

# Banco Gorringe - A Potential MPA

## Location

Banco Gorringe is a volcanic seamount off the south-west coast of Portugal. It is situated in the Exclusive Economic Zone of Portugal at 36°30'30 N, 11°20' W.

## Potential Reasons for Selection

Banco Gorringe represents a seamount with large areas of exposed hard substrate supporting sessile filter feeding invertebrates and species communities associated with kelp beds. The structured habitat also provides food and shelter for commercially important fish species, turtles and cetaceans.

## Seamounts

Seamounts are defined as undersea mountains rising steeply at least 1000 m from the surrounding flat abyssal plain and having a limited extent across the peak. Usually the top of the seamounts is below sealevel. But due to their volcanic origin, tectonic elevations generate a continuum of seamount tops in abyssal depths to break through the surface like the Azores archipelago. Seamounts are not just elevations from the sedimentary sea floor but their tops and slopes are covered by concrete-like hard substrate made up of hydrothermal precipitates: on top of volcanic host rocks, these so-called manganese crusts, on average about 3 cm thick, form as metallic oxides through accretion of metal ions which are supplied by the water currents. Depending on

hydrographic and geological factors, the crusts contain varying concentrations of precious minerals such as cobalt, vanadium, molybdenum, platinum, as well as copper and nickel.

Due to their size and shape, seamounts have complex effects on the oceanic circulation, extending from deflection of ocean currents at the largest scale to amplification of tidal currents and trapping of eddies

to form a closed circulation in the overlying water column. The concurrent upwelling provides ample

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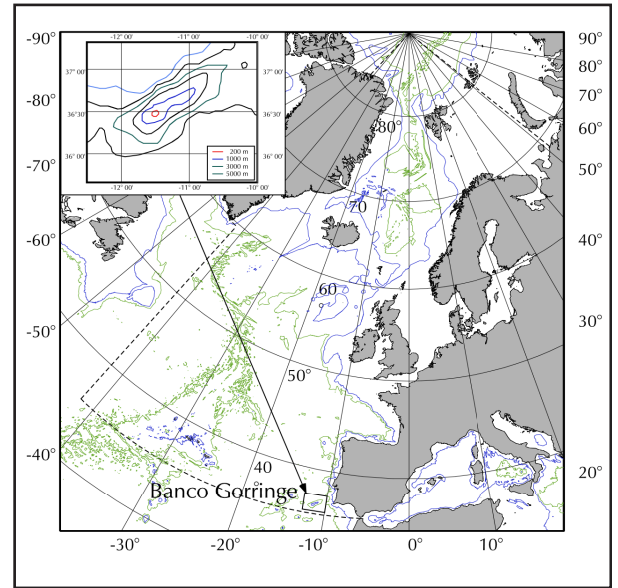


Fig. 1: Map of the North-East Atlantic with insertion of the topography of Banco Gorringe enlarged. The seamount rises from waters almost 5000 m deep to less than -20 m and extends in SW-NE direction ca. 125 nm off the SW coast of Portugal.

nutrients for the enhancement of primary production. Consequently, in many places the biomass and abundance of planktonic organisms was found to be elevated compared to the surrounding waters. Possibly, seamounts not only function as a stepping stone for transoceanic dispersal of plankton and planktonic larvae of benthic species, but also host a significant proportion of endemic species. The most striking biological feature of seamounts is their richness in hard bottom suspension feeders which profit of the enhanced currents transporting rich planktonic life: corals can be particularly abundant with gorgonian, scleractinian and antipatharian corals being recorded where the currents are strongest e.g. on vertical walls and on crests of seamounts with wide peaks. Further, sponges, hydroids, ascidians as well as crinoids, holothurians, shrimps a.o. occur and provide ample food and diverse habitats for fish and other nekton to grow. This is reflected in the high density of large predatory fish like swordfish, tuna, sharks and rays near oceanic seamounts. While in the surrounding deep sea areas the density of catchable fish is too low and the flesh not tasty, some species of fish aggregating at seamounts to spawn, like pelagic armourhead (*Pseudopentaceros wheeleri*) and orange roughy (*Hoplostethus atlanticus*), became commercially interesting. These and other populations of long-lived, slow growing and little reproducing deep water fish are now being heavily exploited. Not only the level of exploitation is unsustainable, but the trawling itself destroys the diversity of benthic life, leaving behind a desert of smashed coral pieces. Removal of top predators probably changes the entire food web.

**Justification for the Potential Selection of Banco Gorringe as an Offshore Marine Protected Area**

## Site description

Banco Gorringe is a large seamount that arises from abyssal plains at almost 5000 m depth on its northern side to peaks at only 20-28 and 33-46 m depth. It is part of the Horseshoe Seamounts range, presents a topographic barrier to the flow of Meddies (eddies of Mediterranean water) and tends to deflect them to the west. The surface of the seamount is composed of recent conglomerates and lava flows with some areas of exposed carbonate rock.



Fig. 2: Hard bottoms provide substrate for a diverse sessile filter feeding fauna. On Banco Gorringe, several species of fragile gorgonians and scleractinian corals are known.

## Biological features of Banco Gorringe

Little is known about the biology of the Gorringe Bank but there is evidence of its high ecological value: Banco Gorringe serves as a „stepping stone“ for the dispersal of benthic fish species from the African Continent to Madeira and from Madeira to Azores. The upper 130 m are covered by kelp forests. There is a diverse sessile fauna, hard substrate specialists, composed of filter feeders such as hydroids, gorgonians and corals. The sediments of the upper strata are dominated by serpulid worms, cirripeds, gastropods and benthic foraminifera. Beyond 160 m depth, bryozoans and molluscs, beyond 350 m planktonic foraminifera and pteropods make up the sediment. Due to the kelp forests and sessile hard bottom fauna, this seamount is supposed to host important stocks of fish species, including those of commercial interest. Around the peaks down to 200 m occur spiny lobster, scabbard fish, conger eel and all sorts of breams. Further down, *inter alia*, forkbeard, blackmouthed and birdbeaked dogfish, silver roughy and a grenadier species are found. Further species of several families of rays as for example electric rays and stingrays as well as dolphins and turtles have been reported.

## Threats

The deep sea fishery, mainly in terms of drifting vertical long-line fishery, extends to 2000 m depth. The extent to which trawling is done is unknown. It is unclear whether the habitats are impacted by fishing activities. However, all deep-sea fish species occurring, and in particular sharks and rays are vulnerable to overfishing.

## Management Issues

Seamounts are „hot spots“ of biological productivity and harvestable biomass in the open ocean. In particular, spawning aggregations of deep sea fish are potential subjects to overexploitation and abuse as a result of the rapid technological progress in deep sea fishing methods. Little is known about the majority of deep sea species, including fishes. In hardly any case, the full generation cycle is known - even in local terms. Therefore, seamounts should be closed to fishing in order to function as a refuge and seed area for deep sea fish populations and to safeguard the fragile habitat structures required for an undisturbed ecosystem functioning. As a minimum, the extent of fishing, in particular of trawling should be investigated and management plans negotiated.

## Legal aspects

The Banco Gorringe seamount is located in the Exclusive Economic Zone (EEZ) of Portugal, giving it the right to exploit its natural resources while fisheries are administered by the EU. However, Contracting Parties to the UN Convention on the Law of the Sea (UNCLOS) have the general obligation to „protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life“ (Article 194(5)). Furthermore, the Convention on Biological Diversity obliges its Contracting Parties to conserve and sustainably use biodiversity by a.o. creating protected areas (Article 8(a)). This is reflected by Annex V of the OSPAR Convention. Banco Gorringe qualifies as Special Area of Conservation (SAC), to be included in the future Natura 2000 network of protected sites according to the criteria of the European Habitat Directive of 1992 if applied to the 200 nm EEZ of Portugal.

## Action required

Portugal should nominate Banco Gorringe as a SAC to the European Community and propose it as Marine Protected Area to OSPAR. Management plans have to be developed and enforced.

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## References / Further Reading

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