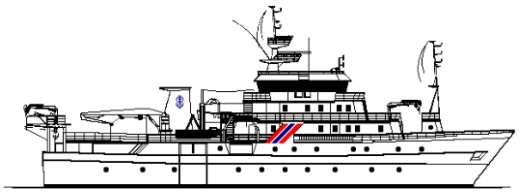
NANSEN PROJECT



Country: Namibia

Research vessel: R/V DR. FRIDTJOF NANSEN

Survey number: 2012406

Number of days: 12

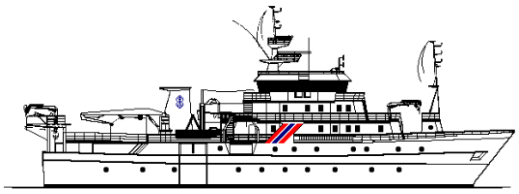
General objectives: Distribution and behaviour of juvenile cape hake (*M. capensis*) off Namibia

	Port	Date	Coverage	Specific objectives
Departure	Walvis Bay	8 October	Namibia	• To acoustically transect the area between 23-250S, and identify acoustic targets by pelagic (multisampler) and bottom trawling. • To collect biological information on target species: *M. capensis*, *S. bibarbatus*, *T.trachurus capensis* • To determine the stomach content and collect otoliths from *M.capensis*. • To collect depth stratified samples of zoo plankton in order to able to relate hake stomach contents to the zooplankton composition and density. • To map the general meteorological, hydrographical and biological conditions in the survey area by means of continuous recordings of weather data, CTD-casts (Temperature, Salinity and Oxygen), ADCP measurements (Acoustic Doppler Current Profiler) and plankton sampling along acoustical and hydrographical transect lines.
Arrival	Walvis Bay	20 October		

Cruise leader: Arved Staby

Participants:
From NatMIRC, Namibia: 08.10-20.10.2012: Sarah Paulus (Team leader), Anne-Marie Amunyela, Victoria Erasmus, Suama Akuumba, Vasana Tutjavi, Ernestus Kangombe, Claudia Kanduuombe, Malakia Shimhanda
From UWC, South Africa: 08.10-20.10.2012: Oliver Numwa
From IMR, Norway: 08.10-20.10.2012: Jan Frode Wilhelmsen, Ole Sverre Fossheim. 08.10-20.10.2012: Arved Staby (Cruise Leader), Oddgeir Alvheim.

Summary of the results:
Juvenile hake distribution
The objective of locating and mapping high densities of juvenile hake was not achieved on this survey. There may be several reasons for this (not in order of importance):
1) juvenile hake occurred outside the surveyed area during the survey period,
2) the timing of the survey was not optimal, i.e. hake do not spawn in autumn/winter, such that an 0-group cohort could have been observed,
3) the high densities of jellyfish and gobies made it difficult to positively identify high densities of small hake acoustically, in essence 'hiding' the presence of juvenile hake,
4) the transect spacing of 15nm was too large, with a high likelihood of missing smaller



aggregations of juvenile hake,
5) acoustic targets were wrongly identified and consequently a decision not to trawl was made.
The largest hake catches were made south of 240 where inshore bottom oxygen concentrations tended to be higher than further north. The size of hake caught throughout the survey was generally above 19 cm, suggesting that most of these fish were spawned during 2011, or earlier. Catches contained few hake below 19 cm in length, and no observations of pelagic hake schools (aggregations) were made. The only pelagic schools identified were observed on inter-transect lines north of 22045'S and consisted most probably of juvenile horse mackerel and other pelagic species (stations 32 and 43).
The current knowledge on the pelagic lifecycle of juvenile hake is limited, if not poor, with limited information available from 0-group hake surveys conducted in the mid 90's with the RV Dr Fridtjof Nansen. It is possible that additional acoustic records of pelagic hake were collected during the period the RV DR Fridtjof Nansen was conducting surveys in the northern Benguela. Such records would be of great help in planning and conducting future surveys to locate and detect pelagic hake schools.
It is clear from this survey that both jellyfish species and the pelagic goby are an integral part of the shelf ecology in the northern Benguela. Acoustic and catch records show that the high densities (abundance) of these species are not a local phenomena, but that these species occur along the entire upper shelf inshore of 150 m, from 210-250S. The vertical and horizontal extent of jellyfish may affect the occurrence of other species and their vertical and horizontal distribution, as well as the entire shelf ecology.

Report status final References:

NORAD - FAO PROJECT: CCP/INT/003/NOR, Cruise reports "Dr. Fridtjof Nansen". Arved Staby, Sarah Paulus and Oddgeir Alvheim. 2012 BCC Survey No.2. Cruise Report No. 6/2012. **Distribution and behaviour of juvenile cape hake (*M. capensis*) off Namibia. 08 October – 20 October 2012.** Institute of Marine Research and National Marine Information and Research Centre, Swakopmund, Namibia. 2012

Constraints/Comments: