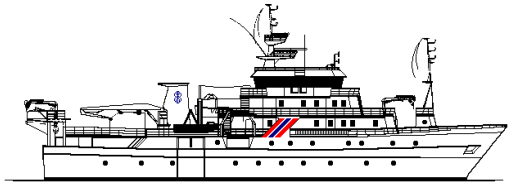
NANSEN PROJECT



Country: São Tomé and Princípe

Research vessel: R/V DR. FRIDTJOF NANSEN

Survey number: 2010405

Number of days: 14

General objectives: Survey of the demersal resources of São Tomé and Princípe

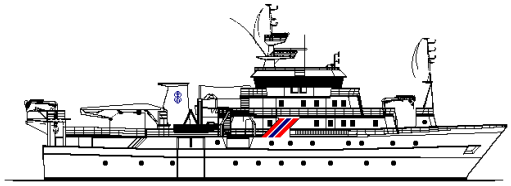
	Port	Date	Coverage	Specific objectives
Departure	Tema	7 May	São Tomé and Princípe	• describe the distribution, composition and estimate the abundance of the main demersal fish species on the shelf by a swept-area trawl programme • map the general hydrographic regime by using a CTD to monitor the temperature, salinity and oxygen at bottom trawl stations and on hydrographical transects • specially watch out for observed dead fish of the genus *Lagocephalus* • on-the-job training covering main survey routines
Arrival	São Tome Port	20 May		

Cruise leader: Jens-Otto Krakstad

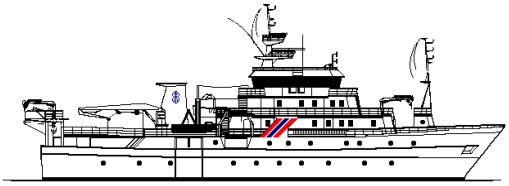
Participants:
Direcção das Pescas, São Tomé and Príncipe:
Virginia Carvalho Godinho, André Bandeira, Leonel Ferreira Nunes da Mota, Jose Dias de Sousa Lopes (local team leader) and Ilair de Conceicão
California Academy of Sciences, USA: Tomio Iwamoto
Institute of Marine Research, Bergen, Norway: Jens-Otto Krakstad , Oddgeir Alvheim, Tore Mørk and Thor Egil Johansson

Summary of the results:

São Tomé and Príncipe are volcanic islands approximately 200 km from the coast of the mainland of Africa, and as such are characterized by an oceanic environment with higher salinity and lower temperatures than along the mainland of Gulf of Guinea. Also the bottom topography and substrate differs greatly from that on the mainland. The coast is rocky and very steep, with a shelf break on both islands around 80 – 100 m depth and bottom depths typically >1000 m off the shelf. The shelf is relatively flat and hard with patches of corral and stones and with sandy substrate in between. Demersal species dominates around the islands, but also pelagic species, carangids, and some few sardinella are found. The biomass estimate for São Tomé and Príncipe was only calculated for the area between 0 – 100 m depth, because trawling was not possible off the shelf break, additionally, due to the nature of the topography on the islands the trawl survey did not cover a fully representative part of the shelf. The biomass estimates presented here must therefore be looked upon as indexes only and not a trough reflection of the actual biomass or a reflection of the total biodiversity. However, the trend in biomass may still be reliable. Generally, the biomass estimated on these islands may seem low due to the small shelf area investigated. If one rather looks at catch rates of demersal species like seabreams, gurnards and snappers, one observe that



these are relatively higher reflecting a relatively high abundance of these species. The fish resources on the island support an important artisanal fishery employing 20% of the nations workforce, and large changes in fish biomass will have huge consequences on the islands.
The abundance of selected species groups on São Tomé was the highest recorded during the surveys with Dr. Fridtjof Nansen since 2004. The overall biomass for these groups was about 1000 tonnes. The abundance has been relatively stable around 800 tonnes during the previous surveys. Looking at Príncipe the abundance was the lowest during the whole time series with 500 tonnes. In 2007 the biomass was estimated at 2 000 tonnes while in 2006, 1000 tonnes was estimated within this area.
The species composition on Principe consisted mainly of gurnards, the species *Dactylopterus volitans* and Seabreams. No biomass estimate was calculated for *Dactylopterus volitans* but the group had this year the highest catch rate observed trough the time series with 74 kg/h compared with 34 kg/h on average for the previous years. The biomass for seabreams was 350 tonnes this year compared with 1100 tonnes in 2007 and 800 tonnes, 1200 tonnes and 1100 tonnes respectively in 2006, 2005 and 2004. Groupers and snappers had catch rates of 40 tonnes each while Carangids was estimated to have an abundance of 30 tonnes and Cephalopods an abundance of 51 tonnes. Rays had an estimated abundance of 5 tonnes while Barracudas was estimated to 3 tonnes. Other species groups were not abundant on the shelf of Príncipe. The lower than previous abundance in Príncipe is mainly due to the low occurrence of seabreams during this survey and may be a reflection of the prevailing environmental conditions with strong influence of water masses from Gulf of Guinea with low salinity and high temperature. This may have affected the seabreams and moved them to deeper waters making them inaccessible for trawling.
Dactylopterus volitans was the most abundant species in catches also in São Tomé with catch rates of 126 kg/h.The most important commercial group in São Tomé were this year snappers (mainly *Lutjanus fulgens*). The biomass of snappers was estimated to 410 tonnes, compared with 160 tonnes in 2007 and 200 tonnes in 2006, In 2005 only one catch of snappers were made but the catch was so big that it was decided to exclude it form the overall biomass calculation because it was not considered representative for the overall abundance. In 2004 150 tonnes of snappers was estimated. The second most important group during the survey this year was the seabreams. 290 tonnes was estimated. However, as in Príncipe this was a decrease from previous years results where the catch rates have been around 450 tonnes. The biomass estimate for grunts was 74 tonnes, an increase from previous years while groupers had an estimate biomass of 44 tonnes. The biomass of carangids, cephalopods, and barracudas were estimated at 91 tonnes, 45 tonnes and 33 tonnes respectively. Other species were of less importance.
Artisanal fisheries currently account for an estimated 60-70% of the protein consumed by the population. Currently, offshore fishery resources of São Tomé and Príncipe are exploited by foreign vessels licensed by the government; these licenses provide important foreign currency needed to purchase imported manufactured products, almost none of which is produced on the islands. (Foreign aid is the most important resource by which the government is able to operate, and the infrastructure maintained and improved.) The lack of adequate monitoring and enforcement capabilities limits the ability of the government to properly regulate the offshore fisheries, and it can be assumed that much unregulated fisheries is surreptitiously conducted.
The country is currently at an inflection point where the potential for greatly increased economic development and consequent disturbances to the marine and terrestrial environments loom large. Undersea oil resources have been located in territorial waters to the north of Príncipe adjacent to the EEZ of Nigeria. There are talk of building a deepwater port and oil-storage facilities on São Tomé. It can only be hoped that revenues accrued from oil will be used wisely to enhance the



economic condition of the country‘s inhabitants and not destroy the pristine nature of the islands and its waters. It is important to record the country‘s biodiversity and advertise its uniqueness to the general populous, so as to instill a conscience of ownership and to ensure its proper preservation and use; the exploitable natural resources must also be documented and their condition monitored over time, so as to provide managers and lawmakers with information that will lead to the enactment of sustainable regulations of these resources. A major goal of the R/V *Dr Fridtjof Nansen* surveys in São Tomé and Príncipe has been to provide the faunal-assessment information that is vital to understand, regulate, and protect the marine resources of São Tomé and Príncipe. There is an urgent need to follow up these surveys in the years to come.

Report: status: final References:

FAO PROJECT: CCP/INT/003/NOR CRUISE REPORTS "DR. FRIDTJOF NANSEN" EAF - N2010/5. **Survey of the fish resources of São Tomé & Príncipe Survey of the demersal resources 10 May - 20 May 2010.** Bergen, November 2010

Constraints/Comments: