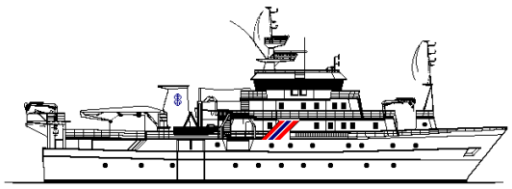
NANSEN PROJECT



Country: Angola				
Research vessel: R/V DR. FRIDTJOF NANSEN				
Survey number: 2015403				
Number of days: 38				
General objectives: Survey of the demersal resources of Angola				
	Port	**Date**	**Coverage**	**Specific objectives**
Departure	Walvis Bay, Namibia	14/02	Angola	• The objectives of the cruise had been previously discussed and agreed upon by the responsible of the Demersal Programme of the Instituto Nacional de Investigação Pesqueira (INIP) of Angola, and the responsible from the Institute of Marine Research (IMR), Norway, for the Angolan Demersal Programme, and were the following: • To survey, map and describe the distribution, composition and abundance of the main demersal species, with special emphasis on seabreams (Sparidae), croakers (Sciaenidae), grunts (Haemulidae), groupers (Serranidae), hakes (Merlucciidae), cephalopods and shrimps (Parapenaeus longirostris and Aristeus varidens) on the Angolan shelf and slope (down to 800 m), from Cunene River (17°14'S) to Tombua* (15°40'S), and from Benguela (12°35'S) to Congo River (06°00'S) using bottom trawl and the swept-area method. • To collect biological data such as length, weight, sex and maturity stage of D*entex macrophthalmus, D. angolensis, Pagellus bellottii, Pseudotolithus spp., Umbrina canariensis, Merluccius polli, M. capensis, Trachurus trecae, Brachydeuterus auritus, Penaeus notialis, P. keraturus, Aristeus varidens, P. longirostris, and Chaceon maritae.* • To collect the stomach contents and otholits for some species such as *Dentex angolensis, D. macrophthalmus, U. canariensis, Merluccius polli, M. capensis,* and *T. trecae,* for subsequent analyses in the INIP Lab. • To collect depth-stratified samples of zoo- and phytoplankton on five monitoring lines –
Arrival	Walvis Bay, Namibia	24/03		

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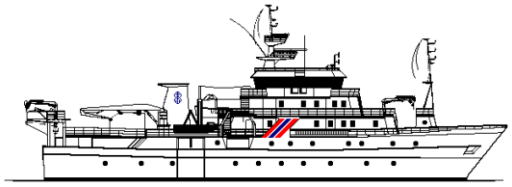


				Luanda, Lobito, Namibe, Congo River, and Cunene – in order to continue the studies on feeding biology, and relate stomach content to estimated zooplankton composition and observed density. • To monitor the general hydrographical conditions using thermosalinograph and CTD-sonde on trawl stations and five oceanographic lines, and map the vertical and horizontal temperature, salinity, oxygen and fluorescence distribution. • To collect catch data from approximately 30 random trawl stations in the central region (9 -110S) • To do parallel trawling with a commercial midwater trawler in the southern region.

Cruise leader: Arved Staby

Participants:
From INIP, Angola:
Virgílio Estevão (local cruise leader), Fátima Delicado, Noemia Nganga, , Adélia Rodrigues, José Amaro Francisco, Marisa De Novato, David Quissungo, Aristóteles Amaro, João Morais, and Tito Milagre
Moçambique, Stela Pedro, Pedro Panzo, Noemia Nganga, and David Quissungo
From IMR, Norway:
Arved Staby, cruise leader (14.02-23.03), Oddgeir Alvheim (14.02-23.03), Tore Mørk (14.02-23.03), Inge Nymark (14.02-23.03), Tor Ensrud (05.03-23.03)

Summary of the results:

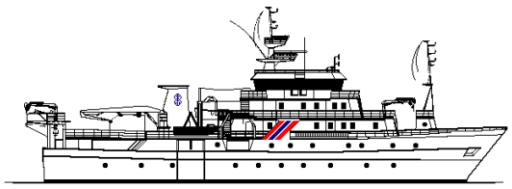
From 14th February to 13th March 2015 the demersal resource survey off Angola was successfully carried out using R/V "Dr. Fridtjof Nansen". During this survey, the shelf and upper slope (20-800m) from Cunene River to Congo River was covered. In total 178 trawl stations were carried out, of which 175 were valid and used in the biomass estimation of the demersal stocks. To map the oceanographic conditions 209 CTD stations were taken.

Hydrographical conditions

The demersal surveys in March coincide with the late phase of the wet season, which causes low salinity in the surface waters on the shelf off northern and central Angola due to the freshwater coming from the coastal rivers.

In southern Angola the surface temperature ranged from 16° C to 26° C and salinity values variety throughout to the region. The lowest values (<36) were recorded between Namibe and west of mouth Cunene river in the open sea and around the coastal zone. Thermal front Angola / Benguela during the cruise was located south of the 17° latitude south. On the Namibe transect the oxygen content on the surface varied from 3 to 5.5 ml/l, and high concentrations (5.5 ml/l) were registered in large bags of surface waters. The fluorescence peaks (0.5 to 1 mg/l) occurred between 0 and 100m depth.

In the central region there was little variation (27° C and 28° C) in surface temperature, except in



the coastal area between Cabo de São Bráz and Cabo Ledo (10°27-9 58'S°), where temperature fluctuated between 25 and 26° C. The salinity varied between 31 and 35.5. South of Ponta das Palmeirinhas due to high precipitation salinity reached values of around 31. On the transect of Lobito, oxygen content varied between 3.5 and 4.5 ml/l at the surface and oxygen minimum zone (OMZ; 1 ml/l) was located at 310 and 480m depth. From the surface to 90m depth high fluorescence peaks were recorded, ranging from 0.5 to 1 g/l, indicating a high productivity of the primary area.

In the northern region temperature values ranged between 27 and 30°C, and salinity varied from 24 to 34. The higher salinity (34) was recorded in Ambriz area, and a minimal (24) registered at the mouth of the Congo River. On the Congo River transect, the oxygen content in the surface layer remained stable (4.5 ml/l. The minimum oxygen zone (OMZ) was recorded below 100m. In terms of fluorescence, biological activity occurred along the coast, with values around 0.3 - 0.9 mg/l.

Report: status: final References:

Report ready

Constraints/Comments: