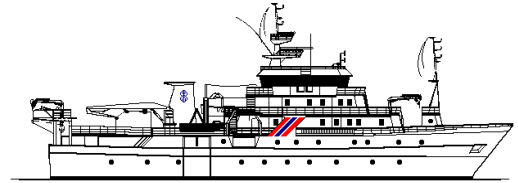


<b>Country:</b> Gabon, Congo, GCLME and BCC area				
<b>Research vessel:</b> R/V DR. FRIDTJOF NANSEN				
<b>Survey number:</b> 2010406				
<b>Number of days:</b> 12 (part I, 55 days in total)				
<b>General objectives:</b> Survey of the pelagic fish resources of Gabon, Congo, DRC, Angola and Namibia (Part I. Gabon and Congo)				
	<b>Port</b>	<b>Date</b>	<b>Coverage</b>	<b>Specific objectives</b>
<b>Departure</b>	Port Gentil	18 June	Gabon Congo	<ul style="list-style-type: none"> <li>• Estimate the abundance and to map the distribution of the main commercially important pelagic and semi-pelagic fish species in the region, including the two sardinella species <i>Sardinella aurita</i> and <i>S. maderensis</i>, the Cunene horse mackerel <i>Trachurus trecae</i> and other pelagic species.</li> <li>• Collect stomach contents and gonads of important pelagic fish species in the region to increase knowledge on feeding and reproductive pattern</li> <li>• 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.</li> <li>• Collect bottom sediment samples.</li> <li>• On-the-job training for the local and regional participants on the main survey routines.</li> </ul>
<b>Arrival</b>	Pointe Noire (Part I)  Walvis Bay	30 June  11 August		
<b>Cruise leader:</b> Sigbjørn MEHL				
<b>Participants:</b>				
<u>From Direction Générale des Pêches et de l'Aquaculture, Gabon:</u> Pulcherie MENGUE M'ADZABA, Marcelle Guylène NKOANE NDOUTOUME and Jean de Dieu LEWEMBE				
<u>From Direction Générale de la Pêche Maritime, Congo:</u> Claude Benoît ATSANGO and Romuald Tite AKENZE				
<u>From Department of Biology, University of Kinshasa and ISP-Gombe, R.D. Congo:</u> Séraphin Ifuta Ndey BIBUYA.				
<u>From Department of Biology, UPN, Kinshasa, R.D. Congo:</u> Jolie KIPIMBYE LUKONDE				
<u>From Direcção das Pescas, São Tomé e Príncipe:</u> Virginia Carvalho D'Almeida GODINHO and José Dias de Sousa LOPES (co-cruise leader)				
<u>From Nigerian Institute for Oceanography and Marine Research, Lagos:</u> Ndubuisi AJUONU				
<u>From Department of Oceanography and Fisheries, University of Ghana:</u> Eunice KONADU-TWUM				
<u>From UNIDO/GCLME, RCU, Ghana:</u> Socrates APETORGBOR				
<u>From Instituto Nacional de Investigação das Pescas (INIP), Angola:</u> Aristóteles Patríce da Silva				





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## AMARO

From Institute of Marine Research (IMR), Bergen:

Sigbjørn MEHL (cruise leader), Diana ZAERA, Tore MØRK and Ole Sverre FOSSHEIM

### Summary of the results:

During the survey the vessel covered a total of 1 841 NM, with 20 pelagic hauls, 14 demersal, 75 CTD stations, 16 plankton and 7 grab stations taken.

In the present survey the environmental conditions were characterized as stable. Little wind was observed in the survey area and the conditions were favourable for acoustic estimations. SST ranged from 19° to 26°C, while salinity fluctuated between 35-36.

Several areas in Congo and Gabon have restricted access due to oil exploitation activities, particularly the area off Olinde (Gabon), which is large and can possibly contain high abundance of pelagic fish. The area is not included in the present abundance calculations.

### Sardinellas

The sardinellas were distributed in several low density areas ( $s_A < 300$ ) with few areas of medium density ( $300 < s_A < 1\ 000$ ) along the coast of both Gabon and Congo, between 20 and 100 m depth. Concentrations increased in the southern part of the survey area. The two species were often separated: *S. aurita* was found further offshore than *S. maderensis*.

*S. aurita* ranged from 5 to 31 cm total length (TL), with four apparent modal peaks around 10, 19, 25 and 28 cm. Although juveniles of *S. aurita* (fish <15cm TL) dominated the catches they represented around 20% of the total biomass. The length distribution for *S. maderensis* ranged from 9 to 28 cm TL, with four apparent modal peaks at around 10, 20, 24 and 26 cm. The cohort of smallest fish (9-11 cm TL) of *S. maderensis* represents less than 5% of the total biomass.

The biomass for both sardinellas was estimated at 108 000 tonnes (79 000 tonnes of *S. aurita* and 29 000 tonnes of *S. maderensis*), which is less than the 142 000 tonnes estimated in 2008 (80 000 tonnes of *S. aurita* and 62 000 tonnes of *S. maderensis*). The proportion of *S. aurita*, in relation to *S. maderensis*, was higher this year as compared with last year: 73% of the Sardinella was calculated to be *S. aurita*, compared to 56% in 2008.

The highest abundance in the time series for the region was recorded at 416 000 tonnes in 2005. Since then the sardinellas' biomass has been declining with the lowest value found during the present survey.

### Other Clupeids

As last year some *Ilisha africana* were found inshore along the coast associated with brackish water areas. The abundance was low and no abundance estimate or distribution map was produced. Anchovy, *Engraulis encrasicolus*, was found on 6 trawl stations close to the coast in both Gabon and Congo. No acoustic values were allocated to these species and no biomass estimate was calculated.

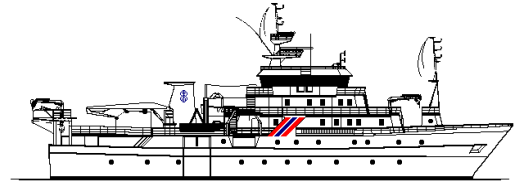
### Trachurus trecae

The horse mackerel *Trachurus trecae* was distributed on the mid shelf mostly off southern Gabon and in Congo, between 50 m and 100 m depth. Five low density ( $s_A < 300$ ) areas were detected. The species was observed mainly on the shelf edge mixed with other demersal species. It was generally found close to the bottom making it sometimes difficult for acoustic species separation. The length distribution shows only one cohort of fish with a peak at 14 cm. The cumulative biomass also reflects that only one cohort was present in the survey area. 50% of the biomass consisted of fish >15 cm. The total biomass of *T. trecae* in the distribution area was 7 800 tonnes. This is slightly higher than the 5 600 tonnes estimated in 2008. The 2007 estimate (400 tonnes) was the lowest recorded in the region during the last seven years. The biomass is still very low and no new recruitment was observed this year.





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### Other pelagic fish

The Pelagic group PEL 2 (carangids, scombrids, barracudas and hairtails) was more or less continuously distributed along the coast of Gabon and Congo, from around 20 m to approximately 100 m depth. The fish were generally scattered and density was low ( $s_A < 300$ ). Catch rates were separately analysed for Gabon and Congo. Assuming an average total length of 23 cm for all the species and a measured condition factor of 0.88, the biomass of PEL 2 was estimated to 45 000 tonnes; 33 000 tonnes in Gabon and 12 000 tonnes in Congo. In 2008 the total PEL2 biomass was estimated to about 40 000 tonnes: 32 000 tonnes in Gabon while 8 000 tonnes were found in Congo.

### Report: status: final References:

NORAD/FAO PROJECT GCP/INT/003/NOR. CRUISE REPORTS DR. FRIDTJOF NANSEN.  
**Survey of the pelagic fish resources of Gabon, Congo, DRC, Angola and Namibia. Part I. Gabon and Congo.**

### Constraints/Comments:

Summary of the results are provided also in French on the report

