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PRELIMINARY DATA ON DEEP-SEA BENTHIC HABITATS DOCUMENTED IN FOUR MACARONESIAN SEAMOUNTS

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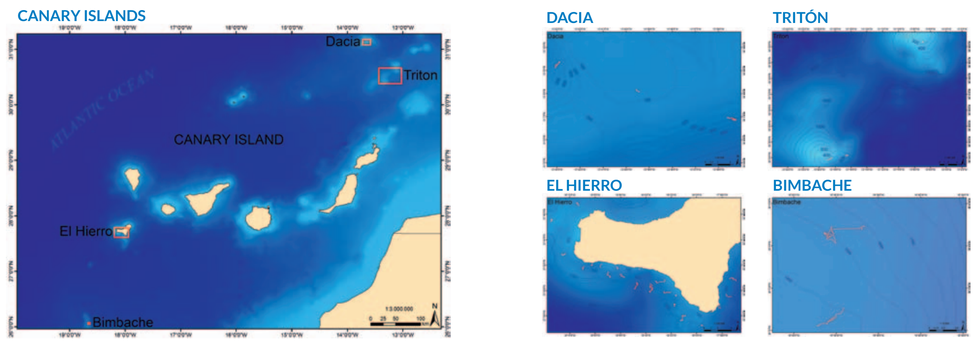
Abstract

Seamounts are considered biodiversity hotspots and the Macaronesian region hosts over one hundred of them. However, biological information on these underwater elevations remains scarce. In 2014, Oceana launched an at-sea campaign aimed at identifying and describing deep-sea benthic communities that inhabit several Macaronesian slopes and remote seamounts. As a preliminary outcome, the presence of Vulnerable Marine Ecosystems (VMEs) was documented in all of the sampling sites. A description of the main benthic communities associated with specific depths and substrata was completed as a result of this work.

Key-words

Seamounts, Macaronesia, cold water corals, deep-sea sponges, deep-sea habitats, VMEs



Main habitats recorded with reference to location and depth range

	Predominant habitats/species	Location	Depth range (m)	
Anthozoa	*Stichopathes* sp. garden	El Hierro Dacia Triton	100-455	
Anthozoa	*Anomocora fecunda* facies	El Hierro Dacia Triton	187-360	
Anthozoa	*Viminella flagellum* gardens	El Hierro Triton	218-550	
Anthozoa	*Callogorgia verticillata* gardens	El Hierro Dacia Triton	282-446	
Anthozoa	*Ancanthogorgia hirsuta* gardens	El Hierro	500-840	
Anthozoa	*Madrepora oculata* and/or *Lophelia pertusa* reefs	El Hierro Bimbache Triton	738-872	
Anthozoa	*Acanella arbuscula* gardens	El Hierro Bimbache	738-966	
Anthozoa	*Corallium niobe* and *C. tricolor* gardens	Bimbache	882-979	
Porifera	*Axinella vaceleti* aggregations	El Hierro	74-106	
Porifera	Lithistid sponges aggregations - *Corallistes masoni* - *Leiodermatium lynceus* - *Neophrissospongia nolitangere*	El Hierro Bimbache Dacia Triton	350-909	
Porifera	Hexactinelid sponges aggregations - *Aphrocallistes beatrix* - *Regadrella* cf. *phoenix* - *Farrea* cf. *foliascens*	El Hierro Bimbache Triton	662-982	

Introduction

Seamounts are regarded as biodiversity hotspots (Morato *et al*., 2010), partly due to the fact that they alter or redirect the flow of water around them, resulting in enhanced currents, eddies, and upwellings (Pitcher *et al*., 2008; IUCN, 2013). While interest in these underwater features is growing, and increased research effort has recently been directed at studying them, most seamounts remain unexplored.

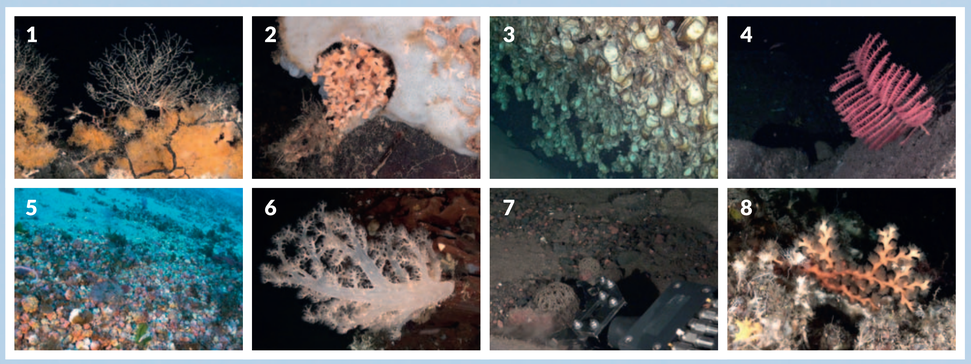
This study aimed to improve the state of knowledge about El Hierro in the Canarian archipelago (considered in this study as an emerged seamount, Staudigel *et al*., 2010) and additionally, to explore two remote seamount clusters, describing and identifying the main benthic communities which inhabit them.

Materials and methods

Data were collected during a one-month, at-sea campaign in 2014, allowing the observation of these nearly unexplored sea bottoms down to 1006 m. Fifty-eight hours of video footage were recorded during 31 ROV transects, carried out at different depths on the slopes of El Hierro and on three remote seamounts: Dacia and Tritón, situated 110 nm north of the Canary Islands, and Bimbache, in the Sahara seamount cluster.

Remote Operated Vehicle (ROV) and catamaran Oceana Ranger. © OCEANA/ Carlos Minguell

Other noteworthy species/habitats



1. *Hydrozoa* on *Leiopathes* sp., 2. *Lophelia pertusa*, 3. *Neopycnodonte zibrowii* beds, 4. *Bathypathes patula*
5. Maërl beds, 6. *Alcyonacea*, 7. *Syringammina fragilissima* bottoms, 8. *Dendrophyllia alternata*

Results and conclusions

The sites were characterized by a high diversity of Vulnerable Marine Ecosystems (VMEs; FAO, 2009) composed of species belonging to the class Anthozoa or the phylum Porifera. By depth range, preliminary results indicate that the main species were:

- **Anthozoa.** 100-450 m: Black coral gardens in shallower areas were dominated by *Stichopathes* sp. and, to a lesser extent, *Antipathella wollastoni*. 200-500 m: The most common corals were gorgonians (e.g. *Callogorgia verticillata*, *Bebryce mollis*, *Viminella flagellum*, *Nicella granifera*), and scleractinians (e.g. *Dendrophyllia cornigera* and *Anomocora fecunda*), with the latter species forming dense aggregations over rocky bottoms. 500-800 m: The main communities were gardens of *Acanthogorgia hirsuta*, together with species as *Muriceides lepida* and *Swiftia pallida*, and black corals (e.g., *Bathypathes patula*, *Leiopathes* sp. and *Parantipathes hirondelle*). 700-1000 m: Bamboo coral (*Acanella arbuscula*) occurred in this range, commonly colonizing white coral reefs formed by *Lophelia pertusa* and *Madrepora oculata*. The solitary coral *Desmophyllium dianthus* was also present on these reefs. The precious corals (*Corallium niobe* and *C. tricolor*) comprised the predominant gorgonian community on Bimbache seamount.
- **Porifera.** From 300 m: Demosponges (e.g., *Axinella vaceleti*, *Geodia* spp.) and lithistid species dominated (e.g. *Corallistes masoni*, *Leiodermatium lynceus*, *Neophrissospongia nolitangere*). 600-700 m: Carnivorous sponge individuals *Cladorhiza abissycola*, *Chondorcladia* sp. and *Asbestopluma* sp. were noted. Below 850 m: hexactinellid facies occasionally predominated in either hard or soft bottoms (e.g. *Asconema setubalense*, *Pheronema carpenteri*, *Aphrocallistes beatrix*, *Regadrella* cf. *phoenix*).

Other noteworthy benthic communities comprised maërl beds at 70-80 m and dominant species such as giant oysters (*Neopycnodonte cochlear* and *N. zibrowii*: 129-665 m), echinoderms (*Koehlermetra porrecta*: 522-738 m; *Araeosoma fenestratum*: below 700 m) and foraminifera (*Syringammina fragilissima*: ca. 850 m).

The northwestern zone of El Hierro was richer in nutrients, allowing a more extensive development of filter feeders, while the south-southwestern zone presented rather extreme habitat conditions in comparison. Dacia and Triton were more similar to El Hierro in their Anthozoa and Porifera species composition than Bimbache. The presence of VME species such as those described here has been repeatedly revealed on other seamounts worldwide (Rogers, 2007). These habitats are considered threatened and/or declining, under international conventions such as OSPAR. Ultimately, the characterization of the benthic communities in these ecologically valuable sites is essential for promoting the development of further measures to protect them.

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