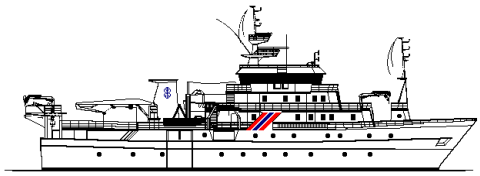
NANSEN PROJECT



Country: Mozambique

Research vessel: R/V DR. FRIDTJOF NANSEN

Survey number: 2009407

Number of days: 15

General objectives: Survey of the living marine resources of North Mozambique

	Port	Date	Coverage	Specific objectives
Departure	Pemba, Mozambique	6 August 2009	North Mozambique	1. To carry out a multi-disciplinary cruise that investigates the physic-chemical processes along the Mozambican Shelf. 2. To establish the distribution and composition of organisms at a number of trophic levels along the shelf. 3. To establish, as far as possible, the productivity, diversity and biomass of the pelagic ecosystem. 4. To survey for bottom suitable for demersal trawling and investigate the demersal fish biodiversity from bottom trawl samples. 5. To establish the role of the shelf region and terrestrial input in linking coastal and pelagic biomes (coupling). 6. To investigate the role of coastal currents as dispersal agents. 7. To investigate mesopelagic fish species diversity and abundance. 8. To link various sources of energy and nutrition to different food-web compartments. 9. Capacity building of ASCLME and SWIOFP trainees & young scientists.
Arrival	Pemba, Mozambique	20 August 2009		

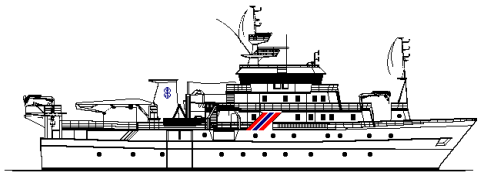
Cruise leader: Erik Olsen, Martinho Padera (Local Cruise leader)

Participants:

ASCLME : Agulhas & Somali Current Large Marine Ecosystems project,
IIP: Instituto Nacional de Investigação Pesqueira; Martinho Padera, Celso Montana, José Chamusse, Pedro Pires, Lourenzo Zacarias, Isaias Tembe,
IMR: Institute of Marine Research, Erik Olsen, Thomas de Lange Wenneck, Terie Hovland, Terje Svoren,
INAHINA: Instituto Nacional de Hidrografiae Navegaçao, Paulo Sigauque,
SAIAB: South African Institute for Aquatic Biodiversity, Mark Lisher, Moqebelo Morallana,
SWIOFP: South West Indian Ocean Fisheries Project,
UCT : University of Cape Town, Michael Funke,
UEM : Universidade Eduardo Mondlane, Fernandes Nobre, Mauricio Lipassula,
UWC : University of the Western Cape, Riaan Cedras.

Summary of the results:

Results of the Acoustic Survey: The hydroacoustic survey covered the shelf and slope to about 2500 m bottom depth. Continuous acoustic recording and analysis was carried throughout the survey. Pelagic trawling was carried out for pelagic species identification, mainly during dark hours, either as random blind trawl hauls close to the surface with pelagic trawl equipped with large floats, or on registrations. In addition blind surface hauls were made at intervals and at the start and end of each environmental transect to determine the distribution and species composition of juvenile fish. The highest acoustic densities where



found over the shelf and shelf break while further out the recordings were lower and the catches more dominated by plankton and mesopelagic fish towards deeper waters. The dispersed fish distribution and high abundance of plankton made acoustic detection and separation very difficult, and thresholding according to the Cotel methods were used.

Acoustic estimate : The acoustic estimates for the pelagic species groups PEL 1 (*Clupeidae)* and PEL 2 (*Carangidae*, *Sphyraenidae*, *Trichiuridae* and *Scombridae*) shown a biomass of 6.1× and 3.5× higher than the estimate presented in the 2007 Ecosystem Survey report for the whole Mozambique coast.

The differences between the 2007 and present survey acoustic estimates should not be taken as indications of large increases in species abundance. During the present survey new methods for analyzing and interpreting the acoustic data were used and these methodological differences are probably the major cause in the differences in abundance between 2007 and 2009.

Pelagic species were observed both acoustically and in trawl catches along the whole survey track. The PEL 1 group was observed from 10°-13°30'S, then from 14° S to the end of the survey. In 2007 no PEL 1 was observed in this region. The main distribution was over the shelf, but PEL1 were also observed over deeper (>1000m) waters.

The PEL 2 group (*Carangidae*, *Sphyraenidae*, *Trichiuridae* and *Scombridae*) were found from 11°30'S to the southern end of the survey. The main distribution area was over the shelf and shelf break, bu like the PEL 1 group the distribution extended into deeper (>1000m) waters. Compared to the 2007 survey the distribution was wider and extended further to the north.

Results from zooplankton investigations:

Zooplankton was sampled at 42 stations using the multinet. The multinet was deployed after measuring the fluorescence profile using the fluorometer mounted on the CTD rosette. Nets were deployed at different depths above and below the depth of highest fluorescence: two above f-max, one through f-max, two below f-max. Samples for the multinet have been preserved in formalin solution but not analyzed in any way. Therefore no results from the zooplankton investigations can be reported in this preliminary survey report.

Results from Biodiversity studies and bottom mapping:

During the survey a total of 213 species were identified. The fish species caught are grouped according to functional groups. Pelagic trawl catches of fish were grouped according to fish depth of the trawl. In the surface layer the 'Other' and 'Scombrids' groups dominated due to one or two very large catches. Down to 20 meters the 'Other' group still dominated but here hairtails as the second most important.

At 20-100 meters Clupeids were the dominant group with one catch 10× as large as the second largest. Deeper than 100 meters the mesopelagic fish dominated, although the catch rates were less than closer to the surface.

Dedicated observations of marine mammals were carried out on 19 August along the coast while steaming towards Pemba. The course was set close to shore to cover bays where whales and birds had been observed during surveying southwards.

A total of 31 birds and 29 humpback whales were observed from 06:10 to 17:38. A large school of fish was seen feeding actively at the surface next to a mangrove forest. Feeding continued for over 15 minutes and the fish were repeatedly jumping out of the water.

Report: status: final References:

E. Olsen, M. Padera, M. Funke, P. Pires, T. Wenneck, L. Zacarias (2009).**PRELIMINARY-Cruise Report "Dr. Fritjof Nansen", Survey of the living marine resources of North Mozambique, (SWIOFP/ASCLME 2009 Cruise 1), 6 August – 20 August 2009.** Instituto Nacional de Investigação Pesqueira, Maputo, Mozambique, Institute of Marine Research, Bergen, Norway, University of Cape Town, South Africa.

Constraints/Comments:

The report at the moment is **PRELIMINAR.**