of data sets OR
- b) Publications are submitted OR
- c) Eighteen months has passed since the conclusion of the cruise, whichever is the soonest.

As soon as processed data sets are distributable, they will be lodged at nationally appointed data centres for the ASCLME.

Raw OR processed data collected by scientists under the ASCLME Project shall be immediately available to the Regional Information Working Group (made up of national D&I Coordinators) for the sole purpose of (*internally*, not for distribution) informing the TDA/SAP, should it be necessary.

Proposed time line for delivery of data products

During each cruise	All sampling activities are carefully documented, geo-and time-referenced.
	Voucher specimens are fixed.
Final day of the 2008 cruise schedule. 18 December	Provisional cruise reports, and final data report (containing a record of sampling activities) is delivered to the PCU. Electronic inventories are provided to the PCU.
After completion of the 2008 cruise schedule (ongoing)	Public domain data sets are reviewed, checked and made available to the PCU and National data centres.
Six weeks after that. 21 st February	Provisional reports, and the final data reports are sent to ASCLME countries.
Three months from the conclusion of the 2008 cruise schedule. 18 March 2009	Voucher specimens are lodged at National Collections.
	All processed data (or raw data sets + report if not yet processed) provided to the PCU.
	Draft Final Cruise Report submitted to FAO and ASCLME
Eighteen months from the conclusion of the 2008 cruise schedule. 11 th June 2010.	The last of the processed data sets are made available to National data centres.