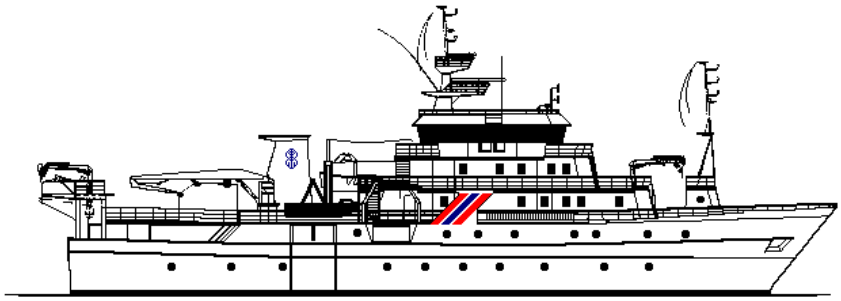

# West Madagascar: Pelagic Ecosystem Survey

SWIOFP/ASCLME / FAO 2009 Cruise 1

**25 August– 03 October 2009**

**Preliminary report**

**Institute of Marine Research (IMR)**

# CRUISE REPORTS "DR. FRIDTJOF NANSEN"

## West Madagascar: Pelagic Ecosystem Survey

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**Preliminary report**

by

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**Institute of Marine Research**
**Bergen, 2009**

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ANNEX IV. CTD, plankton and grab samples

| CTD station | Hydro-graphy | Phyto-plankton | Zoo-plankton | Grab |
|---|---|---|---|---|
| 898 | x | x | x | |
| 899 | x | x | x | |
| 900 | x | x | x | |
| 901 | x | x | x | |
| 902 | x | x | x | |
| 903 | x | x | x | |
| 904 | x | x | x | |
| 905 | x | x | x | |
| 906 | x | x | x | |
| 907 | x | x | x | |
| 908 | x | x | x | |
| 909 | x | x | x | |
| 910 | x | x | x | |
| 911 | x | x | x | |
| 912 | x | | | |
| 913 | x | | | |
| 914 | x | | | |
| 915 | x | x | x | |
| 916 | x | x | x | |
| 917 | x | x | x | |
| 918 | x | x | x | |
| 919 | x | x | x | |
| 920 | x | x | x | |
| 921 | x | | | |
| 922 | x | x | x | |
| 923 | x | | | |
| 924 | x | | | |
| 925 | x | | | |
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| 1029 | x | x | x | |
| 1030 | x | x | x | |
| 1031 | x | | | x |
| 1032 | x | | | |
| 1033 | x | | | x |
| 1034 | x | | | x |
| 1035 | x | | | |

## 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.

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 V.

## 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 |
| Emmanual 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 1st leg) | IMR, Norway | 25.08-18.09 |
| Else Torstensen (Cruise Leader 2nd 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

**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 reasumed 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.

**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. These correspond roughly with known marine bio geographic regions of Madagascar. Figures 1.1-1.3 show the cruise tracks with bottom trawls, pelagic trawls, hydrographic stations, grab and plankton stations.

Table 0.2 summarises the survey effort in each region. Based on topographic characteristics and bio-diversity the coast was divided into three regions.

**Table 0.2 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 |

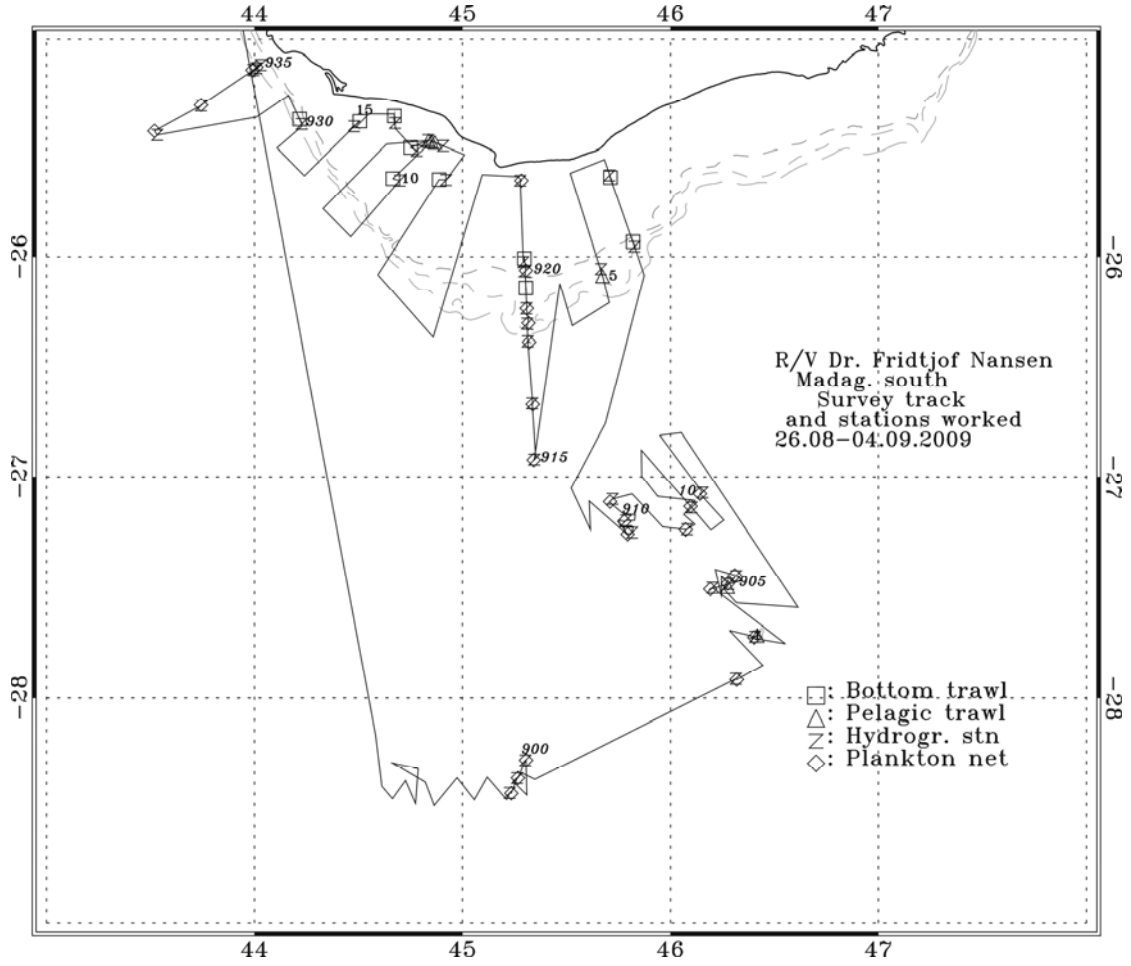



**Figure 0.1. Southern region. Course track with bottom trawl, pelagic trawl, plankton and hydrographic stations. The 100, 500 and 1000 m depth contours are indicated.**

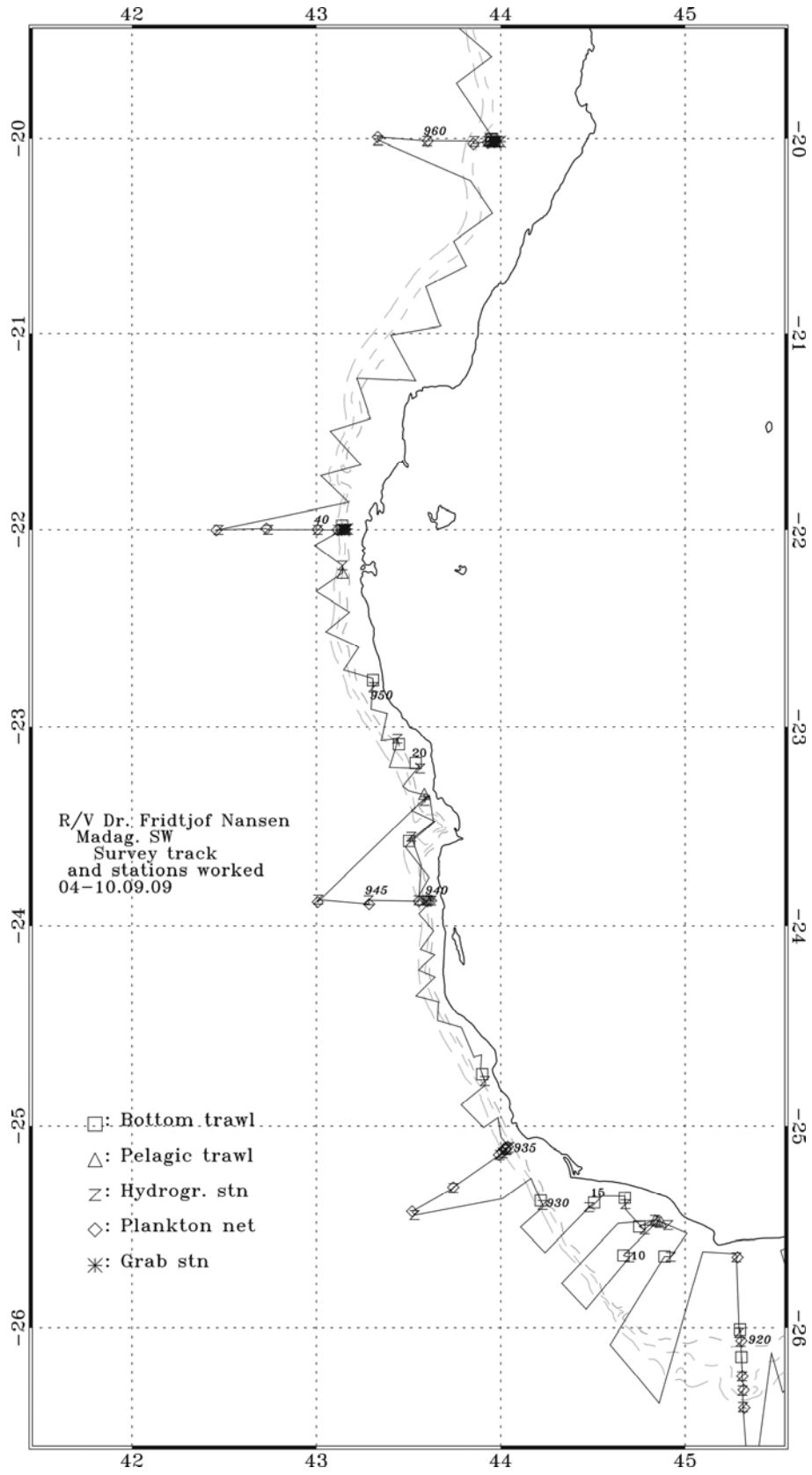



**Figure 0.2. South-western coast. Course track with bottom trawl, pelagic trawl, plankton, grab and hydrographic stations. The 100, 500 and 1000 m depth contours are indicated.**

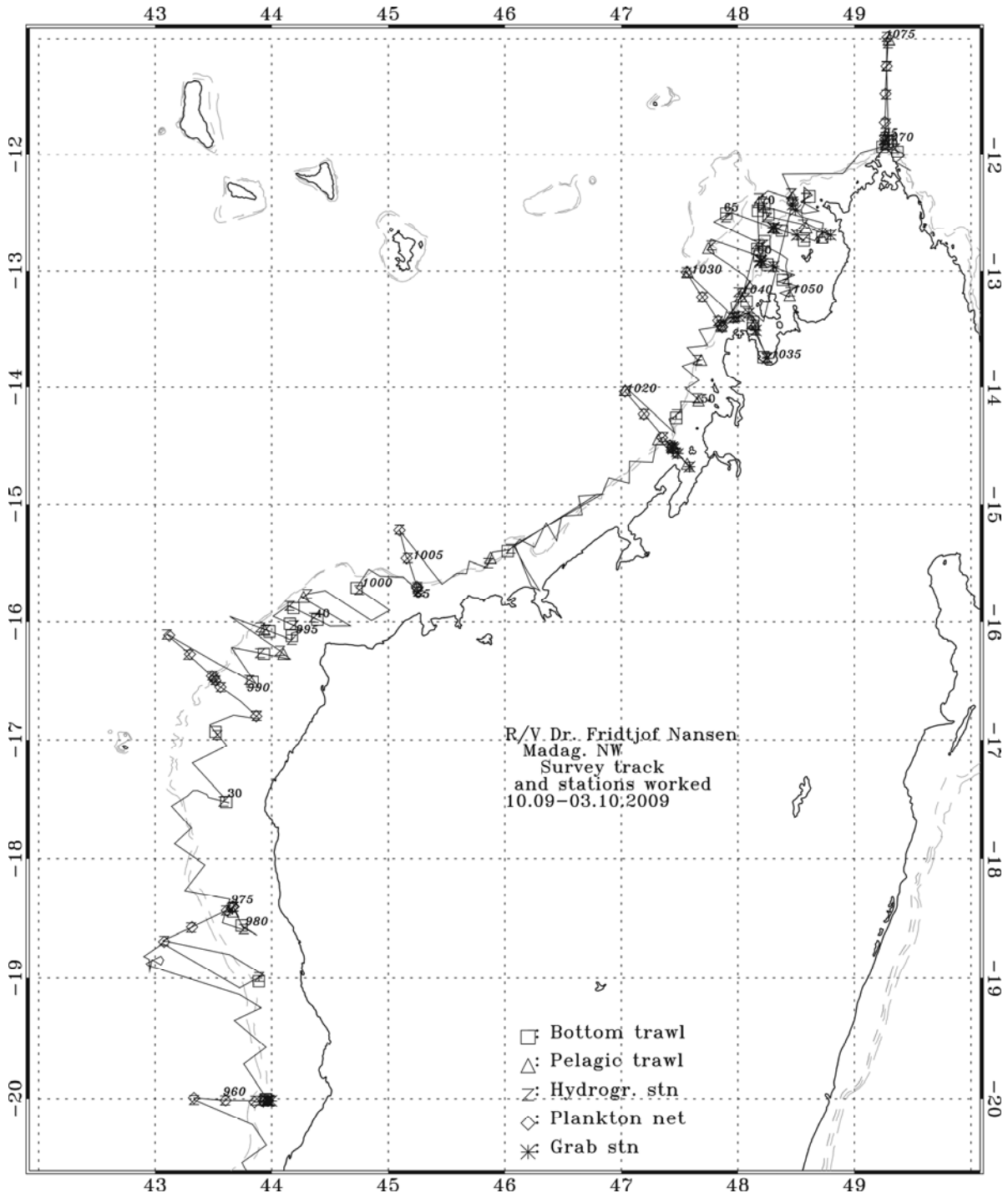



**Figure 0.3. North-western coast. Course track with bottom trawl, pelagic trawl, plankton, and hydrographic stations. The 100, 500 and 1000 m depth contours are indicated.**

# METHODS

## METEOROLOGICAL AND HYDROGRAPHICAL SAMPLING

### *1.1.1 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 fluorescense 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.

*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.

### *1.1.2 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 preseved with buffered formaldehyde. The samples will be analysed on shore for species composition.

### *1.1.3 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.

### *1.1.4 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.

### *1.1.5 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.

## 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%.

## 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.

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.

Pelagic hauls at surface at the beginning and ends of the Environmental transects!!!NB!

**DNA AND ISOTOPE SAMPLING**

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 ($\delta^{15}N$ and $\delta^{13}C$). 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 $50^{o}$ 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 and isotopes 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.

**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.

**BIOMASS ESTIMATES**

*1.1.6 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:

$$TS = 20 \log L - 72\ dB \qquad (1)$$

or in the form

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

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

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

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

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

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:

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

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.

## COLLECTION OF SOFT SEDIMENT MACROBENTHOS

Samples were collected with a Van Veen sediment grab with a sample volume of 1000cm$^3$, 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.

## 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 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 road to go closer (*i.e.*: not during station). 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 (on 8) and an estimation of conditions of observation was done. 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.

## RESULTS

### OCEANOGRAPHIC CONDITION

The 2009408 cruise track traversed few local oceanic characteristics that can be distinguished by their sea surface temperature, salinity, and chlorophyll-*a* fluorescence values (**Figure 1**). Water masses and their chemical properties were also surveyed using a 5 neskin bottles equipped with a CTD and fluorescence sensor. Large scales hydrography summarized by *TS* and contour plots of temperature, salinity, dissolved oxygen and *in vivo* chlorophyll-*a* fluorescence along our cruise track (**Figure 2, Figure 3 and Figure 4**).

**Figure 1. Surface water hydrographic zones for 2009408 cruise.**

Oceanic zones taken in account by surface hydrographic conditions are: 1 – Seamounts, EMC and upwelling areas; 2 – EMC and eddies influenced areas, 3 - eddies and rivers areas; 4, 5 – eddies and large continental shelf; 6 – Narinda bay; 7 – Ampasilava and Ambaro bays; 8 – North of Madagascar.

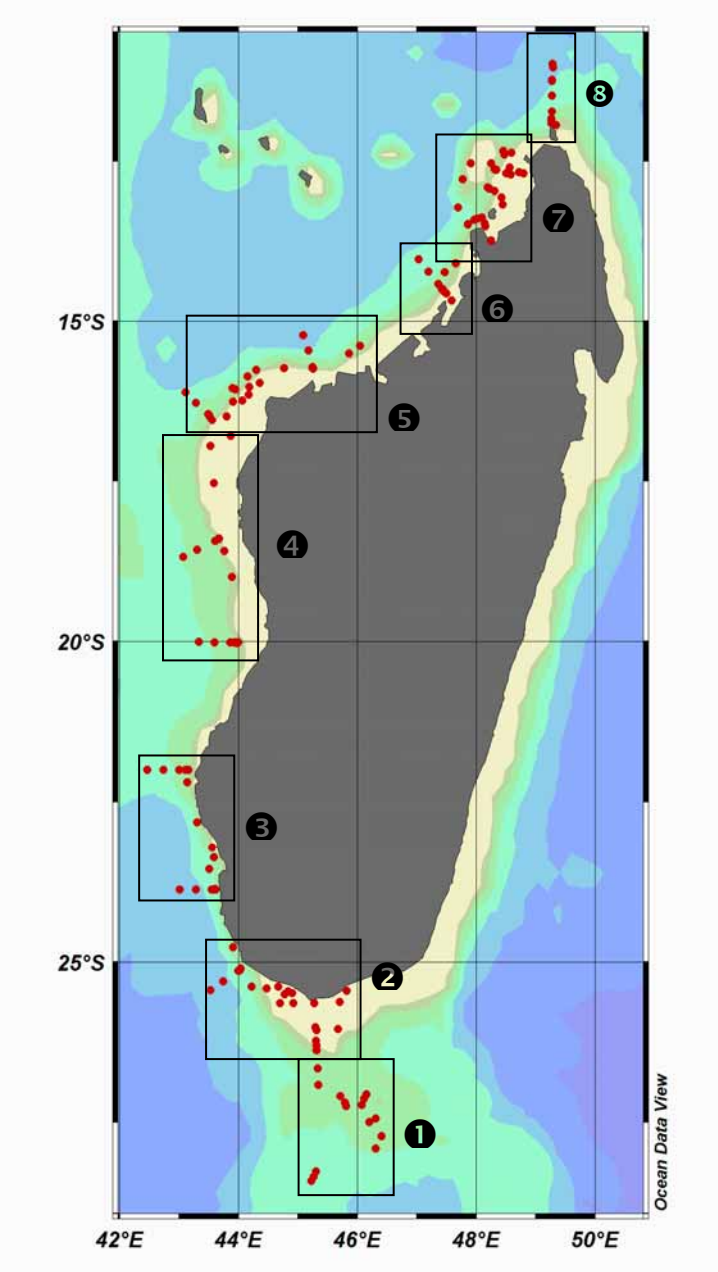


**Figure 2. Global profiles of four main recorded parameters (Temperature, salinity, Oxygen and Chlorophyl-a (XY- plots) for 2009408 cruise.** Note the shape of the profiles showing the variability of different water masses from surface to the bottom.

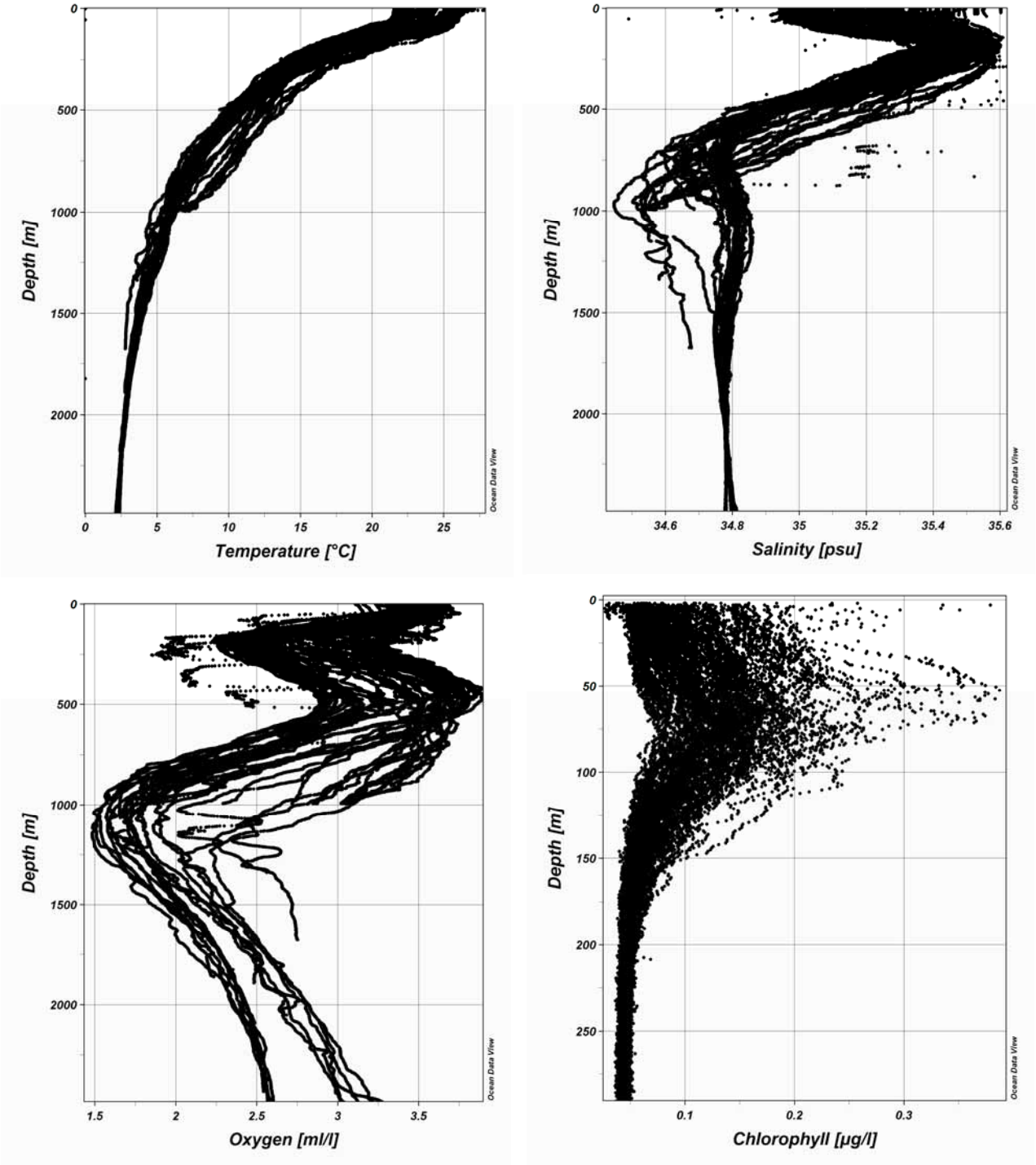
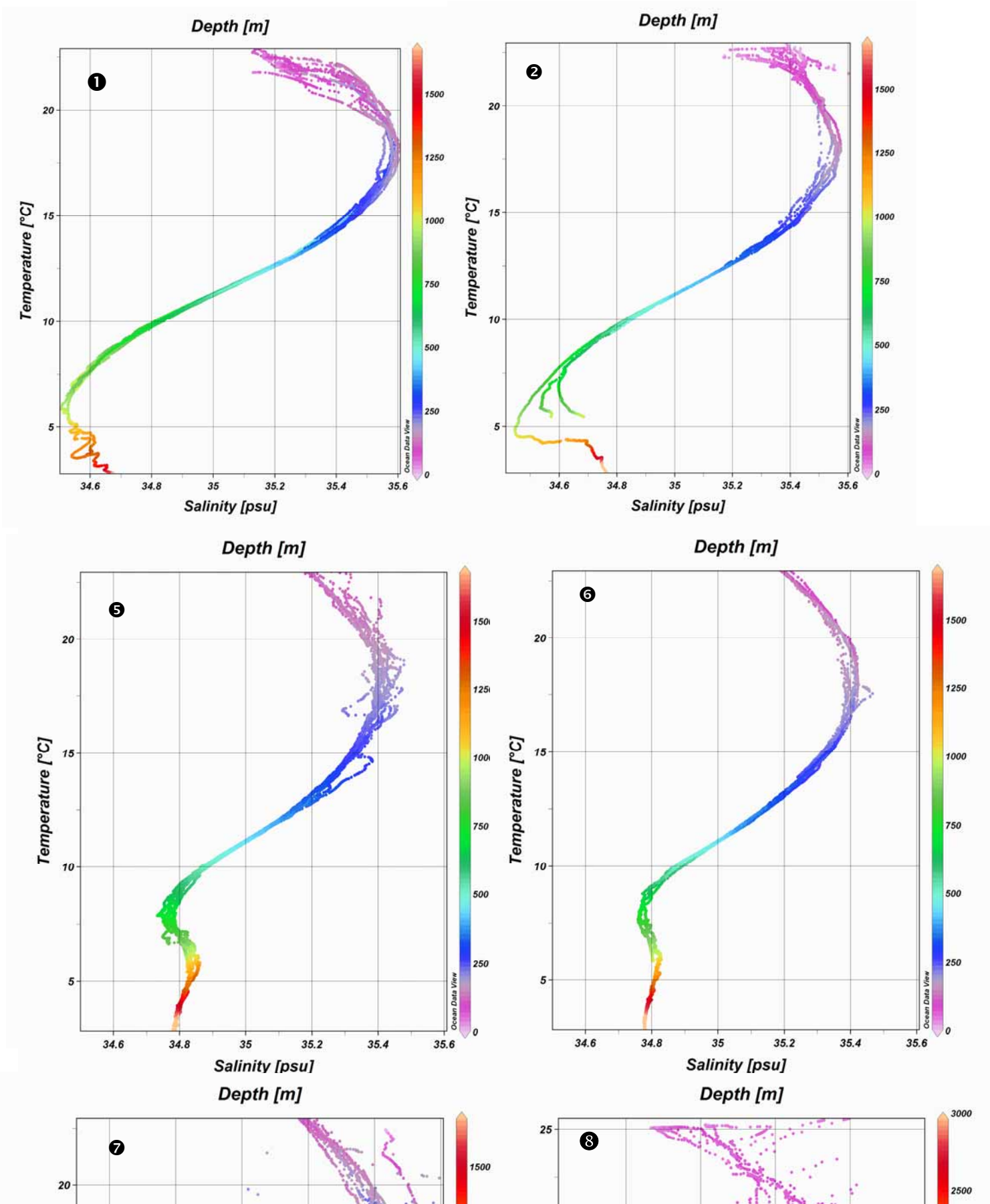
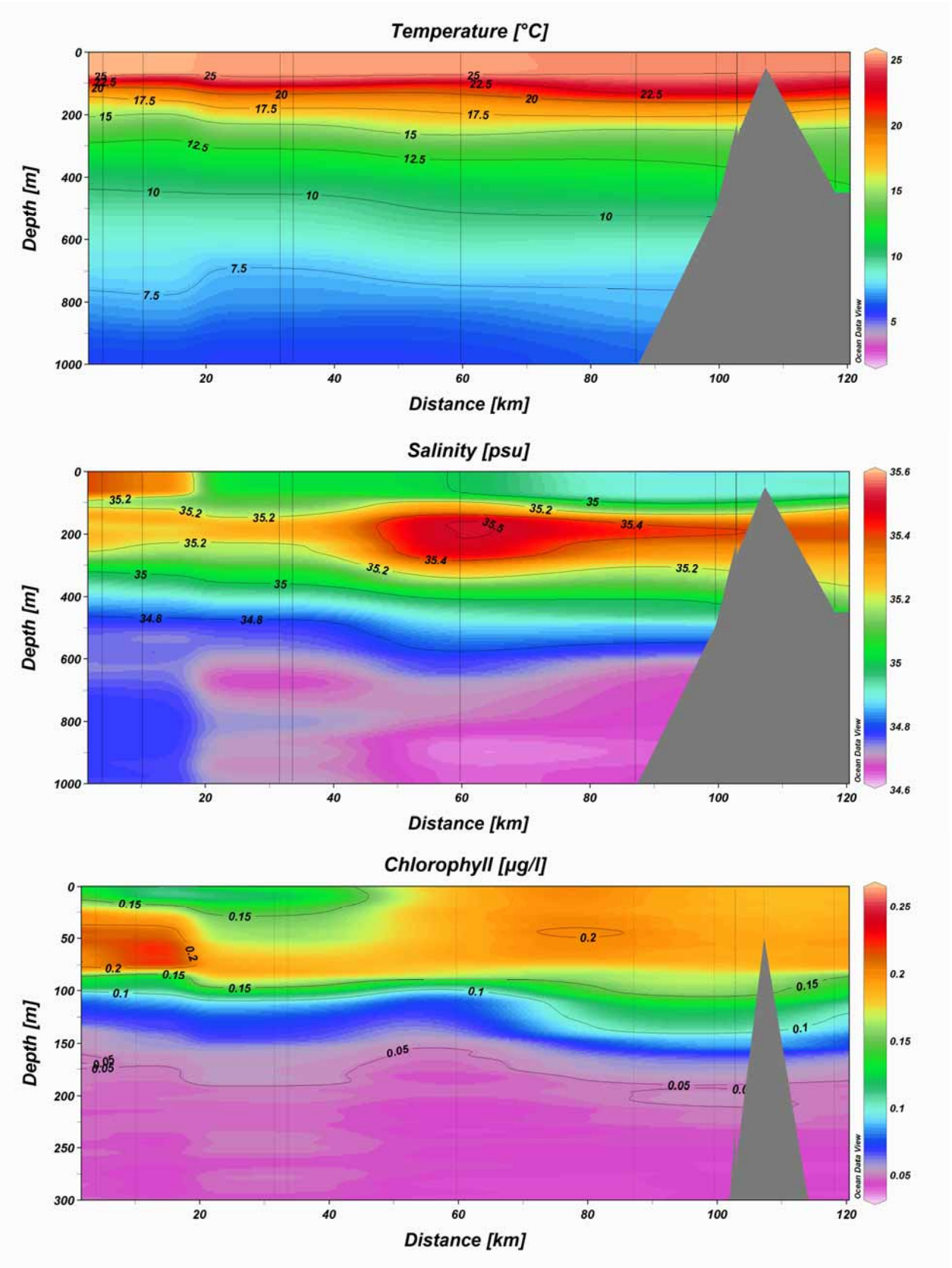


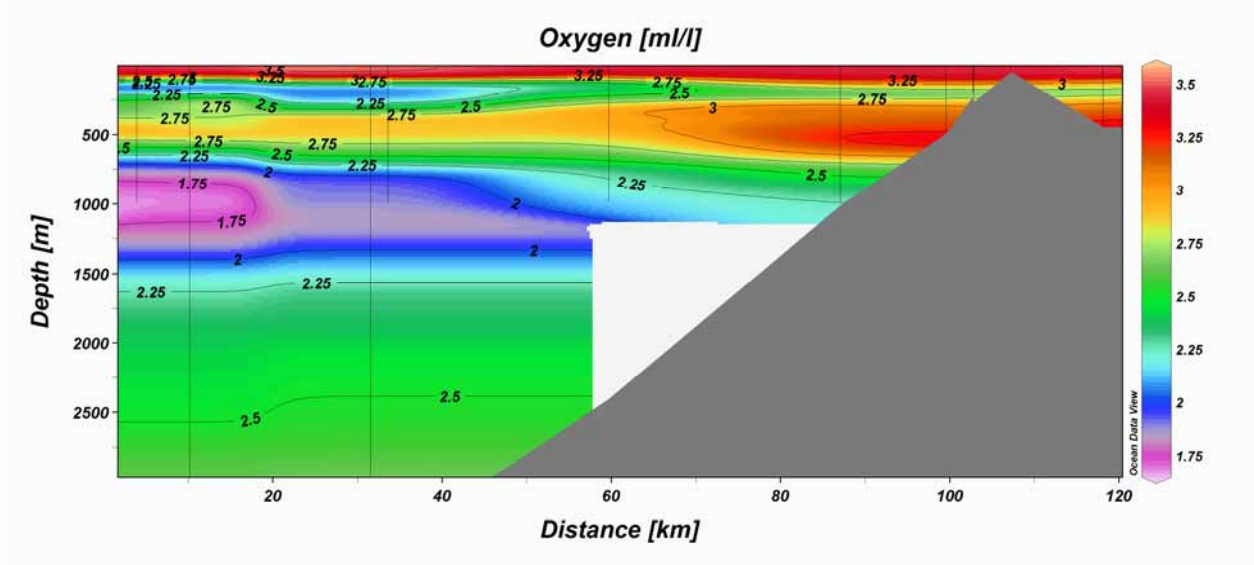
**Figure 3. Water column *TS*-plots for 2009408 cruise according to the zones defined in the previous figure 1.**



Note that, plots are made using raw data and hence, no data quality control has been conducted so far. Bad data could be detected easily on graphs (eg. Zone 7 for station number 1013, 1023, 1025, 1030, 1039,1040, 1051, 1060, 1061 and 1067).

**Fig. 4. Water column section-plots (temperature, salinity, oxygen and chlorophyll-a) of Z8 for 2009408 cruise according to the zones defined in the previous figure 3 .(VG: 80x, 25y).**


Temperature [°C]
Depth [m]
Distance [km]
Ocean Data View
Salinity [psu]
Depth [m]
Distance [km]
Ocean Data View
Chlorophyll [µg/l]
Depth [m]
Distance [km]
Ocean Data View

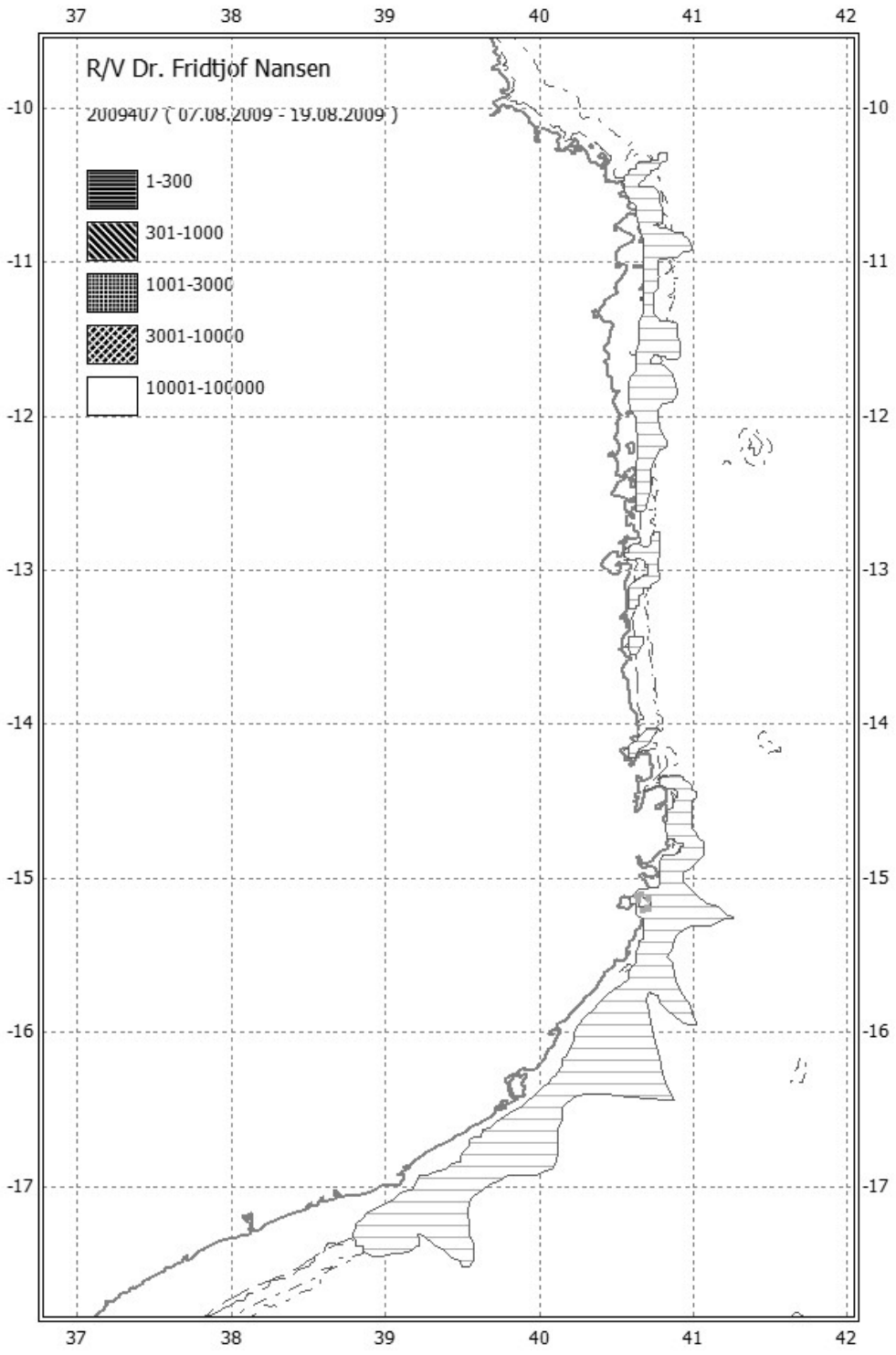



## HYDROACOUSTIC

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 equipment. Generally low acoustic densities where 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. The dispersed fish distribution and high abundance of plankton made acoustic detection and separation very difficult.

## 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 (Pelagic 1), and the second group consisted mainly of carangids, but included also leiognathids, scombrids and associated pelagic like barracudas (Pelagic 2). As discussed in the methods section, the low observed acoustic densities of these groups in combination with unreliable species and length segregations made it necessary to use constant acoustic target strength and default length (23 cm). Using these settings, the estimates of biomass are presented in Table 4.1 a-b. The degree of uncertainty of these estimates is

probably higher than the usual mainly due to the fact that much of the coastline was unsuitable for bottom trawls difficulting accurate species identification.

The distribution areas of the main groups of pelagic fish by regions are depicted in Figures 4.1-4.4 using acoustic integrator values from the LSSS echo-integration system.

In the southern region the Pelagic 1 species (P1) were found in one small low density area, (1-300 $m^2/NM^2$) west off Cape Ste. Marie (Figure 4.1). The main species found were *Sardinella gibbosa* and *Etrumeus teres* which were caught mainly at one station altough not in big quantities. A total biomass of 2 500 tons was estimated (Table 4.1a). Pooled length frequencies of the species can be found in Annex II.

The Pelagic 2 species (P2) were also found west off Cape Ste. Marie, mainly in a patch of low density (1-300 $m^2/NM^2$), but with an area of medium-low (301-1 000 $m^2/NM^2$) and another of medium-high (1 001-3000 $m^2/NM^2$) densities (Figure 4.2). The biomass for the southern coast, was estimated at 28 000 tons (Table 4.1b). 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 P1 and P2 were found in the overlaping 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 tonns and 46 000 tonns for P1 and P2 respectively. In particular for the P2 group although this year's area is smaller than last year, we found small patches of higher fish concentration (Fig 4.2).

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, lowdensity (0-300 sA) areas of PEL 1 were observed. One was located between 17° and 16° South and one 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 at low densities (0-300 sA). Of PEL 2, two groups of 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 *Carangoidaes caeruleopinnatus* that was the most abundant, but never in large numbers. *The highest catches were of Carngoidaes fulvoguttatus*, *Caranx speciosus* and *Decapterus kurroides*, but only in a few hauls. In the second PEL 2-group, the barracudas represent the highest numbers, mainly due to one large catch of around 650 kg of barracuda. Two species

of barracuda were dominant, the *Sphyraena forsteri* and *S. helleri*. The most common of Scombridae was *Scomberomorus commerson.*

**Table 4.1a 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 4.1b 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 | |

## OFFSHORE ACOUSTIC RECORDINGS

Generally no commercial pelagic fish were found offshore, although some low concentrations of mesopelagic fish were found on the shelf break and on the offshore seamounts. 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. No records of commercial pelagic fish were observed.

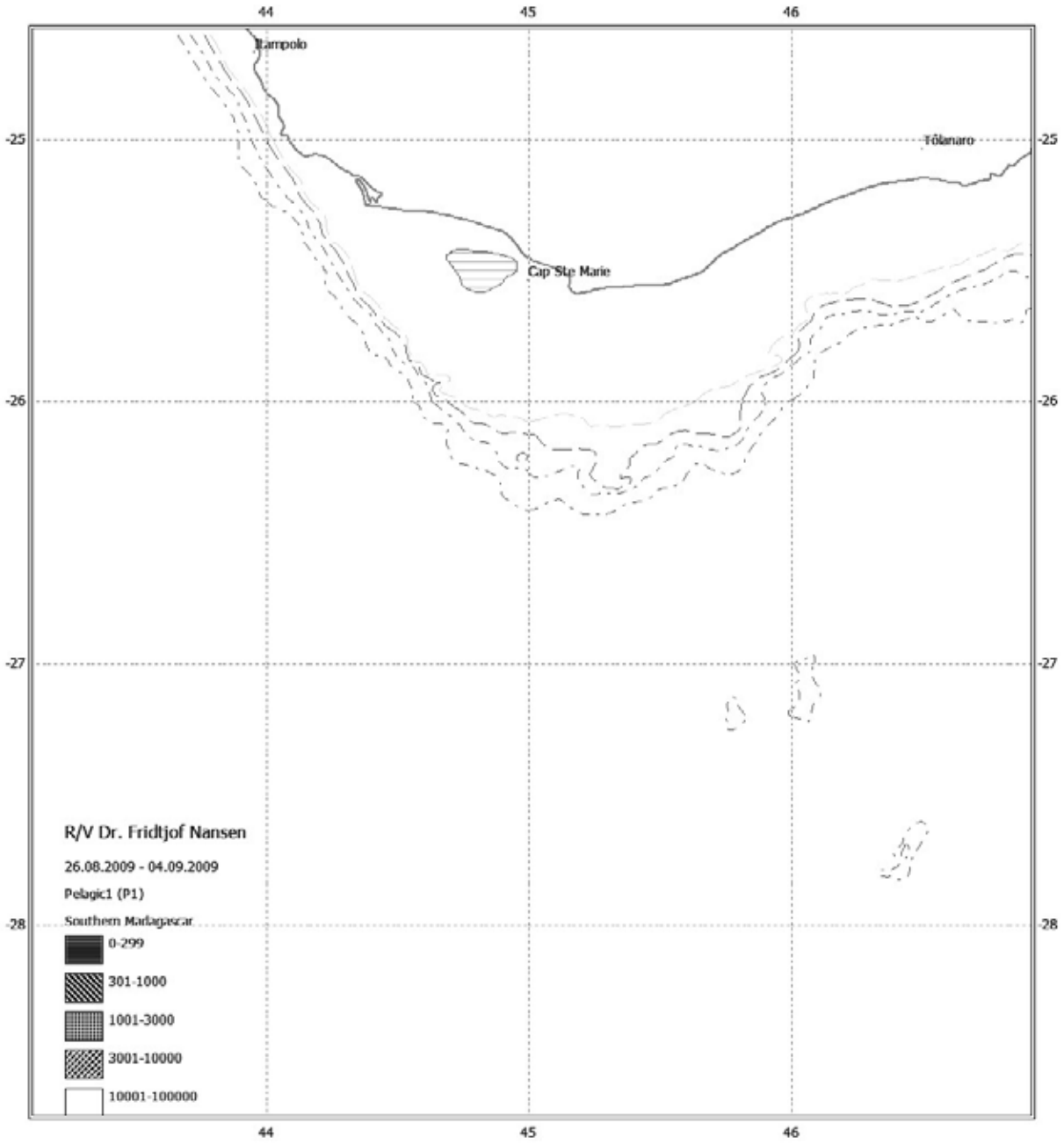



**Figure 4.1 Distribution of Pelagic 1 (Clupeids) on the Southern shelf of Madagascar.**

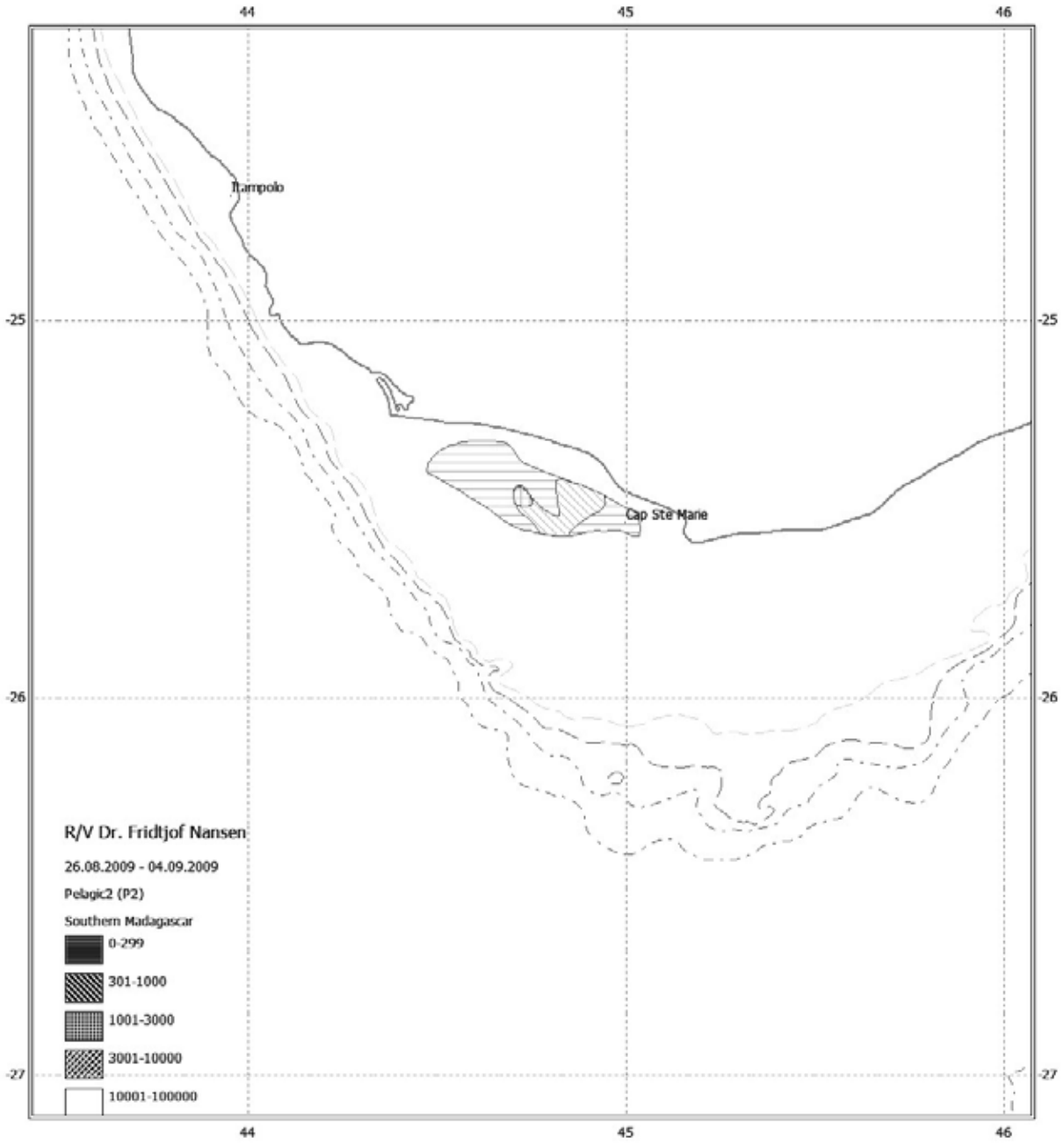



**Figure 4.2 Distribution of Pelagic 2 (carangids and associated pelagic) on the southern shelf of Madagascar.**

**Figure 4.3 Distribution of Pelagic 2 (carangids and associated pelagic) on the northwestern shelf of Madagascar**

**RESULTS FROM ZOOPLANKTON SAMPLING**

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

**RESULTS FROM BIOLOGICAL FISH SAMPLING**

## xx. Isotope analysis

A total of 408 white muscle samples from pelagic demershal and mesopelagic fish have been taken.They were prosessed and stored for further analyses in South Africa. The list of samples are given in ANNEX XXXX.

## xx. Stomach contents

### a. Dietary compostion of demersal and pelagic fishes

A total of 207 stomachs have been examined. Of these 18 were empty (see ANNEXXXYY). Weight and numbers of all food items in the stomach 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.

### b. Dietary compostion of mesopelagic fishes

Of mesopelagic fish, 217 stomachs were examined of which 34 were empty (see ANNEXXXX). 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 bregmaceros, fish larvae |
| ASTRONHESTIDAE | 11 | 8 items |

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

## RESULTS FROM BIODIVERSITY STUDIES FROM TRAWL CATCHES 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 4.2 shows the catch rates (kg/h) for the main groups by depths in the southern region.

Table 4.2. 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 | |

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 4.3 shows the catch rates (kg/h) for the main groups by depths in the southern region.

Table 4.3. 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 | |

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 4.4), 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 (*Aristaemorpha foliaca*, *Penaeopsis balssi* and *Heterocarpus* spp) contributed about 10% to overall catch.

Table 4.4. 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

| **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

| 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

| 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

| 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 | |

## CATCH COMPOSITION ON A 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.

## RESULTS FROM BIOLOGICAL FISH SAMPLING

Biological data from trawl hauls

Genetics

(From Sean) 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 (Appendix: XXXX).

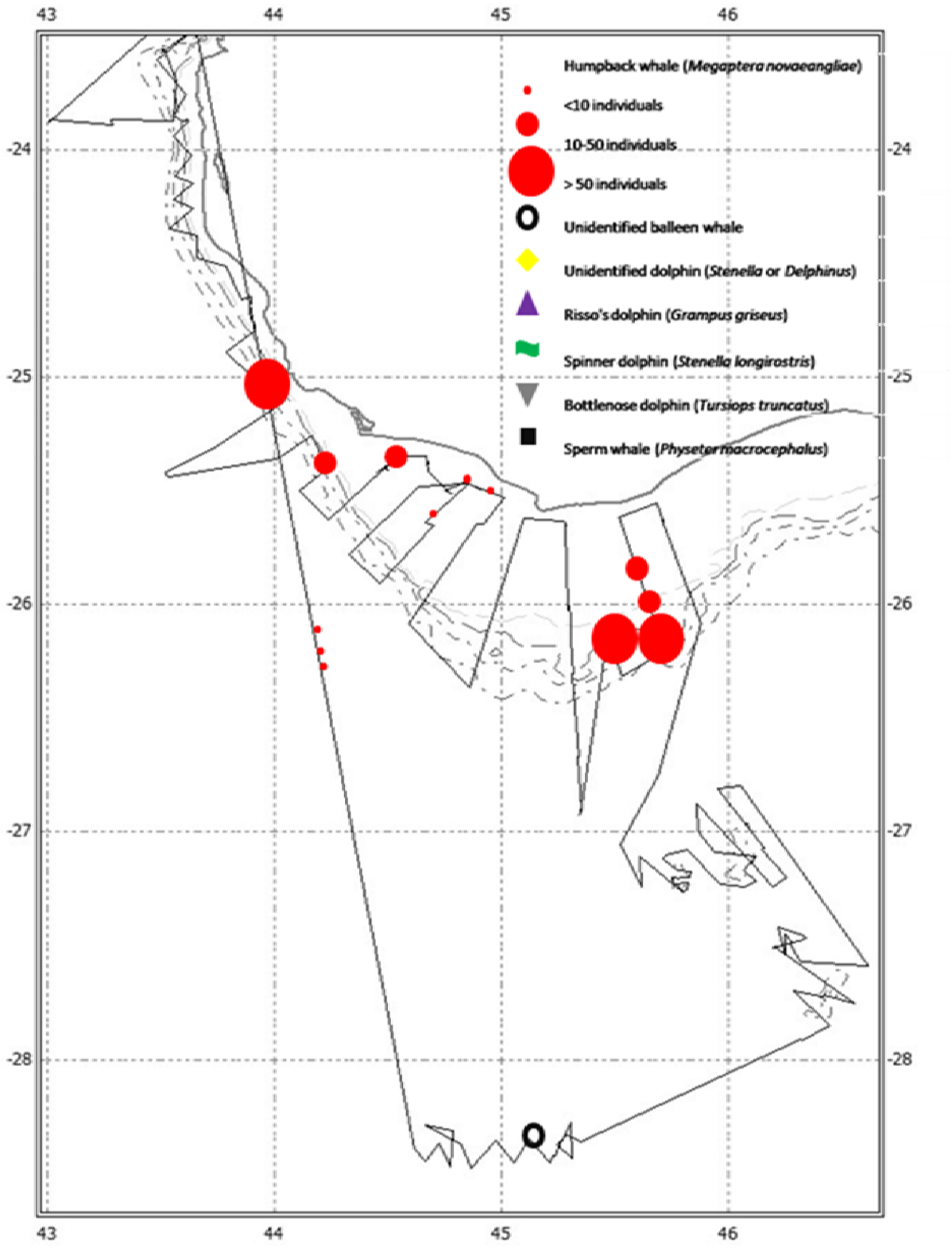
## SOFT SEDIMENT MACROBENTHOS

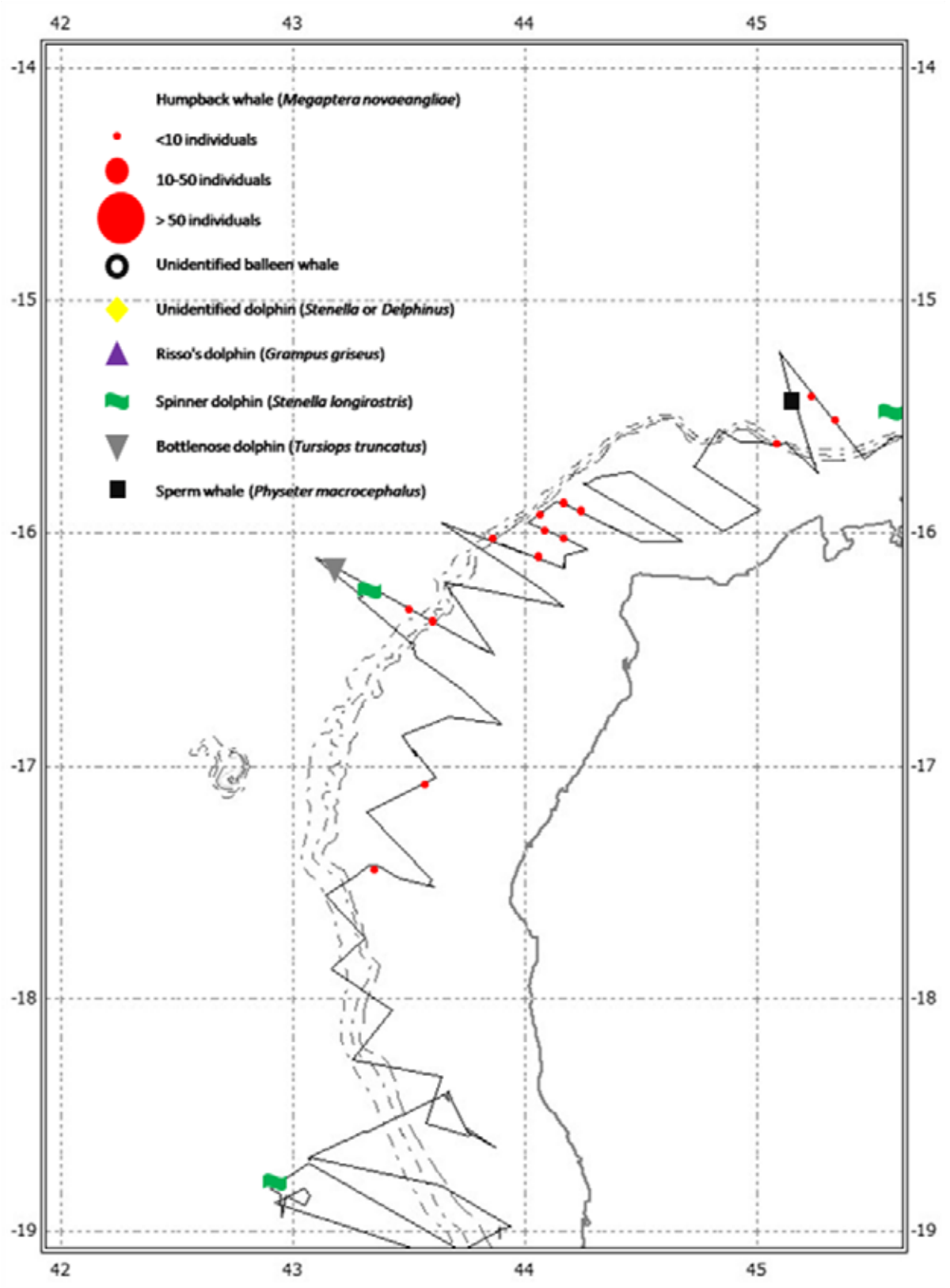
Approximately six transects were sampled. Two transects were sampled on the west coast of Madagascar at approximately 20°S and 22°S. Transects three to six were sampled on the north-west coast between Mahajunga and just east of Nosy Be. Due to errors in the sampling protocol and inappropriate preservation 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-

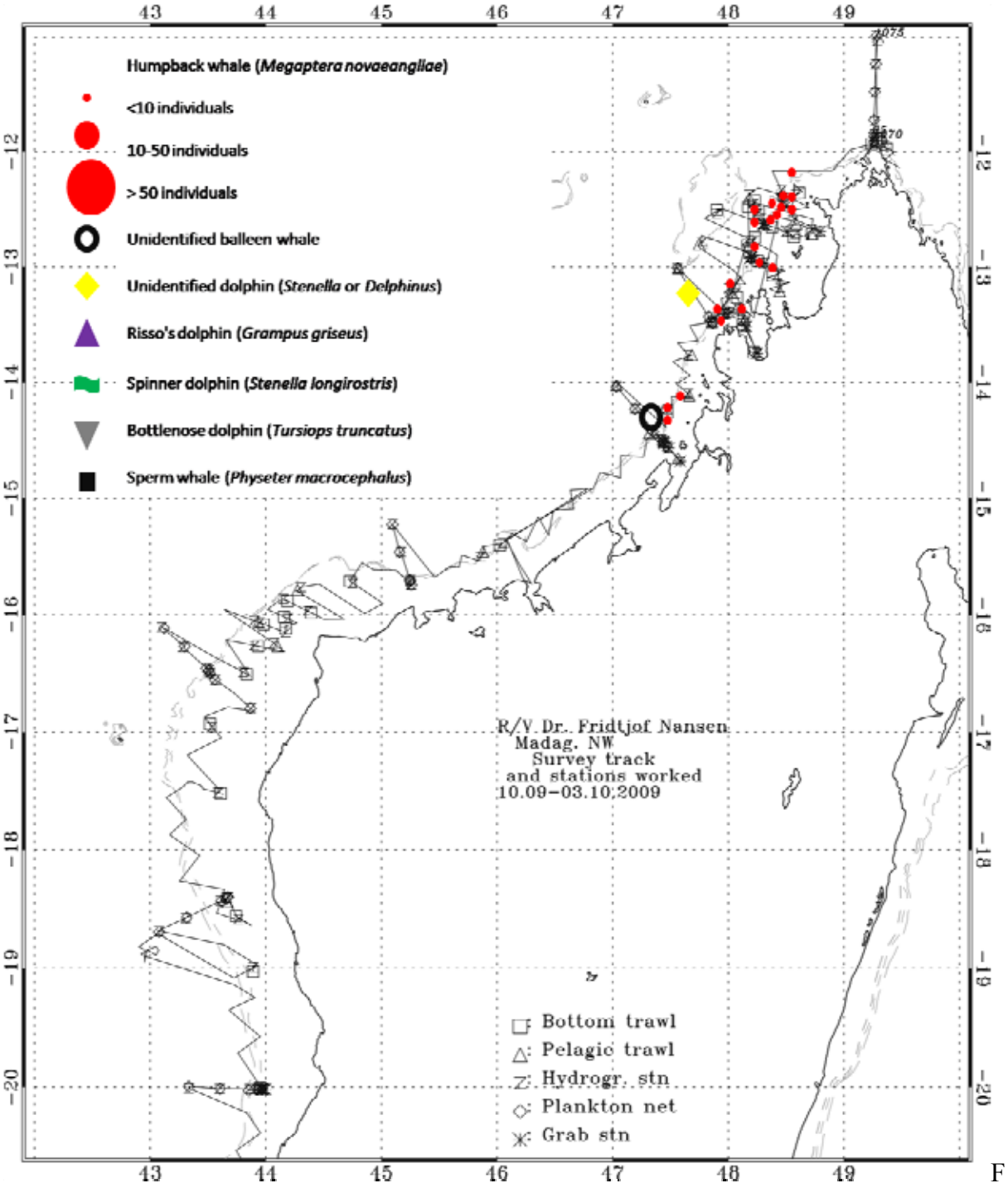
west coast of Madagascar. Not all remaining transects were sampled to completion and not all samples were collected from each depth stratum, due to sampling difficulties associated with the substrate type. Fine grained sand (<0.5mm) and mud was only found at shallow depths, close to the coast. The substrate for the area was primarily large grained coraline 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 all samples collected on Leg 2 is listed in Annex##.

**Other observations**

**WHALE OBSERVATIONS**




42
43
44
45
-14
-15
-16
-17
-18
-19
Humpback whale (Megaptera novaeangliae)
<10 individuals
10-50 individuals
> 50 individuals
Unidentified balleen whale
Unidentified dolphin (Stenella or Delphinus)
Risso's dolphin (Grampus griseus)
Spinner dolphin (Stenella longirostris)
Bottlenose dolphin (Tursiops truncatus)
Sperm whale (Physeter macrocephalus)




F

## SEA BIRDS OBSERVATIONS (MORGANE!! LATIN NAMES!)

The following birds were observed:
_ shy or yellow nose albatross
_pintado petrels
_ skua
_ swift terns
_ fregatebirds
_ sandwich terns
_ 1 plover
Terns are the most even seen species.

## Summary and conclusions

One previous survey has been conducted off the South and East coast of Madagascar with the former *Dr. Fridtjof Nansen*. That survey took place from the 16th to the 28th June 1983 (Sætre *et al.* 1983) with the main objective of covering the shelf < 200 m depth with a combined swept area and acoustic survey. The area covered is similar to what was covered during the present survey. The echo integration method at that time had a low level of accuracy compared with today's equipment. However, a rough estimate of 85 000 tons were estimated for the south and east coast north 17° S combined, which is about the same as the present estimate of 92 000 tons. Carangids were the most common pelagic fish groups in all three areas in both surveys.

Also in the 1983 survey *T. delagoa* and *D. macrosoma* were the most common pelagic species in the bottom trawl catches. Leiognathidae had the highest catch rates on the central part of the eastern coast in both surveys.

**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.**

Future research on the demersal fauna of Madagascar should combine traditional demersal trawling with other types of sampling such as use of ROV, traps and long-line, scuba diving or other suitable methods.

An additional factor that may have had an impact on acoustic estimation in the southern region may have been the high number of humpback whales in the area surveyed. It has previously been observed that pelagic fish hide close to the bottom in the vicinity of cetacean predators.

## References

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.

# ANNEX I Records of fishing stations

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 Lon E 46°25.02
TIME :23:16:13 23:46:50 30.6 (min) Purpose : 1
LOG : 8724.13 8725.95 1.8 Region : 7510
FDEPTH: 90 80 Gear cond.: 0
BDEPTH: 945 1263 Validity : 0
Towing dir: 0° Wire out : 140 m Speed : 3.6 kn
Sorted : 3 Total catch: 3.25 Catch/hour: 6.37

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| J E L L Y F I S H | 4.31 | 0 | 67.69 | |
| MYCTOPHIDAE | 1.27 | 247 | 20.00 | 1 |
| Ancistrocheirus sp. | 0.39 | 2 | 6.15 | |
| S H R I M P S | 0.29 | 143 | 4.62 | |
| Abraliopsis 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 Lon E 46°16.48
TIME :11:19:46 11:40:55 21.2 (min) Purpose : 1
LOG : 8802.00 8803.20 1.2 Region : 7510
FDEPTH: 220 230 Gear cond.: 0
BDEPTH: 248 268 Validity : 0
Towing dir: 0° Wire out : 520 m Speed : 3.4 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Lon E 45°49.20
TIME :06:43:17 07:04:57 21.7 (min) Purpose : 1
LOG : 9151.67 9152.75 1.1 Region : 7510
FDEPTH: 107 110 Gear cond.: 0
BDEPTH: 107 110 Validity : 1
Towing dir: 0° Wire out : 280 m Speed : 3.0 kn
Sorted : 42 Total catch: 42.18 Catch/hour: 116.79

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Epinephelus flavocaeruleus | 28.66 | 3 | 24.54 | 9 |
| Mustelus mosis, female | 22.98 | 3 | 19.68 | 3 |
| Epinephelus morrhua | 21.74 | 6 | 18.61 | 4 |
| Parupeneus rubescens | 13.84 | 44 | 11.85 | 11 |
| Paracaesio xanthurus | 10.38 | 25 | 8.89 | 14 |
| Pristipomoides filamentosus | 6.65 | 11 | 5.69 | 8 |
| Argyrops spinifer | 2.77 | 6 | 2.37 | 6 |
| Arothron incognitus | 2.66 | 3 | 2.28 | 10 |
| Scorpaena scrofa | 1.88 | 3 | 1.61 | |
| Gymnocranius griseus | 1.72 | 8 | 1.47 | 12 |
| Choerodon robustus | 1.50 | 6 | 1.28 | 13 |
| Polysteganus coeruleopunctatus | 1.05 | 3 | 0.90 | 7 |
| Fistularia petimba | 0.42 | 8 | 0.36 | |
| Chaetodon dolosus | 0.30 | 8 | 0.26 | 5 |
| 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 Lon E 45°42.67
TIME :09:50:09 10:19:30 29.3 (min) Purpose : 1
LOG : 9174.65 9176.08 1.4 Region : 7510
FDEPTH: 53 58 Gear cond.: 0
BDEPTH: 53 58 Validity : 0
Towing dir: 0° Wire out : 150 m Speed : 2.9 kn
Sorted : 55 Total catch: 54.67 Catch/hour: 111.80

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Epinephelus multinotatus | 41.31 | 4 | 36.95 | 17 |
| Teixeirichthys jordani | 22.60 | 877 | 20.21 | |
| Lutjanus sebae | 20.14 | 2 | 18.02 | 16 |
| Rhinobatos leucospilus*, female | 8.08 | 2 | 7.23 | 15 |
| 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 | 18 |
| Dascyllus trimaculatus | 1.27 | 55 | 1.13 | |
| OMMASTREPHIDAE | 1.00 | 35 | 0.90 | |
| Priacanthus hamrur | 0.84 | 4 | 0.75 | |
| Paracaesio 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 | 19 |
| Cyprinocirrhites polyactis | 0.12 | 6 | 0.11 | |
| Stethojulis interrupta | 0.08 | 2 | 0.07 | |
| SERRANIDAE | 0.06 | 2 | 0.05 | 0 |
| 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 Lon E 45°40.39
TIME :15:34:03 15:51:38 17.6 (min) Purpose : 1
LOG : 9223.63 9224.75 1.1 Region : 7510
FDEPTH: 55 22 Gear cond.: 0
BDEPTH: 116 114 Validity : 0
Towing dir: 0° Wire out : 120 m Speed : 3.9 kn
Sorted : 1 Total catch: 1.00 Catch/hour: 3.40

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Lon E 45°18.27
TIME :12:07:04 12:36:34 29.5 (min) Purpose : 1
LOG : 9367.41 9368.91 1.5 Region : 7510
FDEPTH: 119 127 Gear cond.: 0
BDEPTH: 119 127 Validity : 0
Towing dir: 0° Wire out : 310 m Speed : 3.1 kn
Sorted : 34 Total catch: 33.66 Catch/hour: 68.46

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Polysteganus coeruleopunctatus | 23.49 | 69 | 34.31 | 21 |
| Mustelus mosis | 14.03 | 2 | 20.50 | |
| Pristipomoides filamentosus | 12.08 | 24 | 17.65 | 20 |
| Cheimerius nufar | 5.90 | 2 | 8.62 | 23 |
| Epinephelus morrhua | 3.42 | 2 | 4.99 | 22 |
| 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 Lon E 45°17.81
TIME :14:43:27 14:59:54 16.5 (min) Purpose : 1
LOG : 9381.76 9382.57 0.8 Region : 7510
FDEPTH: 82 84 Gear cond.: 0
BDEPTH: 82 84 Validity : 0
Towing dir: 0° Wire out : 230 m Speed : 2.9 kn
Sorted : 15 Total catch: 14.69 Catch/hour: 53.55

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Lutjanus sebae | 29.71 | 4 | 55.48 | 25 |
| Rhizoprionodon acutus, female | 10.57 | 4 | 19.74 | 24 |
| Epinephelus morrhua | 7.29 | 4 | 13.61 | 26 |
| Gymnocranius griseus | 2.52 | 7 | 4.70 | 29 |
| Polysteganus coeruleopunctatus | 1.46 | 4 | 2.72 | 28 |
| 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 | |
| Calappa 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 | 27 |
| 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 Lon E 44°53.25
TIME :06:31:43 07:03:36 31.9 (min) Purpose : 1
LOG : 9520.63 9522.22 1.6 Region : 7510
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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 caerulaurea | 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 | |
| Cheimerius 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 Lon E 44°52.07
TIME :09:51:42 10:18:33 26.9 (min) Purpose : 1
LOG : 9541.46 9542.91 1.5 Region : 7510
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 32 34 Validity : 0
Towing dir: 0° Wire out : 130 m Speed : 3.2 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Lon E 44°39.90
TIME :12:57:50 13:27:08 29.3 (min) Purpose : 1
LOG : 9563.40 9564.94 1.5 Region : 7510
FDEPTH: 45 44 Gear cond.: 0
BDEPTH: 45 44 Validity : 0
Towing dir: 0° Wire out : 130 m Speed : 3.2 kn
Sorted : 80 Total catch: 79.52 Catch/hour: 162.90

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Cheimerius 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 caerulaurea | 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 | |
| Total | 162.90 | | 100.00 | |

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 Lon E 44°50.24
TIME :23:03:37 23:23:10 19.6 (min) Purpose : 1
LOG : 9635.67 9636.88 1.2 Region : 7510
FDEPTH: 5 5 Gear cond.: 0
BDEPTH: 32 32 Validity : 0
Towing dir: 0° Wire out : 140 m Speed : 3.7 kn
Sorted : 1 Total catch: 1.38 Catch/hour: 4.24

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Lon E 44°51.01
TIME :23:55:15 23:58:42 3.5 (min) Purpose : 1
LOG : 9639.00 9639.21 0.2 Region : 7510
FDEPTH: 10 10 Gear cond.: 0
BDEPTH: 31 31 Validity : 0
Towing dir: 0° Wire out : 150 m Speed : 3.6 kn
Sorted : 100 Total catch: 337.44 Catch/hour: 5868.52

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Lon E 44°45.04
TIME :03:23:20 03:43:04 19.7 (min) Purpose : 1
LOG : 9654.53 9655.58 1.1 Region : 7510
FDEPTH: 36 36 Gear cond.: 0
BDEPTH: 36 36 Validity : 0
Towing dir: 0° Wire out : 120 m Speed : 3.2 kn
Sorted : 34 Total catch: 1036.05 Catch/hour: 3150.68

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 |
| Sphyraena 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 Lon E 44°40.34
TIME :05:49:39 06:20:13 30.6 (min) Purpose : 1
LOG : 9670.12 9671.66 1.5 Region : 7510
FDEPTH: 25 27 Gear cond.: 0
BDEPTH: 25 27 Validity : 0
Towing dir: 0° Wire out : 100 m Speed : 3.0 kn
Sorted : 14 Total catch: 14.00 Catch/hour: 27.49

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 latimanus | 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 Lon E 44°30.40
TIME :09:20:24 09:50:21 30.0 (min) Purpose : 1
LOG : 9697.19 9698.86 1.7 Region : 7510
FDEPTH: 32 35 Gear cond.: 0
BDEPTH: 32 35 Validity : 0
Towing dir: 0° Wire out : 115 m Speed : 3.3 kn
Sorted : 11 Total catch: 10.72 Catch/hour: 21.44

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |

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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Decapterus kurroides | 18.25 | 197 | 56.98 | 64 |
| Upeneus taeniopterus | 6.18 | 306 | 19.30 | 63 |
| Loligo duvauceli | 1.89 | 93 | 5.91 | |
| Zeus faber | 1.79 | 3 | 5.57 | 65 |
| Loligo forbesi | 1.49 | 8 | 4.66 | |
| Saurida undosquamis | 0.88 | 8 | 2.75 | |
| Sphyraena acutipinnis | 0.37 | 3 | 1.16 | |
| Torquigener hypselogenion | 0.32 | 99 | 1.00 | |
| Priacanthus hamrur | 0.29 | 3 | 0.92 | |
| LOLIGINIDAE | 0.24 | 8 | 0.75 | |
| Synodus CF dermatogenys | 0.13 | 3 | 0.42 | |
| Synodus sp. | 0.05 | 3 | 0.17 | |
| Upeneus cf vittatus | 0.05 | 3 | 0.17 | |
| Decapterus macrosoma | 0.05 | 3 | 0.17 | |
| Penaeus latisulcatus | 0.03 | 3 | 0.08 | |
| CARANGIDAE, juvenile | 0.00 | 3 | 0.01 | |
| Total | 32.03 | | 100.00 | |

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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Mustelus mosis | 14.07 | 4 | 25.95 | |
| Gymnocranius grandoculis | 12.96 | 2 | 23.91 | 67 |
| Seriola rivoliana | 10.05 | 14 | 18.53 | 66 |
| Abalistes stellatus | 8.64 | 6 | 15.94 | |
| Echeneis naucrates | 3.62 | 2 | 6.67 | |
| Pseudobalistes fuscus | 2.51 | 2 | 4.63 | |
| Tetrosomus concatenatus | 1.81 | 4 | 3.34 | |
| AMMODYTIDAE | 0.50 | 241 | 0.93 | |
| Sphyraena sp. | 0.06 | 12 | 0.11 | |
| Total | 54.21 | | 100.00 | |

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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Centrophorus moluccensis | 105.11 | 38 | 35.80 | |
| Chlorophthalmus sp. | 31.63 | 352 | 10.77 | |
| Rexea prometheoides | 28.23 | 190 | 9.61 | |
| Haliporoides triarthrus | 27.33 | 1329 | 9.31 | 69 |
| Taractichthys steindachneri | 19.32 | 4 | 6.58 | |
| Polymixia berndti | 13.71 | 108 | 4.67 | |
| Neoscopelus macrolepidotus | 12.91 | 661 | 4.40 | |
| Paratriacanthodes retrospinus | 11.31 | 196 | 3.85 | |
| S H R I M P S | 7.47 | 2503 | 2.54 | |
| Scorpaena sp. | 5.17 | 38 | 1.76 | |
| Chaunax sp. | 4.84 | 10 | 1.65 | |
| Metanephrops mozambicus | 3.70 | 66 | 1.26 | |
| Synagrops japonicus | 3.20 | 22 | 1.09 | |
| Priacanthus hamrur | 2.34 | 28 | 0.80 | |
| Neoepinnula orientalis | 2.20 | 16 | 0.75 | |
| Polymetme corythaeola | 2.06 | 54 | 0.70 | |
| Bathyclupea sp. | 1.70 | 88 | 0.58 | |
| Peristedion cf weberi | 1.60 | 104 | 0.55 | |
| Coloconger sp. | 1.30 | 10 | 0.44 | |
| Benthodesmus elongatus | 1.08 | 22 | 0.37 | |
| Histioteuthis sp. | 1.00 | 22 | 0.34 | |
| Xenolepidichthys dagleishi | 0.88 | 32 | 0.30 | |
| Caelorinchus braueri | 0.60 | 10 | 0.20 | |
| Pteraclis cf velifera | 0.54 | 6 | 0.18 | |
| Rossia sp. | 0.54 | 10 | 0.18 | |
| Etmopterus sentosus | 0.44 | 20 | 0.15 | |
| Tetradonthidae | 0.42 | 6 | 0.14 | |
| Ostracoberyx dorygenys | 0.42 | 6 | 0.14 | |
| Malacocephalus laevis | 0.40 | 10 | 0.14 | |
| Gymnoscopelus sp. | 0.40 | 6 | 0.14 | |
| Gonorhynchus sp. | 0.26 | 6 | 0.09 | |
| Hymenocephalus italicus | 0.26 | 44 | 0.09 | |
| Halieutaea sp. B | 0.22 | 16 | 0.08 | |
| GALATHEIDAE | 0.22 | 10 | 0.08 | |
| Heterocarpus ensifer | 0.22 | 16 | 0.08 | |
| Symphurus ocellatus | 0.12 | 10 | 0.04 | |
| Lepidotrigla '2 dark blotches' | 0.10 | 10 | 0.03 | |
| Heterocarpus tricarinatus | 0.10 | 6 | 0.03 | |
| Lophiodes sp. | 0.10 | 6 | 0.03 | |
| Zenion sp. | 0.06 | 6 | 0.02 | |
| Brama orcini | 0.06 | 10 | 0.02 | |
| Total | 293.59 | | 100.00 | |

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

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

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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dasyatis sp. | 57.48 | 2 | 60.20 | |
| Squatina africana | 19.23 | 4 | 20.14 | 74 |
| Carangoides caeruleopinnatus | 14.83 | 34 | 15.53 | 72 |
| Nemipterus japonicus | 2.68 | 30 | 2.80 | 71 |
| Sphyraena forsteri | 0.69 | 2 | 0.73 | 73 |
| Argyrops filamentosus | 0.26 | 2 | 0.27 | 70 |
| Loligo duvauceli | 0.16 | 18 | 0.17 | |
| Tetrosomus concatenatus | 0.12 | 2 | 0.12 | |
| Gazza minuta | 0.02 | 2 | 0.02 | |
| Upeneus sp. | 0.02 | 2 | 0.02 | |
| Total | 95.48 | | 100.00 | |

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 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Trichiurus lepturus | 144.49 | 1743 | 41.68 | 75 |
| Rexea prometheoides | 109.22 | 882 | 31.50 | |
| Polysteganus coeruleopunctatus | 19.64 | 18 | 5.67 | 77 |
| Parazen pacificus | 16.83 | 16 | 4.86 | |
| Satyrichthys adeni | 15.43 | 16 | 4.45 | |
| Apogon sp. | 9.82 | 244 | 2.83 | |
| Chaunax sp. | 8.02 | 50 | 2.31 | |
| Citharoides macrolepis | 5.61 | 42 | 1.62 | |
| Chlorophthalmus punctatus | 4.11 | 74 | 1.19 | |
| Champsodon capensis | 2.91 | 735 | 0.84 | |
| Poecilopsetta zanzibarensis | 1.70 | 36 | 0.49 | |
| Lepidotrigla sp. | 1.22 | 6 | 0.35 | |
| Peristedion weberi | 1.10 | 44 | 0.32 | |
| Coloconger sp. | 1.02 | 12 | 0.29 | |
| Small shrimps | 1.00 | 301 | 0.29 | |
| Owstonia weberi | 0.96 | 4 | 0.28 | |
| Synchiropus monacanthus | 0.80 | 2 | 0.23 | |
| OMMASTREPHIDAE | 0.62 | 8 | 0.18 | |
| Polymixia berndti | 0.38 | 6 | 0.11 | |
| Hoplostethus atlanticus | 0.36 | 8 | 0.10 | |
| Sepia sp. | 0.26 | 30 | 0.08 | |
| Holohalaelurus sp. | 0.24 | 2 | 0.07 | 76 |
| Neobythides cf somaliaensis | 0.22 | 6 | 0.06 | |
| Zenion sp. | 0.20 | 72 | 0.06 | |
| Synagrops japonicus | 0.18 | 2 | 0.05 | |
| Scyllarus batei | 0.12 | 10 | 0.03 | |
| Neobythites sp. | 0.10 | 2 | 0.03 | |
| Rossia sp. | 0.08 | 2 | 0.02 | |
| Setarches guentheri | 0.02 | 2 | 0.01 | |
| Total | 346.67 | | 100.00 | |

| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Polysteganus coeruleopunctatus | 59.48 | 76 | 24.18 | 87 |
| Pliotrema 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 |
| Trichiurus lepturus | 7.45 | 116 | 3.03 | |
| Sphyraena 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 | |
| Histiopterus 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: 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 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Lutjanus bohar | 110.91 | 22 | 45.17 | 78 |
| Lethrinus 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 | |
| Gymnocranius grandoculis | 3.37 | 13 | 1.37 | 0 |
| Lutjanus gibbus | 3.31 | 4 | 1.35 | |
| Lutjanus fulviflamma | 3.24 | 9 | 1.32 | 82 |
| Caesio caerulaurea | 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 l | 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 | |
| Gymnocranius 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 ittodai | 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: PT 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| TRIPTERYGIIDAE | 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

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 | | |
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Decapterus kurroides | 45.16 | 297 | 43.14 | 93 |
| Squalus megalops | 35.70 | 91 | 34.11 | |
| Sphyraena acutipinnis | 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 | |
| Satyrichthys 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| MYCTOPHIDAE | 44.70 | 3779 | 37.46 | |
| Squalus megalops | 26.72 | 39 | 22.39 | |
| Pliotrema 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 | |
| Gonorhynchus gonorhynchus | 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 | |
| Neoepinnula orientalis | 1.71 | 12 | 1.43 | |
| Trichiurus lepturus | 1.10 | 8 | 0.92 | |
| Chirocentrodon bleekerianus | 0.75 | 146 | 0.63 | |
| Cubiceps 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 | |
| Oplophoris 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Pliotrema 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 | |
| Neoepinnula orientalis * | 0.72 | 4 | 1.02 | |
| Solenocera sp. | 0.70 | 33 | 1.00 | |
| Polymixia berndti | 0.65 | 16 | 0.91 | |
| Trichiurus 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 doliatus | 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 | |
| Halieutaea 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 | |
| OGCOCEPHALIDAE | 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: PT NO: 4 POSITION:Lat S 18°26.52

| start | stop | duration | | | Lon | E 43°40.14 |
|---|---|---|---|---|---|---|
| TIME :10:36:38 | 11:06:15 | 29.6 (min) | Purpose | : 1 | | |
| LOG : 1049.53 | 1051.19 | 1.7 | Region | : 7510 | | |
| FDEPTH: 0 | 0 | | Gear cond.: | 0 | | |
| BDEPTH: 718 | 826 | | Validity | : 0 | | |
| Towing dir: 0° | Wire out | : 150 m | Speed | : 3.4 kn | | |
| Sorted : 0 | Total catch: | 0.08 | Catch/hour: | 0.16 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | | | Lon | E 43°44.52 |
|---|---|---|---|---|---|---|
| TIME :17:32:39 | 18:03:55 | 31.3 (min) | Purpose | : 1 | | |
| LOG : 1093.62 | 1095.21 | 1.6 | Region | : 7510 | | |
| FDEPTH: 226 | 224 | | Gear cond.: | 0 | | |
| BDEPTH: 226 | 224 | | Validity | : 0 | | |
| Towing dir: 0° | Wire out | : 590 m | Speed | : 3.0 kn | | |
| Sorted : 72 | Total catch: | 71.58 | Catch/hour: | 137.39 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Diaphus effulgens | 28.98 | 1449 | 21.10 | |
| Squalus megalops | 18.23 | 23 | 13.27 | |
| Apogon apogonides | 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 | |
| Coelorinchus cf carnifer | 5.05 | 186 | 3.67 | |
| ARISTEIDAE | 4.36 | 482 | 3.17 | |
| Aristeus antennatus | 4.22 | 154 | 3.07 | |
| Neoepinnula 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 | |
| Uroconger 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 | |
| PERISTEDIIDAE | 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 | |
| Halieutaea fitzsimonsi | 0.17 | 2 | 0.13 | |
| Squilla sp. | 0.15 | 6 | 0.11 | |
| Parapandalus spinifer | 0.13 | 19 | 0.10 | |
| Parapriacanthus ransonneti | 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 | | | Lon | E 43°36.57 |
|---|---|---|---|---|---|---|
| TIME :06:43:28 | 07:03:17 | 19.8 (min) | Purpose | : 1 | | |
| LOG : 1255.46 | 1256.53 | 1.1 | Region | : 7510 | | |
| FDEPTH: 38 | 40 | | Gear cond.: | 0 | | |
| BDEPTH: 38 | 40 | | Validity | : 0 | | |
| Towing dir: 0° | Wire out | : 120 m | Speed | : 3.2 kn | | |
| Sorted : 10 | Total catch: | 9.65 | Catch/hour: | 29.21 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| JELLYFISH | 24.73 | 869 | 84.66 | |
| Nemipterus bipunctatus | 2.66 | 42 | 9.12 | 95 |
| 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 Lon E 43°31.04
TIME :13:18:06 13:48:45 30.7 (min) Purpose : 1
LOG : 1312.32 1313.85 1.5 Region : 7510
FDEPTH: 59 58 Gear cond.: 0
BDEPTH: 59 58 Validity : 0
Towing dir: 0° Wire out : 160 m Speed : 3.0 kn
Sorted : 14 Total catch: 14.41 Catch/hour: 28.21

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Loxodon macrorhinus | 12.92 | 6 | 45.79 | |
| Carangoides coeruleopinnatus | 3.41 | 16 | 12.07 | 97 |
| Gymnocranius griseus | 3.09 | 14 | 10.96 | 98 |
| Scomberomorus commerson | 2.62 | 2 | 9.30 | 99 |
| Balistes capriscus | 2.08 | 4 | 7.35 | |
| Nemipterus japonicus | 1.35 | 16 | 4.79 | 96 |
| 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 Lon E 43°50.12
TIME :13:23:20 13:53:43 30.4 (min) Purpose : 1
LOG : 1476.67 1478.22 1.5 Region : 7510
FDEPTH: 43 45 Gear cond.: 0
BDEPTH: 43 45 Validity : 0
Towing dir: 0° Wire out : 145 m Speed : 3.1 kn
Sorted : 40 Total catch: 39.95 Catch/hour: 78.87

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Upeneus moluccensis | 28.13 | 1125 | 35.67 | |
| Scomberomorus commerson | 26.85 | 6 | 34.04 | 102 |
| JELLYFISH | 7.01 | 2 | 8.89 | |
| Abalistes stellatus | 5.82 | 8 | 7.38 | |
| Nemipterus japonicus | 3.06 | 57 | 3.88 | 100 |
| 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 | 101 |
| Saurida undosquamis | 0.55 | 14 | 0.70 | |
| Sepia orbignyana | 0.45 | 2 | 0.58 | |
| Pseudalutarius nasicornis | 0.12 | 2 | 0.15 | |
| Lagocephalus sceleratus | 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 Lon E 43°55.95
TIME :18:45:21 19:16:46 31.4 (min) Purpose : 1
LOG : 1522.52 1524.06 1.5 Region : 7510
FDEPTH: 39 39 Gear cond.: 0
BDEPTH: 39 39 Validity : 0
Towing dir: 0° Wire out : 120 m Speed : 2.9 kn
Sorted : 72 Total catch: 72.49 Catch/hour: 138.47

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Upeneus moluccensis | 103.34 | 3203 | 74.63 | |
| Gazza minuta | 9.57 | 638 | 6.91 | |
| Nemipterus japonicus | 4.39 | 122 | 3.17 | |
| Herklotsichthys quadrimaculat. | 4.30 | 96 | 3.10 | 103 |
| Saurida tumbil | 4.15 | 27 | 2.99 | |
| Decapterus macrosoma | 2.35 | 69 | 1.70 | 105 |
| Saurida undosquamis | 2.27 | 69 | 1.64 | |
| Sphyraena 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 | 104 |
| Apogon cf quekettii | 0.74 | 96 | 0.54 | |
| Apogon nitidus | 0.55 | 69 | 0.40 | |
| Upeneus bensasi | 0.52 | 32 | 0.37 | |
| Psettodes 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 | |
| Sphyraena chrysotaenia | 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 Lon E 44°6.07
TIME :21:47:51 22:18:18 30.5 (min) Purpose : 1
LOG : 1544.85 1546.69 1.8 Region : 7510
FDEPTH: 0 0 Gear cond.: 0
BDEPTH: 31 33 Validity : 0
Towing dir: 0° Wire out : 120 m Speed : 3.6 kn
Sorted : 13 Total catch: 12.68 Catch/hour: 24.99

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Gazza minuta | 9.54 | 357 | 38.17 | |
| Scomberomorus lineolatus | 4.55 | 2 | 18.22 | 108 |
| Pellona ditchela | 3.31 | 110 | 13.25 | |
| Chirocentrus dorab | 2.96 | 14 | 11.83 | |
| Rastrelliger kanagurta | 2.11 | 18 | 8.44 | 106 |
| Selar crumenophthalmus | 0.89 | 8 | 3.55 | 107 |
| J E L 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 | |
| Sphyraena chrysotaenia | 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 Lon E 43°56.20
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Lon E 43°58.83
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Caranx (Gnathanodon) speciosus | 44.85 | 7 | 59.58 | 109 |
| Scomberoides commersonianus | 8.50 | 2 | 11.29 | 110 |
| Abalistes stellatus | 7.55 | 10 | 10.03 | |
| Upeneus moluccensis | 7.43 | 187 | 9.86 | 112 |
| Nemipterus japonicus | 2.29 | 59 | 3.04 | |
| Scomberomorus commerson | 2.17 | 2 | 2.88 | 111 |
| 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 Lon E 44°10.37
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Alepes kleinii | 33.46 | 308 | 82.06 | 114 |
| Abalistes stellatus | 4.43 | 4 | 10.86 | |
| Carangoides coeruleopinnatus | 0.80 | 2 | 1.96 | 113 |
| 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 | 115 |
| 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 Lon E 44°9.37
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Lutjanus sanguineus | 77.19 | 22 | 23.23 | 116 |
| Scomberomorus commerson | 53.54 | 16 | 16.12 | 119 |
| Epinephelus coioides | 35.17 | 10 | 10.59 | 123 |
| Sphyraena putnamie | 32.78 | 40 | 9.87 | 121 |
| Diagramma centurio | 26.92 | 8 | 8.10 | |
| Lutjanus argentimaculatus | 19.17 | 4 | 5.77 | 117 |
| Caranx (Caranx) sexfasciatus | 17.28 | 10 | 5.20 | 125 |
| Tripterodon orbis | 14.70 | 14 | 4.43 | 118 |
| Alectis ciliaris | 13.13 | 4 | 3.95 | |
| Carangoides coeruleopinnatus | 13.11 | 54 | 3.95 | 126 |
| Scarus ghobban | 8.30 | 2 | 2.50 | |
| Carangoides chrysophrys | 4.05 | 4 | 1.22 | |
| Lethrinus lentjan | 2.56 | 2 | 0.77 | 122 |
| Gerres filamentosus | 2.54 | 12 | 0.77 | |
| Canthigaster jantinoptera | 2.34 | 159 | 0.71 | |
| Abalistes stellatus | 2.26 | 2 | 0.68 | |
| Ostracion cubicus | 1.89 | 2 | 0.57 | |
| Argyrops spinifer | 1.77 | 4 | 0.53 | 120 |
| 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 Lon E 44°11.21
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Lutjanus sanguineus | 36.79 | 10 | 26.46 | 130 |
| Carangoides coeruleopinnatus | 30.06 | 316 | 21.61 | 133 |
| Diagramma centurio | 27.23 | 8 | 19.58 | 128 |
| Scomberomorus commerson | 11.03 | 6 | 7.93 | 127 |
| 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 | 132 |
| Lethrinus olivaceus | 3.81 | 2 | 2.74 | 129 |
| Ostracion cubicus | 3.06 | 2 | 2.20 | |
| Gymnocranius griseus | 1.60 | 6 | 1.15 | |
| Apogon 'black spot' | 1.35 | 632 | 0.97 | |
| Sphyraena putnamie | 0.68 | 2 | 0.49 | |
| Decapterus kurroides | 0.51 | 4 | 0.36 | 131 |
| Scolopsis bimaculatus | 0.27 | 2 | 0.20 | |
| Sphyraena forsteri | 0.23 | 2 | 0.17 | |
| Parupeneus nansen | 0.16 | 2 | 0.11 | |
| Canthigaster jantinoptera | 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 Lon E 44°23.55
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Sphyraena chrysotaenia | 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 | 0 |
| Penaeus semisulcatus | 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 ditchela | 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 | |
| Pomadasys 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 Lon E 44°16.40
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Selar crumenophthalmus | 7.27 | 54 | 44.14 | 134 |
| Small squids unident. | 1.45 | 165 | 8.83 | |
| Leiognathus lineolatus | 1.37 | 34 | 8.34 | |
| Megalaspis cordyla | 1.35 | 6 | 8.22 | |
| Sphyraena putnamie | 1.21 | 4 | 7.38 | |
| Herklotsichthys quadrimaculat. | 1.14 | 26 | 6.89 | |
| Sphyraena chrysotaenia | 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 | |

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 Lon E 44°43.65
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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | 136 |
| Scomberomorus commerson | 10.64 | 5 | 3.67 | 135 |
| Loxodon macrorhinus | 5.55 | 2 | 1.92 | |
| Pseudalutarius nasicornis | 2.73 | 382 | 0.94 | |
| Selar crumenophthalmus | 2.22 | 14 | 0.77 | 137 |
| 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 | |
| Sphyraena 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 | |

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 Lon E 45°52.66
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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Trichiurus 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 | |
| Sternoptyx sp. | 0.00 | 1 | 0.03 | |
| Total | 4.64 | | 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 Lon E 46°1.51
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

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Pristipomoides multidens | 17.66 | 4 | 40.33 | 140 |
| Rexea prometheoides | 5.66 | 74 | 12.92 | |
| Apogon 'black spot' | 5.19 | 1153 | 11.85 | |
| Ibacus novemdentatus | 3.75 | 27 | 8.56 | |
| Polysteganus coeruleopunctatus | 3.36 | 2 | 7.66 | 139 |
| Squalus megalops | 3.32 | 4 | 7.58 | |
| Sphyraena acutipinnis | 1.78 | 10 | 4.06 | 138 |
| Satyrichthys adeni | 1.01 | 2 | 2.32 | |
| Ommastrephes bartrami | 0.49 | 16 | 1.11 | |
| Penaeus 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 cg 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: 45
DATE :19.09.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 14°39.24
start stop duration Lon E 47°33.86
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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| J E L L Y F I S H | 16260.16 | 0 | 100.00 | |
| Decapterus punctatus | 0.00 | 3 | 0.00 | |
| Carangoides sp. | 0.00 | 3 | 0.00 | |
| Total | 16260.16 | | 100.00 | |

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 | | Lon | E 47°26.87 |
|---|---|---|---|---|---|
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Eurypegasus 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: 47
DATE :19/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°26.30

| start | stop | duration | | Lon | E 47°19.04 |
|---|---|---|---|---|---|
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| OPLOPHORIDAE | 0.18 | 732 | 2.35 | |
| Cubiceps pauciradiatus | 0.06 | 2 | 0.71 | |
| Squilla sp. | 0.04 | 185 | 0.58 | |
| SCYLLARIDAE | 0.03 | 63 | 0.32 | |
| Balistididae 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: 48
DATE :20/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°1.41

| start | stop | duration | | Lon | E 47°1.98 |
|---|---|---|---|---|---|
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| N O C A T C H | 0.00 | 0 | 0.00 | |

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 | | Lon | E 47°28.26 |
|---|---|---|---|---|---|
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Etelis coruscans | 107.59 | 101 | 37.09 | 141 |
| Etelis carbunculus | 63.94 | 14 | 22.04 | 142 |
| Glass sponge | 58.99 | 0 | 20.33 | |
| Epinephelus magniscuttis | 20.06 | 2 | 6.91 | |
| Polysteganus coeruleopunctatus | 15.69 | 17 | 5.41 | 144 |
| Pristipomoides filamentosus | 13.21 | 14 | 4.55 | 143 |
| Pristipomoides argyrogrammicus | 5.69 | 26 | 1.96 | |
| Zenion sp. | 1.06 | 566 | 0.37 | |
| Satyrichthys 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 | |
| Ibacus novemdentatus | 0.24 | 5 | 0.08 | |
| Rexea prometheoides | 0.14 | 14 | 0.05 | |
| Grammatonotus sp. 'plaintail' | 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 | |
| 'Undidenfied 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 | |
| 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 | |

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 50
DATE :20/09/2009 GEAR TYPE: PT NO: 4 POSITION:Lat S 14°6.77

| start | stop | duration | | Lon | E 47°39.72 |
|---|---|---|---|---|---|
| TIME :15:54:40 | 16:25:27 | 30.8 (min) | Purpose | : 1 | |
| LOG : 2485.34 | 2487.17 | 1.8 | Region | : 7510 | |
| FDEPTH: 5 | 5 | | Gear cond.: | 0 | |
| BDEPTH: 366 | 538 | | Validity | : 0 | |
| Towing dir: 0° | Wire out | : 140 m | Speed | : 3.5 kn | |
| Sorted : 15 | Total catch: 15.24 | | Catch/hour: | 29.70 | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sphyraena 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 | |
| Dipterygonotus balteatus | 0.06 | 8 | 0.20 | |
| Ommastrephes bartrami | 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

| start | stop | duration | | Lon | E 47°41.08 |
|---|---|---|---|---|---|
| TIME :21:20:26 | 21:50:49 | 30.4 (min) | Purpose | : 1 | |
| LOG : 2527.90 | 2529.65 | 1.8 | Region | : 7510 | |
| FDEPTH: 5 | 5 | | Gear cond.: | 0 | |
| BDEPTH: 432 | 383 | | Validity | : 0 | |
| Towing dir: 0° | Wire out | : 140 m | Speed | : 3.5 kn | |
| Sorted : 1 | Total catch: 1.03 | | Catch/hour: | 2.03 | |

| SPECIES | CATCH/HOUR weight | 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 mcclellandi | 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

| start | stop | duration | | Lon | E 47°51.43 |
|---|---|---|---|---|---|
| TIME :04:28:03 | 04:58:36 | 30.6 (min) | Purpose | : 1 | |
| LOG : 2573.75 | 2575.36 | 1.6 | Region | : 7510 | |
| FDEPTH: 5 | 5 | | Gear cond.: | 0 | |
| BDEPTH: 365 | 820 | | Validity | : 0 | |
| Towing dir: 0° | Wire out | : 140 m | Speed | : 3.2 kn | |
| Sorted : 0 | Total catch: 0.17 | | Catch/hour: | 0.33 | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Leptocephalus | 0.12 | 57 | 0.00 | |
| APOGONIDAE | 0.00 | 8 | 0.00 | |
| Juvenile flatfish | 0.00 | 2 | 0.00 | |
| Taeniopsetta 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 bartrami | 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

| start | stop | duration | | Lon | E 47°34.12 |
|---|---|---|---|---|---|
| TIME :15:35:06 | 16:05:19 | 30.2 (min) | Purpose | : 1 | |
| LOG : 2620.28 | 2621.67 | 1.4 | Region | : 7510 | |
| FDEPTH: 5 | 5 | | Gear cond.: | 0 | |
| BDEPTH: 2264 | 2446 | | Validity | : 0 | |
| Towing dir: 0° | Wire out | : 140 m | Speed | : 2.8 kn | |
| Sorted : 5 | Total catch: 5.04 | | Catch/hour: | 10.00 | |

| SPECIES | CATCH/HOUR weight | 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 bartrami | 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 | |
| Loligo sp. | 0.00 | 16 | 0.00 | |
| Fistularia sp. | 0.00 | 8 | 0.00 | |
| Invertebrate | 0.00 | 8 | 0.00 | |
| Total | 10.00 | | 100.00 | |

R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 54
DATE :22/09/2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 13°27.49

start stop duration Lon E 48°8.42
TIME :05:06:11 05:23:21 17.2 (min) Purpose : 1
LOG : 2733.58 2734.78 1.2 Region : 7510
FDEPTH: 20 28 Gear cond.: 0
BDEPTH: 46 51 Validity : 0
Towing dir: 0° Wire out : 80 m Speed : 4.2 kn
Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

| SPECIES | CATCH/HOUR weight | 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
start stop duration Lon E 48°7.87
TIME :05:45:47 06:16:27 30.7 (min) Purpose : 1
LOG : 2735.91 2737.31 1.4 Region : 7510
FDEPTH: 50 45 Gear cond.: 0
BDEPTH: 50 45 Validity : 0
Towing dir: 0° Wire out : 150 m Speed : 2.8 kn
Sorted : 75 Total catch: 74.97 Catch/hour: 146.76

| SPECIES | CATCH/HOUR weight | 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 | |
| Thenus orientalis | 0.35 | 2 | 0.24 | |
| Saurida undosquamis | 0.33 | 0 | 0.23 | |
| MULLIDAE | 0.22 | 20 | 0.15 | |
| Canthigaster jantinoptera | 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
start stop duration Lon E 48°13.18
TIME :09:42:58 10:12:05 29.1 (min) Purpose : 1
LOG : 2760.49 2762.05 1.6 Region : 7510
FDEPTH: 24 27 Gear cond.: 0
BDEPTH: 24 27 Validity : 0
Towing dir: 0° Wire out : 85 m Speed : 3.2 kn
Sorted : 136 Total catch: 135.53 Catch/hour: 279.16

| SPECIES | CATCH/HOUR weight | 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 | |
| Sphyraena 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 | |
| Gnathophis capensis | 0.10 | 4 | 0.04 | |
| Nemipterus bipunctatus | 0.10 | 2 | 0.04 | |
| Fistularia commersonii | 0.10 | 4 | 0.04 | |
| Pomadasys 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Psettodes 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 | |
| Ophiuroidae | 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 effulgens | 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 sceleratus | 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Sphyraena obtusata | 0.12 | 2 | 1.26 | |
| Leptocephalus | 0.10 | 48 | 1.05 | |
| Juvenile flatfish | 0.08 | 12 | 0.84 | |
| Parapriacanthus 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 | |
| Sphyraena 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 | |
| Ibacus 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Ophiuroidae | 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 | |
| Neobythides cf somaliaensis | 0.02 | 2 | 0.06 | |
| Rossia macrosomia | 0.02 | 2 | 0.06 | |
| SCORPAENIDAE | 0.01 | 2 | 0.02 | |
| Polyipnus indicus | 0.01 | 4 | 0.02 | |
| Sepiola 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Caranx ignobilis | 36.26 | 4 | 49.97 | |
| Sphyraena 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 sceleratus | 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 Region : 7510
FDEPTH: 342 344 Gear cond.: 0
BDEPTH: 342 344 Validity : 0
Towing dir: 0° Wire out : 900 m Speed : 3.2 kn
Sorted : 14 Total catch: 13.79 Catch/hour: 27.23

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Centrophorus moluccensis | 8.98 | 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 | |
| Etmopterus 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 | |
| Oplophoris gracilirostris | 0.10 | 59 | 0.36 | |
| Margrethia sp. | 0.10 | 34 | 0.36 | |
| Cubiceps sp. | 0.10 | 4 | 0.36 | |
| Neoepinnula 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 | |

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 kn
Sorted : 25 Total catch: 25.50 Catch/hour: 64.39

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Dalatias licha | 45.45 | 5 | 70.59 | |
| Zenion sp | 7.80 | 942 | 12.12 | |
| Satyrichthys 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 | |
| Poecilopsetta 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 | |
| Oplophoris gracilirostris | 0.00 | 3 | 0.00 | |
| Total | 64.39 | | 100.00 | |

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 kn
Sorted : 5 Total catch: 4.80 Catch/hour: 9.74

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |

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

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| 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 | |
| Abalistes 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 | |
| Sphyraena 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 | |
| Sphyraena 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 mcclellandi | 0.04 | 55 0.04 | |
| Loligo vulgaris | 0.04 | 4 0.04 | |
| Leiognathus elongatus | 0.04 | 8 0.04 | |
| Paramonacanthus pusillus | 0.04 | 2 0.04 | |
| Sand doller | 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 kn
Sorted : 6 Total catch: 6.27 Catch/hour: 12.19

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Gazza minuta | 3.01 | 95 24.72 | |
| Decapterus kurroides | 1.79 | 78 14.67 | 155 |
| Sphyraena 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 | |
| Herklotsichthys quadrimaculat. | 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 kn
Sorted : 220 Total catch: 219.89 Catch/hour: 435.71

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Leiognathus leuciscus | 91.55 | 6523 21.01 | |
| Hypolophus 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 | |
| Psettodes erumei | 8.42 | 6 1.93 | |
| Herklotsichthys quadrimaculat. | 7.37 | 254 1.69 | |
| Carangoides malabaricus | 6.90 | 135 1.58 | |
| Sphyraena pinguis | 5.94 | 111 1.36 | |
| Sphyrna lewini | 5.45 | 2 1.25 | 161 |
| Upeneus cf vittatus | 4.20 | 87 0.96 | |
| Pomadasys 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 | |
| Leiognathus equulus | 0.79 | 16 0.18 | |
| Pomadasys 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 kn
Sorted : 1 Total catch: 0.72 Catch/hour: 1.42

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| 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 L Y F I S H | 0.14 | 0 9.76 | |
| Brama orcini | 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 effulgens | 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 Lon E 48°36.88
TIME :08:15:27 08:45:36 30.2 (min) Purpose : 1
LOG : 3257.29 3258.82 1.5 Region : 7510
FDEPTH: 54 60 Gear cond.: 0
BDEPTH: 54 60 Validity : 0
Towing dir: 0° Wire out : 160 m Speed : 3.0 kn
Sorted : 85 Total catch: 84.68 Catch/hour: 168.52

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| Himantura uarnak | 99.50 | 2 59.05 | 168 |
| Himantura cf gerrardi | 49.75 | 2 29.52 | 167 |
| Sphyraena 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 | |
| Metapenaeus 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: PT NO: 4 POSITION:Lat S 12°37.45
start stop duration Lon E 48°35.25
TIME :15:25:08 15:55:13 30.1 (min) Purpose : 1
LOG : 3316.13 3317.89 1.8 Region : 7510
FDEPTH: 0 0 Gear cond.: 0
BDEPTH: 52 56 Validity : 0
Towing dir: 0° Wire out : 140 m Speed : 3.5 kn
Sorted : 150 Total catch: 149.54 Catch/hour: 298.38

| SPECIES | CATCH/HOUR weight | % OF TOT. C numbers | SAMP |
|---|---|---|---|
| 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 |
| Stolephorus sp. | 3.23 | 116 1.08 | |
| Sphyraena 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 | | Lon | E 48°15.78 |
|---|---|---|---|---|---|
| TIME :19:10:18 | 19:41:48 | 31.5 (min) | Purpose : 1 | | |
| LOG : 3343.63 | 3345.10 | 1.5 | Region : 7510 | | |
| FDEPTH: 417 | 416 | | Gear cond.: 0 | | |
| BDEPTH: 417 | 416 | | Validity : 0 | | |
| Towing dir: 0° | Wire out : 1050 m | | Speed : 2.8 kn | | |
| Sorted : 26 | Total catch: 25.99 | | Catch/hour: 49.52 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Chlorophthalmus agassizi | 29.46 | 274 | 59.48 | |
| 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 | |
| Oplophoris gracilirostris | 0.27 | 128 | 0.54 | |
| Lophiodes insidiator | 0.25 | 2 | 0.50 | |
| Selachophidium guentheri | 0.19 | 6 | 0.38 | |
| Margrethia sp. | 0.17 | 29 | 0.35 | |
| Penaeopsis 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 | |
| Synchiropus 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 effulgens | 0.00 | 2 | 0.00 | |
| Halaelurus sp. | 0.00 | 2 | 0.00 | |
| Total | 49.52 | | 100.00 | |

| start | stop | duration | | Lon | E 48°10.32 |
|---|---|---|---|---|---|
| TIME :00:50:44 | 01:21:13 | 30.5 (min) | Purpose : 1 | | |
| LOG : 3369.96 | 3371.52 | 1.6 | Region : 7510 | | |
| FDEPTH: 662 | 661 | | Gear cond.: 0 | | |
| BDEPTH: 662 | 661 | | Validity : 0 | | |
| Towing dir: 0° | Wire out : 1520 m | | Speed : 3.1 kn | | |
| Sorted : 89 | Total catch: 89.15 | | Catch/hour: 175.49 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Bathyclupea 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 tricarinatus | 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 | 2.36 | 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 | |
| HALOSAURIDAE | 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 | |

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 | | Lon | E 48°13.70 |
|---|---|---|---|---|---|
| TIME :22:15:04 | 22:45:22 | 30.3 (min) | Purpose : 1 | | |
| LOG : 3358.59 | 3360.11 | 1.5 | Region : 7510 | | |
| FDEPTH: 556 | 552 | | Gear cond.: 0 | | |
| BDEPTH: 556 | 552 | | Validity : 0 | | |
| Towing dir: 0° | Wire out : 1300 m | | Speed : 3.0 kn | | |
| Sorted : 35 | Total catch: 34.98 | | Catch/hour: 69.24 | | |

| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Photichthys sp | 14.15 | 629 | 20.44 | |
| Urotrygon daviesi | 14.05 | 2 | 20.30 | |
| Etmopterus lucifer | 6.61 | 99 | 9.55 | |
| Centrophorus 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 | |
| Penaeopsis 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 | |
| Bathyclupea 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 | |
| Hymenocephalus sp. | 0.12 | 18 | 0.17 | |
| Lophiodes sp. | 0.12 | 2 | 0.17 | |
| Margrethia sp. | 0.08 | 10 | 0.11 | |
| GRAMMICOLEPIDIDAE | 0.08 | 2 | 0.11 | |
| Oplophoris 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 | |
| Argyropelecus 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 effulgens | 0.00 | 2 | 0.00 | |
| Diplophos taenia | 0.00 | 2 | 0.00 | |
| J E L 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

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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| OPHIDIIDAE | 1.55 | 4 | 2.19 | |
| Neoscopelus macrolepidotus | 1.53 | 29 | 2.16 | |
| Heterocarpus tricarinatus | 1.47 | 122 | 2.08 | |
| TRICHIURIDAE | 1.38 | 19 | 1.95 | |
| Neoepinnula 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: 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Scarrus blue chin | 24.00 | 4 | 30.84 | |
| Glass sponge | 23.61 | 2 | 30.33 | |
| Scarrus 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 | |
| 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 jantinoptera | 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: 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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 | |
| Oplophoris 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Sphyraena forsteri | 3307.01 | 7100 | 59.72 | 173 |
| Sphyraena helleri | 1455.35 | 3299 | 26.28 | 172 |
| Chelonia mydas | 442.80 | 7 | 8.00 | 170 |
| Himantura uarnak | 332.10 | 7 | 6.00 | 171 |
| 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| 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: 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 weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Unid. juvenile fishes | 0.02 | 17 | 0.00 | |
| J E L L Y F I S H | 0.00 | 8 | 0.00 | |

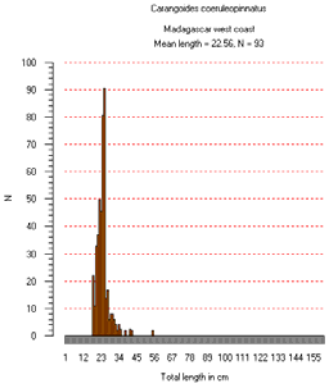
R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 82
DATE :01/10/2009 GEAR TYPE: BT NO: 21 POSITION:Lat S 11°53.19
start stop duration Lon E 49°17.55
TIME :19:25:10 19:42:36 17.4 (min) Purpose : 1
LOG : 3785.43 3786.36 0.9 Region : 7510
FDEPTH: 328 319 Gear cond.: 0
BDEPTH: 328 319 Validity : 0
Towing dir: 0° Wire out : 800 m Speed : 3.2 kn
Sorted : 89 Total catch: 89.39 Catch/hour: 307.71

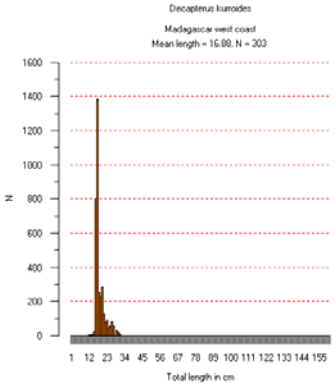
| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Glass sponge | 275.39 | 0 | 89.50 | |
| Laemonema globiceps | 5.27 | 124 | 1.71 | |
| Synagrops japonicus | 5.27 | 10 | 1.71 | |
| Symbolophorus evermanni | 5.27 | 826 | 1.71 | |
| G A S T R O P O D S | 2.89 | 31 | 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 | |
| Luciobrotula bartschi | 1.03 | 21 | 0.34 | |
| Acropoma sp. | 0.72 | 52 | 0.23 | |
| Oplophoris 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 | |
| Gnathophis sp. | 0.21 | 10 | 0.07 | |
| Platycephalus sp. | 0.21 | 52 | 0.07 | |
| Pontinus nigerimum | 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 | |
| Synchiropus 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 | |

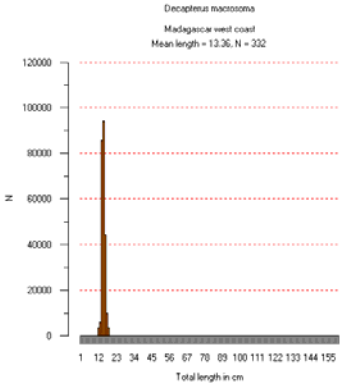
R/V Dr. Fridtjof Nansen SURVEY:2009408 STATION: 83
DATE :01/10/2009 GEAR TYPE: BT NO: 21 POSITION:Lat S 11°58.41
start stop duration Lon E 49°22.26
TIME :23:06:17 23:28:04 21.8 (min) Purpose : 1
LOG : 3807.39 3808.39 1.0 Region : 7510
FDEPTH: 453 455 Gear cond.: 0
BDEPTH: 453 455 Validity : 0
Towing dir: 0° Wire out : 1200 m Speed : 2.8 kn
Sorted : 16 Total catch: 16.43 Catch/hour: 45.25

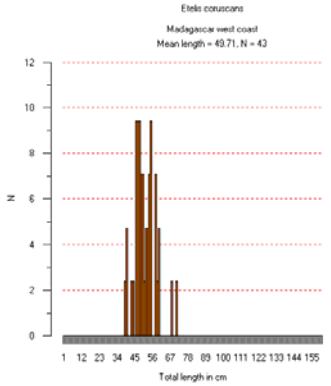
| SPECIES | CATCH/HOUR weight | numbers | % OF TOT. C | SAMP |
|---|---|---|---|---|
| Glass sponge | 19.01 | 0 | 42.01 | |
| Chlorophthalmus agassizi | 8.26 | 325 | 18.26 | |
| Starfish | 3.86 | 77 | 8.52 | |
| Etmopterus lucifer | 2.29 | 19 | 5.05 | |
| Zenion sp | 2.20 | 165 | 4.87 | |
| Diaphus watasei | 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 | |
| Luciobrotula 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 | |
| Poecilopsetta zanzibarensis | 0.03 | 3 | 0.06 | |
| Munida sp. | 0.03 | 14 | 0.06 | |
| Total | 45.25 | | 100.00 | |

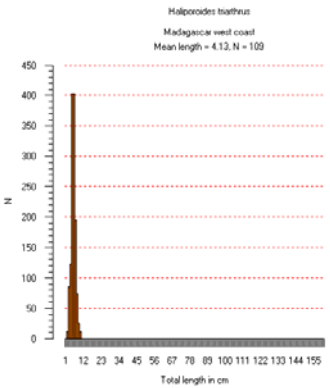
# ANNEX II. Length distribution of main species

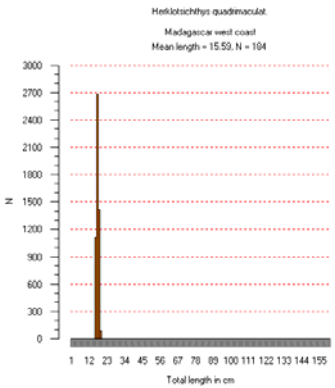


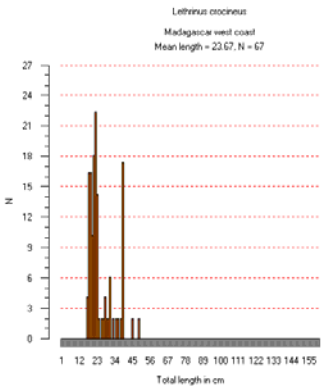



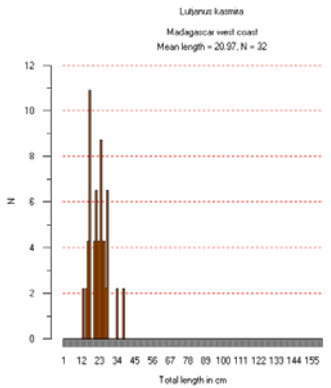



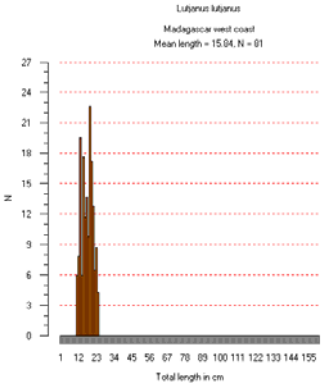



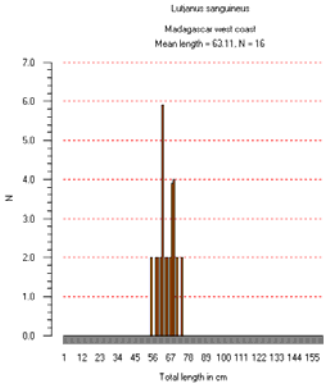



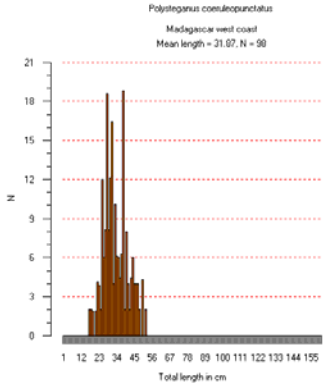



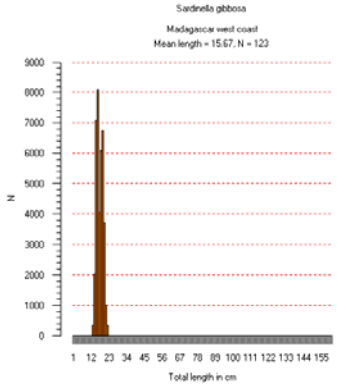



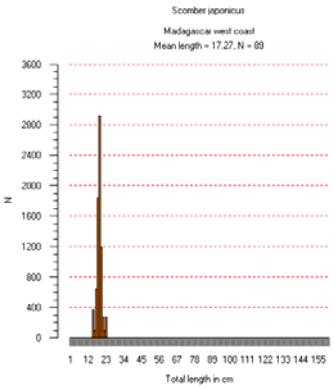



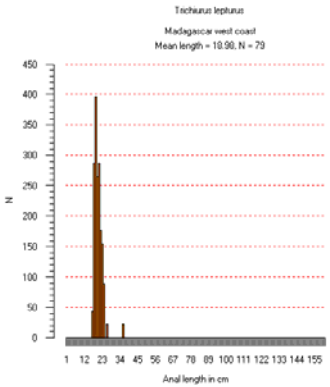

Lutjanus lutjanus
Madagascar west coast
Mean length = 15.94, N = 81
N
Total length in cm


Lutjanus sanguineus
Madagascar west coast
Mean length = 63.11, N = 16
N
Total length in cm


Polysteganus coeruleopunctatus
Madagascar west coast
Mean length = 31.07, N = 98
N
Total length in cm


Sardinella gibbosa
Madagascar west coast
Mean length = 15.67, N = 123
N
Total length in cm


Scomber japonicus
Madagascar west coast
Mean length = 17.27, N = 89
N
Total length in cm


Trichiurus lepturus
Madagascar west coast
Mean length = 19.90, N = 79
N
Anal length in cm

## 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 | 6.95º alongship |
| | 6.99º athwardship |
| Alongship offset | 0.11º |
| Athwardship offset | 0.04º |

**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 $m^2$, 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 IV. CTD, plankton and grab samples

| CTD station | Hydro-graphy | Phyto-plankton | Zoo-plankton | Grab |
|---|---|---|---|---|
| 898 | x | x | x | |
| 899 | x | x | x | |
| 900 | x | x | x | |
| 901 | x | x | x | |
| 902 | x | x | x | |
| 903 | x | x | x | |
| 904 | x | x | x | |
| 905 | x | x | x | |
| 906 | x | x | x | |
| 907 | x | x | x | |
| 908 | x | x | x | |
| 909 | x | x | x | |
| 910 | x | x | x | |
| 911 | x | x | x | |
| 912 | x | | | |
| 913 | x | | | |
| 914 | x | | | |
| 915 | x | x | x | |
| 916 | x | x | x | |
| 917 | x | x | x | |
| 918 | x | x | x | |
| 919 | x | x | x | |
| 920 | x | x | x | |
| 921 | x | | | |
| 922 | x | x | x | |
| 923 | x | | | |
| 924 | x | | | |
| 925 | x | | | |
| 926 | x | | | |
| 927 | x | | | |
| 928 | x | | | |
| 929 | x | | | |
| 930 | x | | | |
| 931 | x | x | x | |
| 932 | x | x | x | |
| 933 | x | x | x | |
| 934 | x | x | x | |
| 935 | x | x | x | |
| 936 | x | x | x | |
| 937 | x | x | x | |
| 938 | x | | | |
| 939 | x | x | x | |
| 940 | x | x | x | |
| 941 | x | x | x | |
| 942 | x | x | x | |
| 943 | x | | | |

| CTD station | Hydro-graphy | Phyto-plankton | Zoo-plankton | Grab |
|---|---|---|---|---|
| 944 | x | x | x | |
| 945 | x | x | x | |
| 946 | x | x | x | |
| 947 | x | | | |
| 948 | x | | | |
| 949 | x | | | |
| 950 | x | | | |
| 951 | x | | | |
| 952 | x | x | x | |
| 953 | x | x | x | x |
| 954 | x | x | x | |
| 955 | x | x | x | |
| 956 | x | x | x | |
| 957 | x | x | x | |
| 958 | x | x | x | |
| 959 | x | x | x | |
| 960 | x | x | x | |
| 961 | x | x | x | |
| 962 | x | x | x | |
| 963 | x | x | x | |
| 964 | x | x | x | |
| 965 | x | x | x | |
| 966 | x | | | |
| 967 | x | | | |
| 968 | x | | | |
| 969 | x | | | |
| 970 | x | | | |
| 971 | x | | | |
| 972 | x | | | |
| 973 | x | x | x | |
| 974 | x | x | x | |
| 975 | x | x | x | |
| 976 | x | x | x | |
| 977 | x | x | x | |
| 978 | x | x | x | |
| 979 | x | x | x | |
| 980 | x | | | |
| 981 | x | | | |
| 982 | x | | | |
| 983 | x | x | x | |
| 984 | x | x | x | |
| 985 | x | x | x | |
| 986 | x | x | x | |
| 987 | x | x | x | |
| 988 | x | x | x | |
| 989 | x | x | x | |

| CTD station | Hydro-graphy | Phyto-plankton | Zoo-plankton | Grab |
|---|---|---|---|---|
| 990 | x | | | |
| 991 | x | | | |
| 992 | x | | | |
| 993 | x | | | |
| 994 | x | | | |
| 995 | x | | | |
| 996 | x | | | |
| 997 | x | | | |
| 998 | x | | | |
| 999 | x | | | |
| 1000 | x | | | |
| 1001 | x | x | x | |
| 1002 | x | | | |
| 1003 | x | x | x | |
| 1004 | x | x | x | |
| 1005 | x | x | x | |
| 1006 | x | x | x | |
| 1007 | x | | | |
| 1008 | x | | | |
| 1009 | x | | | x |
| 1010 | x | | | x |
| 1011 | x | | | x |
| 1012 | x | | | x |
| 1013 | x | | | x |
| 1014 | x | | | x |
| 1015 | x | x | x | |
| 1016 | x | x | x | |
| 1017 | x | x | x | |
| 1018 | x | x | x | |
| 1019 | x | x | x | |
| 1020 | x | x | x | |
| 1021 | x | | | |
| 1022 | x | | | |
| 1023 | x | | | |
| 1024 | x | x | x | |
| 1025 | x | x | x | |
| 1026 | x | x | x | |
| 1027 | x | x | x | |
| 1028 | x | x | x | |
| 1029 | x | x | x | |
| 1030 | x | x | x | |
| 1031 | x | | | x |
| 1032 | x | | | |
| 1033 | x | | | x |
| 1034 | x | | | x |
| 1035 | x | | | |

| CTD station | Hydro-graphy | Phyto-plankton | Zoo-plankton | Grab |
|---|---|---|---|---|
| 1036 | x | | | |
| 1037 | x | | | x |
| 1038 | x | | | x |
| 1039 | x | | | x |
| 1040 | x | | | |
| 1041 | x | | | |
| 1042 | x | | | x |
| 1043 | x | | | x |
| 1044 | x | | | x |
| 1045 | x | | | x |
| 1046 | x | | | x |
| 1047 | x | | | |
| 1048 | x | | | x |
| 1049 | x | | | |
| 1050 | x | | | |
| 1051 | x | | | |
| 1052 | x | | | |
| 1053 | x | | | x |
| 1054 | x | | | x |
| 1055 | x | | | x |
| 1056 | x | | | |
| 1057 | x | | | x |
| 1058 | x | | | |
| 1059 | x | | | |
| 1060 | x | | | |
| 1061 | x | | | x |
| 1062 | x | | | |
| 1063 | x | | | x |
| 1064 | x | | | |
| 1065 | x | | | |
| 1066 | x | | | |
| 1067 | x | | | |
| 1068 | x | | | |
| 1069 | x | x | x | |
| 1070 | x | x | x | |
| 1071 | x | x | x | |
| 1072 | x | x | x | |
| 1073 | x | x | x | |
| 1074 | x | x | x | |
| 1075 | x | x | x | |
| 1076 | x | | | |
| 1077 | x | | | |
| 1078 | x | | | |
| 1079 | x | | | |

# ANNEX V. List of species for Isotope analyses

| Trawl station | code | Species | Length (cm) | Weight (g) | Sex |
|---|---|---|---|---|---|
| 4 | M001 | Pseudanthias cooperi | 15 | 48 | J |
| 4 | M002 | Pseudanthias cooperi | 15 | 50 | J |
| 4 | M003 | Pseudanthias cooperi | 15.5 | 60 | J |
| 4 | M004 | Pristotis cf. cyanostigma | 11.5 | 20 | J |
| 4 | M005 | Pristotis cf. cyanostigma | 11.5 | 23 | J |
| 4 | M006 | Pristotis cf. cyanostigma | 12 | 26 | J |
| 4 | M007 | Dascyllus trimaculatus | 10 | 29 | F |
| 4 | M008 | Dascyllus trimaculatus | 11 | 39 | M |
| 4 | M009 | Dascyllus trimaculatus | 11 | 38 | J |
| 4 | M010 | Trachurus delagoa | 13 | 19 | J |
| 4 | M011 | Trachurus delagoa | 11.5 | 17 | J |
| 4 | M012 | Trachurus delagoa | 13 | 19 | J |
| 4 | M013 | Chaetodon blackburnii | 8.5 | 15 | F |
| 4 | M014 | Chaetodon blackburnii | 10 | 25 | J |
| 4 | M015 | Chaetodon blackburnii | 10 | 25 | J |
| 4 | M016 | Lutjanus sebae | 81 | 9700 | M |
| 6 | M017 | Polysteganus coeruleopunctatus | 28 | 32 | F |
| 6 | M018 | Polysteganus coeruleopunctatus | 27 | 26 | M |
| 6 | M019 | Polysteganus coeruleopunctatus | 27 | 25 | F |
| 6 | M020 | Pristipomoides filamentosus | 38 | 55 | F |
| 6 | M021 | Pristipomoides filamentosus | 35 | 46 | M |
| 6 | M022 | Pristipomoides filamentosus | 36 | 48 | F |
| 6 | M023 | Cantherhines dumerilii | 33 | 44 | M |
| 6 | M024 | Cantherhines dumerilii | 32 | 42 | J |
| 10 | M025 | Caesio caerulaurea | 16 | 79 | F |
| 10 | M026 | Caesio caerulaurea | 18 | 95 | F |
| 10 | M027 | Caesio caerulaurea | 16 | 63 | F |
| 10 | M028 | Parupeneus rubescens | 28 | 349 | M |
| 10 | M029 | Parupeneus rubescens | 21 | 152 | F |
| 10 | M030 | Parupeneus rubescens | 16 | 81 | F |
| 10 | M031 | Parupeneus indicus | 15 | 67 | F |
| 10 | M032 | Parupeneus indicus | 13 | 57 | M |
| 10 | M033 | Parupeneus indicus | 15 | 68 | J |
| 10 | M034 | Teixeirichthys jordani | 11 | 31 | M |
| 10 | M035 | Teixeirichthys jordani | 11 | 30 | J |
| 10 | M036 | Teixeirichthys jordani | 10 | 28 | F |
| 10 | M037 | suganus sutor | 25 | 261 | J |
| 10 | M038 | suganus sutor | 25 | 259 | F |
| 10 | M039 | suganus sutor | 22 | 182 | J |
| 12 | M040 | Parupeneus rubescens | 30 | 437 | F |
| 12 | M041 | Parupeneus rubescens | 22 | 161 | F |
| 12 | M042 | Parupeneus rubescens | 14 | 45 | F |
| 12 | M043 | Lethrinus crocineus | 33 | 728 | M |
| 12 | M044 | Lethrinus crocineus | 21 | 168 | F |
| 12 | M045 | Lethrinus crocineus | 15 | 15 | M |
| 12 | M046 | Lethrinus nebulosus | 28 | 382 | M |
| 12 | M047 | Lethrinus nebulosus | 20 | 147 | F |
| 12 | M048 | Lethrinus nebulosus | 16 | 77 | J |
| 12 | M049 | Gymnocranius griseus | 18 | 126 | J |
| 12 | M050 | Gymnocranius griseus | 12 | 30 | J |
| 12 | M051 | Gymnocranius griseus | 10.5 | 22 | X |
| 12 | M052 | Drepane longimana | 52 | 2850 | J |
| 12 | M053 | Drepane longimana | 58 | 3850 | J |
| 12 | M054 | Drepane longimana | 61 | 4050 | J |
| 12 | M055 | Decaptureus macrosoma | 11 | 35 | J |
| 12 | M056 | Decaptureus macrosoma | 13 | 46 | M |
| 12 | M057 | Decaptureus macrosoma | 15 | 52 | F |
| 12 | M058 | Herklotsichthys quadrimaculatus | | | M |
| 15 | M059 | saurida undoscomis | 23 | 89 | F |
| 15 | M060 | saurida undoscomis | 20 | 41 | F |
| 15 | M061 | saurida undoscomis | 18 | 19 | F |
| 15 | M062 | decapterus kuroides | 18 | 49 | M |
| 15 | M063 | decapterus kuroides | 17 | 45 | M |
| 15 | M064 | decapterus kuroides | 15 | 35 | M |
| 15 | M065 | Herklotsichtys quadrimaculatus | 16 | 31 | F |
| 15 | M066 | Herklotsichtys quadrimaculatus | 15 | 28 | F |
| 15 | M067 | Herklotsichtys quadrimaculatus | 16 | 31 | F |
| 15 | M068 | Upenaeus taenopterus | 12 | 30 | F |
| 16 | M069 | Upenaeus taenopterus | 9 | 11 | F |
| 16 | M070 | Upenaeus taenopterus | 8 | 16 | F |
| 16 | M071 | Decaptrus kurroides | 25 | 182 | F |
| 16 | M072 | Decaptrus kurroides | 19 | 80 | F |
| 16 | M073 | Decaptrus kurroides | 16 | 61 | M |
| 17 | M074 | seriola rivoliana | 35 | 779 | F |
| 17 | M075 | seriola rivoliana | 32 | 635 | M |
| 17 | M076 | seriola rivoliana | 32 | 632 | F |
| 20 | M077 | Carangoides caeruleolineatus | 35 | 915 | F |
| 20 | M078 | Carangoides caeruleolineatus | 29 | 522 | F |
| 20 | M079 | Carangoides caeruleolineatus | 20 | 181 | F |
| 20 | M080 | Nemipterus japonicus | 20 | 135 | M |
| 20 | M081 | Sphyraena forsteri | 43 | 287 | F |
| 20 | M082 | Rexea prometheoides | 27 | 146 | F |
| 20 | M083 | Rexea prometheoides | 23 | 117 | F |
| 20 | M084 | Rexea prometheoides3 | 19 | 59 | F |
| 21 | M085 | Trichiurus lepturus | 160 | 7000 | F |
| 21 | M086 | Trichiurus lepturus | 23 | 180 | M |
| 21 | M087 | Trichiurus lepturus | 19 | 70 | M |
| 21 | M088 | Trichiurus lepturus | 30 | 60 | F |
| 21 | M089 | Polysteganus coeruleopunctatus | 50 | 2040 | M |
| 21 | M090 | Polysteganus coeruleopunctatus | 40 | 1044 | M |
| 21 | M091 | Polysteganus coeruleopunctatus | 42 | 1040 | F |
| 24 | M092 | Decapterus table | 26 | 251 | M |
| 24 | M093 | Decapterus table | 21 | 117 | F |
| 24 | M094 | Decapterus table | 28 | 286 | F |

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

| Trawl station | code | Species | Length (cm) | Weight (g) | Sex |
|---|---|---|---|---|---|
| 27 | M189 | Rexea promethoides | 21 | 70 | F |
| 27 | M190 | Rexea promethoides | 22 | 78 | M |
| 27 | M191 | Astronesthes trifibulatis | 13 | 17 | F |
| 27 | M192 | Astronesthes trifibulatis | 12 | 16 | F |
| 27 | M193 | Astronesthes trifibulatis | 13 | 14 | F |
| 27 | M194 | Astronesthes trifibulatis | 11 | 13 | F |
| 27 | M195 | Astronesthes trifibulatis | 6 | 2 | J |
| 27 | M196 | Lestrolepis japonica | 14 | 5 | M |
| 29 | M197 | upenaeus vittatus | 13 | 40 | m |
| 29 | M198 | upenaeus vittatus | 14 | 40 | f |
| 29 | M199 | upenaeus vittatus | 14 | 41 | m |
| 29 | M200 | upenaeus vittatus | 14 | 42 | f |
| 29 | M201 | upenaeus vittatus | 14 | 41 | J |
| 29 | M202 | bregmaceros macclellandi | 7 | 3 | J |
| 29 | M203 | Diaphus garmani | 13 | 29 | M |
| 29 | M204 | Diaphus garmani | 13 | 27 | F |
| 29 | M205 | Diaphusthiollieri | 14 | 17 | M |
| 29 | M206 | Diaphus jenseni | 18 | 36 | F |
| 29 | M207 | Cerastoscopelus warmingii | 19 | 41 | F |
| 29 | M208 | Astronesthes trifibulatis | 14 | 13 | F |
| 29 | M209 | Astronesthes trifibulatis | 20 | 27 | F |
| 29 | M210 | Rexea promethoides | 17 | 19 | J |
| 29 | M211 | Rexea promethoides | 19 | 17 | M |
| 29 | M212 | Rexea promethoides | 21 | 30 | J |
| 29 | M213 | Lestrolepis japonica | 13 | 17 | J |

| Trawl station | code | Species | Length (cm) | Weight (g) | Sex |
|---|---|---|---|---|---|
| 29 | M214 | Lestrolepis japonica | 10 | 15 | M |
| 29 | M215 | Lestrolepis japonica | 12 | 11 | F |
| 29 | M216 | argyropelacus a | 11 | 10 | M |
| 29 | M217 | Melanostomias barbatombeani | 19 | 18 | F |
| 29 | M218 | Melanostomias barbatombeani | 20 | 19 | F |
| 29 | M219 | Melanostomias barbatombeani | 25 | 21 | F |
| 29 | M220 | Melanostomias barbatombeani | 23 | 23 | F |
| 29 | M221 | Melanostomias barbatombeani | 17 | 17 | J |
| 29 | M222 | Melanostomias barbatombeani | 18 | 17 | M |
| 29 | M223 | Melanostomias barbatombeani | 19 | 18 | J |
| 29 | M224 | Melanostomias barbatombeani | 21 | 20 | J |
| 29 | M225 | Melanostomias barbatombeani | 26 | 25 | M |
| 29 | M226 | Melanostomias barbatombeani | 24 | 23 | F |
| 29 | M227 | Melanostomias barbatombeani | 24 | 22 | M |
| 30 | M228 | Nemipterus bipunctatus | 21 | 131 | M |
| 30 | M229 | Nemipterus bipunctatus | 16 | 62 | F |
| 30 | M230 | Nemipterus bipunctatus | 15 | 60 | F |
| 30 | M231 | Nemipterus bipunctatus | 15 | 65 | F |
| 30 | M232 | Nemipterus bipunctatus | 11 | 27 | F |
| 30 | M233 | Nemipterus bipunctatus | 10 | 17 | F |
| 31 | M234 | Nemipterus japonicus | 14 | 46 | M |
| 31 | M235 | Nemipterus japonicus | 16 | 49 | F |
| 31 | M236 | Nemipterus japonicus | 15 | 63 | F |
| 31 | M237 | Nemipterus japonicus | 19 | 96 | F |

# ANNEX VI. List of species for DNA analyses and conservation

| Trawl station | DNA | Specimen Kept | Photo | Formalin/Frozen | ACEP # | Species |
|---|---|---|---|---|---|---|
| 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 flavocaeruleus |
| 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 mosis |
| 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 |
| 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 | Siganus 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 | Scomberosomus commerson |
| 8 | yes | yes | yes | Frozen | 228 | Scomberosomus 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 | Gymnocranius griseus |
| 10 | yes | yes | yes | Formalin | 293 | Gymnocranius 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 | Siganus 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | Sphyraena 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 |
|---|---|---|---|---|---|---|
| 13 | yes | yes | yes | Formalin | 281 | Scomber japonicus |
| 14 | yes | yes | yes | Formalin | 273 | Decapterus kurroides |
| 14 | yes | yes | yes | Formalin | 274 | Decapterus kurroides |
| 14 | yes | yes | yes | Formalin | 275 | Scomber japonicus |
| 14 | yes | yes | yes | Formalin | 276 | Scomber japonicus |
| 14 | yes | yes | yes | Formalin | 286 | Decapterus macronemus |
| 14 | yes | yes | yes | Formalin | 287 | Decapterus macronemus |
| 15 | yes | yes | yes | Formalin | 320 | Pterois miles |
| 15 | yes | yes | yes | Formalin | 321 | Lagocephalus guentheri |
| 15 | yes | yes | yes | Formalin | 322 | Sardinella gibbosa |
| 16 | yes | yes | yes | Formalin | 271 | Saurida undosquamis |
| 16 | yes | yes | yes | Formalin | 272 | Saurida undosquamis |
| 16 | yes | yes | yes | Formalin | 288 | Saurida undosquamis |
| 16 | yes | yes | yes | Formalin | 309 | Decapterus kurroides |
| 16 | yes | yes | yes | Formalin | 310 | Decapterus kurroides |
| 16 | yes | yes | yes | Formalin | 305 | Zeus faber |
| 16 | yes | yes | yes | Formalin | 307 | Priacanthus hamrur |
| 16 | yes | yes | yes | Formalin | 306 | Sphyraena acutipinnis |
| 16 | yes | yes | yes | Formalin | 304 | Synodus dermatogenys |
| 16 | yes | yes | yes | Formalin | 303 | Synodus sp |
| 16 | yes | yes | yes | Formalin | 301 | Torquigener hypselogenion |
| 16 | yes | yes | yes | Formalin | 302 | Torquigener hypselogenion |
| 16 | yes | yes | yes | Formalin | 289 | Upeneus mollucensis |
| 16 | yes | yes | yes | Formalin | 308 | Upeneus cf vittatus |
| 16 | yes | yes | yes | Formalin | 311 | Upeneus cf vittatus |
| 17 | yes | no | yes | | 144 | Mustelus mosis |
| 17 | yes | no | yes | | 145 | Mustelus mosis |
| 17 | yes | yes | yes | Formalin | 316 | Echeneis naucrates |
| 17 | yes | no | yes | | 314 | Seriola rivoliana |

| Trawl station | DNA | Specimen Kept | Photo | Formalin/Frozen | ACEP # | Species |
|---|---|---|---|---|---|---|
| 18 | yes | yes | yes | Formalin | 326 | Coloconger sp |
| 18 | yes | yes | yes | Formalin | 339 | Halieutaea sp |
| 18 | yes | yes | yes | Formalin | 340 | Halieutaea sp |
| 18 | yes | yes | yes | Formalin | 329 | Halocephalus laevis |
| 18 | yes | yes | yes | Formalin | 351 | Chaunax sp |
| 18 | yes | yes | yes | Formalin | 365 | Gonorynchus gonorhynchus |
| 18 | yes | yes | yes | Formalin | 356 | Unidentified |
| 18 | yes | yes | yes | Formalin | 363 | Bathyclupea sp |
| 18 | yes | yes | yes | Formalin | 364 | Bathyclupea sp |
| 18 | yes | yes | yes | Formalin | 369 | Hymenocephalus sp |
| 18 | yes | no | yes | Formalin | 370 | Hymenocephalus sp |
| 18 | yes | yes | yes | Formalin | 374 | Neoscopelus macrolepidotus |
| 18 | yes | yes | yes | Formalin | 375 | Neoscopelus macrolepidotus |
| 18 | yes | yes | yes | Formalin | 366 | Zenion sp |
| 18 | yes | yes | yes | Formalin | 371 | Macrorhamphosodes uradoi |
| 18 | yes | yes | yes | Formalin | 345 | Etmopterus sentosus |
| 18 | yes | yes | yes | Formalin | 346 | Etmopterus sentosus |
| 18 | yes | yes | yes | Formalin | 323 | Taractichthys steindachneri |
| 18 | yes | yes | yes | Formalin | 341 | Taractichthys steindachneri |
| 18 | yes | yes | yes | Formalin | 377 | Centrophorus molluccensis |
| 18 | yes | yes | yes | Formalin | 378 | Centrophorus molluccensis |
| 18 | yes | yes | yes | Formalin | 382 | Centrophorus molluccensis |
| 18 | yes | yes | yes | Formalin | 383 | Centrophorus molluccensis |
| 18 | yes | yes | yes | Formalin | 381 | Centrophorus molluccensis |
| 18 | yes | yes | yes | Formalin | 384 | Pteraclis cf velifera |
| 20 | yes | yes | yes | Formalin | 387 | Carangoides Caeruleopinnatus |
| 20 | yes | yes | yes | Formalin | 388 | Carangoides Caeruleopinnatus |
| 20 | yes | yes | yes | Formalin | 389 | Sphyraena forsteri |
| 20 | yes | yes | yes | Formalin | 390 | Nemipterus japonicus |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | yes | no | yes | | 315 | Seriola rivoliana |
| 17 | yes | yes | yes | Formalin | 317 | Abalistes stellatus |
| 17 | yes | yes | yes | Formalin | 318 | Abalistes stellatus |
| 17 | yes | yes | yes | Formalin | 319 | Pseudobalistes fuscus |
| 17 | yes | yes | yes | Formalin | 312 | Tetrasomus concatenatus |
| 17 | yes | yes | yes | Formalin | 313 | Tetrasomus concatenatus |
| 18 | yes | yes | yes | Formalin | 372 | Tetraodontidae sp |
| 18 | yes | yes | yes | Formalin | 361 | Lophius sp |
| 18 | yes | yes | yes | Formalin | 347 | Polymixia berndti |
| 18 | yes | yes | yes | Formalin | 348 | Polymixia berndti |
| 18 | yes | yes | yes | Formalin | 334 | Peristedion cf weberi |
| 18 | yes | yes | yes | Formalin | 335 | Peristedion cf weberi |
| 18 | yes | yes | yes | Formalin | 333 | Coelorinchus sp |
| 18 | yes | yes | yes | Formalin | 332 | Rexea promethoides |
| 18 | yes | yes | yes | Formalin | 344 | Rexea promethoides |
| 18 | yes | yes | yes | Formalin | 330 | Scorpaena sp |
| 18 | yes | yes | yes | Formalin | 343 | Scorpaena sp |
| 18 | yes | yes | yes | Formalin | 331 | Chloropthalmus sp |
| 18 | yes | yes | yes | Formalin | 342 | Chloropthalmus sp |
| 18 | yes | yes | yes | Formalin | 336 | Xenolepidichthys dalgleishi |
| 18 | yes | yes | yes | Formalin | 337 | Xenolepidichthys dalgleishi |
| 18 | yes | yes | yes | Formalin | 338 | Xenolepidichthys dalgleishi |
| 18 | yes | yes | yes | Formalin | 349 | Paratriacanthus retrospinus |
| 18 | yes | yes | yes | Formalin | 350 | Paratriacanthus retrospinus |
| 18 | yes | yes | yes | Formalin | 373 | Polyipnus indicus |
| 18 | yes | yes | yes | Formalin | 354 | Symphurus ocellus |
| 18 | yes | yes | yes | Formalin | 355 | Symphurus ocellus |
| 18 | yes | yes | yes | Formalin | 352 | Lepidotrigla '2 dark blotches' |
| 18 | yes | yes | yes | Formalin | 353 | Lepidotrigla '2 dark blotches' |
| 18 | yes | yes | yes | Formalin | 357 | Synogrops japonicus |
| 18 | yes | yes | yes | Formalin | 358 | Synogrops japonicus |
| 18 | yes | yes | yes | Formalin | 324 | Neoepinnula orientalis |
| 18 | yes | yes | yes | Formalin | 325 | Neoepinnula orientalis |
| 18 | yes | yes | yes | Formalin | 327 | Benthodesmus elongatus |
| 18 | yes | yes | yes | Formalin | 328 | Benthodesmus elongatus |
| 18 | yes | yes | yes | Formalin | 359 | Brama orcini |
| 18 | yes | yes | yes | Formalin | 360 | Brama orcini |
| 18 | yes | yes | yes | Formalin | 376 | Gymnoscopelus sp |
| 18 | yes | yes | yes | Formalin | 367 | ? Polymetme ? |
| 18 | yes | yes | yes | Formalin | 368 | ? Polymetme ? |
| 18 | yes | yes | yes | Formalin | 362 | Cubiceps cubiceps |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | yes | yes | yes | Formalin | 391 | Nemipterus japonicus |
| 20 | yes | yes | yes | Formalin | 393 | Argyrops filamentosus |
| 20 | yes | yes | yes | Formalin | 392 | Tetrasomus concatenatus |
| 20 | yes | yes | yes | Formalin | 395 | Gazza minuta |
| 20 | yes | yes | yes | Formalin | 394 | Upeneus sp. |
| 20 | yes | yes | yes | Formalin | 385 | Squatina africana |
| 20 | yes | yes | yes | Formalin | 386 | Squatina africana |
| 21 | yes | yes | yes | Formalin | 423 | Neobythites sp |
| 21 | yes | yes | yes | Formalin | 421 | Hoplostethus atlanticus |
| 21 | yes | yes | yes | Formalin | 422 | Hoplostethus atlanticus |
| 21 | yes | yes | yes | Formalin | 431 | Synchirops monacanthus |
| 21 | yes | yes | yes | Formalin | 424 | Neobythites cf somalensis |
| 21 | yes | yes | yes | Formalin | 425 | Neobythites cf somalensis |
| 21 | yes | yes | yes | Formalin | 426 | Polysteganus coeruleopunctatus |
| 21 | yes | yes | yes | Formalin | 427 | Citharoides macrolepis |
| 21 | yes | yes | yes | Formalin | 428 | Citharoides macrolepis |
| 21 | yes | yes | yes | Formalin | 417 | Champsodon capensis |
| 21 | yes | yes | yes | Formalin | 418 | Champsodon capensis |
| 21 | yes | yes | yes | Formalin | 419 | Zenion sp |
| 21 | yes | yes | yes | Formalin | 420 | Zenion sp |
| 21 | yes | yes | yes | Formalin | 409 | Rexea promethoides |
| 21 | yes | yes | yes | Formalin | 410 | Rexea promethoides |
| 21 | yes | yes | yes | Formalin | 435 | Apogon sp |
| 21 | yes | yes | yes | Formalin | 436 | Apogon sp |
| 21 | yes | yes | yes | Formalin | 411 | Triglidae sp |
| 21 | yes | yes | yes | Formalin | 429 | Carangoides Caeruleopunctatus |
| 21 | yes | yes | yes | Formalin | 430 | Carangoides Caeruleopunctatus |
| 21 | yes | yes | yes | Formalin | 399 | Satyricthyes adeni |
| 21 | yes | yes | yes | Formalin | 400 | Satyricthyes adeni |
| 21 | yes | yes | yes | Formalin | 401 | Chaunax sp |
| 21 | yes | yes | yes | Formalin | 402 | Chaunax sp |
| 21 | yes | yes | yes | Formalin | 407 | Chloropthalmus punctatus |
| 21 | yes | yes | yes | Formalin | 408 | Chloropthalmus punctatus |
| 21 | yes | yes | yes | Formalin | 432 | Coloconger sp |
| 21 | yes | yes | yes | Formalin | 433 | Coloconger sp |
| 21 | yes | yes | yes | Formalin | 405 | Polymixia berndti |
| 21 | yes | yes | yes | Formalin | 406 | Polymixia berndti |
| 21 | yes | yes | yes | Formalin | 396 | Owstonia weberi |
| 21 | yes | yes | yes | Formalin | 397 | Owstonia weberi |
| 21 | yes | yes | yes | Formalin | 398 | Owstonia weberi |
| 21 | yes | yes | yes | Formalin | 413 | Lepidotrigla sp |

| Trawl station | DNA | Specimen Kept | Photo | Formalin/Frozen | ACEP # | Species |
|---|---|---|---|---|---|---|
| 21 | yes | yes | yes | Formalin | 414 | Lepidotrigla sp |
| 21 | yes | yes | yes | Formalin | 403 | Trichiurus lepturus |
| 21 | yes | yes | yes | Formalin | 404 | Trichiurus lepturus |
| 21 | yes | yes | yes | Formalin | 415 | Poecilopsetta zanzibareni |
| 21 | yes | yes | yes | Formalin | 416 | Poecilopsetta zanzibareni |

| Trawl station | DNA | Specimen Kept | Photo | Formalin/Frozen | ACEP # | Species |
|---|---|---|---|---|---|---|
| 24 | yes | yes | yes | Formalin | 499 | Chloropthalmus agassizi |
| 24 | yes | yes | yes | Formalin | 500 | Chloropthalmus agassizi |
| 24 | yes | yes | yes | Formalin | 551 | Leiognathus equulus |
| 24 | yes | yes | yes | Formalin | 552 | Leiognathus equulus |
| 24 | yes | yes | yes | Formalin | 555 | Sphyraena flavicauda |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21 | yes | yes | yes | Formalin | 412 | Synagrops japonicus |
| 21 | yes | yes | yes | Formalin | 434 | Holohalaelurus sp |
| 22 | yes | yes | yes | Formalin | 496 | Lutjanus bohar |
| 22 | yes | yes | yes | Formalin | 476 | Apnion virescens |
| 22 | yes | yes | yes | Formalin | 475 | Carangoides Caeruleopinnatus |
| 22 | yes | yes | yes | Formalin | 495 | Carangoides Caeruleopinnatus |
| 22 | yes | yes | yes | Formalin | 466 | Lutjanus gibbus |
| 22 | yes | yes | yes | Formalin | 467 | Lutjanus gibbus |
| 22 | yes | yes | yes | Formalin | 460 | Paracaesio xanthurus |
| 22 | yes | yes | yes | Formalin | 461 | Paracaesio xanthurus |
| 22 | yes | yes | yes | Formalin | 437 | Anthias pulcherrimus |
| 22 | yes | yes | yes | Formalin | 449 | Sargocentron microstoma |
| 22 | yes | yes | yes | Formalin | 450 | Sargocentron microstoma |
| 22 | yes | yes | yes | Formalin | 448 | Sargocentron ittodai |
| 22 | yes | yes | yes | Formalin | 449 | Sargocentron ittodai |
| 22 | yes | yes | yes | Formalin | 479 | Lutjanus bouton |
| 22 | yes | yes | yes | Formalin | 480 | Lutjanus bouton |
| 22 | yes | yes | yes | Formalin | 481 | Lutjanus lutjanus |
| 22 | yes | yes | yes | Formalin | 482 | Lutjanus lutjanus |
| 22 | yes | yes | yes | Formalin | 487 | Heniochus acuminatus |
| 22 | yes | yes | yes | Formalin | 488 | Heniochus acuminatus |
| 22 | yes | yes | yes | Formalin | 489 | Heniochus acuminatus |
| 22 | yes | yes | yes | Formalin | 440 | Upeneus vittatus |
| 22 | yes | yes | yes | Formalin | 441 | Upeneus vittatus |
| 22 | yes | yes | yes | Formalin | 446 | Pristipomoides filamentosus |
| 22 | yes | yes | yes | Formalin | 447 | Pristipomoides filamentosus |
| 22 | yes | yes | yes | Formalin | 483 | Lutjanus kasmira |
| 22 | yes | yes | yes | Formalin | 484 | Lutjanus kasmira |
| 22 | yes | yes | yes | Formalin | 442 | Lethrinus elongatus |
| 22 | yes | yes | yes | Formalin | 464 | Lethrinus rubrioperculatus |
| 22 | yes | yes | yes | Formalin | 465 | Lethrinus rubrioperculatus |
| 22 | yes | yes | yes | Formalin | 443 | Lethrinus rubrioperculatus |
| 22 | yes | yes | yes | Formalin | 444 | Caesio caerioflavia |
| 22 | yes | yes | yes | Formalin | 445 | Caesio caerioflavia |
| 22 | yes | yes | yes | Formalin | 485 | Acanthurus mala |
| 22 | yes | yes | yes | Formalin | 486 | Acanthurus mala |
| 22 | yes | yes | yes | Formalin | 492 | Dasyatis kuhlii |
| 22 | yes | yes | yes | Formalin | 493 | Dasyatis kuhlii |
| 22 | yes | yes | yes | Formalin | 490 | Rexea promethoides |
| 22 | yes | yes | yes | Formalin | 491 | Rexea promethoides |
| 22 | yes | yes | yes | Formalin | 457 | Gymnocranius grandoculis |
| 22 | yes | yes | yes | Formalin | 458 | Gymnocranius grandoculis |
| 22 | yes | yes | yes | Formalin | 459 | Tetrasomus concatenatus |
| 22 | yes | yes | yes | Formalin | 477 | Parupeneus 'roundhead yellowstripe' |
| 22 | yes | yes | yes | Formalin | 478 | Parupeneus 'roundhead yellowstripe' |
| 22 | yes | yes | yes | Formalin | 438 | Naso hexacanthus |
| 22 | yes | yes | yes | Formalin | 439 | Naso hexacanthus |
| 22 | yes | yes | yes | Formalin | 472 | Chloropthalmus agassizi |
| 22 | yes | yes | yes | Formalin | 471 | Citharichthyes sp |
| 22 | yes | yes | yes | Formalin | 470 | Pseudorhombus elevatus |
| 22 | yes | yes | yes | Formalin | ? | Pseudorhombus elevatus |
| 22 | yes | yes | yes | Formalin | 462 | Pterocaesio pisang |
| 22 | yes | yes | yes | Formalin | 463 | Pterocaesio pisang |
| 22 | yes | yes | yes | Formalin | 468 | Satyricthyes adeni |
| 22 | yes | yes | yes | Formalin | 469 | Satyricthyes adeni |
| 22 | yes | yes | yes | Formalin | 451 | Priacanthus hamrur |
| 22 | yes | yes | yes | Formalin | 453 | Lutjanus fulviflamma |
| 22 | yes | yes | yes | Formalin | 454 | Lutjanus fulviflamma |
| 22 | yes | yes | yes | Formalin | 473 | Sargocentron melanopsis |
| 22 | yes | yes | yes | Formalin | 474 | Sargocentron melanopsis |
| 24 | yes | yes | yes | Formalin | 556 | Sphyraena flavicauda |
| 24 | yes | yes | yes | Formalin | 553 | Apogon apogonoides |
| 24 | yes | yes | yes | Formalin | 554 | Apogon apogonoides |
| 24 | yes | yes | yes | Formalin | 557 | Trichiurus lepturus |
| 24 | yes | yes | yes | Formalin | 558 | Trichiurus lepturus |
| 24 | yes | yes | yes | Formalin | 560 | Champsodon capensis |
| 24 | yes | yes | yes | Formalin | 561 | Uranoscopus archionema |
| 24 | yes | yes | yes | Formalin | 562 | Neobythites sp |
| 24 | yes | yes | yes | Formalin | 563 | Pilotrema warreni |
| 24 | yes | yes | yes | Formalin | 564 | Pilotrema warreni |
| 24 | yes | yes | yes | Formalin | 578 | Pilotrema warreni |
| 24 | yes | yes | yes | Formalin | 580 | Squatina africana |
| 24 | yes | yes | yes | Formalin | 581 | Squatina africana |
| 24 | yes | yes | yes | Formalin | 579 | Aphareus furcatus |
| 24 | yes | yes | yes | Formalin | 572 | Fistularia petimba |
| 24 | yes | yes | yes | Formalin | 573 | Fistularia petimba |
| 24 | yes | yes | yes | Formalin | 559 | Naso hexacanthus |
| 24 | yes | yes | yes | Formalin | 567 | Upeneus vittatus |
| 24 | yes | yes | yes | Formalin | 568 | Upeneus vittatus |
| 24 | yes | yes | yes | Formalin | 565 | Histiopterus typus |
| 24 | yes | yes | yes | Formalin | 566 | Histiopterus typus |
| 24 | yes | yes | yes | Formalin | 569 | Saurida undosquamis |
| 24 | yes | yes | yes | Formalin | 570 | Chaunax sp |
| 24 | yes | yes | yes | Formalin | 571 | Chaunax sp |
| 24 | yes | yes | yes | Formalin | 576 | Decapterus tabl |
| 24 | yes | yes | yes | Formalin | 577 | Decapterus tabl |
| 24 | yes | yes | yes | Formalin | 574 | Johnius dussimieri |
| 24 | yes | yes | yes | Formalin | 575 | Johnius dussimieri |
| 24 | yes | yes | yes | Formalin | 582 | Mustelus monazo |
| 25 | yes | yes | yes | Formalin | 594 | Chaunax sp |
| 25 | yes | yes | yes | Formalin | 599 | Chaunax sp |
| 25 | yes | yes | yes | Formalin | 596 | Rexea promethoides |
| 25 | yes | yes | yes | Formalin | 601 | Rexea promethoides |
| 25 | yes | yes | yes | Formalin | 595 | Decapterus kurroides |
| 25 | yes | yes | yes | Formalin | 597 | Decapterus kurroides |
| 25 | yes | yes | yes | Formalin | 598 | Upeneus vittatus |
| 25 | yes | yes | yes | Formalin | 600 | Upeneus vittatus |
| 25 | yes | yes | yes | Formalin | 593 | |
| 25 | yes | yes | yes | Formalin | 590 | |
| 25 | yes | yes | yes | Formalin | 606 | Satyricthyes adeni |
| 25 | yes | yes | yes | Formalin | 583 | Priacanthus hamrur |
| 25 | yes | yes | yes | Formalin | 584 | Priacanthus hamrur |
| 25 | yes | yes | yes | Formalin | 585 | Sphyaena acutipinnis |
| 25 | yes | yes | yes | Formalin | 586 | Sphyraena acutipinnis |
| 25 | yes | yes | yes | Formalin | 587 | Argentina euchus |
| 25 | yes | yes | yes | Formalin | 591 | Apogon apogonoides |
| 25 | yes | yes | yes | Formalin | 592 | Apogon apogonoides |
| 25 | yes | yes | yes | Formalin | 588 | Citharoides macrolepis |
| 25 | yes | yes | yes | Formalin | 589 | Citharoides macrolepis |
| 25 | yes | yes | yes | Formalin | 602 | Squalus megalops |
| 25 | yes | yes | yes | Formalin | 607 | Squalus megalops |
| 25 | yes | yes | yes | Formalin | 603 | Polysteganus coeruleopunctatus |
| 25 | yes | yes | yes | Formalin | 604 | Polysteganus coeruleopunctatus |
| 25 | yes | yes | yes | Formalin | 605 | Polysteganus coeruleopunctatus |
| 26 | yes | yes | yes | Formalin | 620 | Coelorinchus braueri |
| 26 | yes | yes | yes | Formalin | 621 | Coelorinchus braueri |
| 26 | yes | yes | yes | Formalin | 618 | Chloropthalmus agassizi |
| 26 | yes | yes | yes | Formalin | 619 | Chloropthalmus agassizi |
| 26 | yes | yes | yes | Formalin | 614 | Neoepinnula orientalis |
| 26 | yes | yes | yes | Formalin | 615 | Neoepinnula orientalis |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 | yes | yes | yes | Formalin | 452 | Myripristis murdjan |
| 22 | yes | yes | yes | Formalin | 494 | Naso tuberosus |
| 22 | yes | yes | yes | Formalin | 455 | Apogon apogonoides |
| 22 | yes | yes | yes | Formalin | 456 | Apogon apogonoides |
| 24 | yes | yes | yes | Formalin | 497 | Rexea promethoides |
| 24 | yes | yes | yes | Formalin | 498 | Rexea promethoides |
| 26 | yes | yes | yes | Formalin | 611 | Saurida gracilis |
| 26 | yes | yes | yes | Formalin | 612 | Saurida gracilis |
| 26 | yes | yes | yes | Formalin | 610 | Gonorynchus gonorhynchus |
| 26 | yes | yes | yes | Formalin | 613 | Gonorynchus gonorhynchus |
| 26 | yes | yes | yes | Formalin | 616 | Johnius amblycephalus |
| 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 | Gnathophis capensis |
| 26 | yes | yes | yes | Formalin | 626 | Gnathophis 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 | Histiopterus typus |
| 27 | yes | yes | yes | Formalin | 648 | Histiopterus typus |
| 27 | yes | yes | yes | Formalin | 657 | Neobythites somalensis |
| 27 | yes | yes | yes | Formalin | 650 | Grammatonotus cf macropthamlus |
| 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 doliatus |
| 27 | yes | yes | yes | Formalin | 653 | Lepidotrigla multispinosus |
| 27 | yes | yes | yes | Formalin | 654 | Lepidotrigla multispinosus |

| 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 | Sphyraena chrysotaenia |
| 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 macclellandii |
| 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 38 | yes | yes | yes | Formalin | 743 | Scoberomorus commerson |
| 38 | yes | yes | yes | Formalin | 742 | Alectis cittaris |
| 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 janthinoptera |
| 38 | yes | yes | yes | Formalin | 734 | Canthigaster janthinoptera |
| 38 | yes | yes | yes | Formalin | 722 | Carangoides caeruleopunctatus |
| 38 | yes | yes | yes | Formalin | 723 | Carangoides caeruleopunctatus |
| 38 | yes | yes | yes | Formalin | 747 | Epinephelus coiedes |
| 38 | yes | yes | yes | Formalin | 748 | Epinephelus coiedes |
| 38 | yes | yes | yes | Formalin | 735 | Geres filamentosus |
| 38 | yes | yes | yes | Formalin | 736 | Geres filamentosus |
| 38 | yes | yes | yes | Formalin | 724 | Tripteradon orbis |
| 38 | yes | yes | yes | Formalin | 725 | Tripteradon 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 | Sphyraena forsteri |
| 39 | yes | yes | yes | Formalin | 749 | Apogon aureus |
| 40 | no | yes | yes | Formalin | | Trachyramphus 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 | | Polyipnus polli |
| 43 | no | yes | yes | Formalin | | Unidentified |

| 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | Sphyraena 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 magniscuttis |
| 49 | yes | yes | yes | Formalin | 776 | Scorpaenus sp |
| 49 | yes | yes | yes | Formalin | 777 | Scorpaenus sp |
| 49 | | 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 'plaintail' |
| 49 | yes | yes | yes | Formalin | 774 | Grammatonotus sp 'plaintail' |
| 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 | - | Sphyraena 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 | - | Astronesthidae |
| 50 | no | yes | yes | Formalin | - | unidentified b |
| 50 | no | yes | yes | Formalin | - | Unidentified c |
| 56 | yes | yes | yes | Formalin | 789 | Oxyurichthys papuensis |
| 56 | yes | yes | yes | Formalin | 790 | Apogonidae sp |
| 57 | yes | yes | yes | Formalin | 791 | Epinephelus chlorostigma |
| 57 | yes | yes | yes | Formalin | 794 | Dactyopterus 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 | Hypsophum zeinhardtii |
| 60 | yes | yes | yes | Formalin | 798 | Hypsophum hanseni |
| 60 | yes | yes | yes | Formalin | 796 | Synagrops japonicus |
| 60 | no | yes | yes | Formalin | - | Cynaglossus lida |
| 60 | no | yes | yes | Formalin | - | Leptolepis sp |
| 62 | yes | yes | yes | Frozen | 807 | Caranx ignobilis |
| 62 | yes | yes | yes | Frozen | 808 | Caranx ignobilis |
| 62 | yes | yes | yes | Frozen | 809 | Sphyraena barracuda |
| 62 | yes | yes | yes | Frozen | 810 | Sphyraena 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 | Laeops 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 | - | Peristiidae 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 crumenopthalmus |
| 67 | yes | yes | yes | Formalin | 828 | Selar crumenopthalmus |
| 67 | yes | yes | yes | Formalin | 829 | Sphyraena 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 | Rhecias 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 | Symbolophoris evermanni |
| 74 | yes | yes | yes | Formalin | 844 | Physiculus natalensis |
| 74 | yes | yes | yes | Formalin | 845 | Macrouridae 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 60 | no | yes | yes | Formalin | - | Polyipnus indicus |

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | Sphyraena forsteri |
| 79 | yes | yes | yes | Frozen | 887 | Sphyraena forsteri |
| 79 | yes | yes | yes | Frozen | 888 | Sphyraena helleri |
| 79 | yes | yes | yes | Frozen | 889 | Sphyraena helleri |
| 82 | yes | yes | yes | Formalin | 890 | Luciobrotula 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

| 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 | Bryozoan | 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 foliacae | 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 | |

**ANNEX VIII. Soft sediment macrobenthos and associated sediment samples, refer to sampling methods (pg 15)**

## 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 | ☒ | ☒ | Sample not collected. |
| | | 1/20/2 | ☒ | ☒ | Sample not collected. |
| | | 1/20/3 | ☒ | ☒ | Sample not collected. |
| 1 | No sample | 1/40/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/40/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/40/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 2 | 953 (approx. area) | 1/60/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/60/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/60/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 3 | 952 (approx. area) | 1/100/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/100/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/100/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 4 | No sample | 1/150/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/150/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/150/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 5 | No sample | 1/200/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/200/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/200/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 6 | 966 | 2/20/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/20/2 | ☒ | ☒ | Sample not collected. |
| | | 2/20/3 | ☒ | ☒ | Sample not collected. |
| 7 | 967 (approx. area) | 2/40/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/40/2 | ☑ | ☑ | 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. |
| | | 2/40/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 8 | 968 (also 965 in approx. area) | 2/60/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/60/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/60/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 9 | 964 | 2/100/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/100/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/100/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 10 | 969 (approx. area) | 2/150/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/150/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/150/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 11 | 971 (approx. area) | 2/200/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/200/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/200/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 12 | 1009 | 3/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 13 | 1010 | 3/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 14 | 1011 | 3/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 15 | 1012 | 3/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/100/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 16 | 1013 | 3/150/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/150/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/150/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 17 | 1014 | 3/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/200/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 20 | 1034 | 4/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |

| Nansis Grab Station | Nansis CTD Station | Sample Label No. | 0.1mm Sample Collected | 0.5mm Sample Collected | Comment |
|---|---|---|---|---|---|
| 19 | 1033 | 4/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 18 | 1031 | 4/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 21 | 1037 | 4/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/100/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 22 | 1038 | 4/150/1 | ☒ | ☒ | Sample not collected. |
| | | 4/150/2 | ☒ | ☒ | Sample not collected. |
| | | 4/150/3 | ☒ | ☒ | Sample not collected. |
| 23 | 1039 | 4/200/1 | ☒ | ☒ | Sample not collected. |
| | | 4/200/1 | ☒ | ☒ | Sample not collected. |
| | | 4/200/2 | ☒ | ☒ | Sample not collected. |
| 29 | 1049 | 5/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 28 | 1046 (approx. area) | 5/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 27 | 1045 (approx. area) | 5/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 26 | 1044 | 5/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/100/1 | ☒ | ☒ | Sample not collected. |
| | | 5/100/2 | ☒ | ☒ | Sample not collected. |
| 25 | 1043 (approx. area) | 5/150/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/150/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/150/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 24 | 1042 (approx. area) | 5/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/200/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 36 | (Not working) | 6/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 35 | (Not working) | 6/20/1 | ☒ | ☒ | Sample not collected. |
| | | 6/20/2 | ☒ | ☒ | Sample not collected. |
| | | 6/20/3 | ☒ | ☒ | Sample not collected. |
| 34 | (Not working) | 6/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |

| Nansis Grab Station | Nansis CTD Station | Sample Label No. | 0.1mm Sample Collected | 0.5mm Sample Collected | Comment |
|---|---|---|---|---|---|
| 33 | 1057 | 6/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 32 | 1055 (also 1056 in approx. area) | 6/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/100/2 | ☒ | ☒ | Sample not collected. |
| 31 | 1054 | 6/150/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/150/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/150/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 30 | 1053 | 6/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/200/2 | ☑ | ☑ | 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 | ☒ | ☒ | Sample not collected. |
| | | 1/20/2 | ☒ | ☒ | Sample not collected. |
| | | 1/20/3 | ☒ | ☒ | Sample not collected. |
| 1 | No sample | 1/40/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/40/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/40/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 2 | 953 (approx. area) | 1/60/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/60/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/60/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 3 | 952 (approx. area) | 1/100/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/100/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/100/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 4 | No sample | 1/150/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/150/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/150/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |

| Nansis Grab Station | Nansis CTD Station | Sample Label No. | TOC Sample Collected | GRAIN Sample Collected | Comment |
|---|---|---|---|---|---|
| 5 | No sample | 1/200/1 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/200/2 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| | | 1/200/3 | ☑ | ☑ | Sample discarded. Incorrect sampling protocol & no preservation. |
| 6 | 966 | 2/20/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/20/2 | ☒ | ☒ | Sample not collected. |
| | | 2/20/3 | ☒ | ☒ | Sample not collected. |
| 7 | 967 (approx. area) | 2/40/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/40/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/40/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 8 | 968 (also 965 in approx. area) | 2/60/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/60/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/60/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 9 | 964 | 2/100/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/100/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/100/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 10 | 969 (approx. area) | 2/150/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/150/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/150/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 11 | 971 (approx. area) | 2/200/1 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/200/2 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| | | 2/200/3 | ☑ | ☑ | Sample retained for species inventory ONLY. Incorrect sampling protocol. |
| 12 | 1009 | 3/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 13 | 1010 | 3/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 14 | 1011 | 3/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 15 | 1012 | 3/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |

| Nansis Grab Station | Nansis CTD Station | Sample Label No. | TOC Sample Collected | GRAIN Sample Collected | Comment |
|---|---|---|---|---|---|
| | | 3/100/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 16 | 1013 | 3/150/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/150/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/150/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 17 | 1014 | 3/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 3/200/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 20 | 1034 | 4/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 19 | 1033 | 4/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 18 | 1031 | 4/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 21 | 1037 | 4/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 4/100/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 22 | 1038 | 4/150/1 | ☒ | ☒ | Sample not collected. |
| | | 4/150/2 | ☒ | ☒ | Sample not collected. |
| | | 4/150/3 | ☒ | ☒ | Sample not collected. |
| 23 | 1039 | 4/200/1 | ☒ | ☒ | Sample not collected. |
| | | 4/200/1 | ☒ | ☒ | Sample not collected. |
| | | 4/200/2 | ☒ | ☒ | Sample not collected. |
| 29 | 1049 | 5/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 28 | 1046 | 5/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | (approx. area) | 5/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 27 | 1045 | 5/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | (approx. area) | 5/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 26 | 1044 | 5/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/100/1 | ☒ | ☒ | Sample not collected. |
| | | 5/100/2 | ☒ | ☒ | Sample not collected. |
| 25 | 1043 | 5/150/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | (approx. area) | 5/150/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/150/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 24 | 1042 | 5/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | (approx. area) | 5/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 5/200/2 | ☑ | ☑ | Sample retained for quantitative analysis. |

| Nansis Grab Station | Nansis CTD Station | Sample Label No. | TOC Sample Collected | GRAIN Sample Collected | Comment |
|---|---|---|---|---|---|
| 36 | (Not working) | 6/20/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/20/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/20/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 35 | (Not working) | 6/20/1 | ☒ | ☒ | Sample not collected. |
| | | 6/20/2 | ☒ | ☒ | Sample not collected. |
| | | 6/20/3 | ☒ | ☒ | Sample not collected. |
| 34 | (Not working) | 6/40/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/40/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/40/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 33 | 1057 | 6/60/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/60/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/60/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 32 | 1055 (also 1056 in approx. area) | 6/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/100/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/100/2 | ☒ | ☒ | Sample not collected. |
| 31 | 1054 | 6/150/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/150/2 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/150/3 | ☑ | ☑ | Sample retained for quantitative analysis. |
| 30 | 1053 | 6/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/200/1 | ☑ | ☑ | Sample retained for quantitative analysis. |
| | | 6/200/2 | ☑ | ☑ | Sample retained for quantitative analysis. |

- Shaded cells – samples discarded or only for species inventory dues to incorrect sampling protocol.
- ORI station number: # *(transect 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. 21st 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. 11th June 2010. | The last of the processed data sets are made available to National data centres. |