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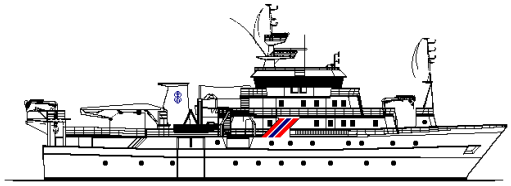

Country: Cape Verde

Research vessel: R/V DR. FRIDTJOF NANSEN

Survey number: 2011406

Number of days: 16

General objectives: to establish the physical, chemical and biological characteristics of the ecosystem associated with shelf region of Cape Verde.

	Port	Date	Coverage	Specific objectives
Departure	Mindelo	4 June	Cape Verde	• To determine the distribution and abundance of small pelagic fish resources along the coast of Cape Verde using acoustics methods and a systematic grid survey strategy. • Obtain information on demersal fish abundance and biodiversity by demersal trawling where bottom-trawlable conditions exist. • To use regular midwater and bottom 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 as far as possible the distribution, abundance and composition of other organisms at a number of trophic levels along the shelf. (Phytoplankton, zooplankton, cetaceans and sea birds, and benthos biodiversity). • Capacity building of CCLME and Cape Verdean trainees and young scientists.
Arrival	Mindelo	18 June		

Cruise leader: Jens Otto Krakstad

Participants:

From Instituto Nacional De Desenvolvimento Das Pescas, Cape Verde: Marcia Valadares Costa, Vito Melo Ramos, Vanda Monteiro Marques, Paulo Varela

From Institute of Marine Research, Norway: Oddgeir Alvheim, Jens Otto Krakstad, Frøydis Lygre, Ole Sverre Fossheim, Inês Dias Bernardes, Jarle Kristiansen,

From Instituto Español de Oceanografía, Spain: Ana Ramos Martos

From Mauritanian Institute for Oceanographic Research and Fisheries, Mauritania: Mohamed Ben Lemlih

From Old Dominion University, USA: Kimberly Wieber

From National Institute of Fisheries Research Morocco: Khalid Manchih

From Universidade de Cabo Verde: Elton Ramos Silva, Eloisa Gomes Monterio

From CCLME: Paul Robinson

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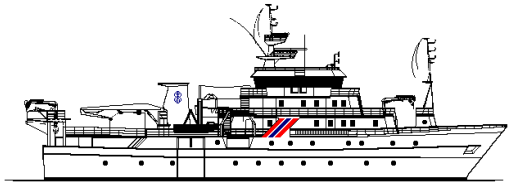


Summary of the results:

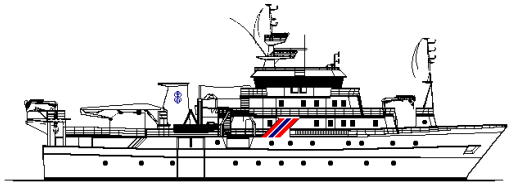
The previous survey with the R.V. Dr. Fridtjof Nansen in Cape Verde was in 1981 with the old Dr. Fridtjof Nansen that was decommissioned in 1993. The trawl gear on that vessel and especially the acoustic equipment was different but the survey methodology today still have many similarities to what was done during that survey. Also other surveys has been conducted in the region most notably for this study the trawls surveys with the INIP vessel R.V. Islandia and the survey in 1997 with the Spanish vessel R.V. Capricórnio.

Pelagic species

The concentration of pelagic fish found during the present survey was low, and no clupeids were found. A total of 3000 tons of Carangids and associated species (PEL 2) were found.
This is considerable lower than the roughly 50 000 tons found during the 1981 survey with the old Dr. Fridtjof Nansen (FAO 1984), although the distribution areas of pelagic fish from the two surveys compared well (but with smaller densities and distribution areas in 2011). The survey in 1997 with the Spanish vessel R.V. Capricórnio (IPIMAR (Portugal); INDP (República de Cabo Verde), 1987) indicates a biomass of almost 15 000 tonnes of mackerel (It is unclear what mackerel means in this context but it is assumed that it is comparable to Pel2 referred to in this report).
The main pelagic species found in 1981 were *Decapterus macarellus*, *D. punctatus* and *D. rhonchus*.
During the present survey all three species were found but none of them were among the most commonly caught pelagic species. Seasonal changes in distribution pattern off the shelf or potential migration of pelagic fish to or from the island group may have had an effect. The most likely reason is however a strong decline in pelagic resources.
The two past surveys compared with the present survey and indicate a strong decline in the pelagic resources over the past thirty years. The present estimate should be verified by another survey in the near future. Pelagic landings should be monitored closely and it is recommended to take management actions to ensure that the stocks of pelagic fish are not depleted further.

Demersal species

The catch rates from the swept area hauls from the 1981 survey was 69.1 tonnes/nm^2 on average. The highest average catch rates were found between the islands of Sal, Boavista and Maio, with average catch rates of 78.6 tonnes/nm^2 (FAO 1984).
The most abundant species during the survey were *Decapterus punctatus*, *Pseudupeneus prayensis*, *Antigonia capros*, *Decapterus rhonchus*, *Lithognathus mormyrus* and *Pagellus acarne*.
During the present survey abundance of demersal resources were considerably lower than in 1981. The total average catch to 500 m depth was 17.37 tonnes/nm^2. The larger shelf area between Maio and Sal yielded the highest catch rates, 20.66 tonnes/nm^2, while the area between Sâo Nicolau and Santo Antâo had average catches of 6.38 tonnes/nm^2.
The three most abundant species overall during the survey was *Dentex macrophthalmus*, *Galeoides decadactylus*, *Antigonia capros*.
The biomass of the 6 most abundant species were < 3000 tonnes, while an overall swept area biomass of about 50 000 tonnes was estimate in 1981 (FAO 1984).
Although the two ways (1981 survey vs 2011 survey) of presenting the biomass estimates are different it strongly indicates that the biomass has decreased considerably over the period. One should keep in mind that the estimates from these surveys mainly are based on results from trawl



hauls on the shelf, as most of the slope is untrawlable. Likewise, seasonal variations in fish abundance and distribution may affect the overall resource situation and will not be picked up during a single survey. It is probable that the overall resource situation is better than what these estimates indicate.

Both pelagic and demersal resources are considerably lower in 2011 than in 1981. These resources of considerable importance to Cape Verde seem to be declining to low levels. Seasonality and survey methodology can however not explain the decline between the two surveys and a general decrease in fish biomass has probably occurred over the period.
It will be important that the resources are monitored regularly and it is recommended another survey to verify the results from the present survey with the R.V. Dr. Fridtjof Nansen.

Report: status: final References:

FAO-NORAD PROJECTNO: GCP/INT/003/NOR CRUISE REPORT "DR. FRIDTJOF NANSEN", **Cape Verde, CCLME Ecosystem Survey, 04 – 20 June 2011.** Bergen 2011

Constraints/Comments:

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