

Distribution of marine megafauna on underwater seamount Mont'Ana, Azores

Seamount Ana is located south of the island Faial (Azores, Portugal) about 3km south of Horta. Three submarine cruises with the submarine "Lula 1000" (Rebikoff-Niggeler Foundation) were carried out (Fig. 1) to identify sessile, benthic, epibenthic and pelagic megafauna. Megafauna comprises large animals (>10cm in size) living in the ocean such as sponges (Fig. 2h), cold-water corals (Fig. 2a-g), sea urchins (Fig. 2i), octopus (Fig. 2u), squid (Fig. 2v), crabs (Fig. 2j-m) and fish (Fig. 2n-t). The gardens of cold-water corals form magnificent and fragile biodiversity hot spots in the ocean. Mont'Ana is in an exceptional position being so close to the shore of Faial. There are only a very few places like this on Earth.

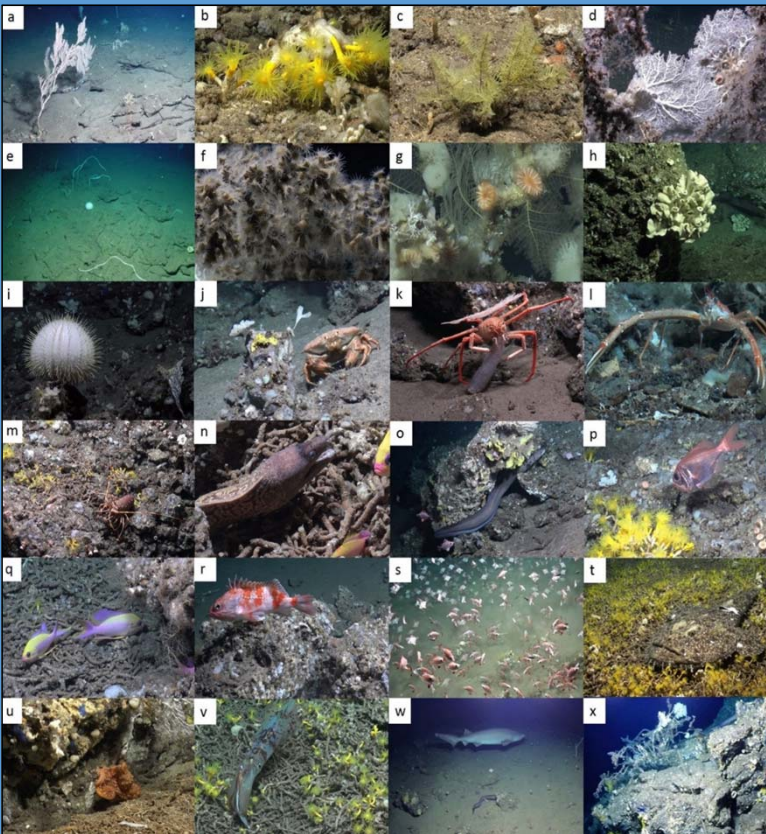
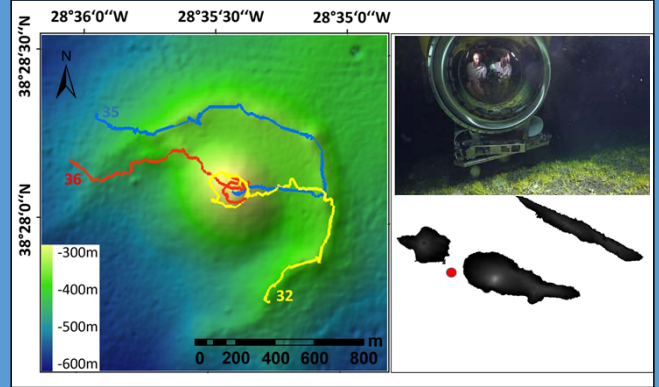


Fig. 2 Typical animals living on Mont'Ana: (a) *Callorgia verticillata*; (b) *Eguchipsammia* sp.; (c) *Elatopathes* sp.; (d) *Errina dabneyi*; (e) *Viminella flagellum*; (f) *Epizoanthus* sp.; (g) *Caryophyllia cyanthus*; (h) *Leiodermatium* sp.; (i) *Echinus acutus*; (j) *Cancer bellianus*; (k) *Paromola cuvieri*; (l) ?*Munida rugosa*; (m) *Palinurus alphas*; (n) *Muraena helena*; (o) *Conger conger*; (p) *Hoplostethus* sp.; (q) *Anthias anthias*; (r) *Helicolenus dactylopterus*; (s) *Capros aper*; (t) *Lophius piscatorius*; (u) *Ocythoe tuberculata*; (v) *Loligo forbesii*; (w) *Hexanchus griseus*; (x) Lost fishing gear entangled on rock and coral

Four main habitat types have been investigated on Mont'Ana: Impressive is the extensive coral garden of *Eguchipsammia* sp. polyps (Fig. 3d) and the densely populated hard rock substrates (Fig. 3c) being home of about 50 species of megafauna. The appearance of animals on Mont'Ana was different on soft sediment, mixed, hard rock and rubble (Fig. 3,5). Most species occurred on rock, mixed and rubble substrate, making these structures very important for species diversity and abundance. Only a few live on soft sediment which is the most common in the ocean.

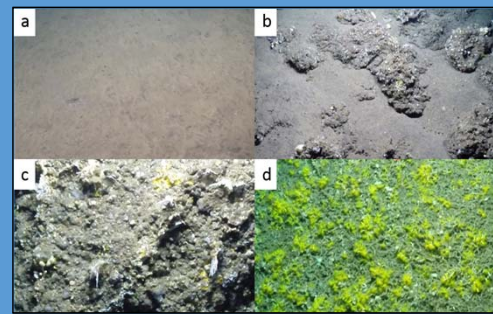


Fig. 3 Different substrate types on Mont'Ana: (a) soft sediment (mainly bioclastic origin), (b) mixed substrate of hard rock and sediment, (c) hard rock (volcanic origin), (d) rubble (coral origin).

The quantitative analysis of megafauna on Mont'Ana is important to understand ecosystem functioning and trophic interactions to preserve these unique animal communities. Fishing activities can be dangerous for megafauna because nets and lines can get entangled on sponges, corals and hard rocks and destroy thereby the habitat of other animals which live, feed or hide on and in between them (Fig. 2x and Fig. 4). Since we know only little about the biology of cold-water corals and associated fauna it is important to sustain fragile and vulnerable habitats like Mont'Ana as an important ground for spawning and nursery for economically interesting fish as well as for further investigations to understand functioning of deep-sea ecosystems. The quantitative assessments of megafauna and its distribution patterns (Fig. 5) on a seamount carried out by LULA1000 are among the first investigations to this extent in the world.

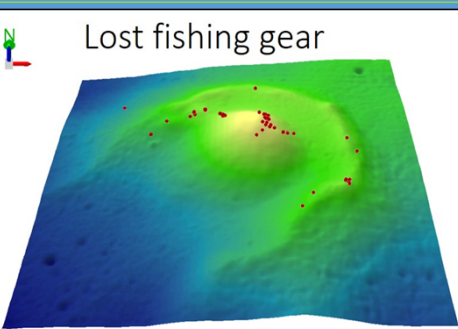


Fig. 4 Lost fishing gear (red dots) found on Mont'Ana

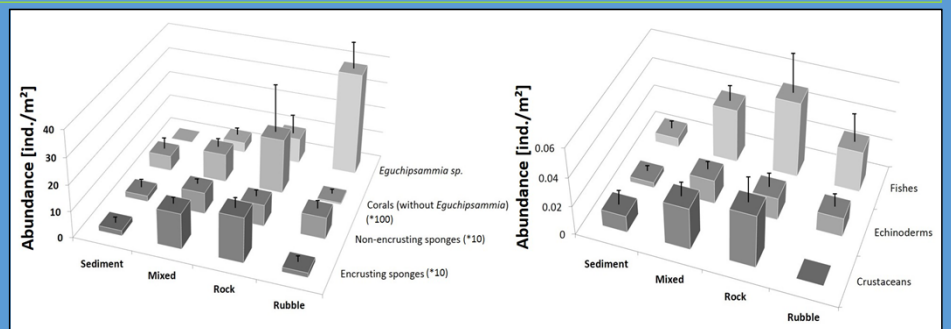


Fig. 5 Appearance of megafauna on Mont'Ana on different grounds. Abundances (mean \pm 95% c.l.) are given either for individuals (*Eguchipsammia*, echinoderms, crustaceans and fishes) or patches/colonies (sponges and corals).