OSPAR Workshop on the improvement of the definitions of habitats on the OSPAR list

Background document for discussión: "Coral gardens", "Deep sea sponge aggregations" and "Seapen and burrowing megafauna communities"

20 - 21 October 2011, Bergen, Norway

INTRODUCTION

Given the diversity of possible appearances of some habitats contained in the OSPAR List of Endangered and/or Declining species and habitats across the North East Atlantic, a more precise description of the habitat as it occurs in relation to different substrates, depths and regions will need to be developed.

When defining habitats, there are several very important parameters we must consider. Some of them are:

- Depth
- Type of seabed/substrate
- Predominant species
- Density at which predominant species appear
- Occupied extension/surface
- Species that are part of the community

However, some of these parameters are difficult to determine in many cases, due to the existing restrictions imposed by the methods used and the time required to be spend in obtaining data. This is mainly the case with the density and the occupied extension/surface.

According to the OSPAR background document "Case Report for the OSPAR List of threatened and/or declining species and habitats", ICES attempted a first characterization of "coral garden" based on the density of stands and faunistic association in order to aid objective and comparable characterizations. They note that the quantification of the in situ density is often not possible due to technical or operational restrictions. The same happens in the case of other habitats which are the object of analysis in this workshop: "deep-sea sponge aggregations" and "sea pens and burrowing megafauna".

Therefore, qualitative or semi-qualitative approaches will in many cases be more appropriate and will lead to further refinement on this habitats definition and its inclusion in national and European habitat classifications.

Some definitions have been given related to these habitats in the Northern regions of the OSPAR maritime area. However, there is a clear delay in the description of the possible appearances of these habitats in some regions, especially in IV and V OSPAR regions. In the same way, the information about the presence and appearance of these habitats in the Southern countries is not included in the classification of European habitats (EUNIS), so their description and inclusion will need to be developed.

In order to collaborate in the description of the habitats that are being analysed, OCEANA presents in this report data gathering during the different expeditions carried out in region II (Kattegat area), region IV (Spain and Portugal coastal waters) and region V (Gorringe Bank). This data needs to be discussed and subsequently added to the international lists.

It is important to bear in mind that this report highlights only qualitative descriptions of some of the different existing types, based only in the video clips that OCEANA has obtained in the expeditions made in recent years. Therefore it is additional information to the scientific information that already exists, which must be complemented by other scientific analyses. We must also take into account that the descriptions of the habitats and the fauna that make up the community are exclusively based on the descriptions of the macrofauna that can be directly observed and identify from the video clips obtained by means of immersions made by divers and ROV (Remotely Operated Vehicle).

CORAL GARDENS

OSPAR DEFINITION

According to the OSPAR background document "Case Report for the OSPAR List of threatened and/or declining species and habitats", "coral gardens" are a relatively dense aggregation of colonies or individuals of one or more coral species, supporting a rich associated fauna of benthic and epibenthic species. Coral gardens can occur on a wide range of soft and hard seabed substrata. Following the definition given by ICES, soft- bottom coral gardens may be dominated by solitary scleractinians, sea pens or certain types of bamboo corals, whereas hard-bottom coral gardens are often found to be dominated by gorgonians, stylasterids, and/or black corals.

Non reef forming cold- water corals can be found as shallow as 30 m depth and down to several thousand meters.

The coral garden communities are made up by different taxonomic groups: leather corals (Alcyonacea), gorgonians (Gorgonacea), sea pens (Pennatulacea), black corals (Antipatharia), hard corals (Scleractinia) and stony hydroids (lace or hydrocorals: Stylasteridae).

Scleractinian corals such as *Lophelia pertusa*, *Madrepora oculata* and *Solenosmilia variabilis* may also be present but not as a dominating habitat component. These corals, if present, occur only as small or scattered colonies. Habitats where colonial scleractinians dominate are defined as coral reef.

Densities of coral species in the habitat vary depending on taxa and abiotic conditions. Scientific investigations indicate that smaller species can occur in higher densities compared to larger species and some of them containing several coral species can reach densities between 100 and 700 colonies per 100m^2. (E. g. *Acanthogorgia* sp.: 50-200 colonies per 100 m^2; *Paragorgia* sp.: 1-2 colonies per 100 m^2). Currently it is not possible to determine threshold values for the presence of a coral garden as knowledge of the *in situ* growth forms and densities of coral gardens is very limited, due to technical or operational restrictions. Moreover, the densities of developed coral gardens vary with taxonomic composition of the habitat forming corals. Visual surveys techniques will hopefully add to our knowledge in the coming years.

OSPAR Regions where the habitat occurs: I, II, III, IV, V

OSPAR Regions where such habitat is under threat and/or decline: all where it occurs

Habitat occurs within each of the following deep seabed EUNIS types:

A6.1. Deep-sea rock and artificial hard substrata
A6.2. Deep-sea mixed substrata
A6.3. Deep- sea sand
A6.4. Deep-sea muddy sand
A6.5. Deep- sea mud
A6.7. Raised features of the deep sea bed
A6.8. Deep sea trenches and canyons, channels, slope failures and slumps on the continental slope
A6.9. Vents, seeps, hypoxic and anoxic habitats of the deep-sea

OCEANAS PROPOSALS

"Coral gardens" as a relatively dense aggregation of colonies or individuals or one or more coral species, supporting a rich associated fauna of benthic and epibenthic species, has been documented by OCEANA from 15 m to 450 m depth.

All the coral gardens recorded by OCEANA occur on hard seabed substrata, although bamboo gorgonian (eg: *Isidella elongata* and *Keratoisis* sp.) gardens have been described by scientists in the Atlantic Sea within the OSPAR maritime area. However, we consider that aggregations of solitary scleractinians (e.g.: *Flabellum chunii*) that occur in soft bottom can not be considered as "coral garden", as they appear isolated and don't form a "three-dimensional community", characteristic of this habitat.

The different taxonomic groups recorded by OCEANA that appear in the OSPAR maritime area as this "relatively dense aggregations of colonies or individuals" are hard corals (Scleractinia), black corals (Antipatharia), gorgonias (Gorgonacea) and leather corals (Alcyonacea). Stony hydroids (lace or hydrocorals: Stylasteridae) have been also recorded as a predominant habitat component and appear in dense aggregations in Canary Islands water (out of the OSPAR maritime area), but they were not recorded during the immersion sessions made in the OSPAR area. However it is possible that they occur in Portuguese areas (area V).

With regard to sea pens (Pennatulacea), we consider that there is another habitat listed by OSPAR where this group is considered ("sea pens and burrowing megafauna), so we take the community dominated by Pennatulacea out of this habitat.

The density of the predominant species in a coral garden is difficult to determine. The background document indicates coral species that can reach densities between 100 and 700 colonies per $100m^2$. In this sense, it is important to highlight that besides the density, the distribution of these species in the space must be considered, because it can be very variable. That is, we can have average figures or percentages for an area where the distribution of these species is very irregular (where there are high density and low density areas), as well as areas where the distribution of the species is more evenly spread.

Furthermore, due to technical restrictions, we can not give a relative density of each of the species aggregation that we have considered, but we give some qualitative descriptions of each of them.

Taking into account the necessity to define and describe the various habitats that must be considered as coral gardens, OCEANA proposes the following:

1) Specific scleractinians, black corals and gorgonian gardens should be listed.

2) Octocoral communities (*Alcyonium* spp., *Corallium rubrum*, etc..) should be added.

3) Communities dominated by reef- forming hard- corals (e.g. *Madrepora oculata*) that occur in low density (not enough to create reefs) should be considered as "coral gardens".

4) The habitat "*Lophelia pertusa* reefs" should be modified to "Deep- sea coral reefs", including in this form other reef- forming hard- corals species such as *Madrepora oculata* and *Solenosmilia variabilis*, species with which the *Lophelia pertusa* appears combined in many occasions, forming mixed reefs

Detailed below are the different types of habitats that OCEANA proposes to be included as "coral gardens":

CORAL GARDEN TYPES PROPOSED BY OCEANA

1. Forest of the scleractinian *Dendrophyllia* sp.

    1.1. *Dendrophyllia ramea* forest on infralittoral and circalittoral bottoms

    1.2. *Dendrophyllia cornigera* forest on circalittoral and bathyal rocky bottoms

2. Community dominated by the scleractinian *Madrepora oculata* on bathyal rocky bottom

3. Antipatharia forest

    3.1. *Antipathes subpinnata* forest on circalittoral rocky bottom

    3.2. *Antipathes dichotoma* forest on bathyal rocky bottom with intense sedimentation

    3.3. Mixed forest of *Antipathes subpinnata* and *Antipathella wollastoni* on circalittoral rocky bottom

4. Gorgonian gardens

    4.1. Mixed gorgonian garden (*Eunicella* spp., *Leptogorgia* spp., *Paramuricea clavata*) on infralittoral and circalittoral rocky bottom

        4.1.1. Mixed gorgonian garden *(Eunicella verrucosa*, *Leptogorgia lusitanica* and *L. sarmentosa*) on infralittoral rocky bottom.

        4.1.2. Mixed gorgonian garden (*Eunicella verrucosa*, *E. labiata*, *Leptogorgia lusitanica* and *L. sarmentosa*) on infralittoral rocky bottom.

        4.1.3. Mixed gorgonian garden (*Eunicella labiata*, *E. gazella*, *E. verrucosa*., *Leptogorgia lusitanica*, *L. sarmentosa* and *Paramuricea clavata*) on infralittoral and circalittoral bedrock

        4.1.4. Mixed gorgonian garden (*Eunicella labiata*, *E. verrucosa*, *Leptogorgia sarmentosa* and *Paramuricea clavata*) on circalittoral rocky bottom

    4.2. *Paramuricea clavata* garden on upper circalittoral rocky bottom

    4.3. *Eunicella verrucosa* garden on upper circalittoral rocky bottom

    4.4. *Callogorgia verticillata* garden on bathyal rocky bottom

        4.4.1 Mixed garden of *Callogorgia verticillata*, *Viminella flagellum, Tedania* sp. and other demosponges

        4.4.2. Mixed garden of *Callogorgia verticillata*, *Asconema setubalense* and other demosponges

    4.5. *Viminella flagellum* garden on lower circalittoral and bathyal rocky bottoms

        4.5.1 Mixed garden of *Viminella flagellum, Callogorgia verticillata*, *Tedania* sp. and other demosponges

5. Caves and overhangs with red coral *Corallium rubrum* on rocky circalittoral bottom

6. Community dominated by *Alcyonium digitatum* on infralittoral and circalittoral rocky bottom

1. Forest of the scleractinian *Dendrophyllia* sp.

1.1 *Dendrophyllia ramea* forest on infralittoral and circalittoral bottoms

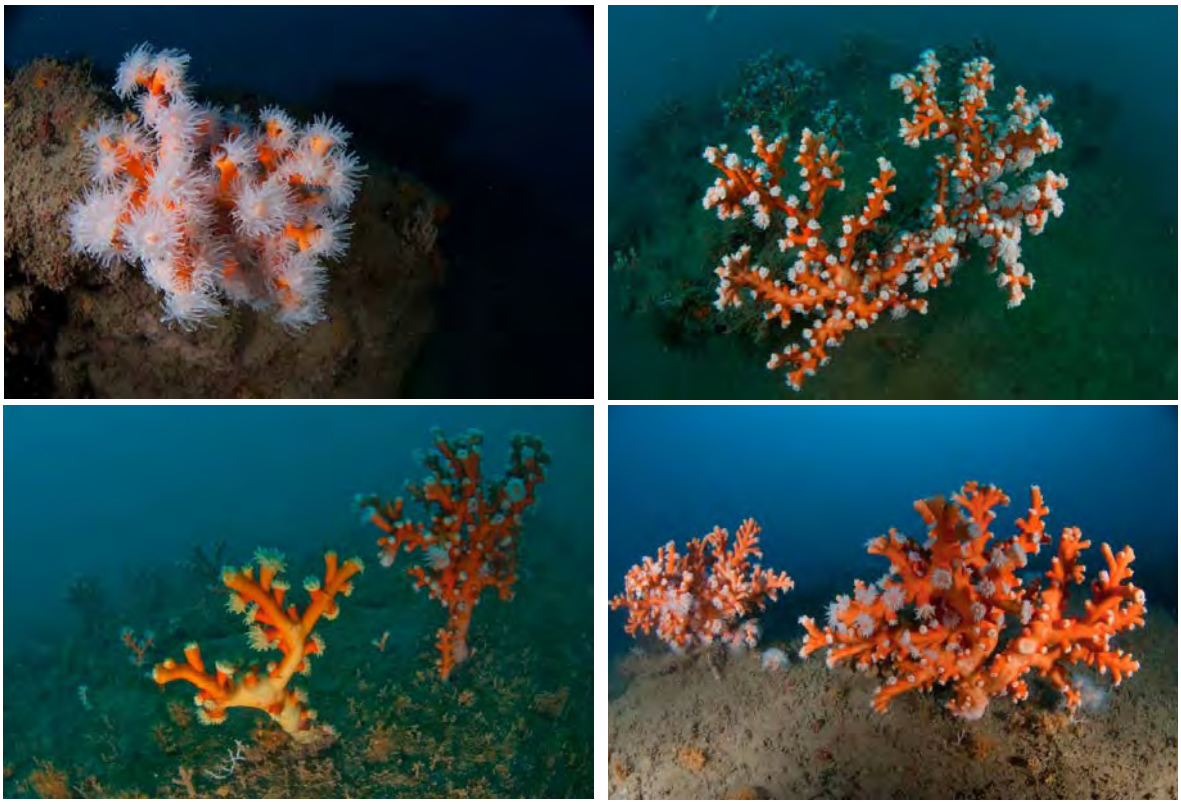
DESCRIPTION: *Dendrophyllia ramea* forests are common below -15/-20 metres in the waters of the Gulf of Cádiz. In some areas they can mix with other "coral gardens" made up of *Leptogorgia* and *Eunicella* gorgonians that are also frequently found in shallow waters -8/-10 m. up to approximately -60/-70 m.

Important facies of protected species can also found in these forests, such as the orange coral (*Astroides calycularis*) or species that create habitats, such as sponges (*Hemimycale columella, Aplysina aerophoba*, etc.) and large bryozoans (*Pentapora fascialis*).

This community can also be found on the Macaronesian area, but occupying deeper bottom areas, between -35 m and -70/-80 m. In this case the associated species are different. It is usually associated to another "coral garden" where antiphataria species predominates, especially the *Antipathella wollastoni*.

DEPTH: 15-40 m

TYPE OF SUBSTRATE: Rocky bottom, made up of slabs in many cases, with high sedimentation, between the infralittoral and circalittoral areas. In the Canary Islands waters, corals are also found on rocky bottoms, but with low sedimentation, and only in the circalittoral area.



Dendrophyllia ramea forests on infralittoral and circalittoral rocky bottoms (Gulf of Cádiz, Spain)

TYPICAL FAUNA OF THE COMMUNITY (ON THE INFRALITTORAL AND CIRCALITTORAL AREAS)

PORIFERA	
Acanthella acuta	*Dysidea avara*
Adreus fascicularis	*Haliclona* sp.
Aplysina aerophoba	*Hemimycale columella*
Axinella damicornis	*Hexadella racovitzai*
Axinella polypoides	*Ircinia oros*
Cliona celata	*Phorbas fictitius*
Corticium candelabrum	*Phorbas tenacior*
Crambe crambe	
CNIDARIA	
Alcyonium acaule	*Gymnangium montagui*
Astroides calycularis	*Leptogorgia sarmentosa*
Balanophyllia regia	*Maasella edwardsi*
Caryophyllia inornata	*Nemertesia antennina*
Caryophyllia smithii	*Paralcyonium spinulosum*
Cladopsammia rolandi	*Paramuricea clavata*
Dendrophyllia cornigera	*Parazoanthus axinellae*
Diphasia margareta	*Parerythropodium coralloides*
Ellisella paraplexauroides	*Pennaria disticha*
Eudendrium rameum	*Polycyathus muellerae*
Eunicella gazella	*Phyllangia americana mouchezii*
Eunicella labiata	*Sertularella gayi*
Eunicella singularis	*Sertularella mediterranea*
Eunicella verrucosa	
BRYOZOA	
Cellepora pumicosa	*Schizobrachiella sanguinea*
Frondipora verrucosa	*Schizomavella mamillata*
Myriapora truncata	*Schizomavella sarniensis*
Pentapora fascialis	
MOLLUSCA	
Cratena peregrina	*Hypselodoris picta*
Dondice banyulensis	*Limaria hians*
Flabellina affinis	*Luria lurida*
Flabellina babai	*Simnia spelta*
Hexaplex trunculus	*Pteria hirundo*
Hypselodoris bilineata	*Sepia officinalis*
Hypselodoris cantabrica	
CRUSTACEA	
Galathea squamifera	*Pilumnus villosissimus*
Lysmata seticaudata	*Porcellana platycheles*
Maja brachydactyla	*Scyllarus arctus*
ECHINODERMATA	
Aslia lefevrii	*Holothuria forskali*
Astrospartus mediterraneus	*Marthasterias glacialis*
Echinaster sepositus	*Ophiothrix fragilis*
ANNELIDA	
Myxicola aesthetica	*Salmacina dysteri*
Protula tubularia	*Serpula vermicularis*
ECHIURA	
Bonellia viridis	
CHORDATA: TUNICATA	
Aplidium nordmanni	*Microcosmus* sp.
Halocynthia papillosa	*Polycitor adriaticus*

Ecteinascidia turbinata	*Synoicum blochmanni*
CHORDATA: PISCES	
Anthias anthias	*Muraena helena*
Chromis chromis	*Pagrus auriga*
Coris julis	*Parablennius pilicornis*
Ctenolabrus rupestris	*Parapristipoma octolineatum*
Diplodus annularis	*Plectorhinchus mediterraneus*
Diplodus bellottii	*Pomadasys incisus*
Diplodus cervinus	*Scorpaena notata*
Diplodus sargus	*Scorpaena porcus*
Diplodus vulgaris	*Serranus cabrilla*
Gobius xanthocephalus	*Symphodus tinca*
Labrus bergylta	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Chipiona, Gulf of Cádiz	Spain	36º 35,37800'N	06º 44,36100'W
Chipiona, Gulf of Cádiz	Spain	36º 39,01400'N	06º 28,19700'W
Chipiona, Gulf of Cádiz	Spain	36º 36,98570'N	06º 27,61430'W
Rota, Gulf of Cádiz	Spain	36º 36,06700'N	06º 28,88100'W
Rota, Gulf of Cádiz	Spain	36º 37,69000'N	06º 28,78800'W
Rota, Gulf of Cádiz	Spain	36º 36,07800'N	06º 29,68800'W
Rota, Gulf of Cádiz	Spain	36º 34,20200'N	06º 26,14400'W
Rota, Gulf of Cádiz	Spain	36º 36,68300'N	06º 28,49100'W

1.2. *Dendrophyllia cornigera* forest on circalittoral and bathyal rocky bottoms

DESCRIPTION: The *Dendrophyllia cornigera* forests occur in a very broad bathymetric range, occupying both the circalittoral and bathyal zones. These forests can have a very variable density, the densest parts being located on the circalittoral area, whilst colonies appear much more dispersed at the ends of the bathymetric distribution range.

Due to the fact that they occupy a broader bathimetric range than other species that are part of the community, the species composition of the community can vary with the depth.

On the circalittoral area, where the densest forests are developed, echinoderms (*Echinus esculentus*, *Holothuria forskali*, *Ophiothrix fragilis*, *Leptometra celtica*), sponges (*Artemisina transiens*, *Phakellia ventilabrum*) and some fish (*Serranus cabrilla, Labrus mixtus*) are also very common. Sometimes, some species are also predominant, forming up mixed fields. This happens with some sponges (*Phakellia ventilabrum* and/or *Artemisina transiens*), ophiuroids (*Ophiothrix fragilis*), and/or crinoids (*Leptometra celtica*).

In some locations the presence of bottom areas covered by skeletons of dead *Dendrophyllia cornigera* as part of the habitat is also important.

DEPTH: 75 - 240 m

TYPE OF SUBSTRATE: Rocky bottom, abrupt. On the circalittoral area, the substrate is usually poorly sedimented, while on deeper areas it is more sedimented.

TYPICAL FAUNA OF THE COMMUNITY (ON THE CIRCALITTORAL AREA)

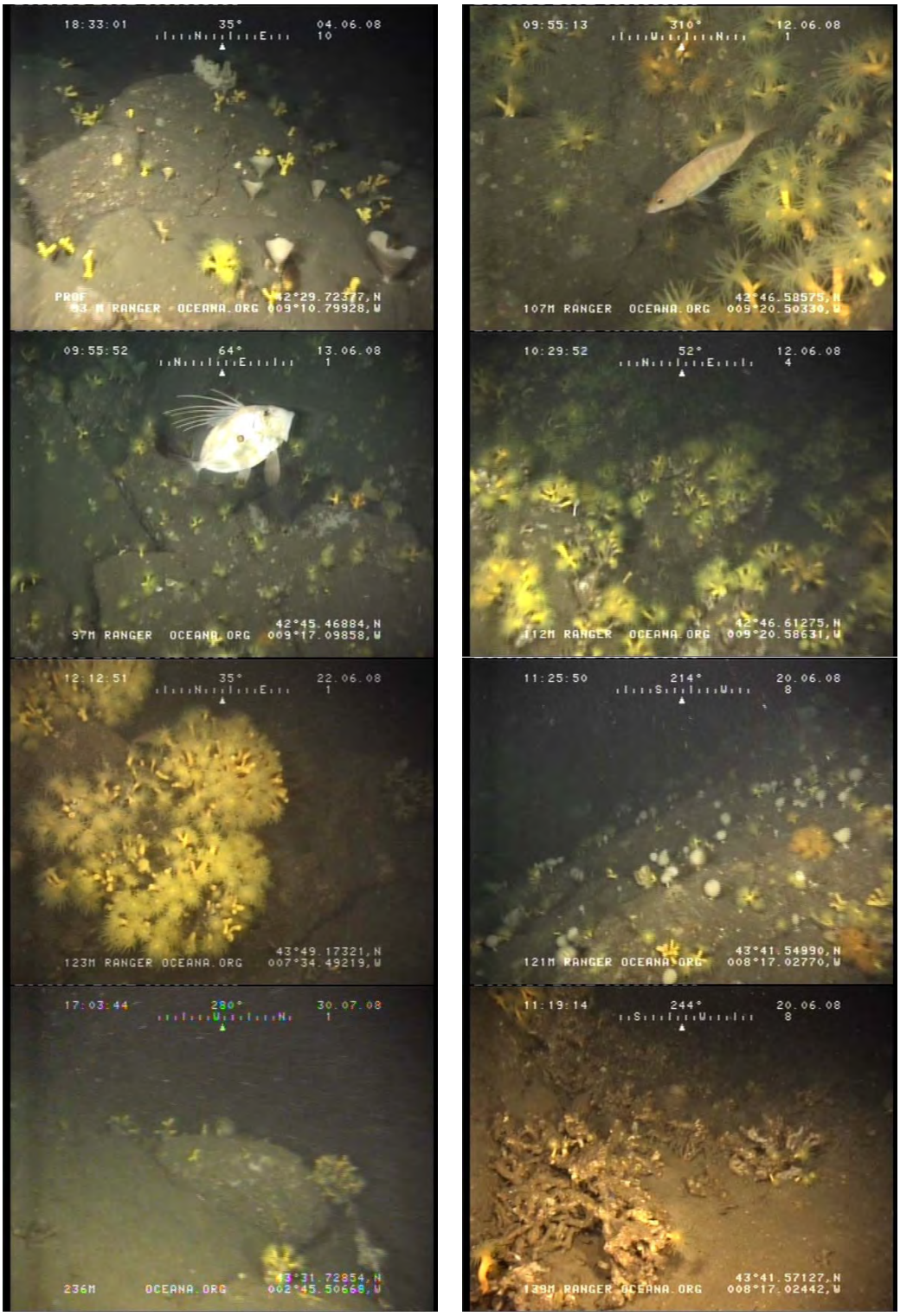
PORIFERA	
Artemisina transiens	*Phakellia* cf. *robusta*
Axinella polypoides	*Phakellia ventilabrum*
CNIDARIA	
Eunicella verrucosa	*Leptogorgia sarmentosa*
Caryophyllia cyathus	
MOLLUSCA	
Octopus vulgaris	*Pteria hirundo*
CRUSTACEA	
Munida sp.	
ECHINODERMATA	
Echinus esculentus	*Leptometra celtica*
Echinus melo	*Marthasterias glacialis*
Holothuria forskali	*Ophiothrix fragilis*
ANNELIDA	
Filograna implexa	
BRACHIOPODA	
Megerlia truncata	
CHORDATA: PISCES	
Acantholabrus palloni	*Scorpaena* sp.
Conger conger	*Scorpaena scrofa*
Helicolenus dactylopterus	*Serranus cabrilla*
Labrus mixtus	*Trisopterus luscus*
Lophius piscatorius	*Zeus faber*

TYPICAL FAUNA OF THE COMMUNITY (ON THE BATHYAL AREA)

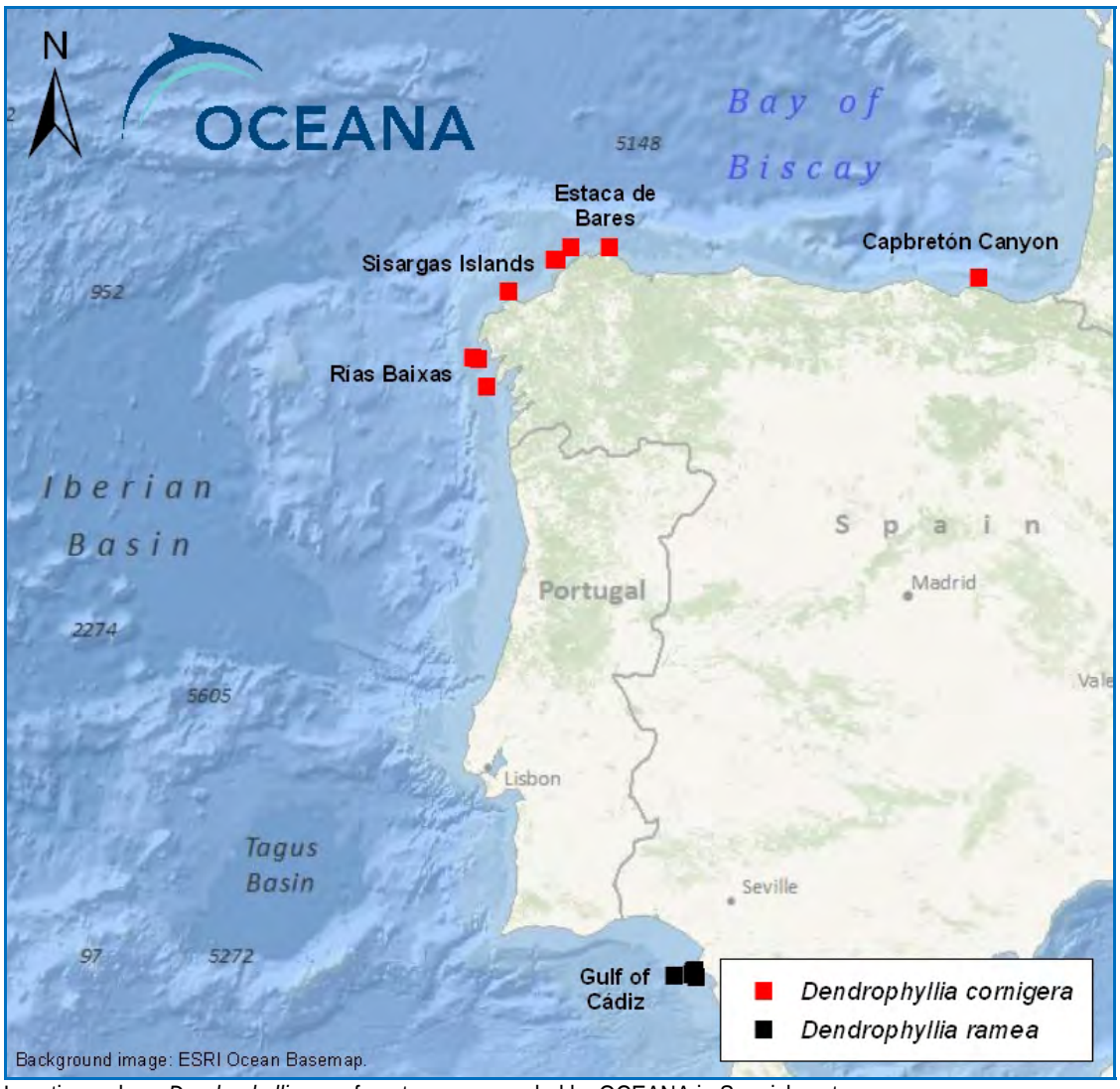
PORIFERA	
Antho dichotoma	*Phakellia ventilabrum*
Geodia sp.	*Tethya citrina*
Phakellia cf. *robusta*	
CNIDARIA	
Antipathes dichotoma	*Caryophyllia cyathus*
Acanthogorgia hirsuta	*Diphasia margareta*
Amphianthus dohrnii	*Eunicella verrucosa*
Bebryce mollis	*Parantipathes hirondelle*
MOLLUSCA	
Eledone cirrhosa	
CRUSTACEA	
Munida sarsi	
ECHINODERMATA	
Holothuria forskali	*Echinus melo*
BRACHIOPODA	
Novocrania anomala	
CHORDATA: PISCES	
Gadiculus argenteus	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Sálvora Island, Rías Baixas	Spain	42º 29,45877'N	09º 10,47925'W
Villa de Fuentes , Rías Baixas	Spain	42º 46,53275'N	09º 20,50330'W
Villar de Fuentes, Rías Baixas	Spain	42º 45,44350'N	09º 17,11509'W
Sisargas Islands	Spain	43º 23,95968'N	08º 53,49114'W
Sisargas Islands	Spain	43º 23,68574'N	08º 52,68915'W
Bermeo Bank, Estaca de Bares	Spain	43º 41,57384'N	08º 15,41907'W
Bermeo Bank, Estaca de Bares	Spain	43º 41,55251'N	08º 17,02612'W
Estaca de Bares	Spain	43º 48,96851'N	08º 04,08038'W
Estaca de Bares	Spain	43º 49,18243'N	07º 34,39450'W
Capbreton canyon	Spain	43º 31,72558'N	02º 45,49569'W



Dendrophyllia cornigera forest in the galaico-cantabrian area (Spain)



Locations where *Dendrophyllia* spp. forests were recorded by OCEANA in Spanish waters

2. Community dominated by the scleractinian *Madrepora oculata* on bathyal rocky bottom

DESCRIPTION: *Madrepora oculata*, along with other scleractinians such as *Lophelia pertusa* or *Solenosmilia variabilis*, forms very deep-sea reefs. However, *Madrepora oculata* is not able to form reefs in some areas, but it does appear as the predominant species in some communities. In these cases, colonies of scleractinian appear more dispersed, mainly occupying vertical walls, canyon edges and rocky overhangs.

Due to the fact that the density of *Madrepora oculata* in these cases is lower, it cannot be considered as a reef, but it can be included in the type of "coral garden" habitat.

Also, when skeletons of colonies of dead *Madrepora oculata* cover the bottom area –which is known as rubbles, a habitat that is usually populated by many species of sponges and other cnidarians- it can be also considered as a "coral garden".

DEPTH: 205 - 245 m

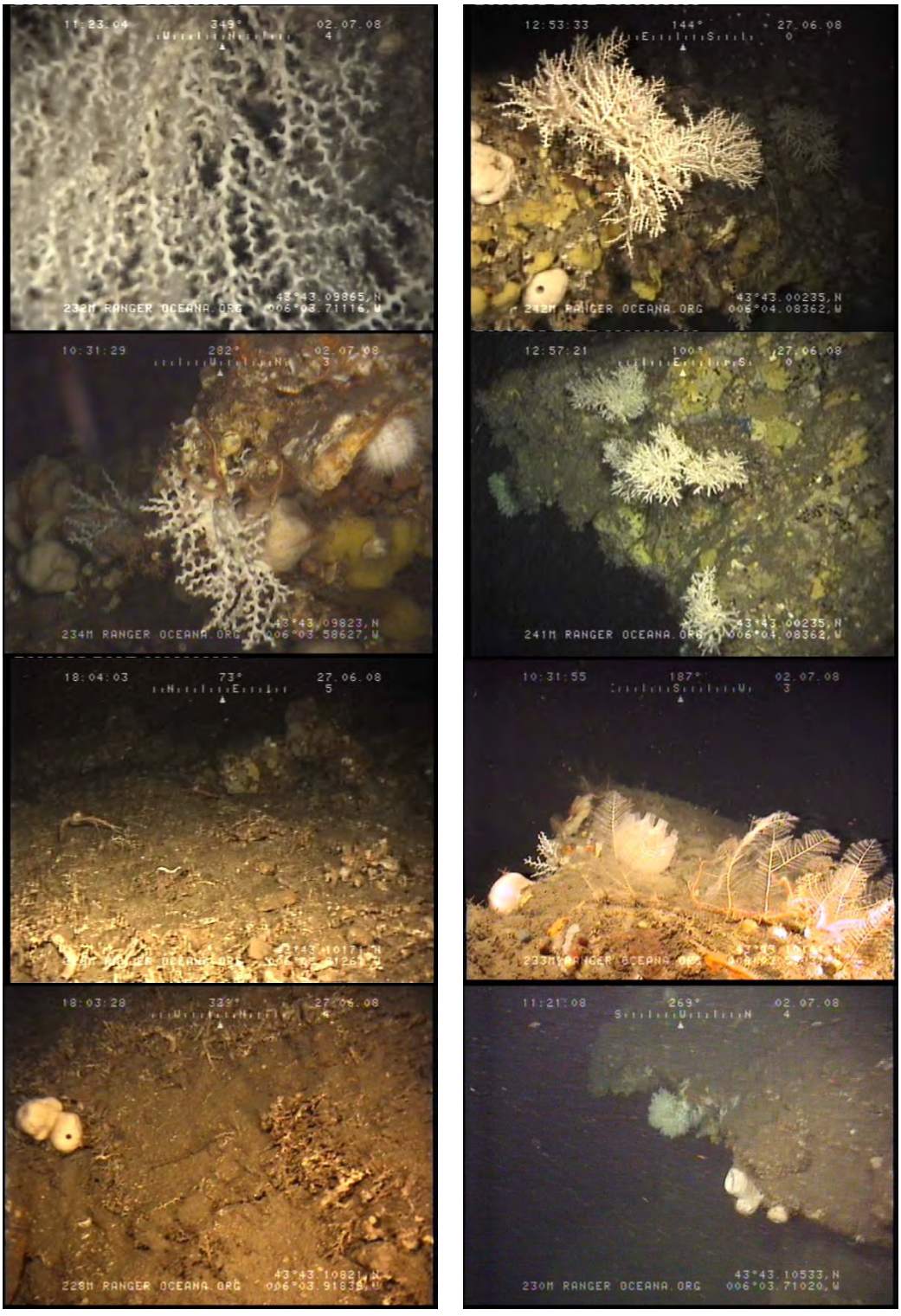
TYPE OF SUBSTRATE: Vertical walls or rocky overhangs, abrupt, with huge slope, sedimentary.

TYPICAL FAUNA OF THE COMMUNITY

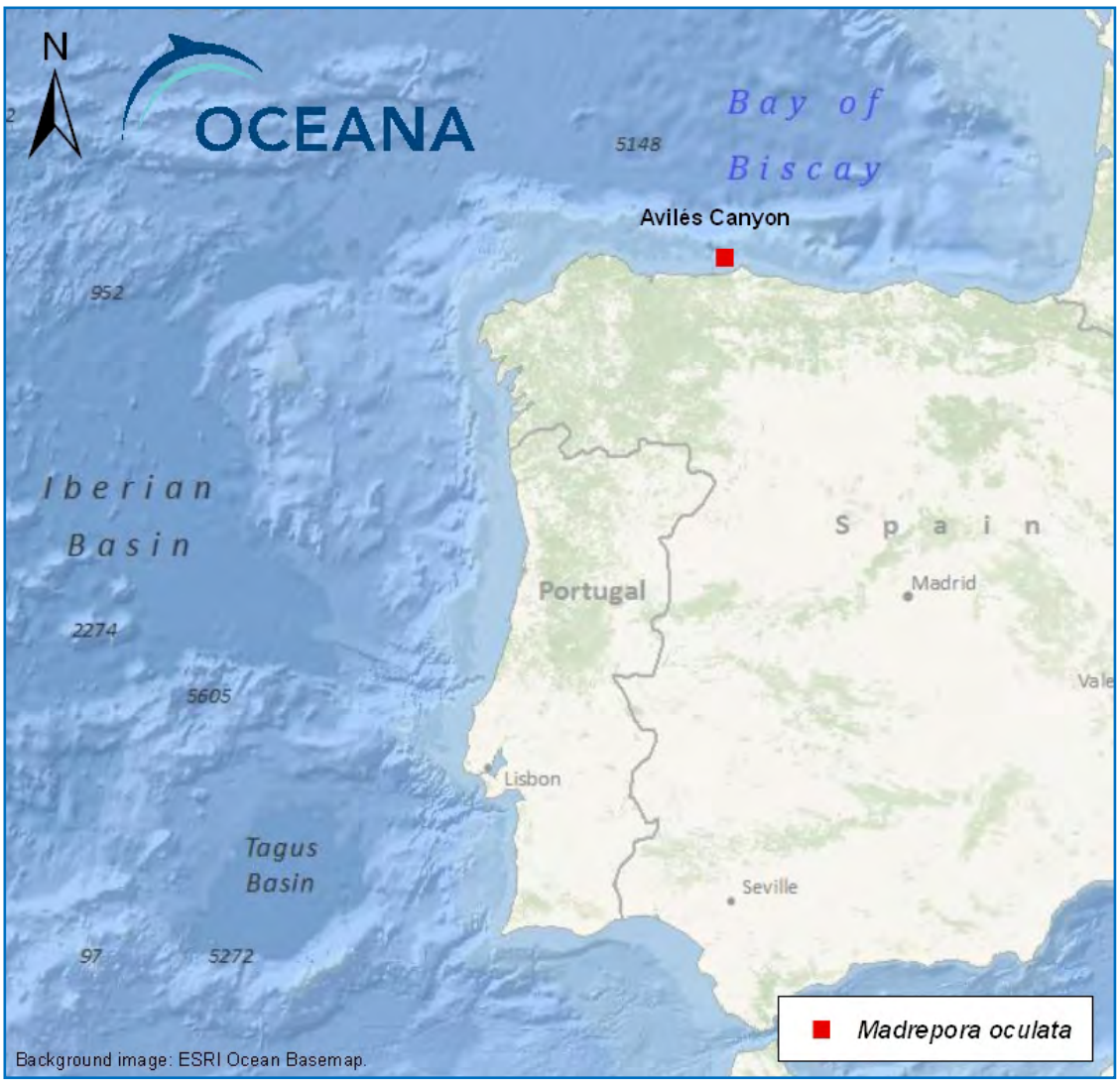
PORIFERA	
Encrusted desmosponges	cf. *Suberites carnosus*
Geodia sp.	*Polymastia* sp.
CNIDARIA	
Acanthogorgia hirsuta	*Parazoanthus anguicomus*
Antipathes dichotoma	*Parazoanthus axinellae*
Dendrophyllia cornigera	*Polyplumaria flabellata*
Parantipathes hirondelle	
MOLLUSCA	
Eledone cirrhosa	
CRUSTACEA	
Homarus gammarus	*Munida* sp.
ECHINODERMATA	
Antedon sp.	*Marthasterias glacialis*
Echinus acutus	*Ophiothrix fragilis*
ANNELIDA	
Myxicola infundibulum	Sabellidae
ECHIURA	
Bonellia viridis	
BRACHIOPODA	
Cf. *Megerlia truncata*	Cf. *Novocrania anomala*
CHORDATA: PISCES	
Capros aper	*Gadiculus argenteus*
Lophius piscatorius	*Phycis blennoides*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Aviles canyon	Spain	43º 43,00235'N	06º 04,08362'W
Aviles canyon	Spain	43º 43,09842'N	06º 03,91510'W
Aviles canyon	Spain	43º 43,09717'N	06º 03,69090'W



Madrepora oculata colonies on bathyal rocky bottom and overhangs in the Aviles Canyon (Spain)



Locations where communities dominated by *Madrepora oculata* were recorded by OCEANA in Spanish waters

3. Antipatharia forest

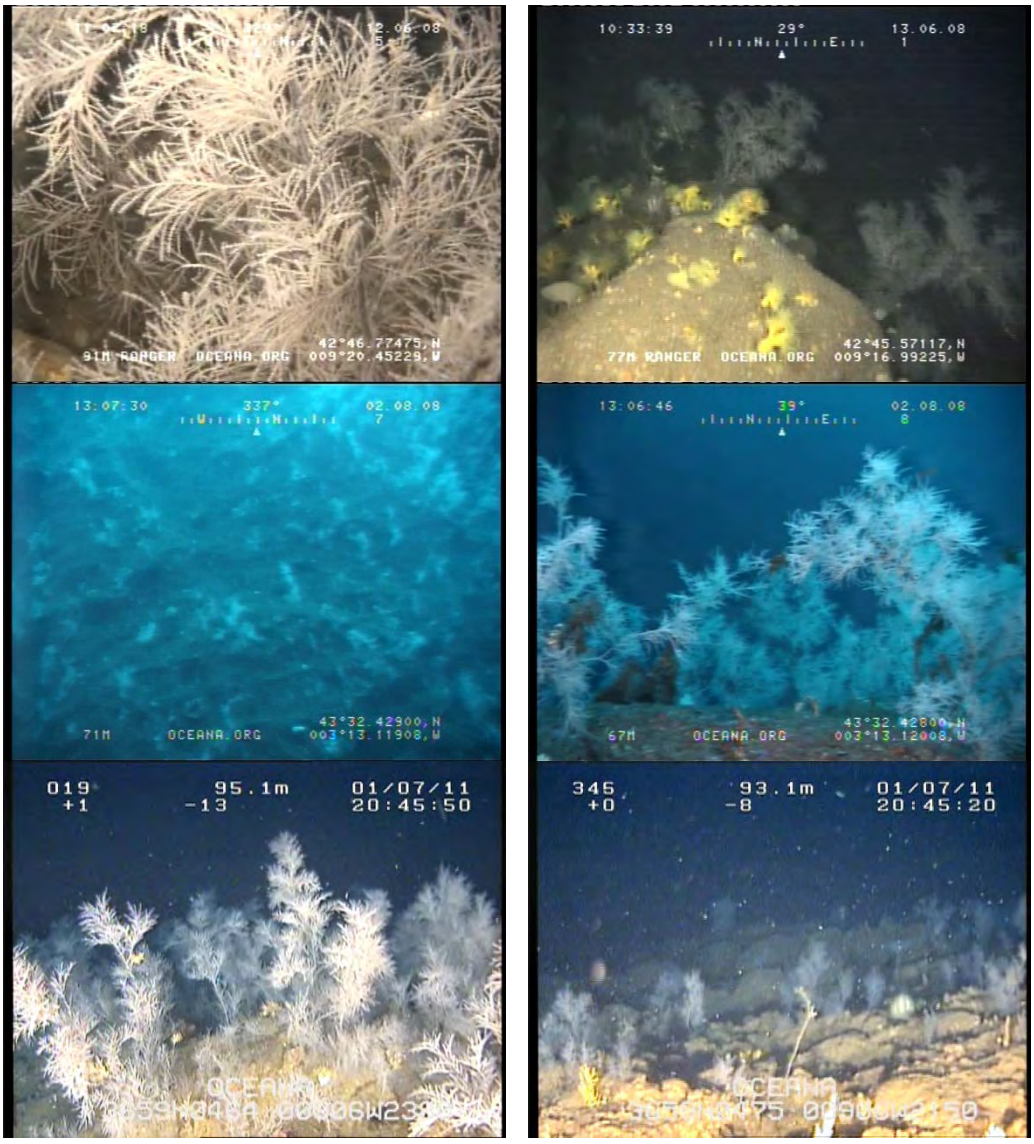
3.1. *Antipathes subpinnata* forest on circalittoral rocky bottom

DESCRIPTION: *Antipathes subpinnata* occurs on bedrock over abrupt areas with little sedimentation, as well as on vertical walls and huge slope areas.

In Galicia this type of forest occurs where *Dendrophyllia cornigera* is also very abundant in the community, forming up important forests as well. Some echinoderms (*Holothuria forskali*, *Echinus esculentus*) are also present in a high number.

DEPTH: 57 - 105 m

TYPE OF SUBSTRATE: Rocky bottom, little sediment, abrupt.



Antipathes subpinnata forests on circalittoral rocky bottom in Spanish and Portuguese waters

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Phakellia ventilabrum	
CNIDARIA	
Acanthogorgia armata	*Eunicella verrucosa*
Dendrophyllia cornigera	
ECHINODERMATA	
Astrospartus mediterraneus	*Echinus melo*
Centrostephanus longispinus	*Holothuria forskali*
Diadema antillarum	*Marthasterias glacialis*
Echinus esculentus	
PHORONIDA	
Myxicola aesthetica	
CHORDATA: PISCES	
Acantholabrus palloni	*Phycis phycis*
Anthias anthias	*Scorpaena sp.*
Diplodus sp.	*Serranus cabrilla*
Labrus mixtus	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

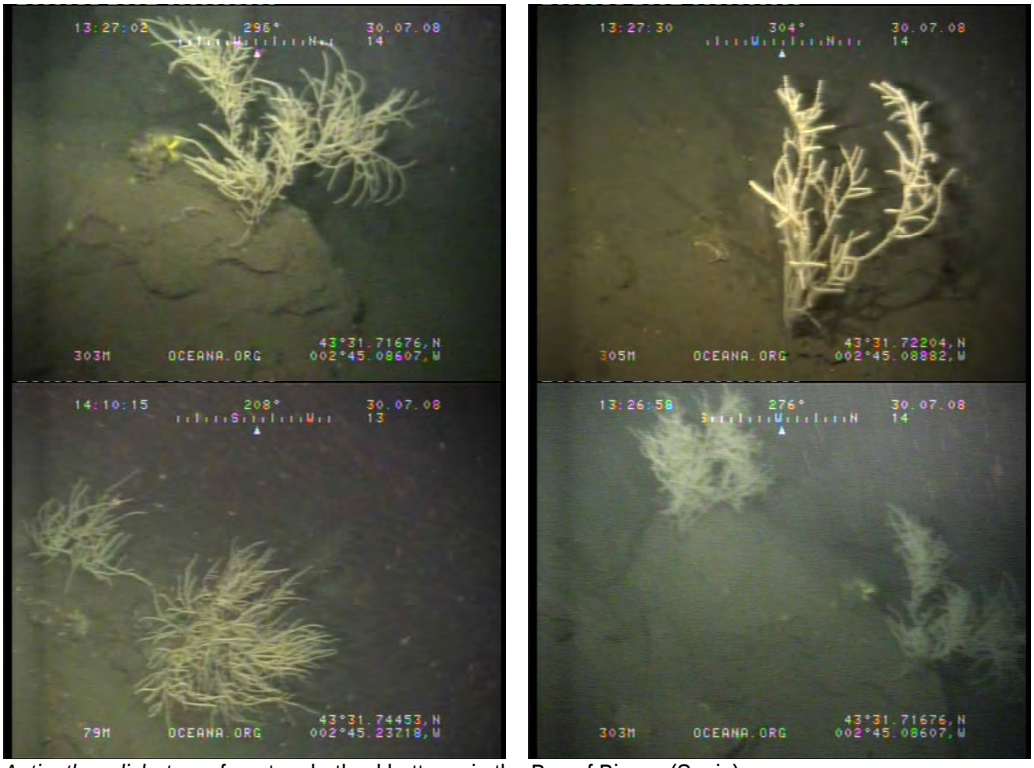
LOCATION	COUNTRY	COORDINATES	
Villar de Fuentes, Rías Baixas	Spain	42º 46,60975'N	09º 20,55630'W
Villar de Fuentes, Rías Baixas	Spain	42º 45,57021'N	09º 16,98813'W
Castro Verde Bank, Bay of Biscay	Spain	43º 32,42800'N	03º 13,11808'W
Castro Verde Bank, Bay of Biscay	Spain	43º 32,71200'N	03º 12,90408'W
Saint Vincent Cape	Portugal	36º 59,04930'N	09º 06,23900'W

3.2. *Antipathes dichotoma* forest on bathyal rocky bottom with intense sedimentation

DESCRIPTION: the forests made up by this species and recorded by OCEANA were little dense and short in extension. This black coral species grows over rocky substrate in areas covered by abundant sediment.

DEPTH: 278-305 m

TYPE OF SUBSTRATE: Rocky bottom covered by abundant sediment



Antipathes dichotoma forest on bathyal bottoms in the Bay of Biscay (Spain)

TYPICAL FAUNA OF THE COMMUNITY

CNIDARIA	
Arachnanthus sp.	*Dendrophyllia cornigera*
CHORDATA: PISCES	
Phycis blennoides	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Capbreton canyon	Spain	43º 31,74453'N	02º 45,23718'W

3.3. Mixed forest of *Antipathes subpinnata* and *Antipathella wollastoni* on circalittoral rocky bottom

DESCRIPTION: These mixed forests made up of two predominant species (*Antipathes subpinnata and Antipathella wollastoni*) are developed on abrupt rocky areas with little sediment.

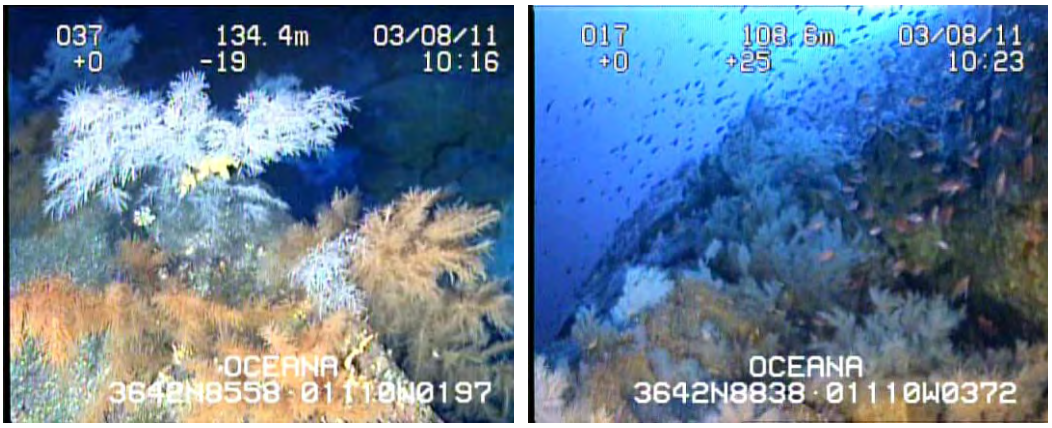
OCEANA documented this habitat on the Gorringe bank, a seamount located around 130 nautical miles SW of the Saint Vincent Cape (Portugal). It is an area of convergence of 2 sub-regions where one of the two indicated species predominates: on the northern area *A. subpinnata* predominates, whilst on the southern area *A. wollastoni* predominates. This seamount is located on the border of distribution of both species and therefore it is one of the few places where these mixed forests appear.

Depth is also a parameter that determines the distribution of these black corals, where *A. subpinnata* take up deeper areas than *A. wollastoni*. On the bathymetric limits of its distribution this habitat can be dominated only by one of both species.

Another species of black coral that can be found in a more dispersed way as part of this community is *Antipathes furcata*.

DEPTH: 100 - 143 m

TYPE OF SUBSTRATE: Rocky bottom, abrupt, little sediment.



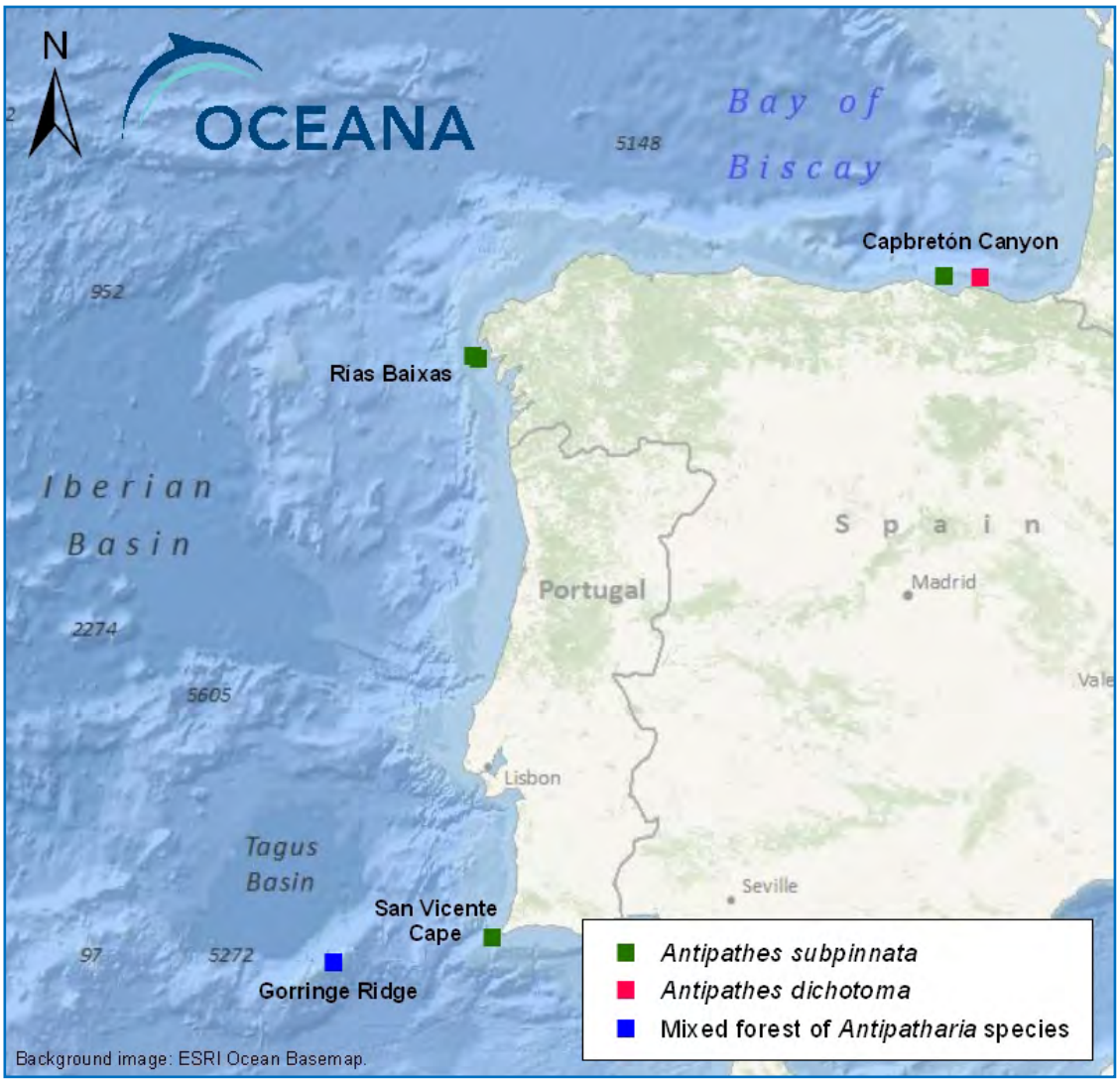
Mixed forests of Antipatharian species (*A. subpinnata* and *A. wollastoni*) in the Gorrige Bank (Portugal)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Encrusted desmosponges	
CNIDARIA	
Antipathes furcata	*Ellisella paraplexauroides*
Dendrophyllia cornigera	
MOLLUSCA	
Charonia lampas	
CRUSTACEA	
Palinurus elephas	
ECHINODERMATA	
Centrostephanus longispinus	*Echinus esculentus*
Holothuria forskali	*Diadema antillarum*
CHORDATA: PISCES	
Anthias anthias	*Serranus atricauda*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Ormonde, Gorringe Bank	Portugal	36º 42,86380'N	11º 10,03800'W
Ormonde, Gorringe Bank	Portugal	36º 43,02310'N	11º 09,53240'W



Locations where Antipatharian forests were recorded by OCEANA in Spanish and Portuguese waters

4. Gorgonian gardens

4.1. Mixed gorgonian garden (*Eunicella* spp., *Leptogorgia* spp., *Paramuricea clavata*) on infralittoral and circalittoral rocky bottom

There are 6 species of gorgonian documented by OCEANA as part of these mixed gardens: *Eunicella labiata*, *E. gazella*, *E. verrucosa*, *Leptogorgia lusitanica*, *L. sarmentosa* and *Paramuricea clavata*.

Their presence depends on the localization and depth where the mixed gardens develop. Some species (*Eunicella verrucosa* and *Leptogorgia* spp.) have been documented both at the Cantabrian Sea (Bay of Biscay) and the Gulf of Cádiz, as well as in waters on the Southwest of Portugal; other species (*Eunicella gazella*, *E. singularis, E. labiata* and *Paramuricea clavata*) were only found in Cádiz and in Portuguese waters, and they are not present in the mixed gardens documented in the Cantabrian Sea.

Regarding the depth, while some species show a very broad bathymetric range (*Eunicella labiata*, *E. verrucosa*), other species are more predominant in shallow waters (*E. gazella*, *Leptogorgia* spp.) and others appear more abundantly in deeper areas (*Paramuricea clavata*).

Based on the predominance of the indicated species in the mixed gardens documented by OCEANA, we have classified these gardens in several categories:

4.1. 1. Mixed gorgonian garden *(Eunicella verrucosa*, *Leptogorgia lusitanica* and *L. sarmentosa*) on infralittoral rocky bottom

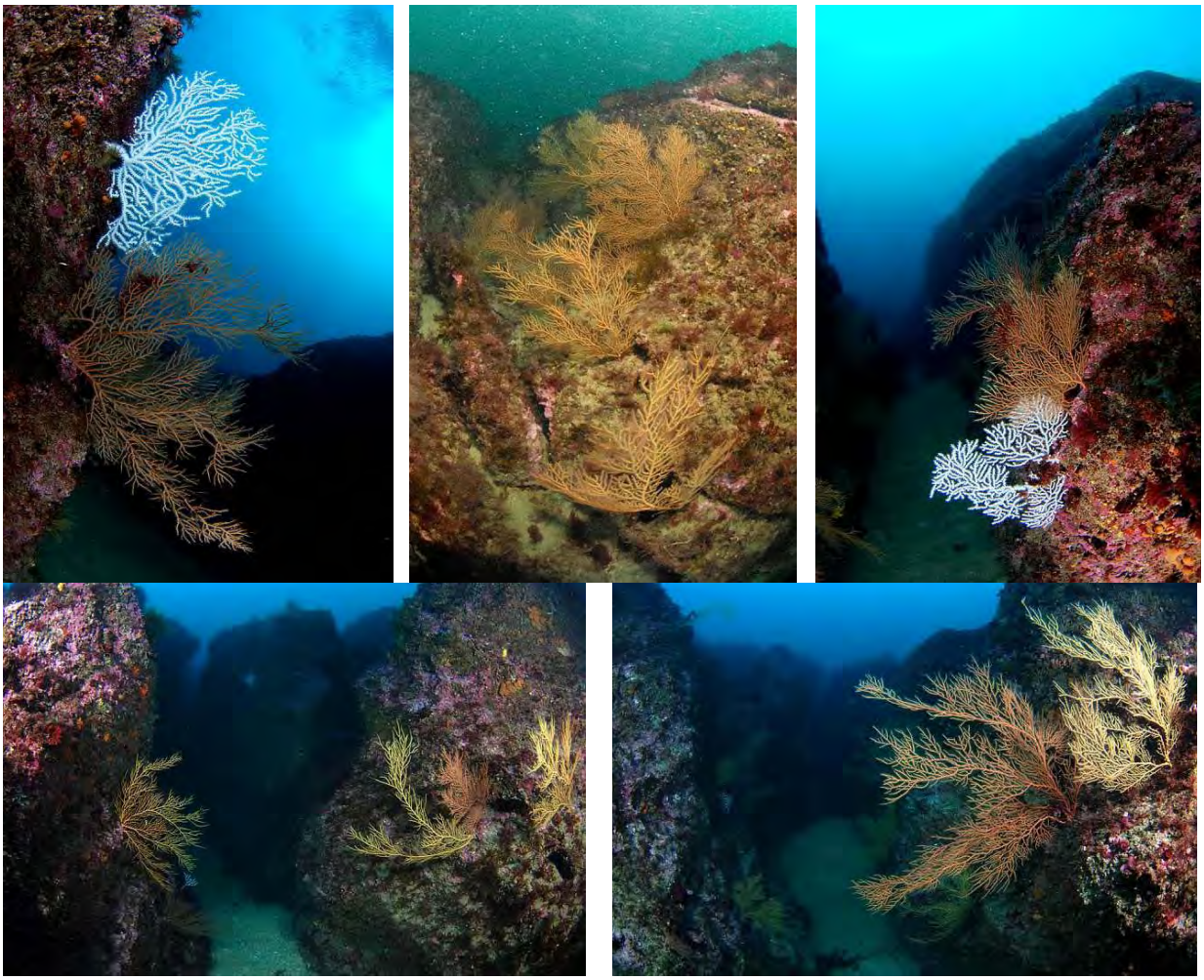
DESCRIPTION: These mixed gardens of gorgonians occur on abrupt rocky bottom, with vertical walls. In front of the Ballena de Sonabia (Cantabrian Sea, Bay of Biscay), at a depth of around 20 m, the predominant gorgonian species are *Eunicella verrucosa*, *Leptogorgia lusitanica* and *L. sarmentosa*: the last being the less abundant that the first two species.

Rocks on which these gardens grow are covered by algae and a many organisms can be found on them, such as anthozoans, hydrozoans, echinoderms, porifera, molluscs, bryozoans, polychaetes, crustaceans, foraminifera and ascidians. Also a lot of fish species are part of this community.

Sometimes, small gardens made up of only one of these species can be found. This is the case of the garden of *Leptogorgia sarmentosa* developed on the bottom of Os Meixidos bank (Galicia), at around 40 metres depth, also on a rocky bottom with no sediment.

DEPTH: 18 - 40 m

TYPE OF SUBSTRATE: Rocky bottom, abrupt. This type of mixed gorgonian gardens frequent forms habitats on rocky overhangs and walls, on areas with no sediment.



Mixed gorgonian garden (*Eunicella verrucosa*, *Leptogorgia lusitanica* and *L. sarmentosa*) in Sonabia (Cantabria, Spain)

Leptogorgia sarmentosa garden in Os Meixidos bank (Galicia, Spain)

TYPICAL FLORA AND FAUNA OF THE COMMUNITY

ALGAE	
Asparagopsis armata	*Mesophyllum lichenoides*
Codium sp.	*Peyssonnelia squamaria*
Dictyota dichotoma	*Peyssonnelia* sp.
Halidrys siliquosa	*Ulva* sp.
Lithophyllum sp.	
PORIFERA	
Acanthella acuta	*Haliclona fulva*
Aplysilla sp.	*Hymedesmia* sp.
Aplysina sp.	*Leuconia nivea*
Axinella dissimilis	*Leucosolenia botryoides*
Axinella polypoides	*Pachymatisma johnstonia*
Axinella verrucosa	*Petrosia ficiformis*
Clathrina clathrus	*Polymastia* sp.
Clathrina coriacea	*Spongia agaricina*
Crambe crambe	*Spongia officinalis*
Cliona celata	*Sycon* sp.
CNIDARIA	
Actinothoe sphyrodeta	*Gymnangium montagui*
Aglaophenia sp.	*Leptopsammia pruvoti*
Aiptasia mutabilis	*Nemertesia antennina*
Anemonia sulcata	*Polycyathus muellerae*
Alcyonium glomeratum	*Parazoanthus axinellae*
Caryophyllia smithii	*Sertularella* sp.
Corynactis viridis	*Sertularella grayi*
BRYOZOA	
Crisia sp.	*Porella compressa*
Disporella hispida	*Schizomavella* sp.
Pentapora fascialis	*Smittina cervicornis*
MOLLUSCA	
Berthella aurantiaca	*Hypselodoris cantabrica*
Peltodoris atromaculata	Cf. *Pruvotfolia pselliotes*
Hypselodoris sp.	
ECHINODERMATA	
Echinaster sepositus	*Marthasterias glacialis*
Holothuria forskali	*Paracentrotus lividus*
Holothuria sp.	*Sphaerechinus granularis*
ANNELIDA	
Myxicola aesthetica	*Protula tubularia*
Spirobranchus triqueter	*Sabella discifera*
PHORONIDA	
Phoronis sp.	
FORAMINIFERA	
Miniacina miniacea	
CHORDATA: TUNICATA	
Didemnum sp.	*Rhopalaea neapolitana*
Cf. Halocynthia papillosa	
CHORDATA: PISCES	
Coris julis	*Mullus surmuletus*
Ctenolabrus rupestris	*Parablennius gattorugine*
Diplodus cervinus	*Parablennius pilicornis*

Diplodus vulgaris
Cf. Gobiusculus flavescens
Labrus bergylta
Labrus mixtus
Scorpaena sp.
Scyliorhinus stellaris
Serranus cabrilla
Symphodus bailloni

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

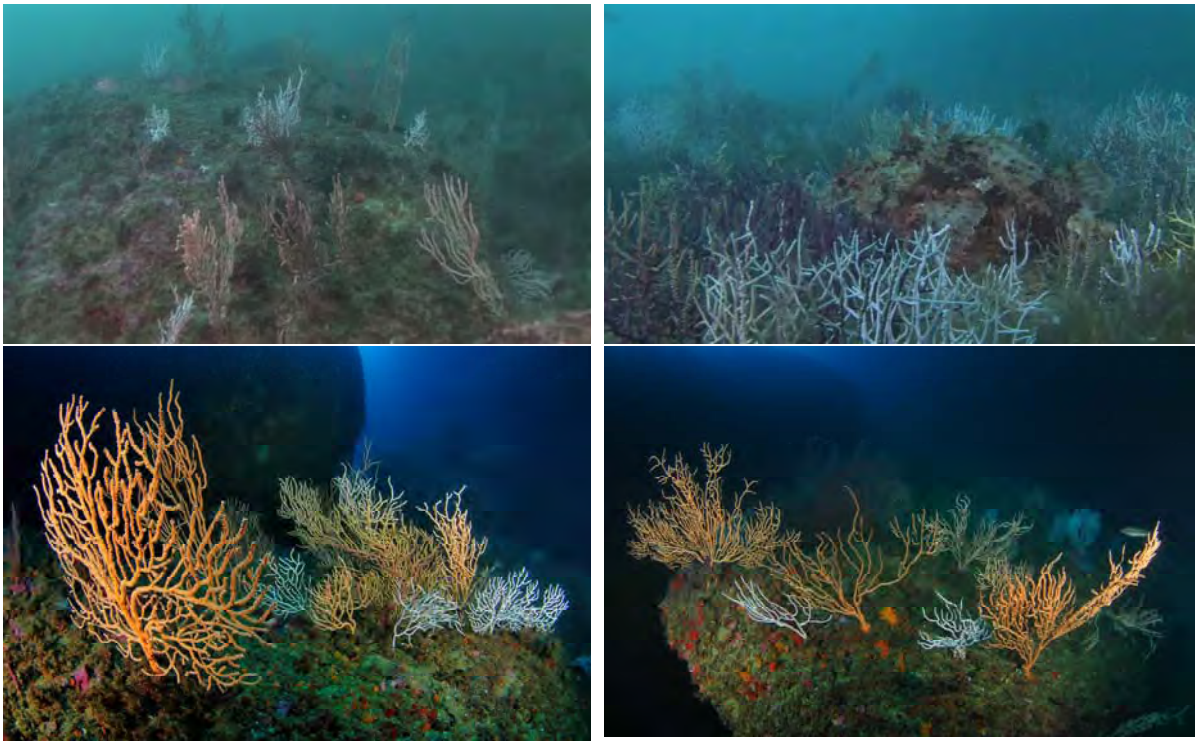
LOCATION	COUNTRY	COORDINATES	
Ballena de Sonabia , Bay of Biscay	Spain	43º 25,29800'N	03º 19,32800'W
Os Meixidos Bank, Galicia	Spain	42º 45,04200'N	09º 00,34600'W

4.1.2. Mixed gorgonian garden (*Eunicella verrucosa*, *E. labiata*, *Leptogorgia lusitanica* and *L. sarmentosa*) on infralittoral rocky bottom

DESCRIPTION: These gardens also develop on bedrock; they can even grow on other hard bottoms made up of abandoned structures or sunken wrecks. In some areas there is a lot of sediment.

DEPTH: 12 - 25 m

TYPE OF SUBSTRATE: Rocky bottom, with or without sediment.



Mixed gorgonian garden (*Eunicella verrucosa*, *E. labiata*, *Leptogorgia lusitanica* and *L. sarmentosa*) in the south of Portugal

TYPICAL FLORA AND FAUNA OF THE COMMUNITY

ALGAE	
Dictyota sp.	*Peyssonnelia squamaria*
Halopteris sp.	*Peyssonnelia* sp.
Mesophyllum sp.	
PORIFERA	
Corticium candelabrum	*Hemimycale columella*
Crambe crambe	*Hymedesmia paupertas*
Dysidea fragilis	*Phorbas fictitius*
CNIDARIA	
Aglaophenia sp.	*Corynactis viridis*
Aiptasia mutabilis	*Dendrophyllia laboreli*
Alcyonium acaule	*Eunicella verrucosa*
Alcyonium sp.	*Gymnangium montagui*
Alicia mirabilis	
BRYOZOA	
Pentapora fascialis	
MOLLUSCA	
Flabellina babai	*Hypselodoris* sp.
CRUSTACEA	
Necora puber	*Palaemon elegans*
ECHINODERMATA	
Holothuria forskali	*Marthasterias glacialis*
Holothuria tubulosa	*Sphaerechinus granularis*
CHORDATA: TUNICATA	
Aplidium nordmanni	
CHORDATA: PISCES	
Atherina presbyter	*Pagrus auriga*
Centrolabrus exoletus	*Parablennius gattorugine*
Coris julis	*Scorpaena porcus*
Ctenolabrus rupestris	*Serranus atricauda*
Diplodus vulgaris	*Serranus cabrilla*
Labrus bergylta	*Trisopterus luscus*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Ilheus de Martinhal, Sagres	Portugal	37º00,90000'N	08º 54,90000'W
Cañonera , Faro	Portugal	37º06,93000'N	08º 36,32000'W
Gemeos pequenhos, Alvor	Portugal	37º06,03000'N	08º 35,18000'W
Ponta dos caminos, Sagres	Portugal	37º01,35000'N	08º 53,59000'W

4.1.3. Mixed *gorgonian* garden (*Eunicella labiata*, *E. gazella*, *E. verrucosa*., *Leptogorgia lusitanica*, *L. sarmentosa* and *Paramuricea clavata*) on infralittoral and circalittoral bedrock

DESCRIPTION: Gorgonian gardens at the infralittoral and circalittoral areas of the Gulf of Cádiz and surrounding areas usually host a huge variety of species that, depending on the specific area, can show different predominance. They can be found at only -6/-8 metres, and they continue until -80 metres on rocky bottoms with high level of sedimentation.

While the eastern area is dominated by *Leptogorgia* lusitanica, *L. sarmentosa* and *Eunicella gazella*, the western area is covered mainly by *Paramuricea clavata, Eunicella verrucosa* and *E. labiata*.

Other important species of these gardens are dead men's fingers (*Alcyonium acaule*), bryozoans (*Pentapora fascialis*) and several hydrozoans (genus *Sertularella, Gymnangium, Diphasia*, etc.). This community can sometimes mix with forests of *Dendrophyllia ramea* and, in some areas, the scleractinian coral *Dendrophyllia laboreli* is also found.

In shallower areas these forests coexist with communities of brown algae (*Dictyota dichotoma*) or red algae (*Mesophyllum* and *Lithophyllum*).

Similar communities, but mainly represented by *Leptogorgia* spp. and *Eunicella verrucosa*, have been found in Atlantic areas of Galicia and the Bay of Biscay.

DEPTH: 10-80 m

TYPE OF SUBSTRATE: It is distributed on rocky bottoms with lots of sediment and other bottoms covered by algae, bryozoans and hydrozoans, between the infralittoral and circalittoral zones.

Mixed gorgonian garden (*Eunicella labiata*, *E. gazella*, *E. verrucosa*, *Leptogorgia lusitanica*, *L. sarmentosa* and *Paramuricea clavata*) in the Gulf of Cádiz (Spain)

TYPICAL FAUNA OF THE COMMUNITY (ON THE INFRALITTORAL AND CIRCALITTORAL AREAS)

ALGAE	
Dictyota sp.	*Mesophyllum* sp.
Lithophyllum sp.	
PORIFERA	
Axinella damicornis	*Hemimycale columella*
Axinella polypoides	*Hexadella racovitzai*
Cacospongia sp.	*Ircinia oros*
Chondrosia reniformis	*Leucosolenia variabilis*
Clathrina clathrus	*Petrosia ficiformis*
Cliona celata	*Phorbas fictitius*
Crambe crambe	*Phorbas tenacior*
Dysidea avara	*Spirastrella cunctatrix*
Haliclona sp.	*Ulosa stuposa*
CNIDARIA	
Alcyonium acaule	*Eunicella verrucosa*
Aiptasia mutabilis	*Gymnangium montagui*
Caryophyllia inornata	*Leptogorgia lusitanica*
Caryophyllia smithii	*Leptogorgia sarmentosa*
Corynactis viridis	*Maasella edwardsi*
Dendrophyllia laboreli	*Nemertesia antennina*
Dendrophyllia ramea	*Paramuricea clavata*
Diphasia margareta	*Parazoanthus axinellae*
Ellisella paraplexauroides	*Parerythropodium coralloides*
Eudendrium rameum	*Pennaria disticha*
Eunicella labiata	*Phyllangia americana mouchezii*
Eunicella gazella	*Sertularella gayi*
Eunicella singularis	*Sertularella mediterranea*
BRYOZOA	
Aetea sp.	*Pentapora fascialis*
Cellepora pumicosa	*Schizobrachiella sanguinea*
Disporella hispida	*Schizomavella mamillata*
Frondipora verrucosa	*Schizomavella sarniensis*
Myriapora truncata	
MOLLUSCA	
Bittium sp.	*Hypselodoris bilineata*
Bolma rugosa	*Hypselodoris picta*
Cratena peregrina	*Janolus cristatus*
Flabellina affinis	*Simnia spelta*
Hexaplex trunculus	*Pteria hirundo*
CRUSTACEA	
Inachus sp.	*Porcellana platycheles*
Pagurus anachoretus	*Xantho pilipes*
ECHINODERMATA	
Astrospartus mediterraneus	*Holothuria forskali*
Coscinasterias tenuispina	*Marthasterias glacialis*
Echinaster sepositus	*Ophiothrix fragilis*
ANNELIDA	
Myxicola aesthetica	*Salmacina dysteri*
Protula tubularia	*Serpula vermicularis*
ECHIURA	
Bonellia viridis	

CHORDATA: TUNICATA	
Aplidium elegans	*Halocynthia papillosa*
Aplidium proliferum	*Polycitor adriaticus*
Aplidium nordmanni	*Pycnoclavella nana*
Ecteinascidia turbinata	*Synoicum blochmanni*
CHORDATA: PISCES	
Anthias anthias	*Pagrus pagrus*
Chromis chromis	*Parablennius pilicornis*
Coris julis	*Parapristipoma octolineatum*
Ctenolabrus rupestris	*Plectorhinchus mediterraneus*
Diplodus annularis	*Pomadasys incisus*
Diplodus bellottii	*Scorpaena loppei*
Diplodus cervinus	*Scorpaena notata*
Diplodus sargus	*Scorpaena porcus*
Diplodus vulgaris	*Serranus cabrilla*
Halobatrachus didactylus	*Serranus scriba*
Labrus bergylta	*Symphodus tinca*
Pagrus auriga	*Tripterygion delaisi*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
In front of PN Doñana, Gulf of Cádiz	Spain	37º01,01300'N	06º 49,39400'W
In front of PN Doñana, Gulf of Cádiz	Spain	37º01,60400'N	06º 50,44900'W
Bonhome Bank, Gulf of Cádiz	Spain	36º36,90200'N	06º 24,60200'W
Rota, Gulf of Cádiz	Spain	36º36,00900'N	06º 28,80900'W
Rota, Gulf of Cádiz	Spain	36º37,33900'N	06º 25,13200'W
Rota, Gulf of Cádiz	Spain	36º37,07500'N	06º 25,81200'W
Rota, Gulf of Cádiz	Spain	36º40,19100'N	06º 26,86400'W
Doñana, Gulf of Cádiz	Spain	37º01,36200'N	06º 41,21300'W
Chipiona, Gulf of Cádiz	Spain	36º39,88900'N	06º 25,59100'W

4.1.4. Mixed gorgonian garden (*Eunicella labiata*, *E. verrucosa*, *Leptogorgia sarmentosa* and *Paramuricea clavata*) on circalittoral rocky bottom

DESCRIPTION: This type of mixed gorgonian gardens grows on rocky substrate (small rocks, rocky slabs and submarine caves, etc.) that emerges on a sandy bottom on the Southwest coast of Portugal, in front of Sagres and Saint Vincent Cape. Some locations show bedrock covered by a lot of sediment. In some areas *Paramuricea clavata* is clearly predominant, while in other areas *Leptogorgia sarmentosa* populate the area more abundantly.

Highest densities of this type of mixed gorgonian garden are between 59 and 75 m depth. On this shallow area other cnidarians predominate, such as *Parazoanthus axinellae*, *Alcyonium* sp., *Nemertesia antennina* and *Diphasia margareta*, apart from sponges as *Phakellia ventilabrum* and *Cliona celata*, echinoderms such as *Holothuria forskali* and *Astrospartus mediterraneus*; and echiuridians as *Bonellia viridis*. The most common fish are *Serranus cabrilla* and shoals of *Anthias anthias*.

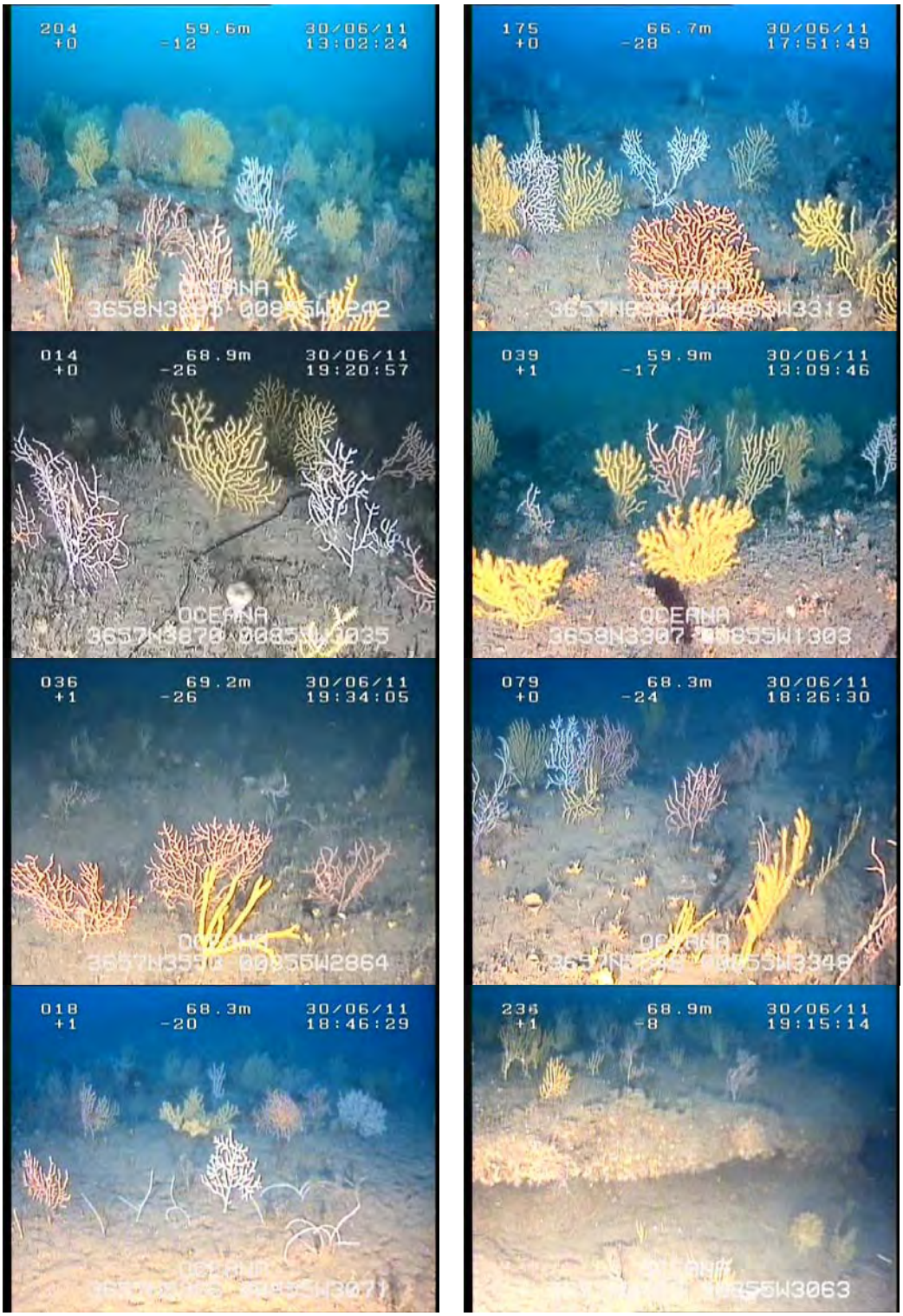
Paramuricea clavata can be recorded down to 120 m depth, forming gardens dominated by this single species or mixed gardens with aggregations of deep sponges. In these deeper areas, the rocky bottom can be covered by a layer of sediment. This area also shows a more abundantly presence of other species, such as *Dendrophyllia cornigera* and *Centrostephanus longispinus*

DEPTH: 59- 120 m

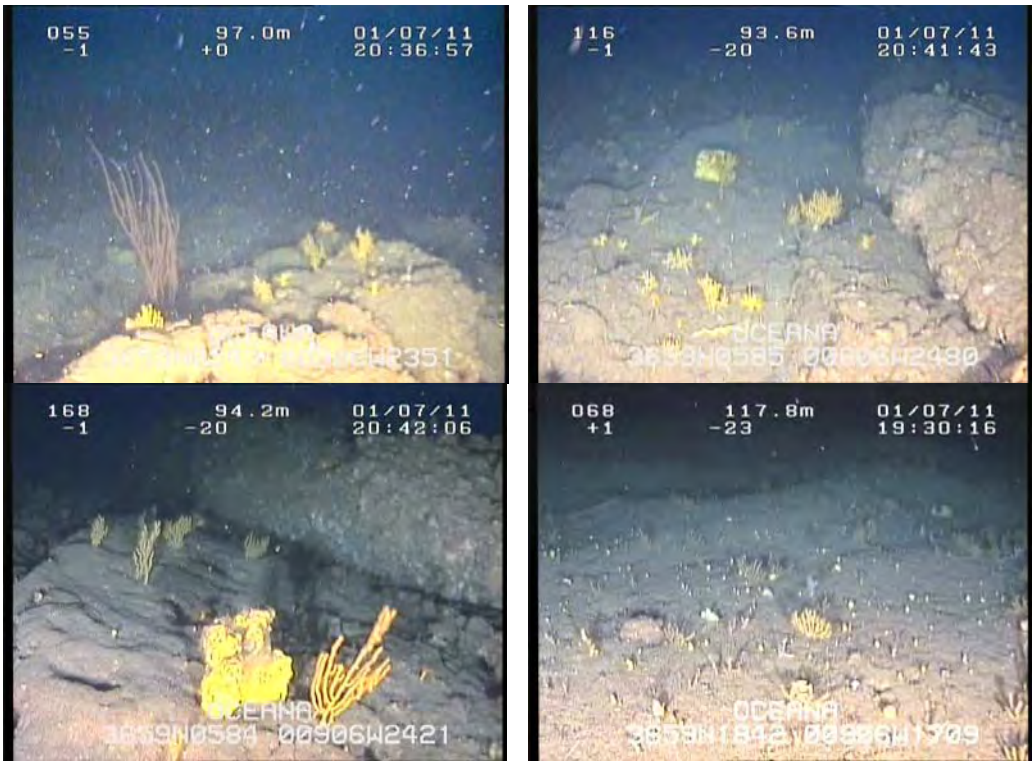
TYPE OF SUBSTRATE: Rocky bottom, with sediment in some areas.

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Artemisina transiens	*Hymedesmia paupertas*
Axinella dissimilis	cf. *Petrosia crassa*
Axinella flustra	*Phakellia ventilabrum*
Axinella polypoides	*Pleraplysilla spinifera*
Axinella sp.	*Raspailia hispida*
Cliona celata	*Spongia agaricina*
Ciocalypta penicillus	*Suberites* sp.
Guitarra solorzanoi	
CNIDARIA	
Aglaophenia sp.	*Eunicella gazella*
Aiptasia mutabilis	*Eunicella labiata*
Alcyonium palmatum	*Eunicella verrucosa*
Alcyonium sp.	*Leptogorgia sarmentosa*
Antipathes sp.	*Nemertesia antennina*
Antipathes subpinnata	*Nemertesia sp.*
Corallium rubrum	*Paramuricea clavata*
Dendrophyllia cornigera	*Parazoanthus axinellae*
Dendrophyllia ramea	*Sertularella gayi*
Diphasia margareta	*Spinimuricea atlantica*
Ellisella paraplexauroides	
BRYOZOA	
Reteporella sp.	
MOLLUSCA	
Berthellina edwardsi	*Neopycnodonte cochlear*
Calliostoma sp.	*Peltodoris atromaculata*
ECHINODERMATA	
Astrospartus mediterraneus	*Holothuria forskali*
Centrostephanus longispinus	*Marthasterias glacialis*
Echinaster sepositus	*Pawsonia saxicola*
ANNELIDA	
Filograna implexa	*Serpula vermicularis*
Polydora sp.	
ECHIURA	
Bonellia viridis	
FORAMINIFERA	
Miniacina miniacea	
CHORDATA: TUNICATA	
Diazona violacea	*Halocynthia papillosa*
CHORDATA: PISCES	
Acantholabrus palloni	*Mola mola*
Anthias anthias	*Mullus surmuletus*
Coris julis	*Scorpaena notata*
Ctenolabrus rupestris	*Scorpaena sp.*
Diplodus vulgaris	*Serranus cabrilla*
Labrus bergylta	*Thorogobius ephippiatus*
Labrus mixtus	



Mixed gorgonian garden (*Eunicella labiata*, *E. verrucosa*, *Leptogorgia sarmentosa* and *Paramuricea clavata*) in Sagres (Portugal)



Paramuricea clavata garden in the Saint Vincent bank (Portugal).

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

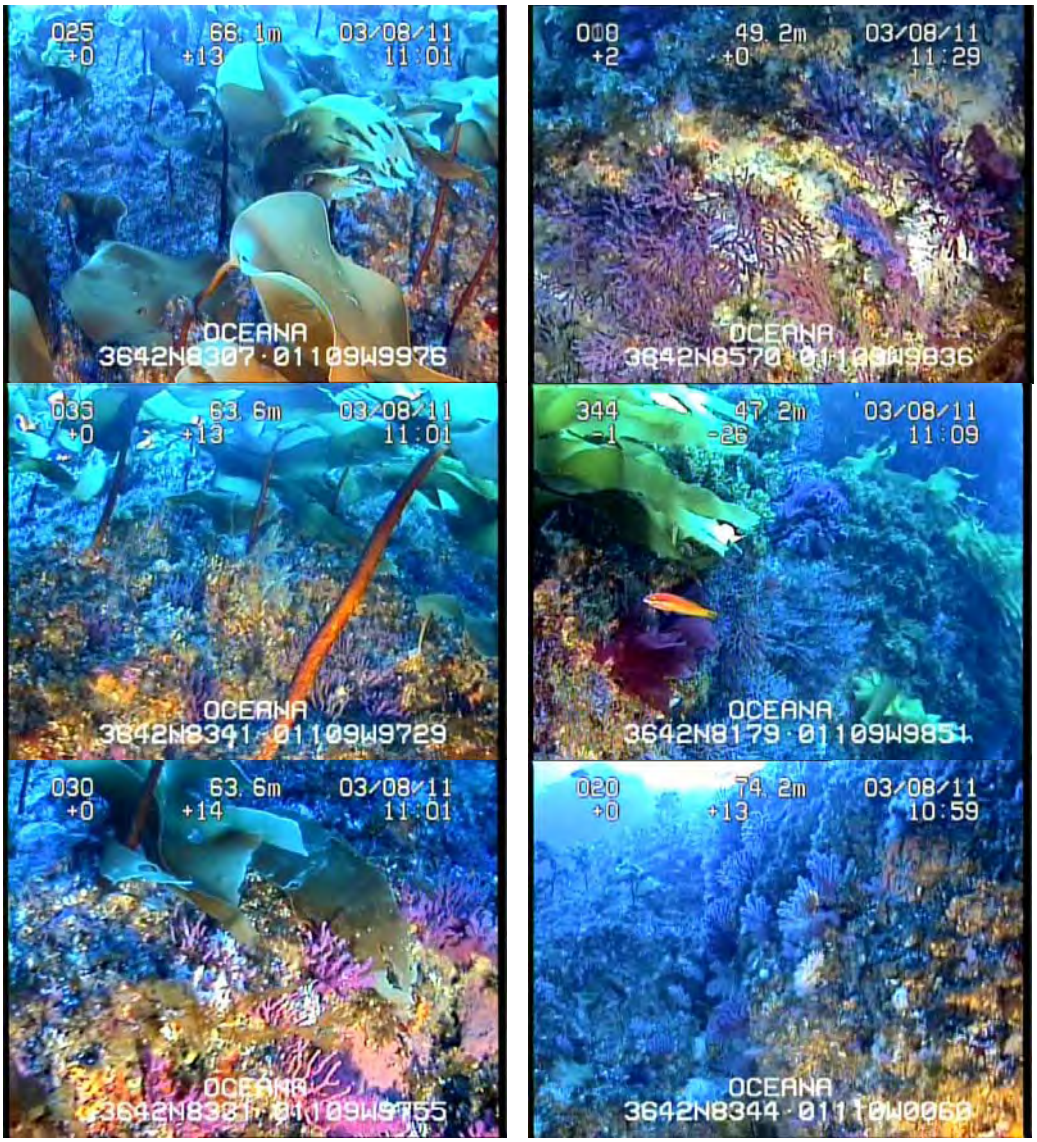
LOCATION	COUNTRY	COORDINATES	
Sagres	Portugal	36º58,28610'N	08º55,13870'W
Sagres	Portugal	36º57,72160'N	08º55,33870'W
Saint Vincent Bank	Portugal	36º59,18210'N	09º06,16840'W

4.2. *Paramuricea clavata* garden on upper circalittoral rocky bottom

DESCRIPTION: This species grows in high density forming huge gardens under kelp forests (*Laminaria ochroleuca*) and other algae (*Dictyota dichotoma*, *Dictyopteris polypodioides*, *Zonaria tournefortii*) coberture. These gardens of *Paramuricea clavata* are denser and specimens are larger in cracks and vertical walls that are not covered by algae or kelp forests.

DEPTH: 50 - 82 m

TYPE OF SUBSTRATE: Abrupt rocky bottom (rocky substrate, overhangs and cracks), with no sediment.



Paramuricea clavata garden on upper circalittoral rocky bottom (Gorrige Bank, Portugal)

TYPICAL FLORA AND FAUNA OF THE COMMUNITY

ALGAE	
Desmarestia ligulata	*Plocamium cartilagineum*
Dictyota dichotoma	*Polyneura bonnemaisonii*
Dictyopteris polypodioides	*Saccorhiza polyschides*
Laminaria ochroleuca	*Zonaria tournefortii*
PORIFERA	
Crambe crambe	Encrusted desmosponges
MOLLUSCA	
Calliostoma sp.	
ANNELIDA	
Hermodice carunculata	
CHORDATA: PISCES	
Anthias anthias	*Serranus cabrilla*
Coris julis	*Symphodus mediterraneus*
Serranus atricauda	*Symphodus tinca*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Ormonde, Gorringe Bank	Portugal	36º 42,85550'N	11º 09,98440'W

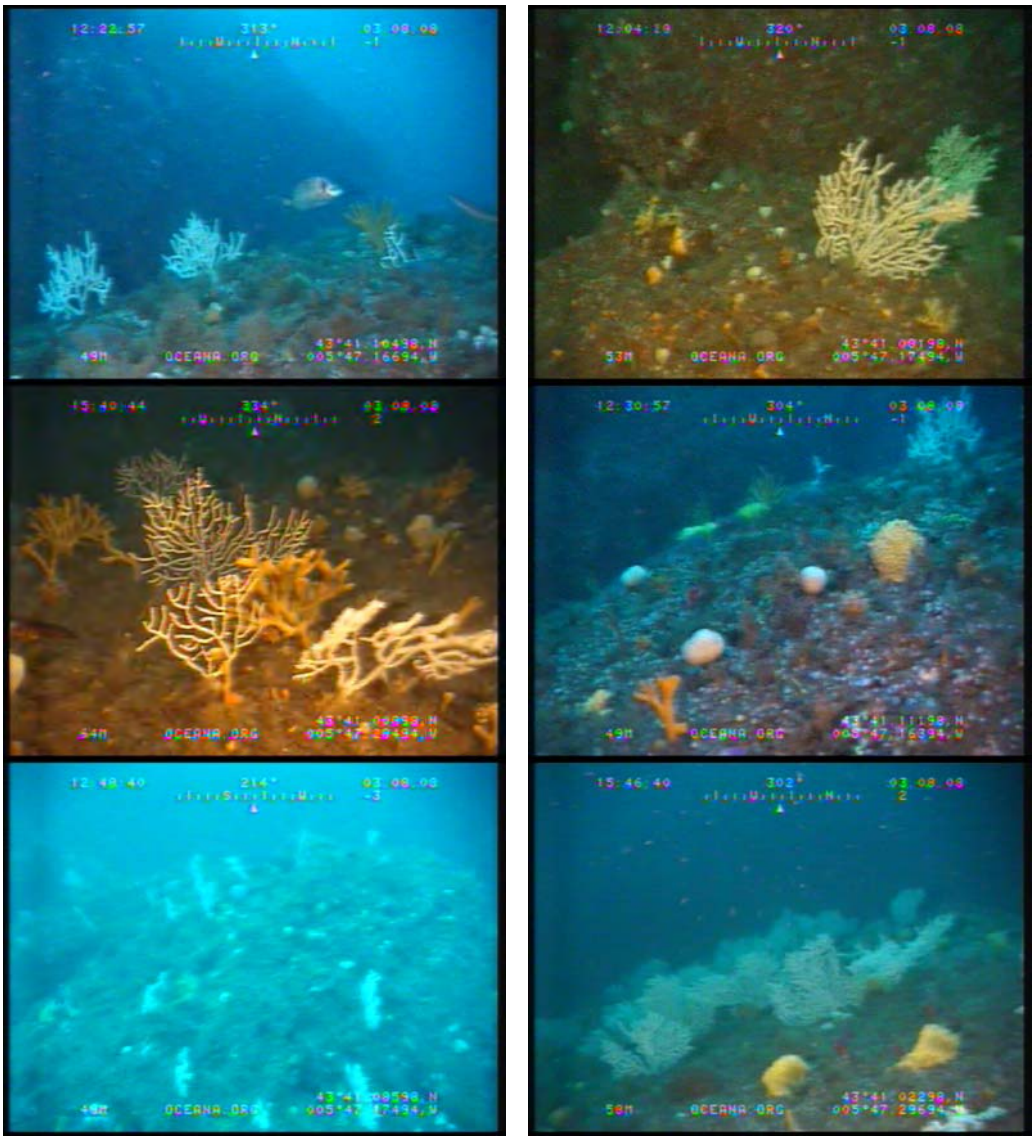
4.3. *Eunicella verrucosa* garden on upper circalittoral rocky bottom

DESCRIPTION: These gardens grow on rocky areas. Several species of sponges abundantly appear as part of this community (*Cliona celata*, *Artemisina transiens*, *Axinella* spp., *Tedania urgorrii*, *Pachymatisma johnstonia*). In some areas, *Cliona celata* and/or *Artemisina transiens* and/or *Axinella* sp. are so abundant that together with *Eunicella verrucosa* form mixed fields of sponges and gorgonians.

Paramuricea grayi is also very dense in some areas.

DEPTH: 48 - 65 m

TYPE OF SUBSTRATE: Rocky bottom, with no sediment.



Eunicella verrucosa garden on upper circalittoral rocky bottom in Somos LLungo (Asturias, Spain)

TYPICAL FAUNA OF THE COMMUNITY

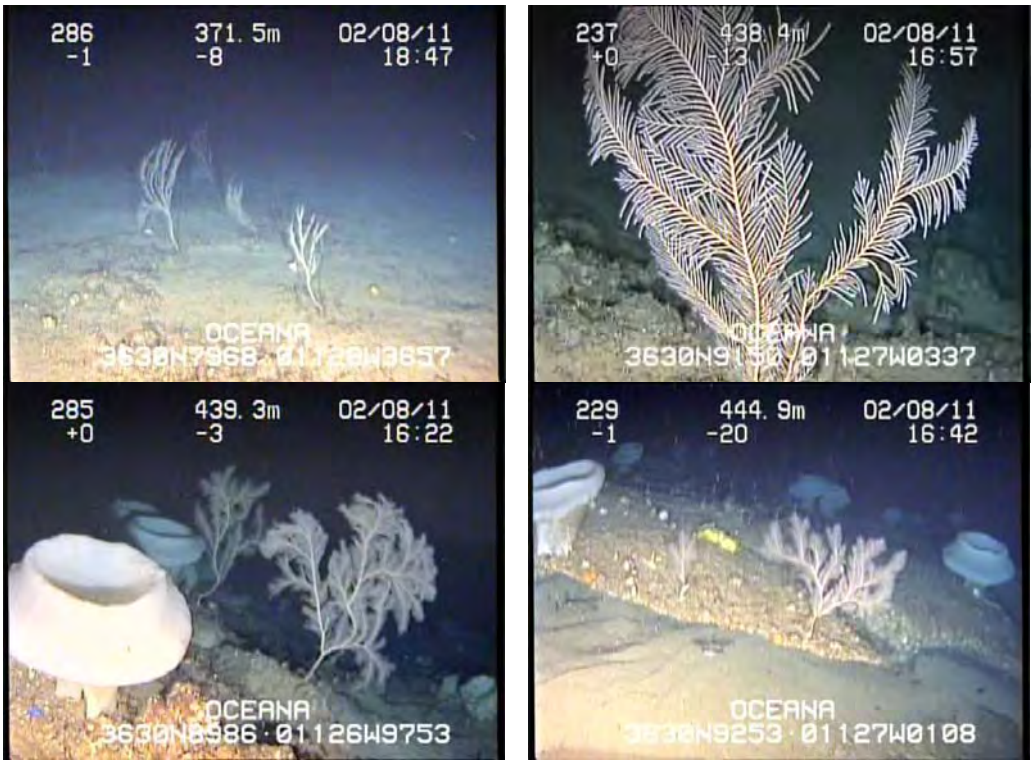
PORIFERA	
Artemisina transiens	*Pachymatisma johnstonia*
Axinella dissimilis	*Phakellia ventilabrum*
Axinella polypoides	*Polymastia* sp.
Cliona celata	*Tedania urgorrii*
Guitarra solorzanoi	
CNIDARIA	
Aglaophenia sp.	*Paramuricea grayi*
Alcyonium glomeratum	*Parazoanthus anguicomus*
Corynactis viridis	*Parazoanthus axinellae*
Gymnangium montagui	
ECHINODERMATA	
Echinaster sepositus	*Holothuria forskali*
Echinus esculentus	*Marthasterias glacialis*
Echinus melo	
CHORDATA: PISCES	
Centrolabrus exoletus	*Labrus mixtus*
Coris julis	*Pollachius pollachius*
Ctenolabrus rupestris	*Serranus cabrilla*
Diplodus vulgaris	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Somos LLungo, Peñas Cape	Spain	43º 41,10598'N	05º 47,16894'W
Somos LLungo, Peñas Cape	Spain	43º 41,02498'N	05º 47,29994'W

4.4. *Callogorgia verticillata* garden on bathyal rocky bottom

DESCRIPTION: On the maritime area of OSPAR, OCEANA recorded isolated groups of this species on the bathyal area (155 - 450 m), as part of typical communities in habitats such as aggregations of *Asconema setubalense* or as part of mixed gorgonian and sponge habitats. Both of them have been documented in the Gorringe Bank (Portugal).



Callogorgia verticillata isolated groups or as part of the community of an *Asconema setubalense* aggregation in the Gorringe Bank (Portugal)

However, gardens made up only by this species occupy broad areas between 225 and 310 metres depth in the Canary Islands waters (e.g.: Punta de Teno, Tenerife). In some areas these gardens are mixed with other abundant gorgonian in Canary Islands, *Narella* cf. *bellissima*.

Callogorgia verticillata garden in Punta de Teno (Canary Islands, Spain)

Although OCEANA could not document these gardens made up only by *Callogorgia verticillata* in the maritime area of OSPAR, it is quite likely that they occur in Portuguese waters. Nevertheless and focusing only in the OSPAR area, mixed garden of *Callogorgia verticillata* and other gorgonian and sponge species have been recorded in the Gorringe Bank.

DEPTH: 135 - 350 m

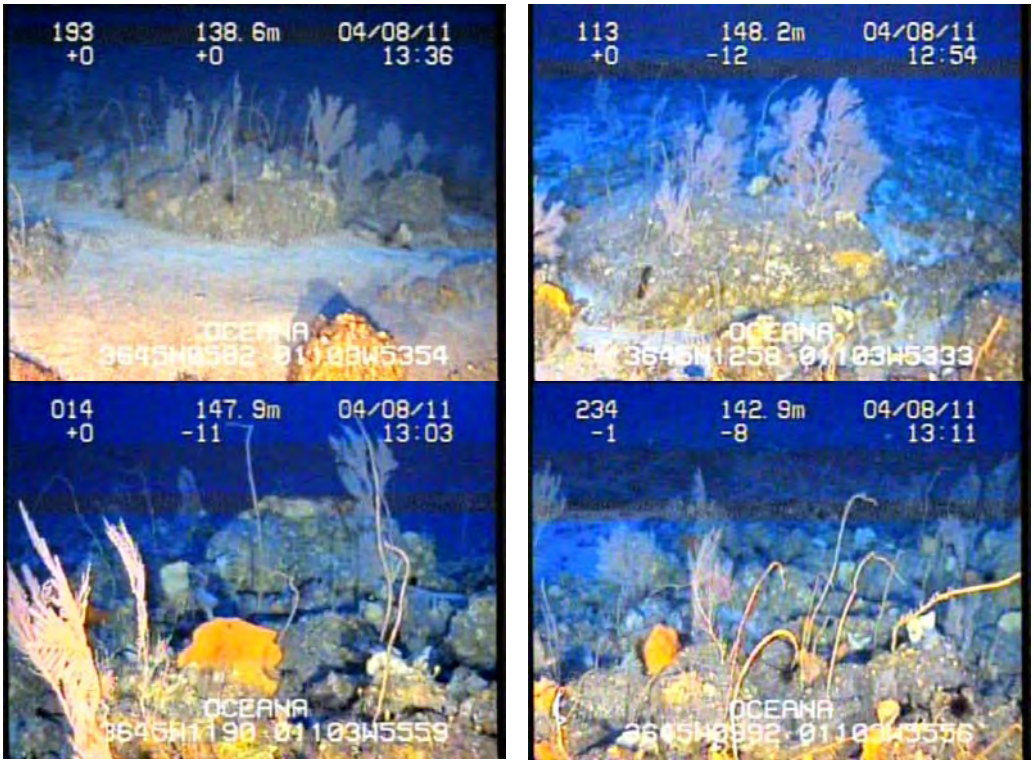
TYPE OF SUBSTRATE: These gorgonian gardens grow on rocky substrate with a great variety of bottom types: non-sediment bedrock, bedrock covered by a lot of sediments, rocky slabs and stones on sandy bottom.

4.4.1 Mixed garden of *Callogorgia verticillata*, *Viminella flagellum, Tedania* sp. and other demosponges

DESCRIPTION: These mixed fields develop on the shallowest area of the bathymetric range of *Callogorgia verticillata* along with another species of predominant gorgonians such as *Viminella flagellum* and sponges such as *Tedania* sp. and other desmosponges not identified. Sea urchins (*Centrostephanus longispinus*) are also abundant, as well as shoals of *Anthias anthias*.

DEPTH: 135 - 150 m

TYPE OF SUBSTRATE: The species that make up this garden develop on rocky substrate, on a sandy-rocky mixed bottom.



Mixed gardens of *Callogorgia verticillata*, *Viminella flagellum*, *Tedania* sp. and other demosponges in the Gorringe bank (Portugal)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Haliclona sp.	*Podospongia loveni*
Haliclona cf. *xena*	*Terpios* sp.
Pachastrella sp.	
CNIDARIA	
Dendrophyllia cornigera	
Ellisella paraplexauroides	
Stichopathes sp.	
MOLLUSCA	
Octopus vulgaris	
ECHINODERMATA	
Centrostephanus longispinus	*Hacelia superba*
Cidaris cidaris	*Holothuria forskali*
Diadema antillarum	
FORAMINIFERA	
Miniacina miniacea	
CHORDATA: PISCES	
Anthias anthias	*Lappanella fasciata*
Callyonimus sp.	*Serranus atricauda*
Coris julis	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Ormonde, Gorringe Bank	Portugal	36º 45,12300'N	11º 03,54030'W

4.4.2. Mixed garden of *Callogorgia verticillata*, *Asconema setubalense* and other demosponges

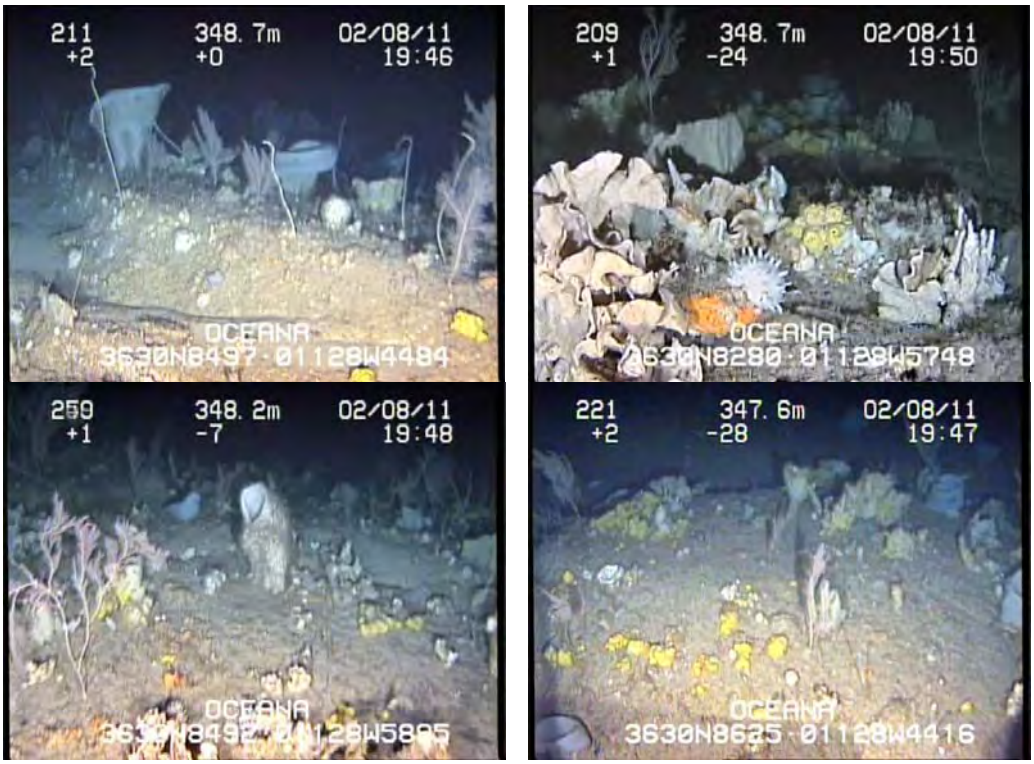
DESCRIPTION: Sponges and gorgonians –grown on hard substrate- predominate in these fields. *Viminella flagellum* as well as other desmosponges appear as part of the typical community of these bottom areas.

DEPTH: 340 - 350 m

TYPE OF SUBSTRATE: Rocky, some areas with a lot of sediment.

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Geodia sp.	*Phakellia* cf. *robusta*
Lithistida	*Polymastia* sp.
CNIDARIA	
Cirrhipathes sp.	*Viminella flagellum*



Mixed gardens of *Callogorgia verticillata*, *Asconema setubalense* and other demosponges in the Gorringe Bank (Portugal)

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Gettysburg, Gorringe Bank	Portugal	36º 30,86380'N	11º 28,43970'W

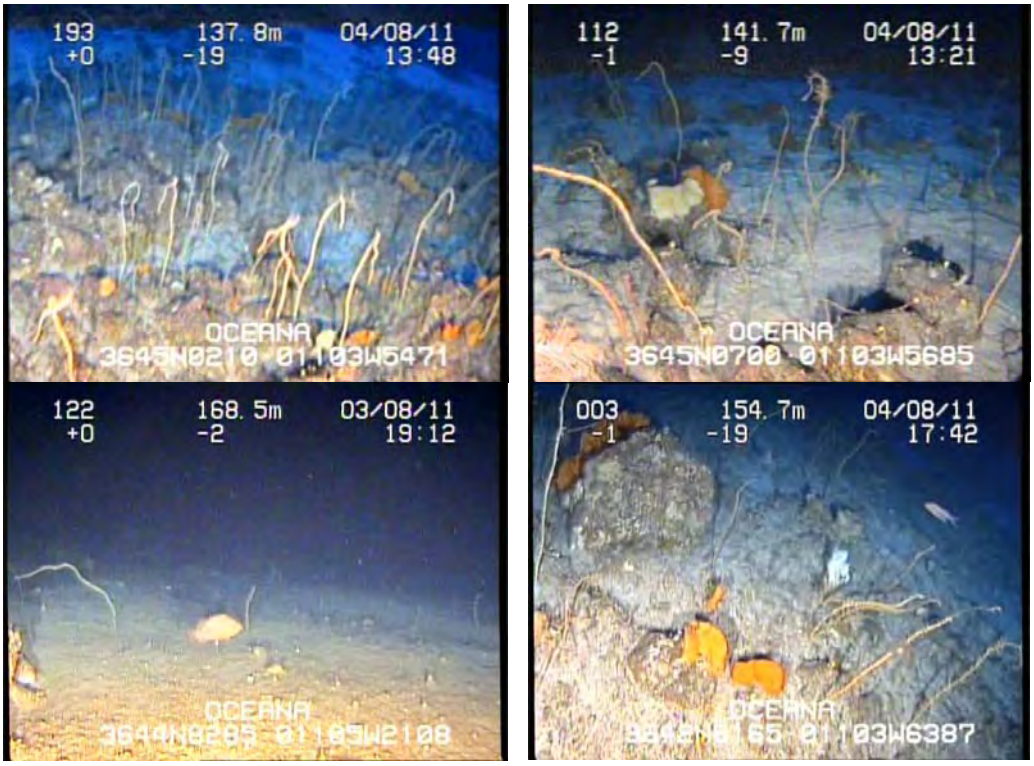
4.5. *Viminella flagellum* garden on lower circalittoral and bathyal rocky bottoms

DESCRIPTION: These gardens occur on rocks or rocky outcrops on a soft or sandy bottom. In some areas there are mixed substrates where rocky and sandy areas alternate or areas where the hard substrate can be completely covered by compact sediment.

A lot of sponges appear as part of this community (*Tedania* sp. and other unidentified demospongiae), together with sea urchins (*Centrostephanus longispinus* and *Diadema antillarum*), starfish (*Hacelia superba*) and fish like *Serranus atricauda* and shoals of *Anthias anthias*.

DEPTH: 120 - 170 m

TYPE OF SUBSTRATE: This species develops on rocks that emerge on the surface of mixed sandy-rocky bottoms and on areas fully covered by compact sediment.



Viminella flagellum gardens in the Gorringe Bank (Portugal)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Haliclona sp.	*Podospongia loveni*
Phakellia cf. *robusta*	*Tedania* sp.
CNIDARIA	
Antipathella wollastoni	*Ellisella paraplexauroides*
Callogorgia verticillata	*Stichopathes* sp.
Dendrophyllia cornigera	

CRUSTACEA	
Palinurus elephas	
ECHINODERMATA	
Centrostephanus longispinus	*Holothuria forskali*
Diadema antillarum	*Holothuria tubulosa*
Hacelia superba	
FORAMINIFERA	
Miniacina miniacea	
CHORDATA: TUNICATA	
Diazona violacea	
CHORDATA: PISCES	
Anthias anthias	*Muraena helena*
Capros aper	*Phycis phycis*
Coris julis	*Pontinus kuhlii*
Helicolenus dactylopterus	*Serranus atricauda*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Gettysburg, Gorringe Bank	Portugal	36º 30,66620'N	11º 35,49880'W
Ormonde, Gorringe Bank	Portugal	36º 44,79590'N	11º 05,20590'W
Ormonde, Gorringe Bank	Portugal	36º 44,90280'N	11º 03,54480'W
Ormonde, Gorringe Bank	Portugal	36º 42,81590'N	11º 03,63730'W

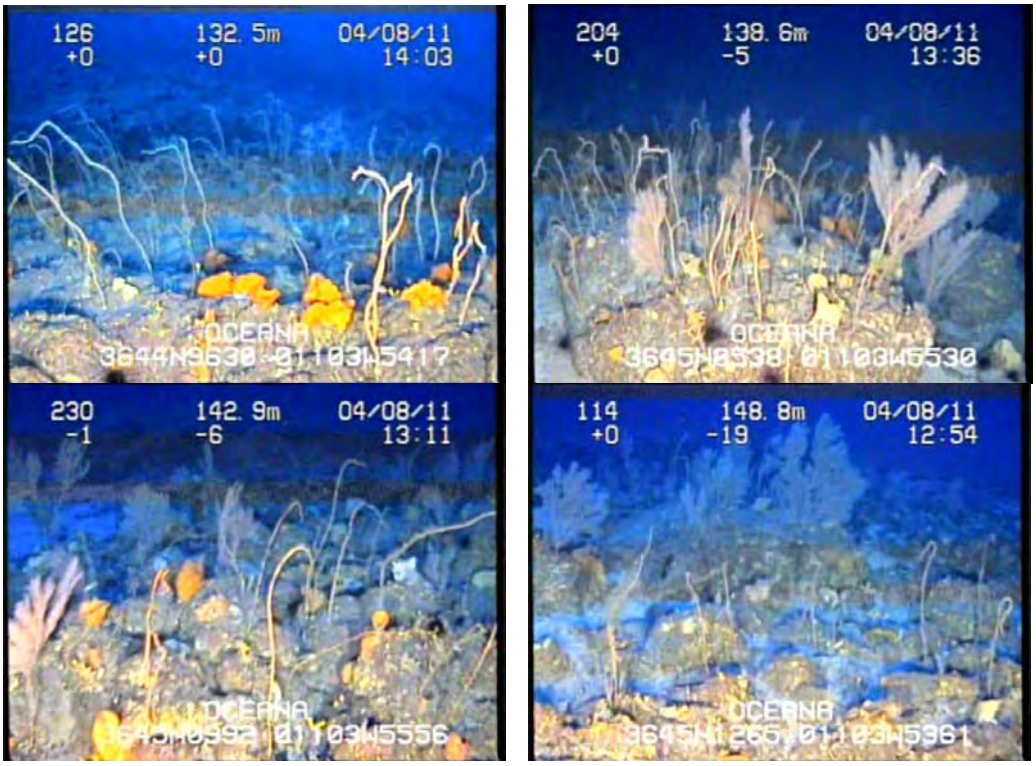
In some cases, fields of *Viminella flagellum* mix with other species, creating mixed gardens of gorgonians and sponges:

4.5.1 Mixed garden of *Callogorgia verticillata*, *Viminella flagellum, Tedania* sp. and other demosponges

These mixed fields where gorgonians and sponges are predominant develop on mixed, sandy-rocky bottoms. Sea urchins (*Centrostephanus longispinus*) are abundant, as well as shoal of *Anthias anthias*.

DEPTH: 135 - 150 m

TYPE OF SUBSTRATE: The species that make up this garden develop on rocky substrate, on a sandy-rocky mixed bottom.



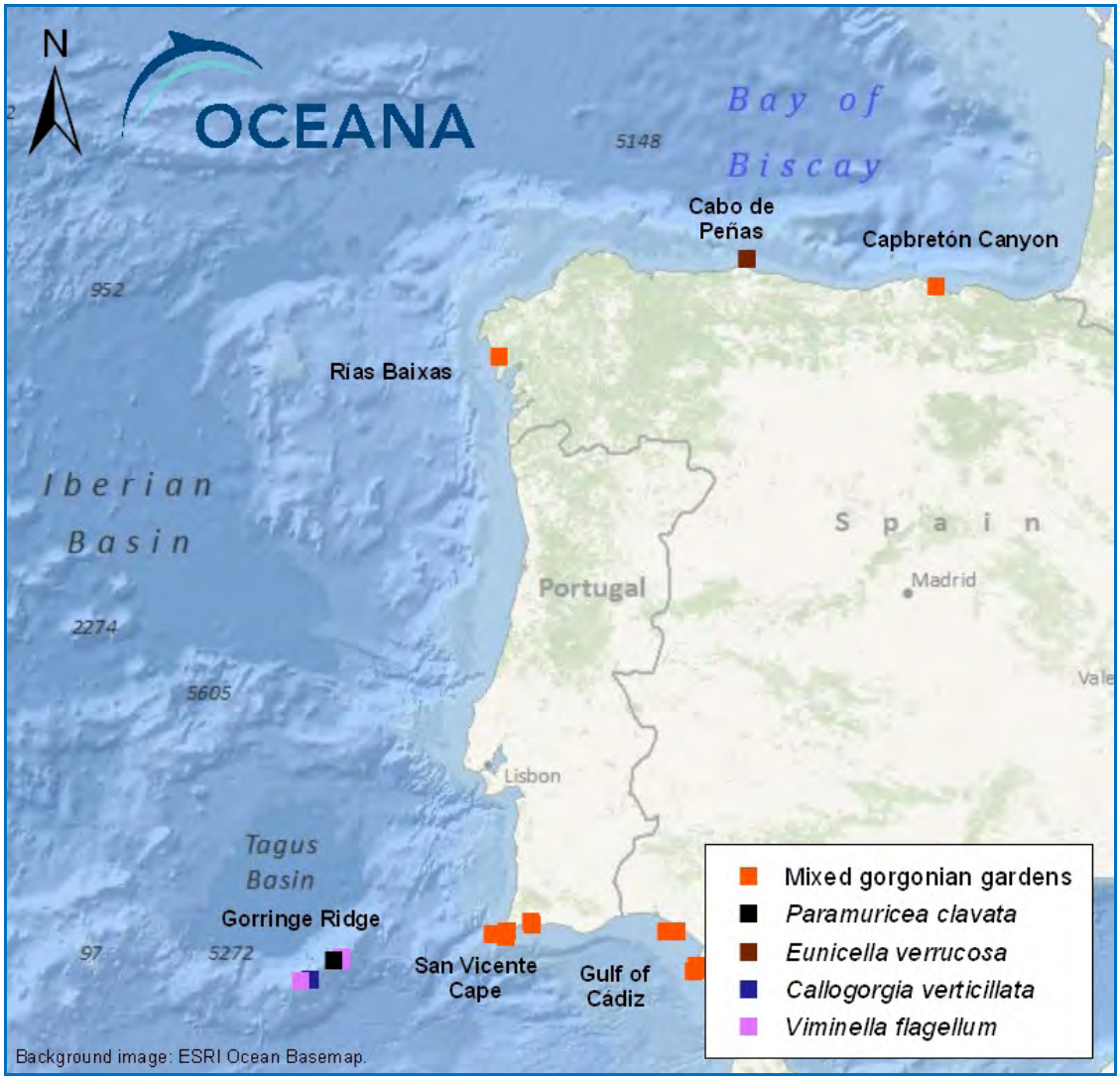
Mixed gardens of *Callogorgia verticillata, Viminella flagellum, Tedania* sp. and other demosponges in the Gorringe Bank (Portugal)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Haliclona sp.	*Podospongia loveni*
Haliclona cf. *xena*	*Terpios* sp.
Pachastrella sp	
CNIDARIA	
Dendrophyllia cornigera	
Ellisella paraplexauroides	
Stichopathes sp.	
MOLLUSCA	
Octopus vulgaris	
ECHINODERMATA	
Centrostephanus longispinus	*Hacelia superba*
Cidaris cidaris	*Holothuria forskali*
Diadema antillarum	
FORAMINIFERA	
Miniacina miniacea	
CHORDATA: PISCES	
Anthias anthias	*Lappanella fasciata*
Callyonimus sp.	*Serranus atricauda*
Coris julis	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Ormonde, Gorringe Bank	Portugal	36º 45,04260'N	11º 03,57730'W



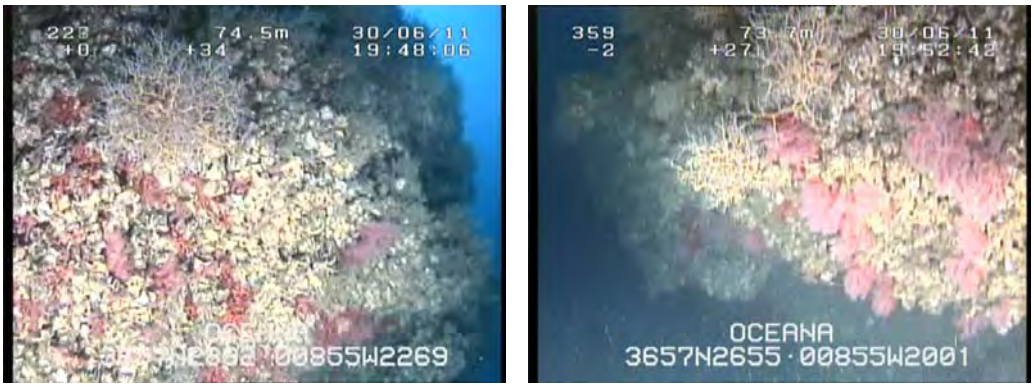
Locations where gorgonian gardens were recorded by OCEANA in Spanish and Portuguese waters

5. Caves and overhangs with red coral *Corallium rubrum* on rocky circalittoral bottom

DESCRIPTION: Gardens of *Corallium rubrum* can be considered micro-habitats that develop on rocky overhangs, many times on rocky walls covered by oysters (*Neopycnodonte* cf. *cochlear*). Covering the rock there are also a lot of desmosponges that could not be identified from the ROV images. On these same walls it is also common to find echinoderms (*Centrostephanus longispinus*, *Astrospartus mediterraneus* and *Marthasterias glacialis*) and cnidarians (*Dendrophyllia cornigera*, *Parazoanthus axinellae*).

DEPTH: 70 - 110 m

TYPE OF SUBSTRATE: Rocky bottom, on vertical walls, ceilings and overhangs.



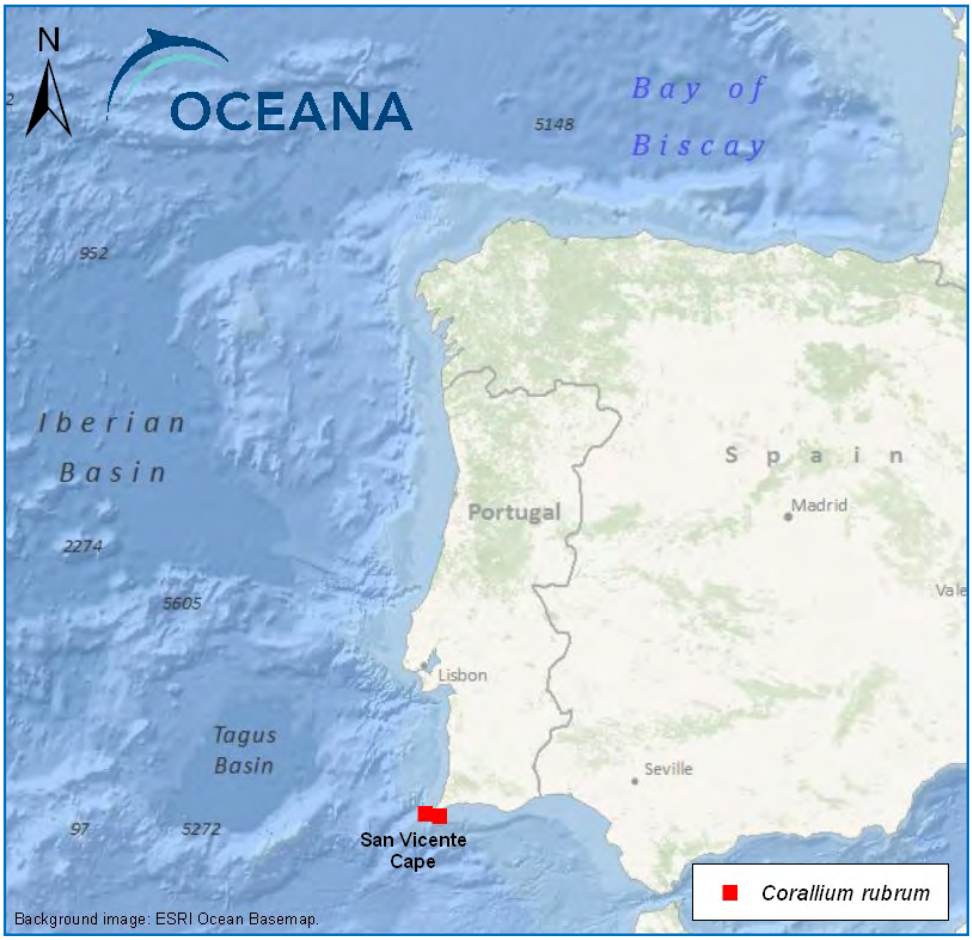
Corallium rubrum gardens covering rocky walls and overhgans in the Algarve (Portugal)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Encrusted desmosponges	
CNIDARIA	
Caryophyllia cyathus	*Parazoanthus axinellae*
Dendrophyllia cornigera	*Sertularella gayi*
Paramuricea clavata	
BRYOZOA	
Reteporella sp.	
MOLLUSCA	
Neopycnodonte cf. *cochlear*	*Peltodoris atromaculata*
EQUINODERMATA	
Astrospartus mediterraneus	*Holothuria forskali*
Centrostephanus longispinus	*Marthasterias glacialis*
ECHIURA	
Bonellia viridis	
CHORDATA: PISCES	
Coris julis	*Scorpaena sp.*
Lappanella fasciata	*Serranus cabrilla*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Sagres, Saint Vincent Cape	Portugal	36º 57,28520'N	08º55,22980'W
Saint Vincent Cape	Portugal	36º 59,11090'N	09º08,23350'W



Locations where caves and overhangs with *Corallium rubrum* were recorded by OCEANA in Portuguese waters

6. Community dominated by *Alcyonium digitatum* on infralittoral and circalittoral rocky bottom

DESCRIPTION: In Galicia (Spain), some rocky areas of the infralittoral are covered by this species, forming up important micro-habitats. These areas are located in shallow waters around 40 m depth in the Rías Baixas. Also covering the rock we can find other cnidarians such as *Corynactis viridis* and several sponges species such as *Cliona celata*, *Halichondria panicea*, *Haliclona cinerea*, *Hymeniacidon perlevis*, *Pleraplysilla spinifera* and other unidentified desmosponges. The spiny starfish (*Marthasterias glacialis*) is also very common and abundant in this community.

This community was documented around the Ven Island in the So Sound, from the central parts of the Kattegat, and at the Swedish coast in Northern Kattegat from stony bottom with boulders and soft sediments (mud, sand–mud). It is in the Baltic Sea between 17 and 38 meter depth. *Alcyonium digitatum* dominates the rocks and boulders. Sea urchins (*Spatangus purpureus* and *Psammechinus miliaris*) and brittle stars (*Ophiura robusta*, *Ophiocomina nigra*, *Ophiura ophiura*) are very abundant. Sea anemones (*Metridium senile*) and a number of hydroids are common. Macrophytes such as big kelps (*Laminaria saccharina*) and red algae (*Delesseria sanguinea*) are also common on shallower areas and these areas absent in deeper waters.

This community dominated by *Alcyonium digitatum* was documented in deeper areas of this location (110-135m), in the central Kattegat, although the community is less abundant than in shallower areas. The sediments consist of mud with rocks and boulders on which *Alcyonium digitatum* was attached. The presence of echinoderm communities (particularly *Brissopsis lyrifera* and *Echinus esculentus*) is characteristic in this area when compared to the community in the shallower waters. *Modiolus* sp. community and burrowing worms (*Arenicola marina*) are also abundant among the rocks. Crustaceans were also more common than in the shallower waters.

DEPTH: 17- 135 m

TYPE OF SUBSTRATE: Rocky bottoms (rocky walls, boulders and stones). In the Baltic Sea, rocky subtrate where this community develops emerges on a soft sedimentary seabed dominated by mud and sand-mud.

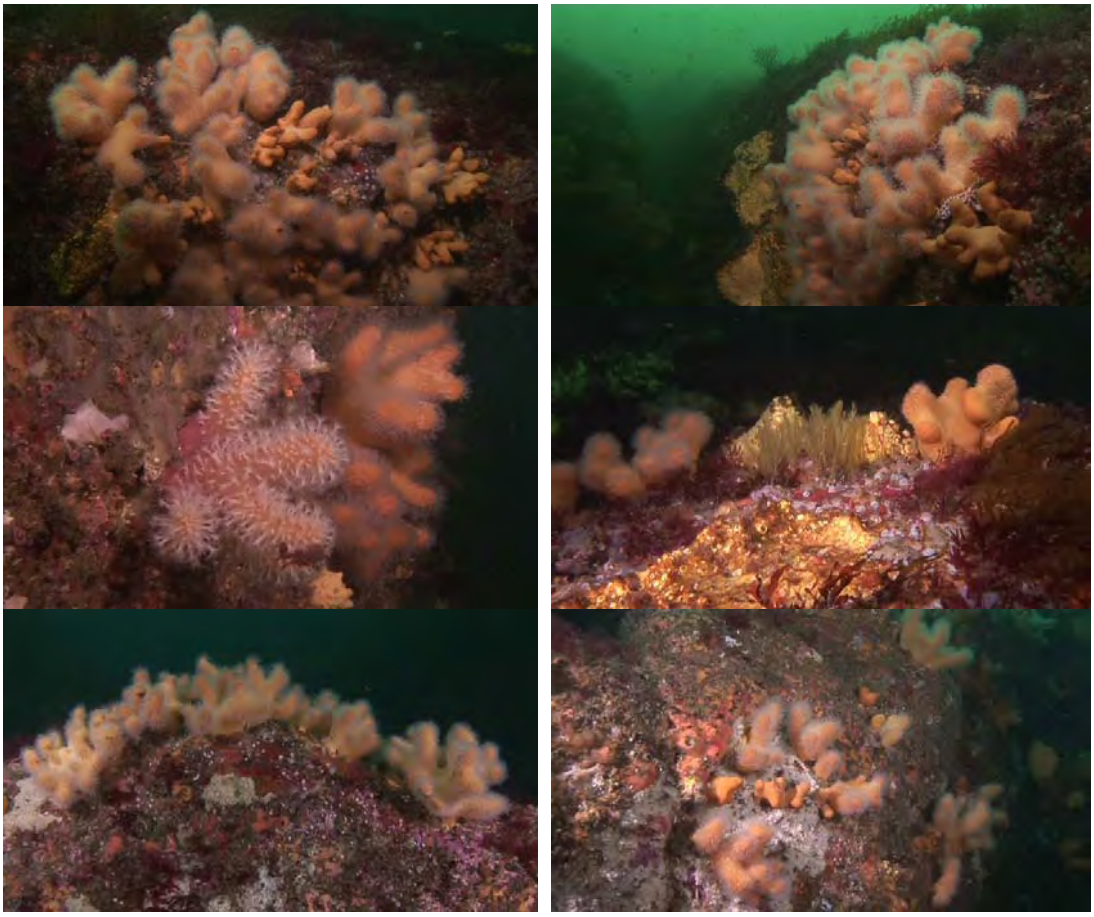
TYPICAL FLORA AND FAUNA OF THE COMMUNITY (Rías Baixas-Galicia, Spain)

ALGAE	
Dictyota dichotoma	*Phyllariopsis purpurascens*
PORIFERA	
Cliona celata	*Haliclona cinerea*
Encrusted desmosponges	*Hymeniacidon perlevis*
Halichondria panicea	*Pleraplysilla spinifera*
CNIDARIA	
Aglaophenia sp.	*Leptogorgia sarmentosa*
Alcyonium glomeratum	*Parazoanthus axinellae*
Corynactis viridis	
BRYOZOA	
Pentapora fascialis	
MOLLUSCA	
Doriopsilla areolata	
ECHINODERMATA	
Aslia lefevrii	*Marthasterias glacialis*
CHORDATA: PISCES	
Gobiusculus flavescens	

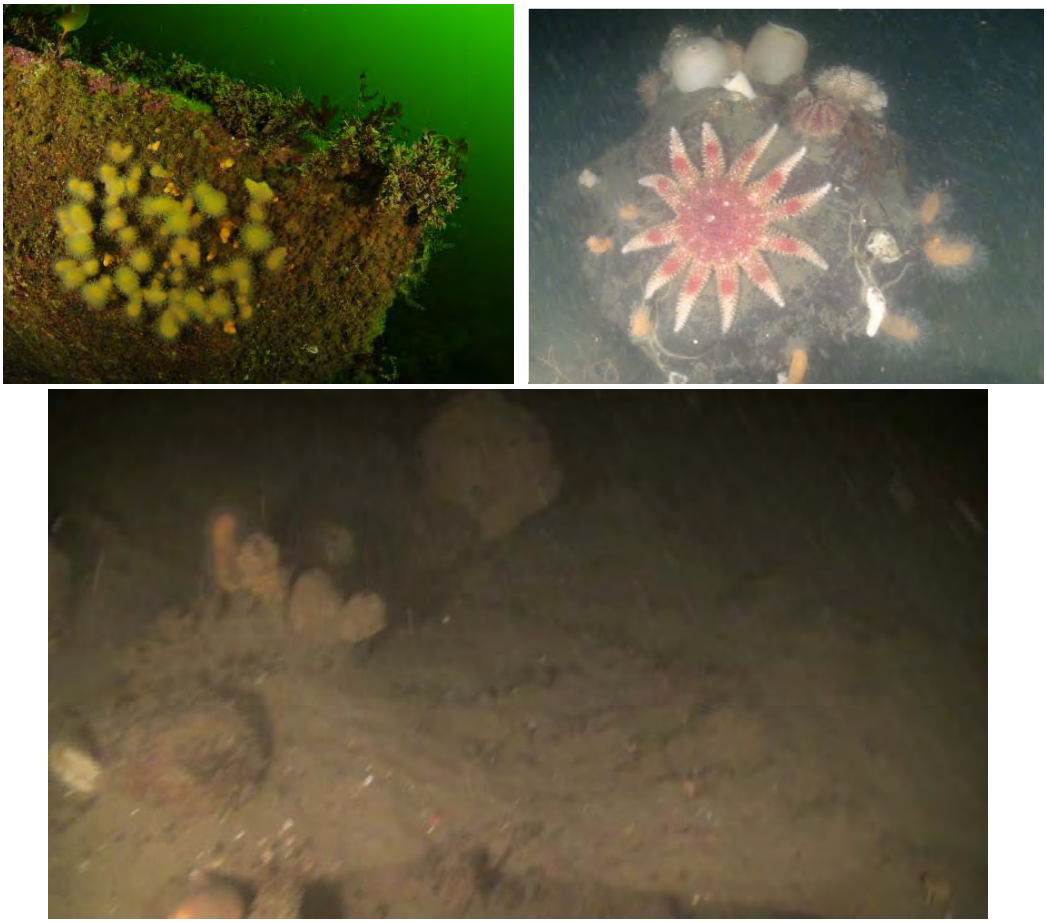
TYPICAL FLORA AND FAUNA OF THE COMMUNITY (Baltic Sea)

ALGAE	
Corallina officinalis	*Laminaria saccharina*
Delesseria sanguinea	*Lithothamnion glaciale*
Dilsea carnosa	*Phymatolithon lenormandii*
Laminaria digitata	
CTENOPHORA	
Beroe cucumis	*Pleurobrachia pileus*
PORIFERA	
Haliclona urceolus	*Suberites virgultosus*
Halichondria panicea	
CNIDARIA	
Abietinaria abietina	*Nemertesia ramosa*
Bougainvillia muscus	*Rhizocaulus verticillatus*
Cyanea lamarckii	*Sagartiogeton laceratus*
Eudendrium rameum	*Sertularella* sp.
Halecium halecinum	*Sertularia cupressina*
Kirchenpaueria pinnata	*Urticina fellina*
Metridium senile	*Tubularia larynx*
BRYOZOA	
Crisia eburnea	*Reteporella beaniana*
Electra pilosa	
MOLLUSCA	
Aequipecten opercularis	*Modiolus modiolus*
Aporrhais pespelecani	*Neptunea antiqua*
Bittium reticulatum	*Pecten maximus*
Buccinum undatum	Pectinidae
Flabellina verrucosa	*Tonicella rubra*
Cuthona nana	
CRUSTACEA	
Cancer pagurus	*Munida rugosa*
Hyas araneus	*Pagurus bernhardus*
Lithodes maja	*Palaemonetes varians*
Meganyctiphanes norvegica	*Pandalus borealis*
ECHINODERMATA	
Acrocnida brachiata	*Ophiothrix fragilis*
Amphiura sp.	*Ophiopholis aculeata*
Asterias rubens	*Ophiura albida*
Brissopsis lyrifera	*Ophiura ophiura*
Crossaster papposus	*Ophiura robusta*
Echinus esculentus	*Psammechinus miliaris*
Henricia sanguinolenta	*Solaster endeca*
Ophiocomina nigra	*Spatangus purpureus*
ANNELIDA	
Amphitrite cirrata	*Spirobranchus triqueter*
Arenicola marina	*Sabella spallanzanii*
Filograna implexa	*Spirorbis* sp.
Neoamphitrite figulus	*Terebellides stroemii*
BRACHIOPODA	
Novocrania anomala	
CHORDATA: AGNATHA	
Myxine glutinosa	

CHORDATA: TUNICATA	
Corella parallelogramma	*Dendrodoa grossularia*
CHORDATA: PISCES	
Gadus morhua	*Solea solea*
Hippoglossoides platessoides	*Trachinus draco*
Merlangius merlangus	



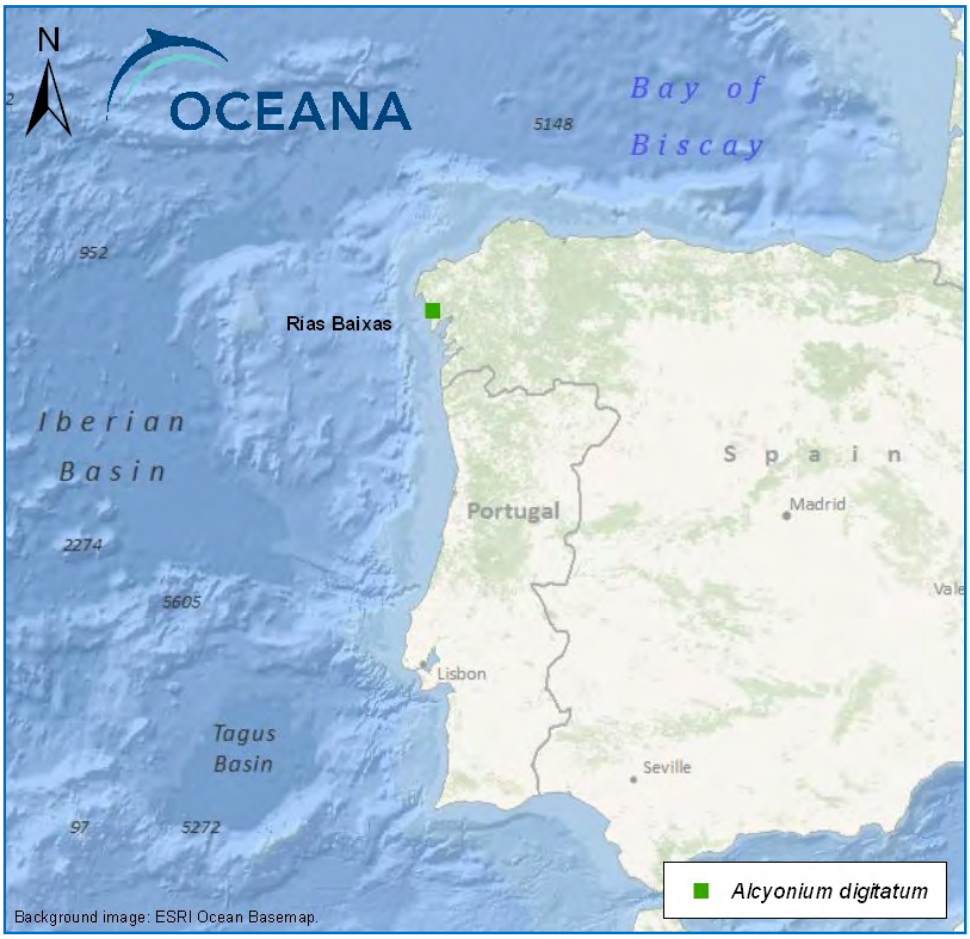
Alcyonium digitatum gardens on circalittoral rocky bottoms in Galicia (Spain)



Alcyonium digitatum gardens at Kattegat and North Ven (Baltic Sea)

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Sálvora Island, Rías Baixas	Spain	42º 45,04200'N	09º00,34600'W
Djupa rännan trench, Kattegat	Sweden	57º 45,41900'N	11º 27,18720'W
Groves flak, Kattegat	Denmark	57°04,02000'N	11°32,61000'E
Kattegat trench, Kattegat	Denmark	57˚46.50000'N	11˚31.50000'E
Kattegat trench, Kattegat	Denmark	57°12,79800'N	11°21,96300'E
Ven island, the Sound	Sweden	55°55,58600'N	12°41,80880'E
Ven island, the Sound	Sweden	55°55,75500'N	12°40,32570'E



Locations where communities dominated by *Alcyonium digitatum* were recorded by OCEANA in Spanish waters (above) and in the Baltic Sea (below).

DEEP- SEA SPONGE AGGREGATIONS

OSPAR DEFINITION:

According to the OSPAR background document "Case Report for the OSPAR List of threatened and/or declining species and habitats", "Deep sea sponge aggregations" are mainly composed of sponges from two clases: Hexactinellida and Demospongia. They are known to occur between water depths of 250-1300 m, where the water temperature ranges from 4-10° C and there is moderate current velocity (0.5 knots). Deep-sea sponge aggregations may be found on soft substrata or hard substrata, such as boulders and cobbles which may lie on sediment.

Densities of occurrence are hard to quantify.

Glass sponges (Hexactinellidae) and some desmonpongids such as *Cladorhiza* and *Asbestopluma* tend to be the predominant group of sponges in the deep sea. Other sponges that dominate some areas include *Geodia barretti*, *G. macandrewi* and *Isops phlegraei*. They can occur at very high densities.

In the background document it is cited that dense aggregations of deep sponges are known to occur in the Porcupine Seabight, around the Faroe Islands and along the Norwegian coast up to West Spitzbergen and Bjornoya.

OSPAR Regions where the habitat occurs: I, III, IV, V

OSPAR Regions where such habitat is under threat and/or decline: V

Habitat occurs within each of the following deep seabed EUNIS types:

A6.62. Deep-sea sponge aggregations

OCEANAS PROPOSALS:

OCEANA has registered important sponge aggregations both in soft and hard substrata, from 35 to 475 m depth. In the IV and V regions the aggregations recorded occur only on hard bottoms; however in the Baltic Sea (Kattegat; region II) the aggregations that occur on soft bottoms are very important.

We would like to hightligh that new scientific research is needed in order to gather new information related to the species that can form this habitat not only in the northern waters of the OSPAR maritime areas, but also in the southern part. OCEANA has recorded large areas dominated by *Asconema setubalense* in the south of Portugal and in the Gorrige Bank. Moreover, deep sea sponge aggregations made up of other different sponge species have also been recorded but we were not able to identify the species because of the lack of any sample. The evidence of of these sponge aggregations existence also shows that more research is needed in order to describe these better.

In regions IV and V, fields of sponges at shallower waters than indicated in the background document are notably found; they can occupy large areas in the circalittoral zone. Despite these are not considered as deep- sea sponge aggregations, because they occupy shallower bottoms, its consideration on inclusion in the OSPAR List of endangered and/or declining species and habitats should be a good step to move towards its conservation. This is the case of aggregations of species such as *Axinella* spp., *Artemisina transiens*, *Cliona celata* or *Phakellia ventilabrum*.

Due to technical restrictions, we can not give a relative density of each of the species aggregation that we have considered, but we give some qualitative descriptions of each of them.

Taking into account the necessity to define and describe the various habitats that must be considered as

deep-sea sponge aggregations, OCEANA proposes the following:

- The presence of this habitat in the II region should be taken into account and listed.

- Many of the aggregations that occur on the rocky bottom in the galaico-cantabrian area (circalittoral bottoms) should be considered as important sponge aggregations and listed by OSPAR. Therefore, the habitats "deep-sea sponge aggregations" should be modified in order to not only include deep-sea species but also important sponge aggregations that occur in the OSPAR southern area.

- Many other species apart from those cited in the background document should be added.

Detailed below are the different types of habitats that OCEANA proposes to be included as "deep-sea sponge aggregations" or "sponge aggregations":

SPONGE AGGREGATION TYPES PROPOSED BY OCEANA:

1. *Asconema setubalense* agreggation on bathyal rocky bottoms
    1.1. Mixed aggregation of *Asconema setubalense*, *Callogorgia verticillata* and other desmosponges
2. *Phakellia ventilabrum* aggregation on circalittoral rocky bottom
3. *Artemisina transiens* aggregation on circalittoral rocky bottom
4. *Axinella* spp. aggregation on upper circalittoral rocky bottom
5. *Cliona celata* agreggation on upper circalittoral rocky bottom
6. *Suberites virgultosus* aggregation on circalittoral soft sediment bottom in the Baltic Sea.

1. *Asconema setubalense* agreggation on bathyal rocky bottoms

DESCRIPTION: Southwest of Portugal we have recorded fields of *Asconema setubalense,* always on hard substrate. Sometimes several species of gorgonians make up mixed fields with this sponge. For example, *Viminella flagellum* appears abundantly as part of the community in the Guadalquivir Bank, forming up mixed aggregations of *Asconema setubalense* and *Viminella flagellum*. This same thing happens in the Gorringe Bank with other species of gorgonians, *Callogorgia verticillata*.

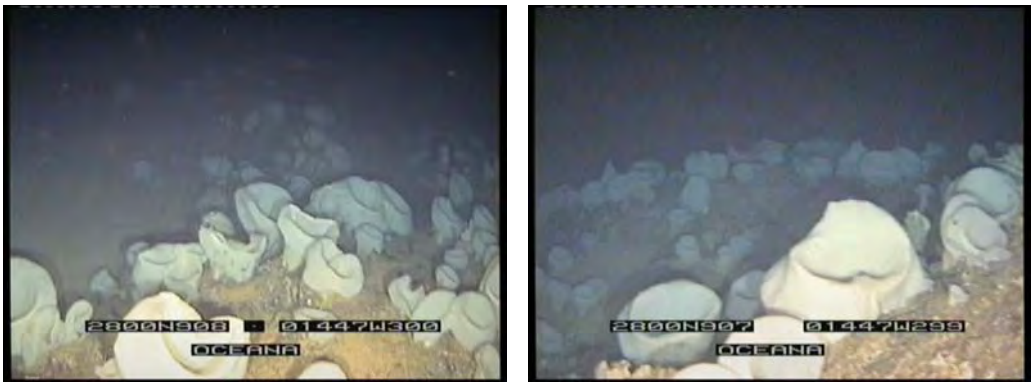
Many species of different unidentified demosponges can appear abundantly in some occasions, making part of this habitat.

DEPTH: 325- 475 m

TYPE OF SUBSTRATE: rocky, very sedimentary, sometimes even covered by a layer of sediment or on rocky outcrops on a sandy-rocky mixed seabed. They occupy flat and very steep areas.

Asconema setubalense aggregations in Portuguese waters

Aggregations of *Asconema setubalense* registered by OCEANA in the Canary Islands waters are larger and have more density than those found by this organization until today in the waters of the maritime area of OSPAR.



Asconema setubalense aggregation in Canary Islands waters (Spain)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Geodia sp.	*Phakellia cf. robusta*
Hymedesmia sp.	*Polymastia* sp.
Lithistida	
CNIDARIA	
Callogorgia verticillata	*Viminella flagellum*
Dendrophyllia cornigera	
MOLLUSCA	
Calliostoma sp.	*Cancer bellianus*
CRUSTACEA	
Munida sp.	*Plesionika* sp.
Palinurus mauritanicus	
ECHINODERMATA	
Cidaris cidaris	*Leptometra celtica*
Echinus sp.	Stalked crinoid
ANNELIDA	
Hyalinoecia tubicola	*Lanice conchilega*
CHORDATA: PISCES	
Acantholabrus palloni	*Laemonema yarrellii*
Arnoglossus sp.	*Macroramphosus scolopax*
Beryx decadactylus	*Nezumia sclerorhynchus*
Callanthias ruber	*Phycis blennoides*
Capros aper	*Pontinus kuhlii*
Coelorhynchus coelorhyncus	*Setarches guentheri*
Epigonus sp.	*Synchiropus phaeton*
Helicolenus dactylopterus	*Trachurus trachurus*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Saint Vincent Cape	Portugal	37º 02,20950'N	09º06,57610'W
Guadalquivir Bank, Gulf of Cádiz	Portugal	36º 22,85870'N	07º44,87520'W
Gettysburg, Gorringe Bank	Portugal	36º 30,82470'N	11º26,76940'W
Gettysburg, Gorringe Bank	Portugal	36º 30,77600'N	11º28,38700'W

1.1. Mixed aggregation of *Asconema setubalense*, *Callogorgia verticillata* and other desmosponges

DESCRIPTION: This type of fields dominated by sponges and gorgonians develop on hard substrate, sometimes covered by compact sediment. As part of the characterisctic community, in this mixed fields it is common to find *Viminella flagellum* and several desmospongies species that we were not able to identify.

DEPTH: 345- 350 m

TYPE OF SUBSTRATE: rocky, with high level of sedimentation

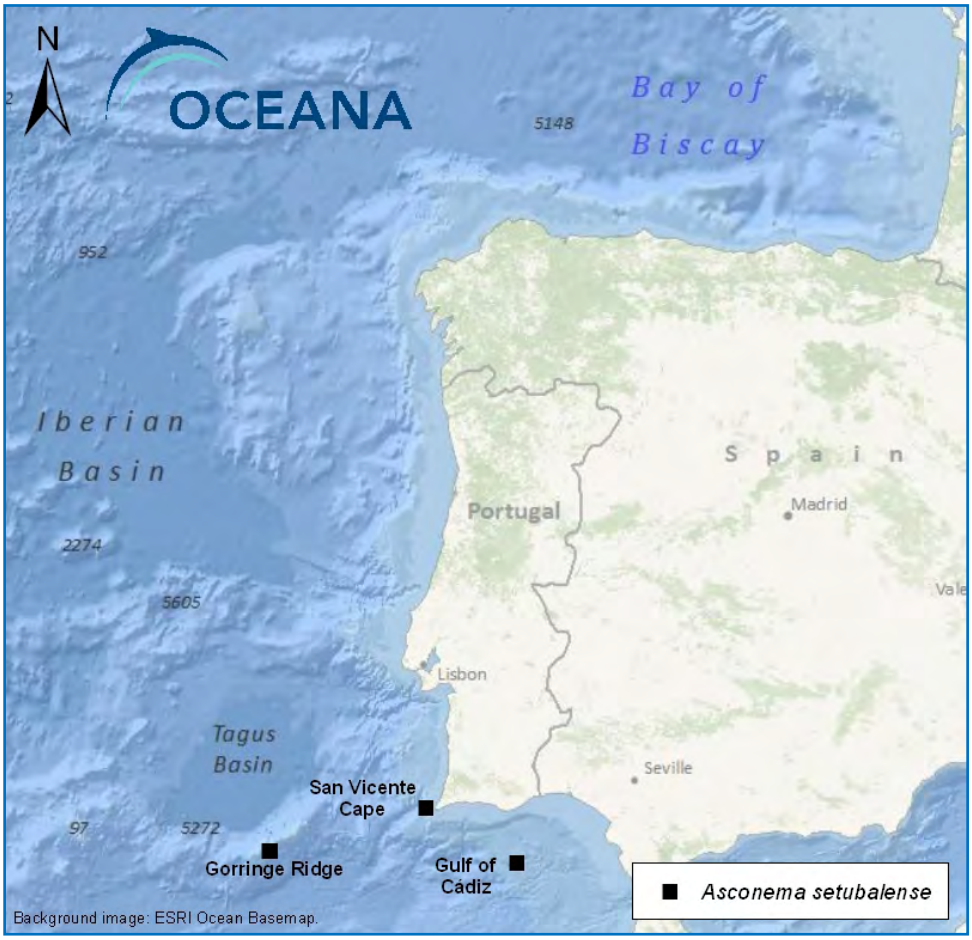
Mixed aggregations of desmospongies and gorgonian species in the Gorringe Bank (Portugal)

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Geodia sp.	*Phakellia* cf. *robusta*
Lithistida	*Polymastia* sp.
CNIDARIA	
Cirrhipathes sp.	*Viminella flagellum*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Gettysburg, Gorringe Bank	Portugal	36º 30,86380'N	11º 28,43970'W



Locations where *Asconema setubalense* aggregations were recorded by OCEANA in Portuguese waters

2. *Phakellia ventilabrum* aggregation on circalittoral rocky bottom

DESCRIPTION: Aggregations of *Phakellia ventilabrum* are formed along the whole Cantabrian coast in great variety of different environments. Regarding depth, they are distributed along a large bathymetric range. OCEANA found them from 45 m to 190 m., both on flat and steep seabed and with vertical walls.

Fields have medium and low density in front of Cantabria and Euskadi, while aggregations show higher density on the Galician coast.

On the shallowest area (45-120 m) of distribution, fields are predominant on abrupt rocky substrate with little sedimentation. On some areas, the rock is covered by *Corynactis viridis* or brachiopods. It is also common to find these aggregations mixed with relevant facies of sponges (*Axinella* spp., *Cliona celata*) or gorgonians gardens (*Eunicella verrucosa*).

Making part of this community, other species such as *Artemisina transiens*, *Tedania urgorrii*, *Dendrophyllia cornigera*, *Holothuria forskali* and *Serranus cabrilla* are also frequent.

However, on deeper areas, between 90 and 190 m, these fields occur on more sedimentary seabed, in many occasions covered by a compact sediment layer, where some rocks emerge. Along with sponges (*Phakellia ventilabrum)*, the most representative species in the community are *Dendrophyllia cornigera* and *Bonellia viridis*, as well as echinoderms (*Antedon bifida, Echinus esculentus, Holothuria forskali, Leptometra celtica* and *Ophiothrix fragilis*) in some areas. *Leptometra celtica* and *Ophiothrix fragilis can* generate very long facies in some areas.

Sponges (*Artemisina transiens*, cf. *Stylocordyla* sp., *Tedania* sp. and other unidentified demospongiae) are the other predominant groups of this community, where mixed areas with *Phakellia ventilabrum* can be created, as is the case of *Artemisina transiens* and cf. *Stylocordyla* sp.

We must also highlight the mixed fields of *Phakellia ventilabrum* with *Dendrophyllia cornigera* and/or *Artemisina transiens* that are created along the Cantabrian littoral, mainly on the western area.

DEPTH: 345- 350 m

TYPE OF SUBSTRATE: These aggregations are developed on rocky substrate, both on seabeds with no sediments and on very sedimentary seabeds.

TYPICAL FAUNA OF THE COMMUNITY

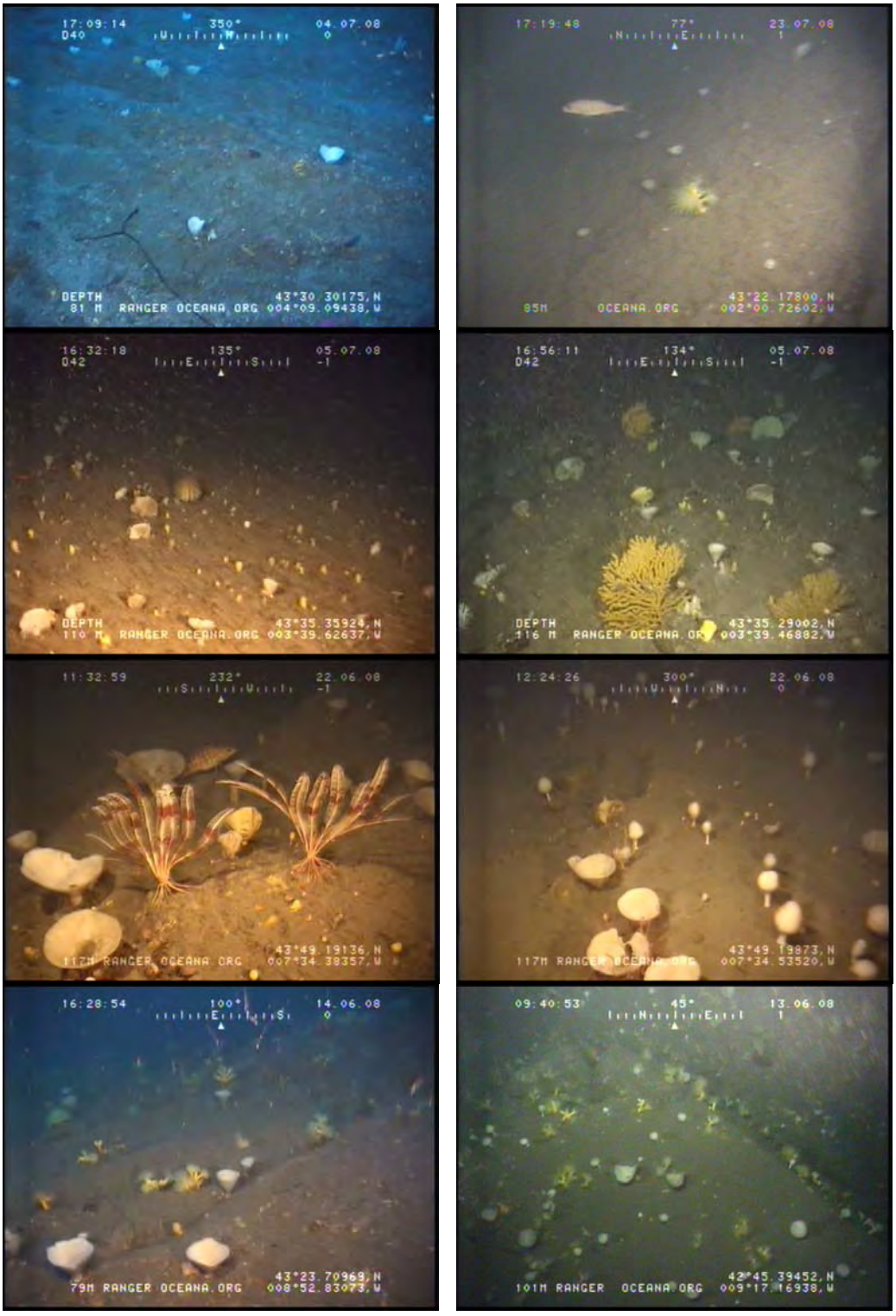
PORIFERA	
Artemisina transiens	*Pachymatisma johnstonia*
Axinella polypoides	*Guitarra solorzanoi*
Axinella dissimilis	*Haliclona cinerea*
Clathrina coriacea	*Petrosia ficiformis*
Cliona celata	*Cf. Stylocordyla* sp.
Desmacidon fruticosum	*Cf. Petrosia crassa*
Halichondria panicea	*Tedania urgorrii*
Pachastrella sp.	*Tedania* sp.
CNIDARIA	
Acanthogorgia hirsuta	*Epizoanthus* sp.
Alcyonium glomeratum	*Eunicella verrucosa*
Alcyonium sp.	*Gymnangium montagui*
Caryophyllia sp.	*Paramuricea grayi*
Cerianthus membranaceus	*Parantipathes hirondelle*
Corynactis viridis	*Parazoanthus anguicomus*

Dendrophyllia cornigera	*Parazoanthus axinellae*
Diphasia nigra	*Sertularella* sp.
Diphasia sp.	*Pennatula* sp.
BRYOZOA	
Reteporella sp.	
MOLLUSCA	
Charonia lampas	*Peltodoris atromaculata*
Octopus vulgaris	
CRUSTACEA	
Munida sp.	
ECHINODERMATA	
Antedon bifida	*Leptometra celtica*
Echinaster sepositus	*Marthasterias glacialis*
Echinus acutus	*Ophiopholis aculeata*
Echinus esculentus	*Ophiopsila aranea*
Echinus melo	*Ophiothrix fragilis*
Holothuria forskali	*Parastichopus regalis*
ANNELIDA	
Serpula vermicularis	
ECHIURA	
Bonellia viridis	
FORAMINIFERA	
Miniacina miniacea	
CHORDATA: PISCES	
Acantholabrus palloni	*Labrus mixtus*
Arnoglossus sp.	*Merluccius merluccius*
Capros aper	*Scorpaena* sp.
Chelidonichthys cuculus	*Scyliorhinus canicula*
Chelidonichthys lucerna	*Serranus cabrilla*
Ctenolabrus rupestris	*Trisopterus minutus*
Coris julis	*Trisopterus luscus*
Gaidropsarus vulgaris	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Sálvora Bank, Rías Baixas	Spain	42º 29,72177'N	09º 10,79828'W
Villar de Fuentes, Galicia	Spain	42º 45,63802'N	09º 16,88259'W
Sisargas Islands, Galicia	Spain	43º 23,90981'N	08º 53,68688'W
Sisargas Islands, Galicia	Spain	43º 23,71080'N	08º 52,84220'W
Bermeo Bank, Galicia	Spain	43º 41,62815'N	08º 16,09863'W
Bermeo Bank, Galicia	Spain	43º 41,63629'N	08º 15,33119'W
Galician coast	Spain	43º 41,18780'N	08º 17,16282'W
Niebla Bank, Galicia	Spain	43º 48,85847'N	08º 03,65901'W
Somos Llungo, Peñas Cape	Spain	43º 41,00898'N	05º 47,28494'W
Peñas Cape	Spain	43º 40,92026'N	05º 53,26132'W
Bank in front of ría Viveiro, Galicia	Spain	43º 49,19344'N	07º 34,37654'W
Castro Verde Bank, Cantabrian Sea	Spain	43º 32,40500'N	03º 13,09508'W
El Castro Bank, Cantabrian Sea	Spain	43º 35,35972'N	03º 39,61644'W
La Maruca Bank, Cantabrian Sea	Spain	43º 38,80564'N	03º 39,97378'W
Cantabria, Cantabrian Sea	Spain	43º 30,34293'N	04º 09,07266'W
La Ballena, Cantabrian Sea	Spain	43º 26,95500'N	03º 17,59509'W
Bajo Castro Verde, Cantabrian Sea	Spain	43º 32,69600'N	03º 12,80608'W

Matxitako, Capbreton canyon	Spain	43º 31,81393'N	02º 45,83506'W
Zumaia, Cantabrian Sea	Spain	43º 19,47400'N	02º 14,90602'W
Cabo Higer, Cantabrian Sea	Spain	43º 24,44200'N	01º 47,64601'W
Donostia, Cantabrian Sea	Spain	43º 22,17800'N	02º 00,70102'W



Phakellia ventilabrum aggregations on circalittoral rocky bottom in the galaico-cantabrian coast

3. *Artemisina transiens* aggregation on circalittoral rocky bottom

DESCRIPTION: This species create aggregations from 35 m to 120 m depth, always on rocky seabed. Although OCEANA found these fields of *Artemisina transiens* on rocky seabed covered by a layer of sediment in the deepest areas, in the rest of its distribution range it predominates on non sedimentary rocky seabed.

This sponge has been recorded making up dense aggregations in several locations in Galicia and Asturias, but not in the eastern zone of the Biscay Gulf.

Making part of this community and covering the substrate, it is common to find *Corynactis viridis* and/or brachiopods. Mixed with these aggregations, large facies of sponges (*Axinella dissimilis*, *Axinella polypoides*, *Cliona celata*¸*Tedania urgorrii*) and gorgonians (*Eunicella verrucosa*) can be found, while echinoderms (*Echinus esculentus*, *Holothuria forskali*) do not create large groups, although they are also abundant.

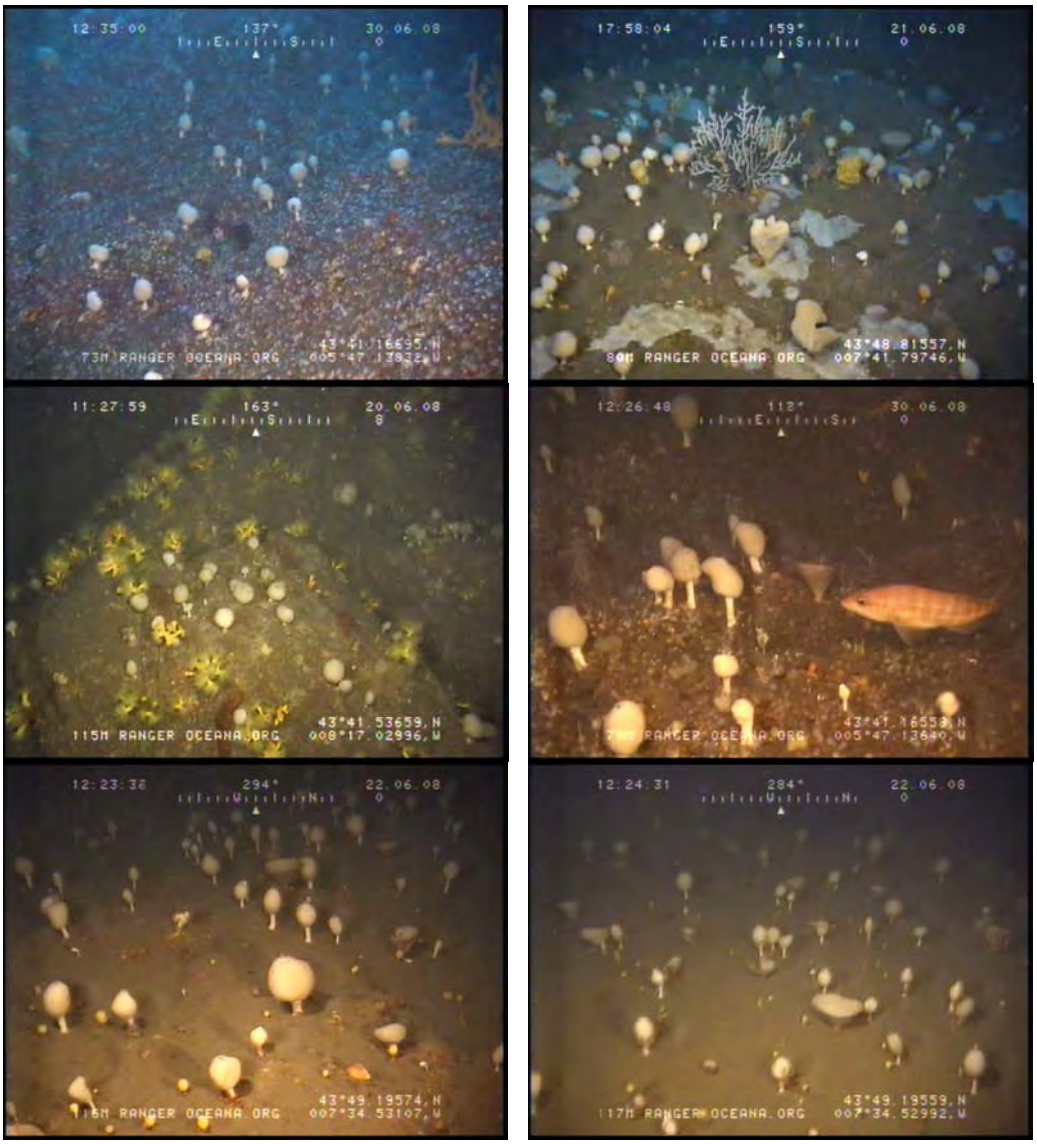
Dendrophyllia cornigera and *Phakellia ventilabrum* appear so abundantly on some areas of the known distribution of *Artemisina transiens* (Cantabrian occidental shelf) making up mixed fields with this species.

DEPTH: 35-125 m

TYPE OF SUBSTRATE: rocky.

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Axinella polypoides	*Haliclona* sp.
Axinella dissimilis	*Pachymatisma johnstoni*
Cliona celata	*Phakellia ventilabrum*
Echinaster sepositus	*Polymastia boletiformis*
Halichondria panicea	*Tedania urgorrii*
CNIDARIA	
Alcyonium sp.	*Parazoanthus anguicomus*
Corynactis viridis	*Parazoanthus axinellae*
Dendrophyllia cornigera	*Paramuricea grayi*
Eunicella verrucosa	*Sertularella* sp.
Leptogorgia sarmentosa	
BRYOZOA	
Pentapora fascialis	*Smittina cervicornis*
CRUSTACEA	
Munida sp.	
ECHINODERMATA	
Echinaster sepositus	*Holothuria forskali*
Echinus esculentus	*Leptometra celtica*
Echinus melo	*Marthasterias glacialis*
ECHIURA	
Bonellia viridis	
CHORDATA: PISCES	
Acantholabrus palloni	*Mullus barbatus*
Coris julis	*Scorpaena loppei*
Ctenolabrus rupestris	*Serranus cabrilla*
Diplodus vulgaris	*Trisopterus luscus*
Labrus mixtus	



Artemisina transiens aggregations on circalittoral rocky bottoms

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Sálvora Bank, Rias Baixas	Spain	42º 29,58777'N	09º 10,64826'W
Villar de Fuentes, Galicia	Spain	42º 45,39622'N	09º 17,17266'W
Galician coast	Spain	43º 48,77606'N	07º 41,97651'W
Galician coast	Spain	43º 41,54016'N	08º 17,02846'W
W Sisargas Islands	Spain	43º 21,49469'N	08º51,91652'W
Somos Llungo, Peñas Cape	Spain	43º 41,03098'N	05º47,35794'W
Somos Llungo, Peñas Cape	Spain	43º 41,09998'N	05º47,17794'W
Somos Llungo, Peñas Cape	Spain	43º 41,07807'N	05º47,21333'W
NE Peñas Cape	Spain	43º 41,16515'N	05º47,13493'W
Peñas Cape	Spain	43º 40,91925'N	05º 53,25885'W
Bank in front ot ría Viveiro, Estaca de Bares	Spain	43º 49,19313'N	07º 34,52424'W
Torre de Aspa, Saint Vincent Cape	Portugal	37º 05,97920'N	09º 07,23410'W

4. *Axinella* spp. aggregation on upper circalittoral rocky bottom

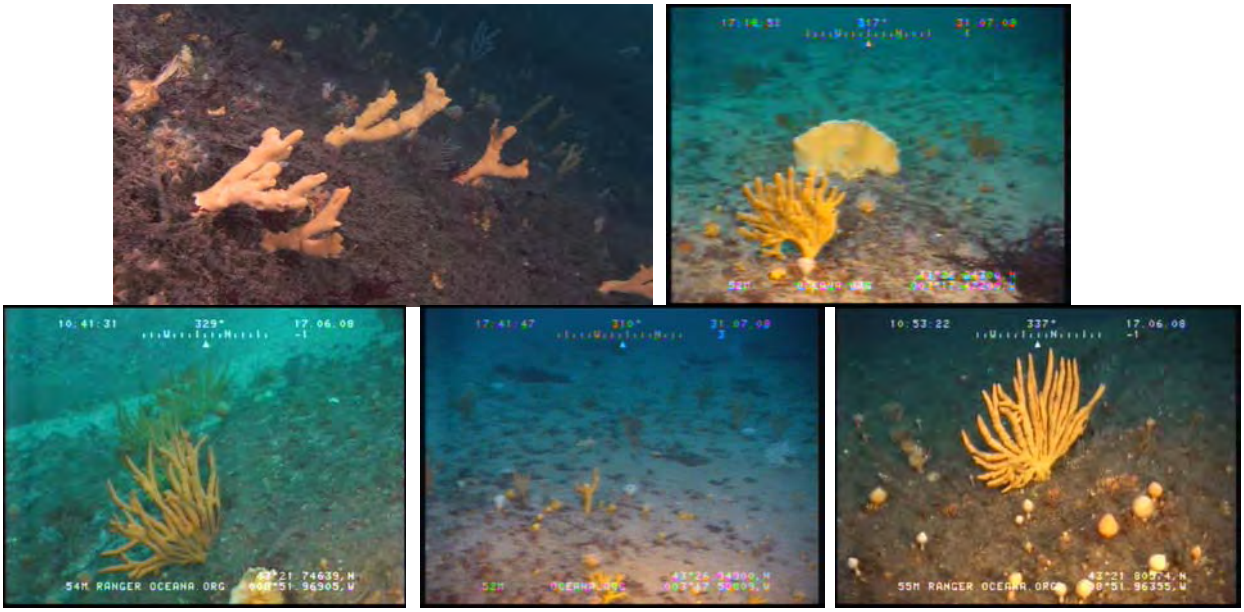
DESCRIPTION: OCEANA has recorded two species of the genus Axinella creating large aggregations: *A. dissimilis* and *A. polypoides*.

Species like *Eunicella verrucosa* and/or *Phakellia ventilabrum* and/or *Artemisina transiens* form up large facies that mix with aggregations of these species. Other common species in this habitat is *Holothuria forskali*.

Although these fields are formed on the shallowest area of the circalittoral zone, the bathymetric distribution of this species is broader, so its presence can be registered in less deep areas. Although they are not considered large aggregations that should therefore be included in this report, we would like to highlitgh the presence of large facies of *Axinella dissimilis* on seabed and rocky walls at a depth of 25 metres.

DEPTH: 50 - 64m

TYPE OF SUBSTRATE: on rocky subtrate, partial or totally covered by sand or on rock in sandy-rocky mixed seabed.



Axinella spp. aggregations on upper circalittoral rocky bottom in the galaico-cantabrian area (North of Spain).

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Artemisina transiens	*Phakellia ventilabrum*
Cliona celata	*Tedania urgorrii*
CNIDARIA	
Diphasia sp.	*Parazoanthus axinellae*
Eunicella verrucosa	
BRYOZOA	
Smittina cervicornis	
ECHINODERMATA	
Echinaster sepositus	
Echinus sp.	
Holothuria forskali	
ECHIURA	
Bonellia viridis	
CHORDATA: PISCES	
Acantholabrus palloni	*Ctenolabrus rupestris*
Coris julis	*Labrus mixtus*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Sonabia, Cantabrian Sea	Spain	43º 26,83700'N	03º 17,47009'W
Somos Llungo, Peñas Cape	Spain	43º 41,00798'N	05º 47,28494'W
W Sisargas Islands	Spain	43º 21,72441'N	08º 51,94354'W
Peñas Cape	Spain	43º 39,93400'N	05º50,56700'W

5. *Cliona celata* agreggation on upper circalittoral rocky bottom

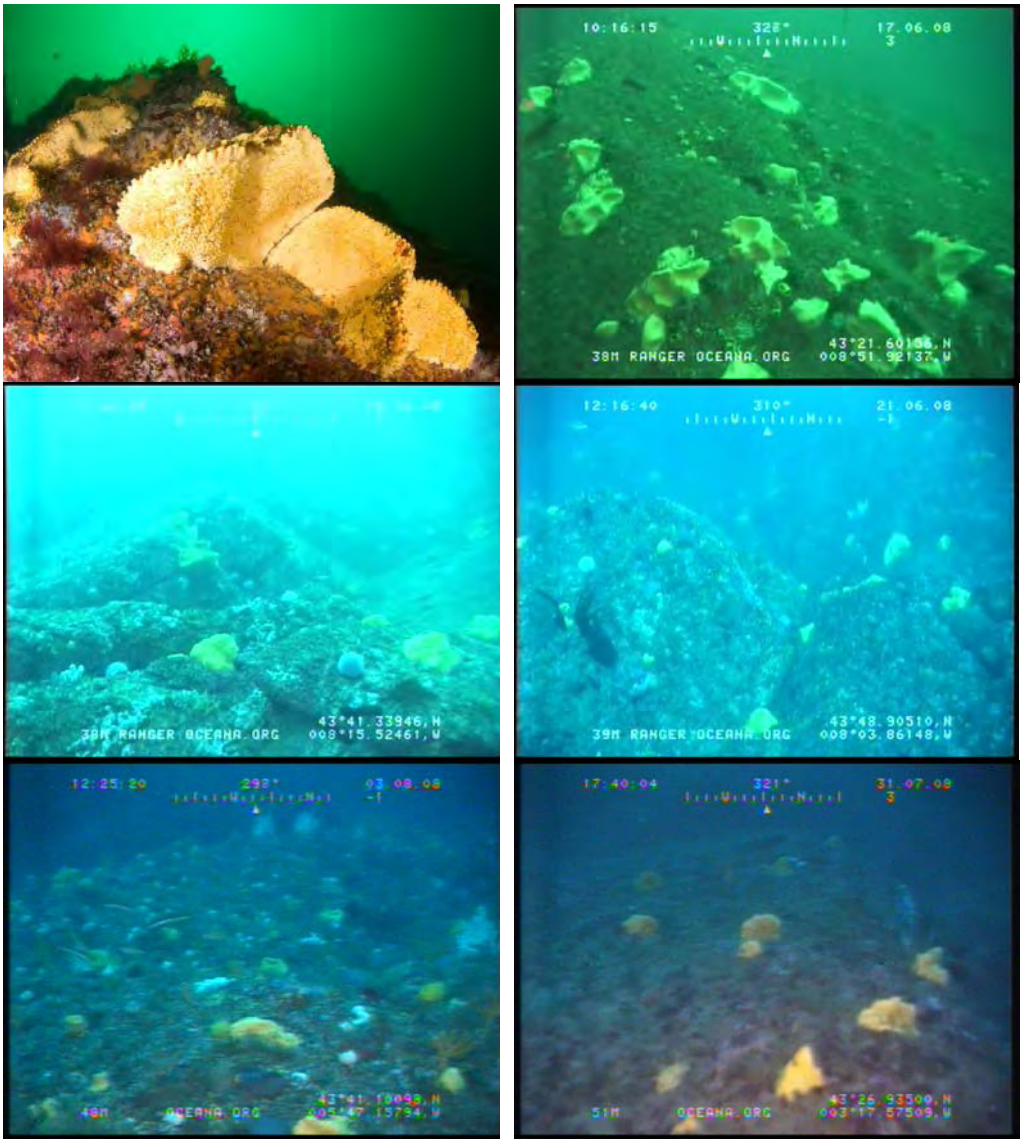
DESCRIPTION: *Cliona celata* is a species that can occupy large surfaces in the upper circalittoral rocky bottoms of low sedimentation. This aggregation has been recorded by OCEANA along the Cantabrian Sea. In many areas the substrata is covered by species such as *Corynactis viridis* and/or *Halichondria panicea*.

The aggregations of this species can appear together with important facies of the gorgonian *Eunicella verrucosa* or other sponge's species aggregations as *Artemisina transiens*. In Galicia, these aggregations are also common in kelp forest (*Laminaria ochroleuca*).

The equinoderms (*Echinus esculentus*, *Holothuria forskali*) are very abundant as part of this community.

DEPTH: 38- 53 m

TYPE OF SUBSTRATE: rocky bottoms in areas with low sedimenation.



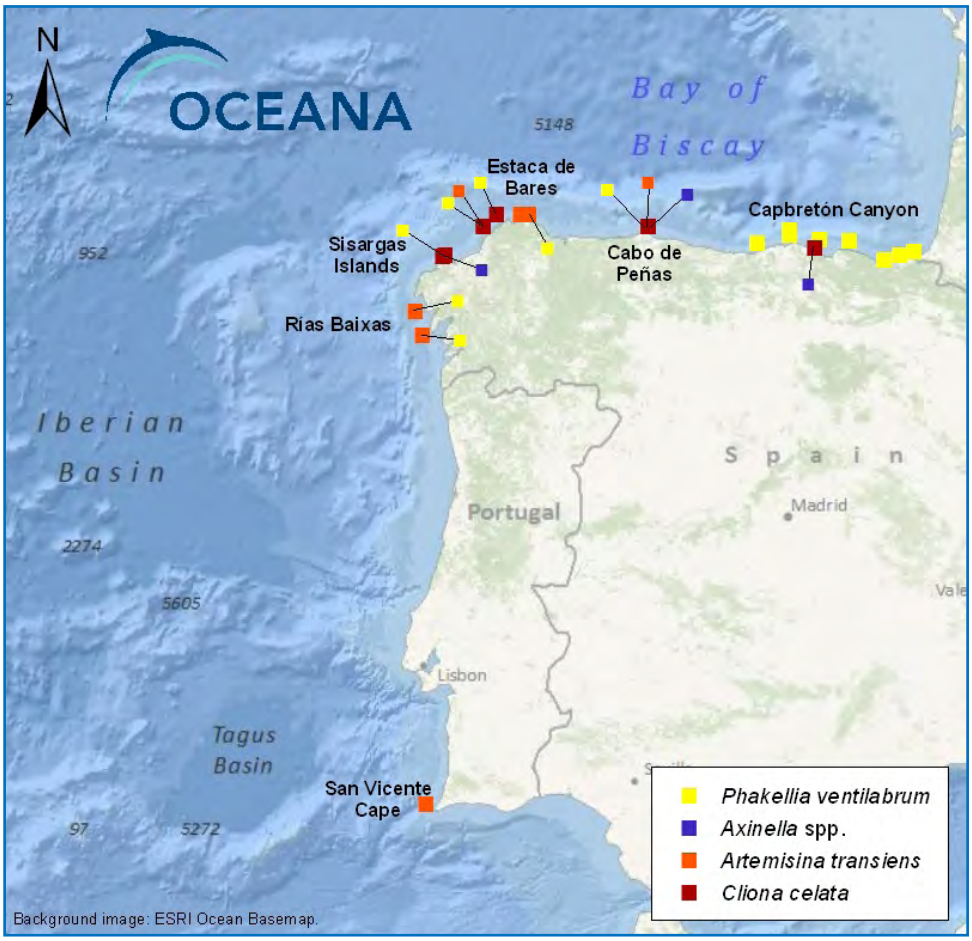
Cliona celata aggregations on upper circalittoral rocky bottoms in the Cantabrian Sea

TYPICAL FLORA AND FAUNA OF THE COMMUNITY

ALGAE	
Laminaria ochroleuca	*Peyssonnelia* sp.
PORIFERA	
Artemisina transiens	*Haliclona rosea*
Axinella dissimilis	*Pachymatisma johnstonia*
Axinella polypoides	*Polymastia boletiformis*
Halichondria panicea	*Petrosia crassa*
Haliclona cinerea	*Tedania urgorrii*
CNIDARIA	
Aglaophenia sp.	*Eunicella verrucosa*
Alcyonium sp.	*Gymnangium montagui*
Corynactis viridis	*Paramuricea grayi*
Diphasia nigra	*Parazoanthus anguicomus*
BRYOZOA	
Pentapora fascialis	*Smittina cervicornis*
MOLLUSCA	
Octopus vulgaris	
ECHINODERMATA	
Echinaster sepositus	*Holothuria forskali*
Echinus esculentus	*Marthasterias glacialis*
CHORDATA: PISCES	
Coris julis	*Labrus mixtus*
Centrolabrus exoletus	*Pollachius pollachius*
Ctenolabrus rupestris	*Serranus cabrilla*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
W Sisargas Islands	Spain	43º 21,60156'N	08º 51,92137'W
N Sisargas Islands	Spain	43º 22,28883'N	08º 49,70157'W
Bermeo Bank, Galicia	Spain	43º 40,99937'N	08º 15,14636'W
Bermeo Bank, Galicia	Spain	43º 41,33946'N	08º 15,52682'W
Niebla Bank, Galicia	Spain	43º 48,90564'N	08º 03,82749'W
Sonabia, Cantabrian Sea	Spain	43º 26,88200'N	03º 17,52609'W
Somos Llungo, Peñas Cape	Spain	43º 41,09589'N	05º 47,19961'W
Somos Llungo, Peñas Cape	Spain	43º 41,09698'N	05º 47,15794'W
Somos Llungo, Peñas Cape	Spain	43º 41,03598'N	05º 47,35094'W



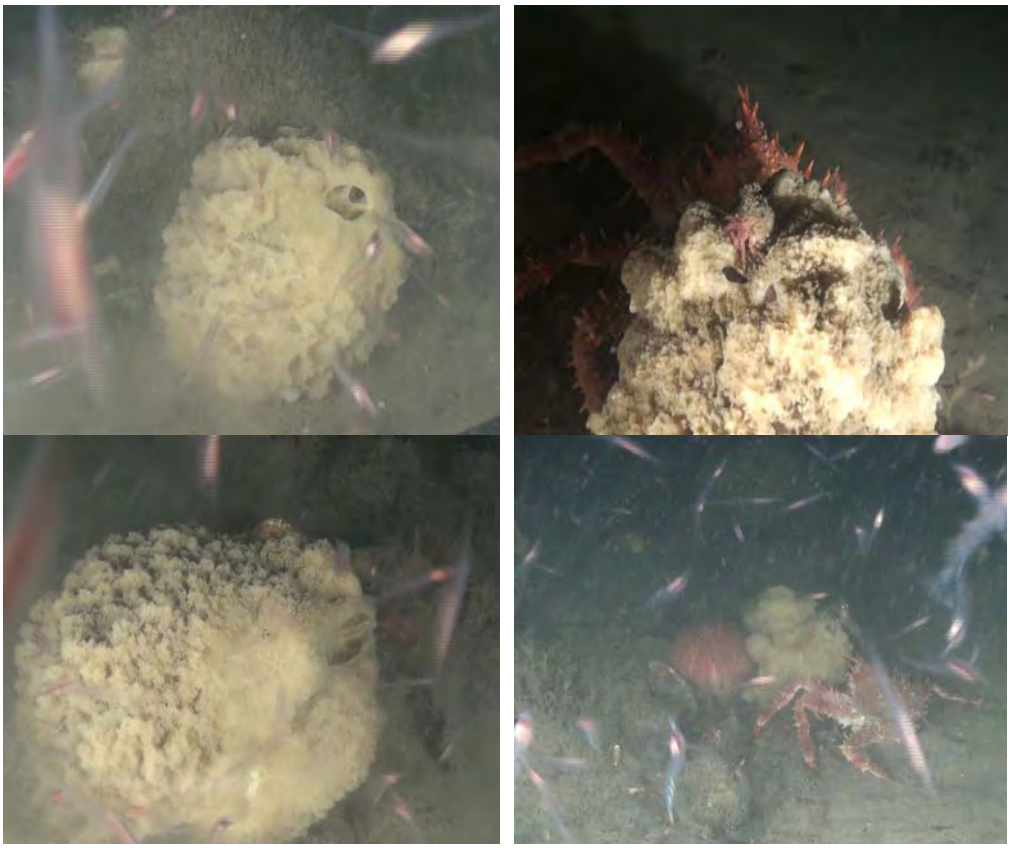
Locations where sponge aggregations on circalittoral bottoms were recorded by OCEANA in Spanish and Portuguese waters

6. *Suberites virgultosus* aggregation on circalittoral soft sediment bottom in the Baltic Sea.

DESCRIPTION: Documented from deep parts of Kattegat with mixed soft sediments consisting mainly of mud and mixed mud-sand. *Suberites virgultosus* dominates in many places sometimes mixed with other sponges. In other places brittle stars, like *Acrocnida brachiata*, and worms, like *Arenicola marina*, are very abundant.

DEPTH: 110-135 m

TYPE OF SUBSTRATE: mixed soft sediments, mud and sand. In some areas with stones and boulders



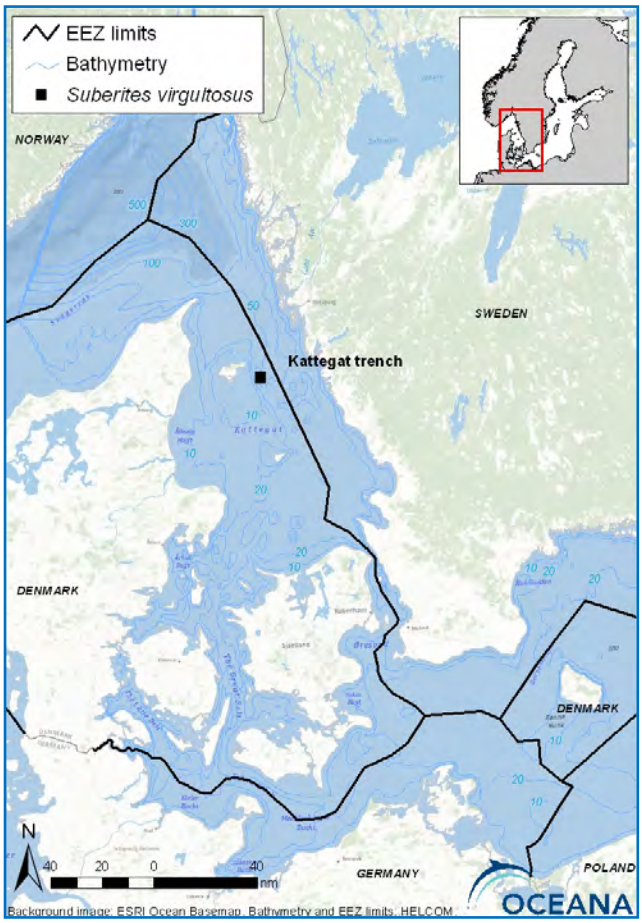
Suberites virgultosus aggregations on circalittoral soft sediment bottom in the Baltic Sea

TYPICAL FAUNA OF THE COMMUNITY

PORIFERA	
Demospongiae not identified	*Iophon nigricans*
Haliclona urceolus	
CNIDARIA	
Alcyonium digitatum	*Pleurobrachia pileus*
Beroe cucumis	*Rhizocaulus verticillatus*
Cyanea lamarckii	*Sertularella* sp.
Halecium halecinum	*Sertularia cupressina*
Nemertesia ramosa	*Urticina fellina*
BRYOZOA	
Crisia eburnea	*Reteporella beaniana*
MOLLUSCA	
Buccinum undatum	*Neptunea antiqua*
Modiolus modiolus	
CRUSTACEA	
Cancer pagurus	*Munida rugosa*
Hyas araneus	*Pagurus bernhardus*
Lithodes maja	*Pandalus borealis*
Meganyctiphanes norvegica	
ECHINODERMATA	
Acrocnida brachiata	*Ophiopholis aculeata*
Brissopsis lyrifera	*Ophiura albida*
Echinus esculentus	*Ophiura ophiura*
ANNELIDA	
Arenicola marina	*Sabella spallanzanii*
Filograna implexa	
BRACHIOPODA	
Novocrania anomala	
CHORDATA: TUNICATA	
Ascidiacea	
CHORDATA: PISCES	
Gadus morhua	*Myxine glutinosa*
Hippoglossoides platessoides	*Solea solea*
Merlangius merlangus	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Kattegat trench, Kattegat	Denmark	57º 12,80000'N	11º 21,9800'W



Locations where *Suberites virgultosus* aggregations were recorded by OCEANA in the Baltic Sea

SEAPEN AND BURROWING MEGAFAUNA

OSPAR DEFINITION:

According to the OSPAR background document "Case Report for the OSPAR List of threatened and/or declining species and habitats", this habitat is define as plains of fine mud, at water depths ranging form 15-200 m or more, which are heavily bioturbated by burrowing megafauna with burrows and mounds typically forming a prominent feature of the sediment surface.

The habitat may include conspicuous populations of seapens, typically *Virgularia mirabilis* and *Pennatula phosphorea*. The burrowing crustaceans present may include *Nephrops norvegicus*, *Calocaris macandreae* or *Callianassa subterranea*. In the deeper fiordic lochs which are protected by entrance sill, the tall sepen *Funiculina quadrangularis* may also be present.

The burrowing activity of megafauna creates a complex habitat, providing deep oxigen penetration.

This habitat occurs extensively in sheltered basins of fjords, sea lochs, voes and in deeper offshores waters such as the northe Sea and Irish Sea basins.

OSPAR Regions where the habitat occurs: I, II, III, IV

OSPAR Regions where such habitat is under threat and/or decline: II, III

Habitat occurs within each of the following deep seabed EUNIS types:

A5.361. Seapens and burrowing megafauna in circalittoral fine mud.
A5.362. Burrowing megafauna and [*Maxmuelleria lankesteri*] in circalittoral mud

OCEANAS PROPOSALS:

OCEANA has registered important areas dominated by this fauna in the II and IV regions of the OSPAR maritime area. The recorded areas occupy a range between 15 m to 450 m depth, depending on the species that predominates and its bathymetric distribution. All of them have been recorded on soft bottoms.

Although the background document refers to this habitat in the northern area of the OSPAR maritime area, we would like to highlight the existence of this habitat in the southern area, both in Spanish and Portuguese waters.

Apart from the species mentioned in that document, other Pennatulacea species such as *Veretillum cynomorium* and *Kophobelemnon stelliferum* have been recorded as predominant species in some areas in the IV OSPAR region.

Due to technical restrictions, we can not give a relative density of the populations that make up this habitat, but we give some qualitative descriptions of the appearances of those types recorded by OCEANA in the OSPAR regions.

Considering the necessity to define and describe the various habitats that must be considered as seapen and burrowing megafauna, OCEANA proposes the following:

- Other species apart from those cited in the background document should be added.

- New information about the distribution of habitat in the southern coutries should be considerer.

Detailed below are the different types of habitats that OCEANA proposes to be included as “seapen and burrowing megafauna”:

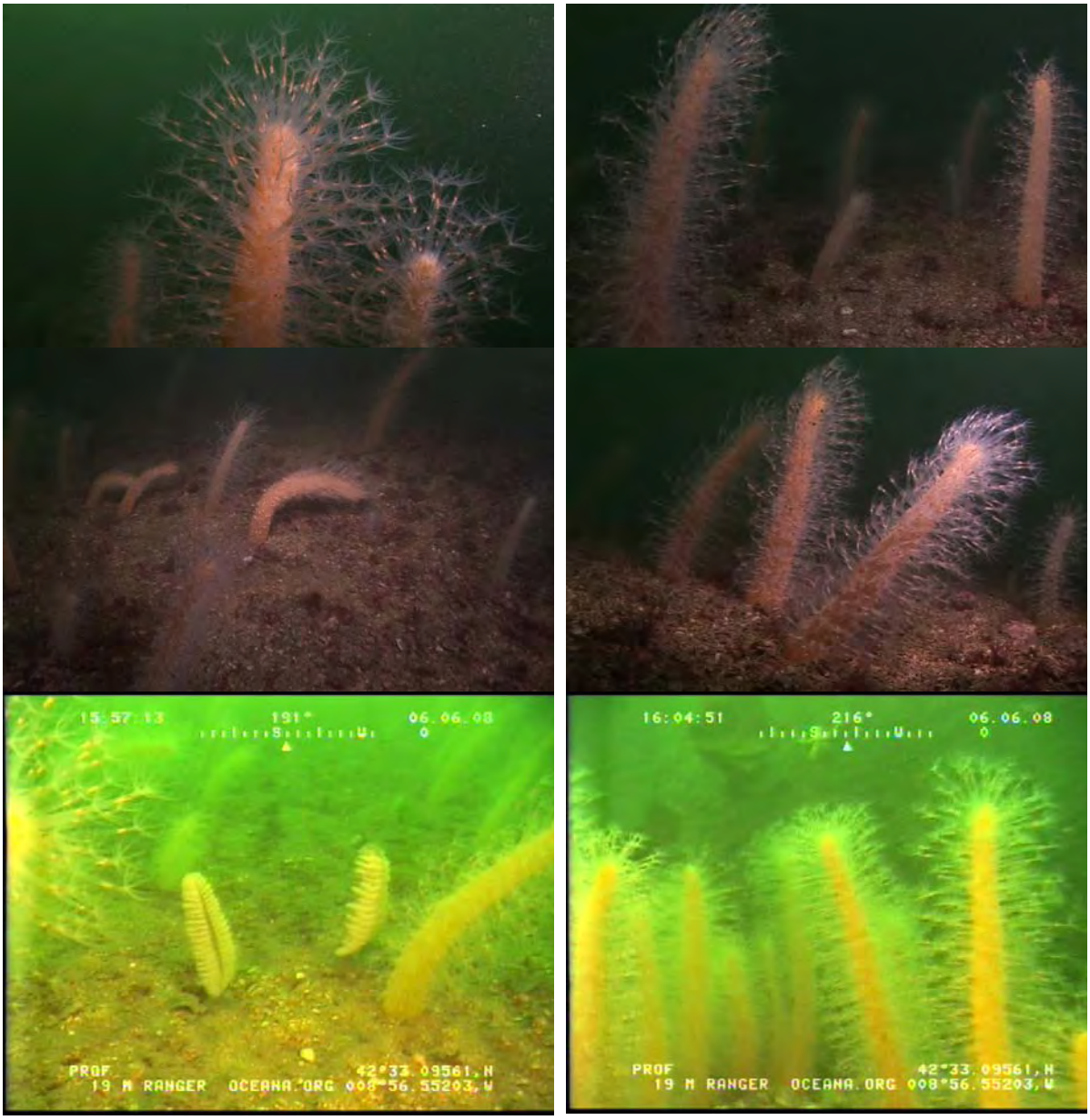
SEAPENS AND BURROWING MEGAFAUNA TYPES PROPOSED BY OCEANA:

1. Infralittoral detritic and soft bottom dominated by *Veretillum cynomorium*
2. Batial soft bottom dominated by *Funiculina quadrangularis*
3. Batial soft bottom dominated by *Kophobelemnon stelliferum*
4. Baltic soft bottom dominated by *Pennatula phosphorea*
5. Baltic soft bottom dominated by *Virgularia mirabilis*

1. Infralittoral detritic and soft bottom dominated by *Veretillum cynomorium*

DESCRIPTION: Within the Rías Baixas (Galicia, Spain), between 15 and 20 m depth, very large fields of *Veretillum cynomorium* are formed over bioclast bottoms. In these detrictic bottoms made up by remains of shell debris, brittle stars (*Ophiocomina nigra*) are very common, forming up abundant facies mixed with the *Veretillum cynomorium* fields. Other echinoderms are also abundant in these communities forming this way the more abundant and diverse group. In some areas rhodoliths are also found.

TYPE OF SUBSTRATE: detritic subtrate with bioclast and shell debris.



Soft substrates dominated by *Veretillum cynomorium* on infralittoral bottoms in Galicia (Spain)

TYPICAL FLORA AND FAUNA OF THE COMMUNITY

ALGAE	
Saccorhiza polyschides	
CNIDARIA	
Anemonactis mazeli	*Pteroeides griseum*
CRUSTACEA	
Macropodia sp.	*Inachus* sp.
ECHINODERMATA	
Aslia lefevrii	*Luidia ciliaris*
Asterias rubens	*Marthasterias glacialis*
Astropecten irregularis	*Ophiocomina nigra*
Echinus esculentus	*Sphaerechinus granularis*
CHORDATA:PISCES	
Arnoglossus sp.	

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Rúa Island, Rías Baixas	Spain	42º 32,96300'N	08º 56,55200'W
Rúa Island, Rías Baixas	Spain	42º 33,09561'N	08º 56,55203W
Ría Arousa, Rías Baixas	Spain	42º 30,56116'N	08º 59,61071W

Locations where soft bottoms dominated by *Veretillum cynomorium* were recorded by OCEANA in Spanish waters

2. Batial soft bottom dominated by *Funiculina quadrangularis*

DESCRIPTION: In the Eastern Cantabrian Sea OCEANA has recorded batial areas dominated by *Funiculina quadrangularis*. They are developed always in soft bottoms, mainly muddy substrate although some areas are dominated by mixed mud-sandy sediments. The substrate is heavily bioturbated by burrowing megafauna with burrows and mounds. There is also other group that creates large concentrations in this continental shelf, the cnidarians *Cerianthus membranaceus*.

DEPTH: 267 m

TYPE OF SUBSTRATE: mixed mud-sandy sediments

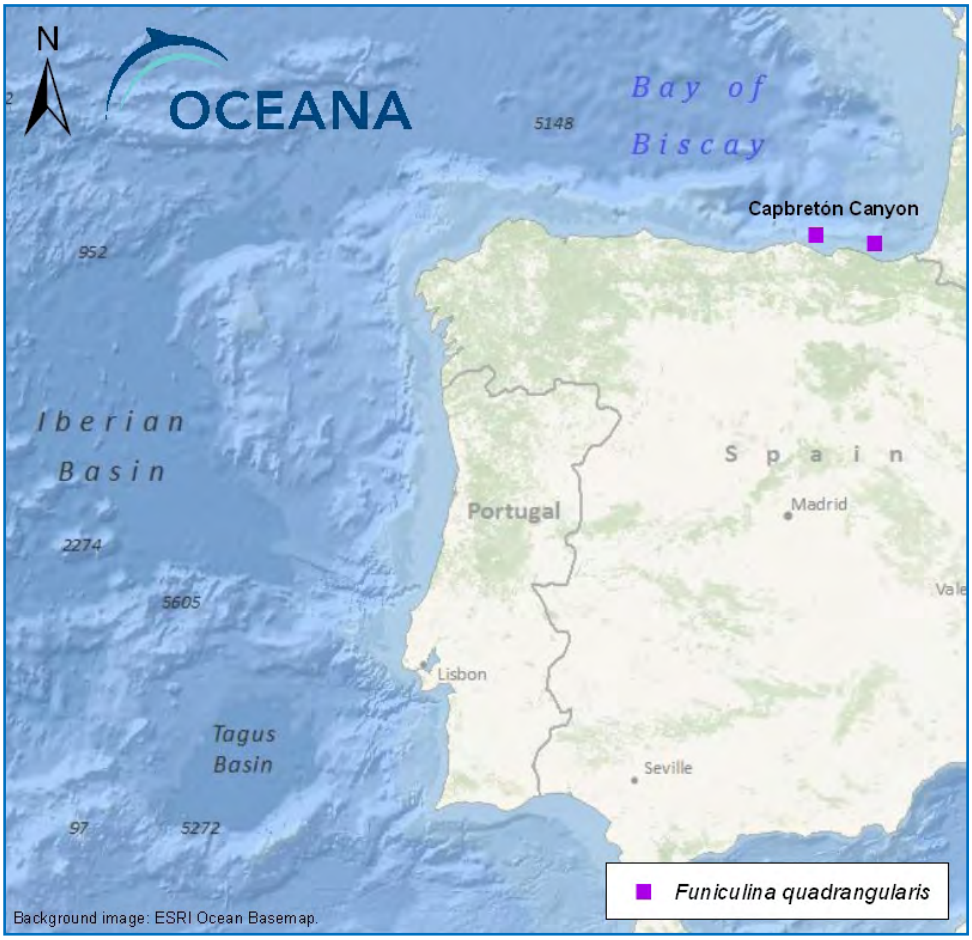
Funiculina quadrangularis fiedls batial soft bottoms in the Bay of Biscay

TYPICAL FAUNA OF THE COMMUNITY

CNIDARIA	
Actinauge richardi	*Epizoanthus* sp.
Alcyonium cf. *palmatum*	*Parazoanthus anguicomus*
Anemonactis mazeli	*Pennatula phosphorea*
Cerianthus membranaceus	*Virgularia mirabilis*
MOLLUSCA	
Buccinum undatum	*Euspira pallida*
Eledone cirrhosa	*Sepiola atlantica*
CRUSTACEA	
Goneplax rhomboides	*Munida* sp.
Inachus sp.	*Munidopsis* sp.
Liocarcinus depurator	*Pagurus* sp.
Macropodia sp.	*Plesionika* sp.
ECHINODERMATA	
Anseropoda placenta	*Ophiothrix fragilis*
Astropecten irregularis	*Parastichopus regalis*
Leptometra celtica	*Spatangus purpureus*
Ophiura ophiura	
ANNELIDA	
Aphrodita aculeata	*Lanice conchilega*
Hyalinoecia tubicola	
CHORDATA:PISCES	
Arnoglossus laterna	*Lophius piscatorius*
Gadiculus argenteus	*Merluccius merluccius*
Galeus melastomus	*Pomatoschistus* sp.
Helicolenus dactylopterus	*Scyliorhinus canicula*
Lepidorhombus boscii	*Solea* sp.
Lepidorhombus whiffiagonis	*Trachurus trachurus*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Castro Verde, Cantabrian Sea	Spain	43º 34,59800'N	03º 16,11209'W
Potera Arretxu, Capbreton canyon	Spain	43º 29,49270'N	02º 23,21363'W



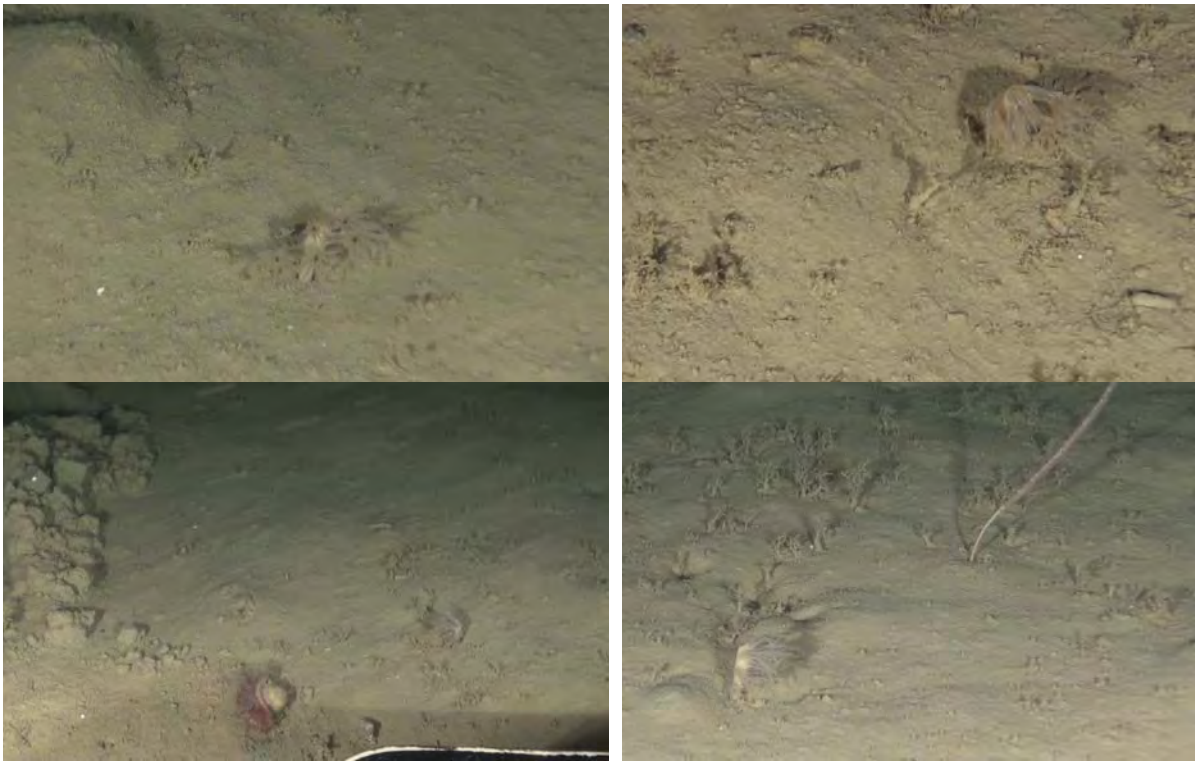
Locations where soft bottoms dominated by *Funiculina quadrangularis* were recorded by OCEANA in Spanish waters

3. Batial soft bottom dominated by *Kophobelemnon stelliferum*

DESCRIPTION: in the southern coast of Portugal, in the Portimão canyon, this species is very abundant in batial bottoms. Always present in soft bottoms around 450 meters depth, it can form up important fields in some muddy areas. Other cnidarians species are also abundant such as *Pennatula phosphorea* and *Flabellum chunii*. Polychaetes as *Lanice conchilega* are also important in this community.

DEPTH: 450 m

TYPE OF SUBSTRATE: muddy bottoms



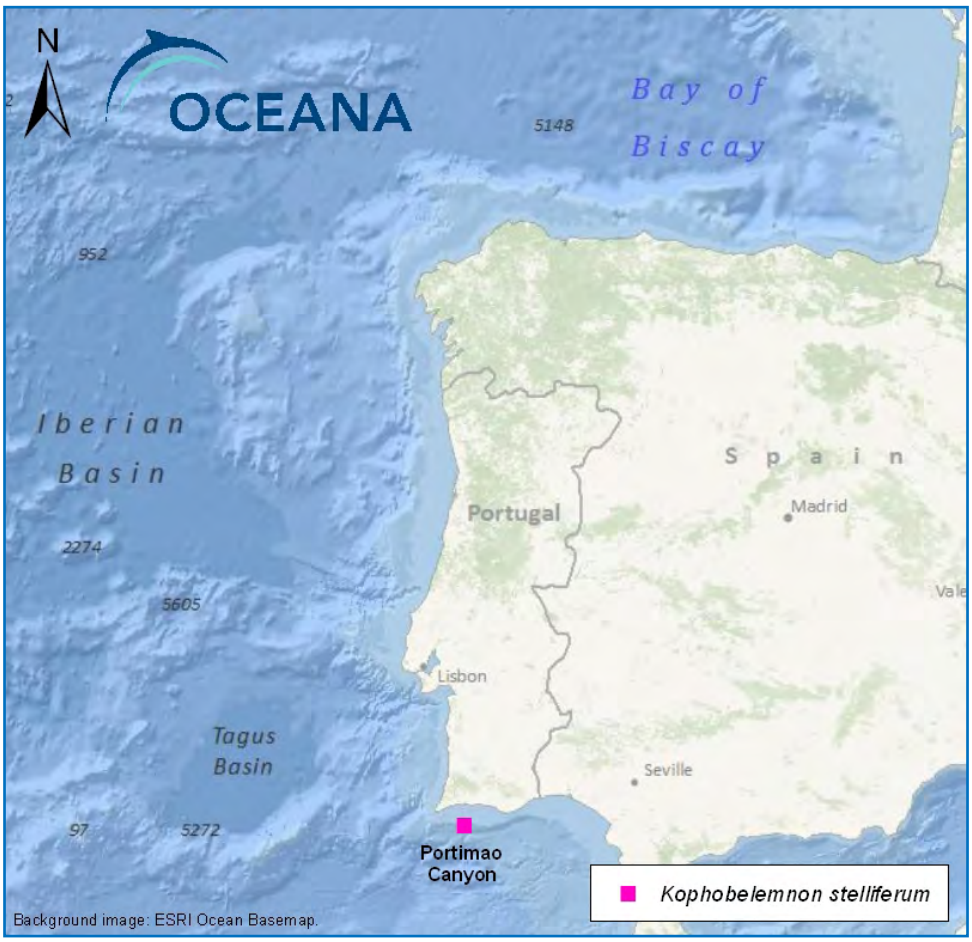
Soft substrates dominated by *Kophobelemnon stelliferum* on batial bottoms in Portuguese waters

TYPICAL FAUNA OF THE COMMUNITY

CNIDARIA	
Alcyonium sp.	*Funiculina quadrangularis*
Arachnanthus oligopodus	*Pennatula phosphorea*
Flabellum chunii	*Pennatula rubra*
MOLLUSCA	
Eledone cirrhosa	
ECHINODERMATA	
Leptometra celtica	
ANNELIDA	
Lanice conchilega	
CHORDATA:PISCES	
Galeus melastomus	*Phycis blennoides*
Nezumia sclerorhynchus	*Scyliorhinus canicula*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Portimão canyon	Portugal	36º 50,83520'N	08º32,7963'W



Locations where soft bottoms dominated by *Kophobelemnon stelliferum* were recorded by OCEANA in Portuguese waters

4. Baltic soft bottom dominated by *Pennatula phosphorea*

DESCRIPTION: Phosphorescent sea pen (*Pennatula phosphorea*) is documented in Kattegat soft sediment bottom, consisting mainly of mud, but also seen on mixed sand and mud bottom. Among species documented in the same areas as *P. phosphorea* are echinoderms (including starfish (*Marthasterias glacialis);* brittle stars (*Amphiura chiajei* and *Ophiocomina nigra*) and heart urchin (*Brissopsis lyrifera*); crustaceans (such as *Pagurus bernhardus*); and several fish species (including *Myxine glutinosa*, *Reinhardtius hippoglossoides*, and *Trisopterus esmarkii*). Slender sea pen (*Virgularia mirabilis*) was observed at some of the *P. phosphorea* areas.

DEPTH: 42-89 m

TYPE OF SUBSTRATE: Soft sediment, mainly mud, but also mud and sand mixed.

Soft bottoms dominated by *Pennatula phosphorea* in the Baltic Sea

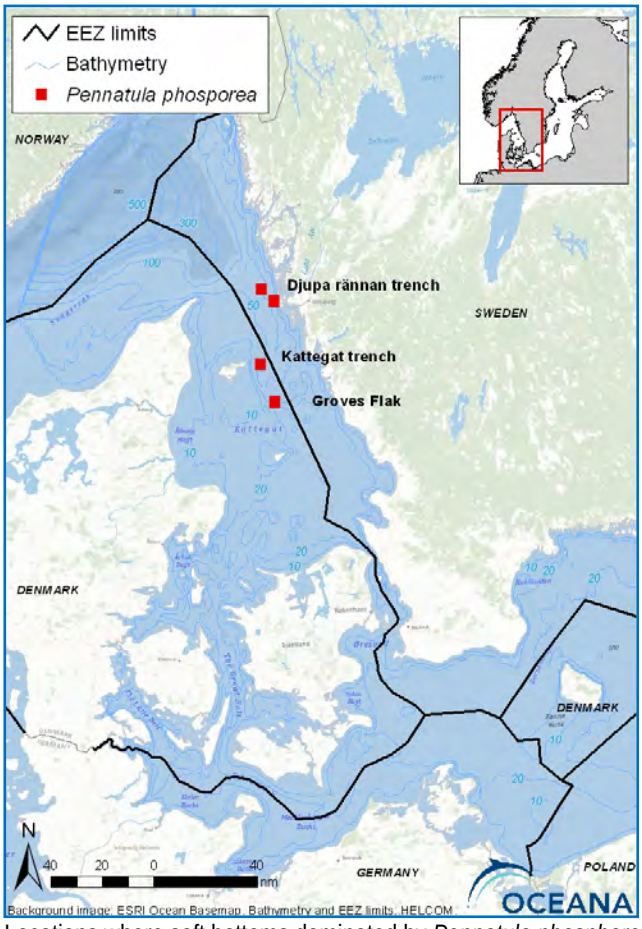
TYPICAL FAUNA OF THE COMMUNITY

CTENOPHORA	
Beroe cucumis	
CNIDARIA	
Virgularia mirabilis	
MOLLUSCA	
Turritella communis	
CRUSTACEA	
Haploops tubicola	*Munida rugosa*
Liocarcinus depurator	*Pandalus borealis*
Pagurus bernhardus	

ECHINODERMATA	
Amphiura chiajei	*Marthasterias glacialis*
Asteroidea	*Ophiocomina nigra*
Brissopsis lyrifera	*Thyone fusus*
ANNELIDA	
Anobothrus gracilis	
CORDADOS: PECES	
Callionymus lyra	*Micromesistius poutassou*
Gadus morhua	*Myxine glutinosa*
Lesueurigobius friesii	*Reinhardtius hippoglossoides*
Lumpenus lampretaeformis	*Trisopterus esmarkii*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Groves Flak, Kattegat	Denmark	57º 04,05000'N	11º 32,73000'W
Kattegat trench, Kattegat	Denmark	57º 16,39000'N	11º 25,50000'W
Djupa rännan trench, Kattegat	Sweden	57º 45,41900'N	11º 27,18720'W
Djupa rännan trench, Kattegat	Sweden	57º 43,18900'N	11º 33,57500'W



Locations where soft bottoms dominated by *Pennatula phosphorea* were recorded by OCEANA in the Baltic Sea

5. Baltic soft bottom dominated by *Virgularia mirabilis*

DESCRIPTION: Slender sea pen (*Virgularia mirabilis*) is documented in Kattegat on mud soft sediment bottom. Echinoderms (*Ophiura* spp., *Asterias rubens*, *Strongylocentrotus droebachiensis* and *Brissopsis lyrifera*), crustaceans (*Pagurus bernhardus*, *Liocarcinus depurator*, and *Munida rugosa*), molluscs (*Aporrhais pespelecani*, *Buccinum undatum*, and *Pecten maximus*), and fish (including *Gadus morhua*, *Limanda limanda*, *Callionymus lyra*, *Myxine glutinosa*, *Pleuronectes platessa*, and *Pomatoschistus minutus*) were among the species documented at the same areas where *Virgularia mirabilis* occurs.

DEPTH: 39-59 m

TYPE OF SUBSTRATE: muddy bottom.

Suberites virgultosus aggregations on circalittoral soft sediment bottom in the Baltic Sea

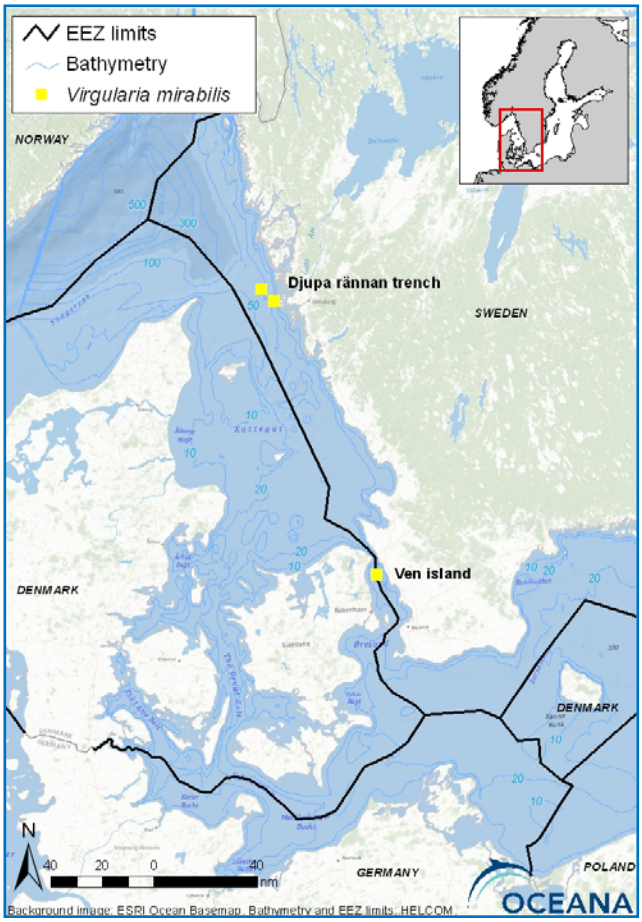
TYPICAL FAUNA OF THE COMMUNITY

CNIDARIA	
Pennatula phosphorea	
MOLLUSCA	
Aporrhais pespelecani	*Pecten maximus*
Buccinum undatum	
CRUSTACEA	
Liocarcinus depurator	*Pagurus bernhardus*
Munida rugosa	
ECHINODERMATA	
Amphiura chiajei	*Ophiocomina nigra*
Asterias rubens	*Ophiura albida*
Brissopsis lyrifera	*Ophiura ophiura*
Luidia sarsi	*Strongylocentrotus droebachiensis*
ANNELIDA	
Anobothrus gracilis	
SIPUNCULA	
Phascolion strombus	

CHORDATA: PISCES	
Callionymus lyra	*Myxine glutinosa*
Gadus morhua	*Platichthys flesus*
Lesueurigobius friesii	*Pomatoschistus minutus*
Limanda limanda	*Pleuronectes platessa*
Lumpenus lampretaeformis	*Reinhardtius hippoglossoides*
Micromesistius poutassou	*Trisopterus esmarkii*

AREAS WHERE THIS HABITAT IS PRESENT AND DOCUMENTED BY OCEANA

LOCATION	COUNTRY	COORDINATES	
Ven island, the Sound	Sweden	55º 55,58960'N	12º 41,79470'W
Djupa rännan trench, Kattegat	Sweden	57º 45,33640'N	11º 27,20950'W
Djupa rännen trench, Kattegat	Sweden	57º 45,40900'N	11º 27,20600'W



Locations where soft bottoms dominated by *Virgularia mirabilis* were recorded by OCEANA in the Baltic Sea