

Northwest Atlantic



Fisheries Organization

Serial No. N4541

NAFO SCR Doc. 01/147

**SCIENTIFIC COUNCIL MEETING – SEPTEMBER 2001**  
(Deep-sea Fisheries Symposium – Poster)

Composition of Demersal Fish Assemblages in Deep-waters of the Western Guinean Gulf

by

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**Abstract**

Data from deep water hauls carried out during the Spanish Research trawling Survey 'GUINEA -90', conducted in Sierra Leone, Liberia, Ivory Coast and Ghana, between 100 and 700 m depth, were analysed. The taxonomic list of the survey showed a total of 91 fish species caught between 100 and 700 m depth. The maximum species richness and the highest abundances were found between 200 and 300 m (60 species), depth range corresponding to the breaking of the continental shelf and to the upper part of the slope. Despite the local differences, the 'GUINEA -90' Survey showed the existence of fish assemblages.

**Introduction**

Data from deep water hauls carried out during the Spanish Research trawling Survey 'GUINEA -90', conducted in Sierra Leone, Liberia, Ivory Coast and Ghana, between 100 and 700 m depth, were analysed (Fig. 1).

Mean catches (kilograms in half hour trawling) presented maximum values in the Ivory Coast–Ghanian sector, while regarding the bathymetrical distribution of the assemblages, highest abundances were observed between 200 and 400 m depth (Fig. 2).

The taxonomic list of the survey showed a total of 91 fish species caught between 100 and 700 m depth: 13 belonging to Chondrichthyes, and 78 to Osteichthyes (Fig. 3). The maximum species richness and the highest abundances were found between 200 and 300 m (60 species), depth range corresponding to the breaking of the continental shelf and to the upper part of the slope. Depths above this bathymetric range exhibited lower species richness values (20 species at 100 m as well as at 550 m) (Fig. 4).

Despite the local differences observed in the faunistic composition, the results of the 'GUINEA -90' Survey showed the existence of fish assemblages very similar to those described by Fager and Longhurst (1968) and Longhurst (1969) for the Tropical Africa waters.

The **deep shelf assemblage** is the poorest in species (mean richness: 15.1 species by haul). It was represented by *Spicara alta*, *Ariomma bondi* and *Antigonia capros* being the former more abundant in Ivory Coast and the latter off Sierra Leone and Liberia. Both species were included by Longhurst in the Deep Sparids Community. Secondary species in this community were *Aulopus cadenati*, (in Sierra Leone and Liberia), *Bembrops heterurus*, *Ponthinus kuhlii* and *Peristedion cataphractum* (in the remaining countries)(Fig. 5).

The **continental slope assemblage** was located below 200 m depth. The absolute richness was of 82 species, with mean values of 28.9 species for the depth range between 200 and 400 m, and of 27.9 species for this between 400 and 700 m. According to the description of this community made by Longhurst (1969), which is characterized by the occurrence of *Hypoclidonia bella*, Macrouridae, Moridae and some Chondrichthyes, it was possible to distinguish two subgroups:

- 1) An **upper slope community** distributed down to 400 m and defined by high abundances of *Hypoclidonia bella* and *Chorophthalmus* sp. and a high number of accompanying fish species found across the whole surveyed zone, such as: *Peristedium cataphractum*, *Malacocephalus* sp., *Coelorhynchus coelorhynchus*, *Trigla lyra*, *Synagrops microlepis*, *Zenopsis conchifer* and *Chascanopsetta lugubris*.
- 2) A **deep slope community** distributed deeper than 400 m, characterized by a dramatic decrease in biomass, an stability in the species richness and the substitution of Macrouridae by other dominant fish taxa (*Centrophorus granulosus*, Lophiidae, *Lamprogrammus* sp. and *Cubiceps* sp.).

### Conclusions

Although with local differences the faunistic composition of the 'GUINEA-90' survey showed the existence of fish assemblages very similar to those described by Fager and Longhurst (1968) and Longhurst (1969) for the Tropical Africa waters, extending the knowledge about the deep fauna.

The maximum abundances found in the Ivory Coast – Ghanaian sector coincides with the up-welling of the Central Guinean Gulf where the highest productivities occur (Willimas, 1968). While that the highest values observed between 200 and 400 m depth are likely related with the inexistence of fishing activity in this area as a consequence of the low commercial value of the species on the fish communities inhabiting this depth range.

Due to overexploitation situation of shel stocks, the FAO Working Groups have recomended the removing of fishing effort to deep shelf. Discarding deep species as *A. bondi*, *S. alta*, *H. bella* and demersal sharks would constitute alternative resources.

### References

- Fager, E.W. and Longhurst, A.R. 1968. Recurrent group analysis of species assemblages of demersal fish in the Gulf of Guinea. *J. Fish. Res. Board Can.*, 25 (7): 1405-1421.
- Longhurst, A.R. 1969. A review of the ocanography of the Gulf of Guinea. *Bull. Inst. Fr. Afr. Noire (A)*, 24(3): 633-663..
- Ramos, A., Sobrino, I., L. Fernández and J.F González. 1991. The "Guinea 90" Survey. FAO, *CECAF/ECAF Ser.* 91/52: 295 pp, 8 maps and photographs.



Fig. 1. Localization of surveyed area.

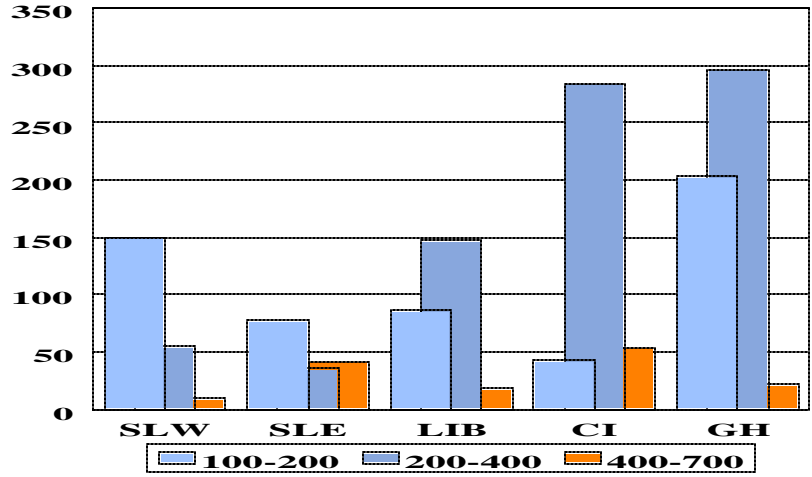


Fig. 2. Yields (kilograms in half hour trawling) by zone and depth range.

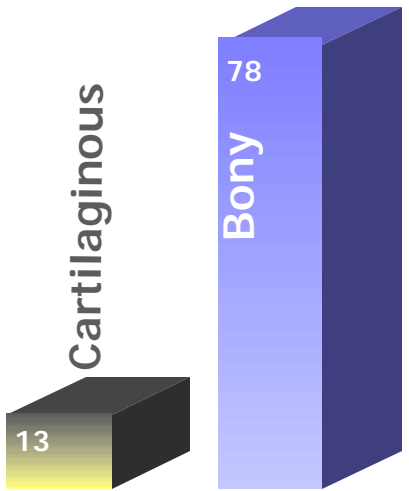


Fig. 3. Number of fish type.

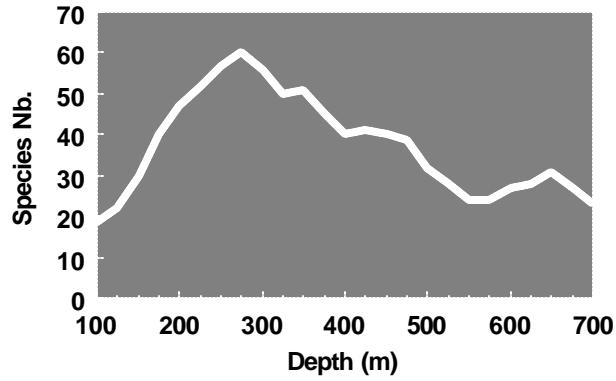


Fig. 4. Species richness by depth.

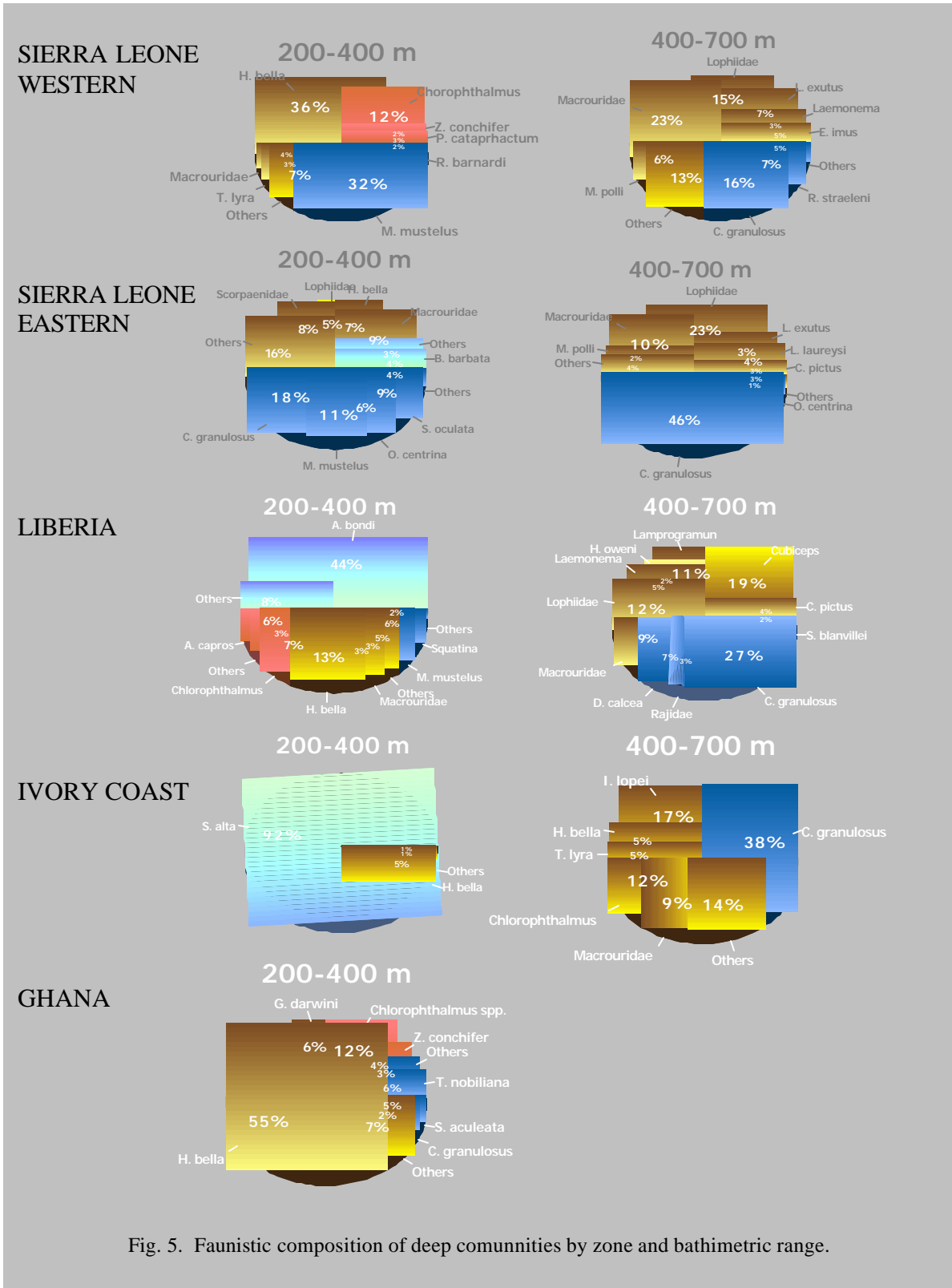


Fig. 5. Faunistic composition of deep communities by zone and bathymetric range.