Environmental heterogeneity preference of deep-water fishes in a deep seamount (Galicia Bank)

By

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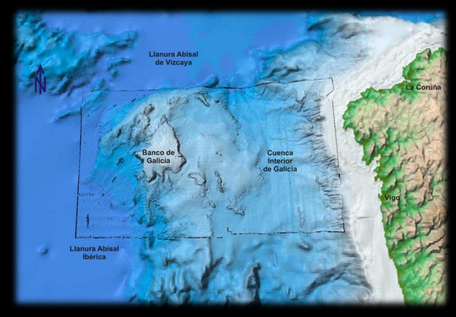
Material and Methods

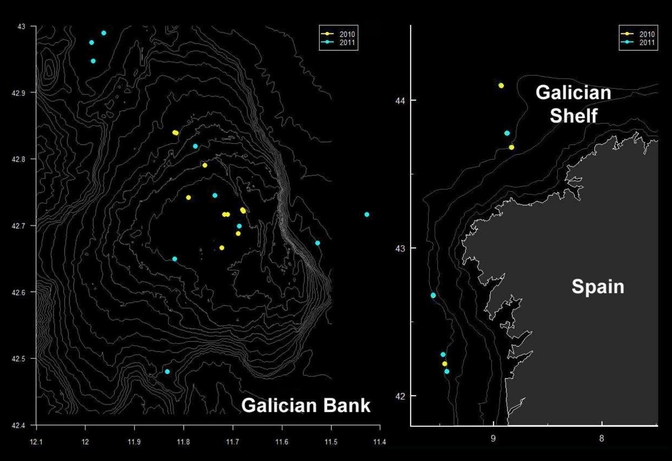
During the summer of 2010 and 2011, 20 hauls were performed in the Galicia Bank. In addition the information from Demersal Survey in the Galicia shelf (Northwest of Spain Shelf) was taken into account to analyse the singularity of the Galicia Bank in comparison with the adjacent continental shelf, respect fish assemblages. In this case only was used the hauls (11) made in 2010 and 2011 deeper 500 m, from sectors Miño-Finisterre and Finisterre-Estaca de Bares (Serrano et al., 2010). The sampling unit consisted of 30-minute hauls at a speed of 3.0 knots, using a GOC73 otter trawl for Galicia Bank Survey and Baca 44/60 otter trawl gear for Cantabrian Sea Survey.

To analysed fish assemblages, a hierarchical cluster analysis was applied to the species abundance matrix using the Euclidian Distance similarity index. The distance matrix was processed using the UPGMA algorithm

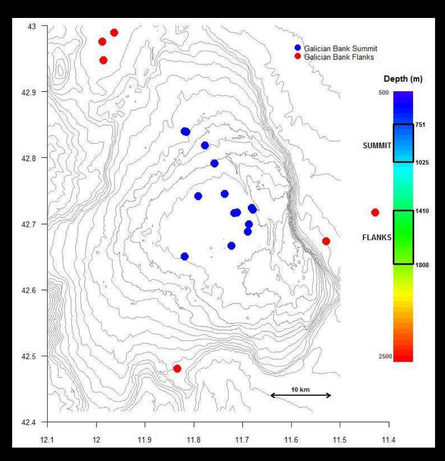
INDEMARES Project

The aim of the INDEMARES Project is to obtain information to identify valuable areas for the Natura 2000 network in the Spanish sea. One of these potential marine protected areas is the Galicia Bank, a large seamount located at 150 miles far from the west coast of Galicia coast. This deep seamount have a flat summit with slight slopes from 600 m to the bank break around 1000 m. Deeper 1500 m, slope increases sharply until it reaches the abyssal platform, at 5000 m deep.





Spatial distribution of hauls



Spatial distribution of hauls in Galicia Bank by cluster

Fish Assemblages

Flank of Bank (>1410 m)

Top of Bank (751-1025 m)

Galicia Deep Shelf (560-760 m)

Galicia Bank Ichthyofauna

Hoplosthetus atlanticus

Hoplosthetus mediterraneus

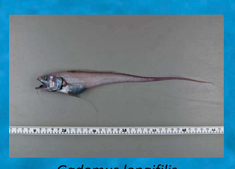
Argyropelecus olfersi

Bathypterois dubius

Rowlenia_atrita

Coryphaenoides_guenteri

Halargireus johnsoni



Gadomus longifilis

Centroscymnus coelolepis

Alepocephalus bairdi

Batysaurus ferox

Fotostomia guerney

Results

94 fish species were identified in the Galicia Bank Surveys. Three assemblages were identified. The first dendrogram dichotomy separates the top of the Galicia Bank and the Galicia Deep Shelf from the deep zone of Galicia Bank (Bank flanks). For the first two clusters, one of the most important species (in biomass) is *Hoplostethus mediterraneus*, and both areas we could consider associated with the Mediterranean Outflow Waters (MOW) (van Aken, 2000). For the Galicia Deep Shelf the main species were *Galeus melastomus, Hoplostethus mediterraneus, Chimaera monstrosa* and *Deania profundorum*. The richness in these two years was 43.

For the Galican Bank Summit, 40 species were identified, of which 32% were not found during the same period in the Galicia Shelf. The main species (in biomass) *were Hoplostethus mediterraneus, Alepocephalus bairdii*, *Mora moro* and *Scymnodon ringens*. It is important to note, that commercially important and abundant species in the Galican Deep Shelf as *Galeus melastomus*, *Galeus atlanticus*, and *Merluccius merluccius* , *Helicolenus datylopterus* have not been found in the Galicia Bank.

The third assemblage was located between 1,400 and 1,800 m depth, affected by the Labrador Sea Water (LSW) (van Aken, 2000). The main species (in biomass) were *Alepocephalus bairdii*, *Centroscymnus coelolepis*, *Rouleina attrita* and *Halargyreus johnsonii.* 44 species were identified, of which 75% are unique to this assemblage. Among them we can highlight several species of the genus *Aldovrandria* and *Coryphaenoides*, and the species *Conocara macropterum*, Cataetyx laticeps *Hoplostethus atlanticus*, …

References

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