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Draft Updated Reference List of Marine Habitat Types for the Selection of Sites to be included in the National Inventories of Natural Sites of Conservation Interest in the Mediterranean

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Introduction

The Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and the Action plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean (MAP Phase II), adopted by the Contracting Parties to the Barcelona Convention in 1995, contains provisions for the preparation of inventories of habitats at national as well as regional level.

In this context, and following a specific provision of MAP Phase II to prepare inventories according to common criteria, the Contracting Parties adopted at their 10th Ordinary Meeting (Tunis, 18-21 November 1997) criteria for the establishment of national inventories of natural sites of conservation interest. The criteria require that "Information concerning each inventoried site will be compiled according to a standard format, which will have to be agreed by the Parties upon a proposal from the Centre. Such information will include, but will not necessarily be limited to, the fields detailed in Appendix I to these criteria " (Art. 7)". To this end, a Standard Data-Entry Form (SDF) was conceived as an operational inventory tool made available to the relevant national authorities. It is designed to cover the fields of information detailed in the Appendix to the Criteria, and the specific criteria for the assessment of the importance of the site for habitats and species (Art. 4, 5 and 6 of the Criteria). The criteria provided also for the establishment of a reference list of marine and coastal natural habitat types, on the basis of a model classification. A model classification of marine habitat types for the Mediterranean region, as well as a reference list of habitat types were adopted in 1999.

During the last symposiums on the marine key habitats held in Portoroz from 27 to 31 October 2014, it was recommended to amend, discuss and propose new facies for integration within the Barcelona Convention's Habitats List.

The 19th Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) requested SPA/RAC to revise the Reference List of Marine and Coastal Habitat Types in the Mediterranean for consideration by COP 20, taking in full account the biodiversity-related MAP Ecological Objectives, IMAP, and GES targets (Decision IG.22/12).

The Draft Reference List of Marine Habitat Types proposed hereinafter will be used for the Selection of Sites to be included in the National Inventories of Natural Sites of Conservation Interest in the Mediterranean. It will be also used to define the reference list of habitats types to be monitored within the framework of the Integrated Monitoring and Assessment Program (IMAP) in relation to the common indicator EO1.

Draft Updated Reference List of Marine Habitat Types for the Selection of Sites to be included in the National Inventories of Natural Sites of Conservation Interest in the Mediterranean

In order to draw up the updated Reference List of Marine Habitat Types, an updated and more comprehensive draft classification of benthic marine habitat types for the Mediterranean region (UNEP(DEPI)/MED WG.431/Inf.17) was elaborated based on :

- Classification of benthic marine habitat types for the Mediterranean region of the Barcelona Convention (1998),
- the schemes of the new EUNIS classification system¹ (Table 1),
- the List of French Mediterranean habitats (Michez et al, 2014),
- the spanish inventory of marine habitats (Templado et al., 2012),
- the Croatian List of Marine Habitats (Bakran-Petricioli, 2011) and,
- new habitats based on the experts inputs.

Furthermore, the following lists were taken into account:

- the European Red list of marine Habitats in the Mediterranean
- the list compiled by OCEANA, with the contribution of experts on Mediterranean deep-sea habitats, in order to implement the UNGA Resolutions for the protection of Vulnerable Marine Ecosystems (VMEs)² in the GFCM context.

Given that the habitats that deserve specific attention are those displaying certain features that make them important for conservation and are vulnerable to disturbances, the criteria used for inclusion in the Reference List take into account a series of eight traits that define more accurately this “importance” and “vulnerability”. While they are sometimes correlated, these traits account for different features of the habitats that make them worthy (or not) for protection.

They are partially based on those used in the last edition of the Mediterranean Reference List of marine habitat types (1999) and take into consideration the FAO’s criteria³ for identification of VMEs which were used by OCEANA in order to develop the list of VMEs in the GFCM context.

¹ EUNIS is the European Nature Information System and brings together European data on habitat and species among others. It provides the reference information system to assist in the designation of Natura 2000 sites. It was submitted for EIONET consultation in 2015 and could be adopted in 2017.

² United Nations General Assembly (UNGA) Resolutions 59/25, 61/105 and 64/72.

³ FAO (2009). International Guidelines for the Management of Deep-sea Fisheries in the High Seas

The eight traits are the following:

- 1) Fragility: Degree of susceptibility to degradation (i.e. maintaining its structure and functions) when faced to natural and anthropogenic disturbances.
- 2) Inability to recover quickly from a disturbance (resilience⁻¹). Usually related to life-history traits of component species that make recovery difficult (i.e. slow growth rates, late age of maturity, low or unpredictable recruitment, long-lived).
- 3) Uniqueness or rarity: Degree of rarity, i.e. unusual, very unfrequent, at the Mediterranean level.
- 4) Importance of the habitat for hosting rare, threatened, endangered or endemic species that occur only in discrete areas.
- 5) Species diversity: The number of species sheltered in the habitat.
- 6) Structural complexity: Degree of complexity of physical structures created by biotic and abiotic features.
- 7) Capacity of modifying the physical environment and the ecosystem processes (i.e. geomorphological traits, fluxes of matter and energy).
- 8) Significance of the habitat for the survival, spawning/reproduction of species not necessarily typical for the habitat during all their life cycle and other (ecosystem) services provided by the habitat.

Each habitat type has been rated from 1 (very low) to 5 (very high) in relation to each trait in relation to other habitats situated in the same bathymetric zone. Its inclusion in the list depends on the final rating adding the values of the eight traits altogether. The threshold used here for the inclusion of a habitat in the Reference List is of 22.

All habitats type having a rating of 5 in “Uniqueness” (i.e. those that are extremely rare) have been selected for the Reference List regardless of the final rating.

No water column habitats or habitats of anthropogenic origin have been considered for the inclusion in the Reference List.

When the main habitat-forming species is an alien, it has not been selected for the Reference List whatever it is the final rating.

The proposed Reference List of Mediterranean habitat types has been elaborated based on the discussions, comments and suggestions of the adhoc group meeting held in Blanes, Spain, on 22-23 February 2017 in presence of a number of Mediterranean experts and regional partner organizations (GFCM, IUCN-Med, OCEANA and ETC/BD). The Focal Points for SPA will be invited to consider and review the proposed Reference List that should remain dynamic to ensure adequate harmonisation with other classifications defined in relevant frameworks, such as EUNIS, and according to the implementation inputs of the IMAP.

PROPOSED DRAFT UPDATED REFERENCE LIST OF MARINE HABITAT TYPES

- MA1.5 Mediterranean littoral rock
MA1.51 Supralittoral rock
Wracks of dead seagrass
- MA1.54 Lower mediolittoral rock
MA1.541 Facies with *Pollicipes pollicipes*
MA1.542 Belt of *Lithophyllum byssoides*
MA1.546 Belt of *Neogoniolithon brassica-florida/Dendropoma* spp.
MA1.549 Belt of *Fucus virsoides*
Belt of *Palisada* spp.
Belt of *Titanoderma ramosissimum*
Anchialine environments
MA1.54A Mediolittoral rockpools
Deep mediolittoral rockpools with Fucales
- MA2.55 Biogenic reef assemblages of the lower mediolittoral rock
MA2.551 Vermetid reefs (*Dendropoma* spp.)
MA2.552 Platforms with coralline algae (*Lithophyllum* concretions)
MA2.561 Banks of dead leaves of *Posidonia oceanica* and other macrophytes
Reefs of *Sabellaria alveolata*
- MA3.5 Mediterranean littoral coarse sediment
MA3.51 Slowly drying wracks in supralittoral coarse sediment
- MA4.5 Mediterranean littoral mixed sediment
MA4.51 Slowly drying wracks in supralittoral mixed sediment
- MA5.5 Mediterranean littoral sand
MA5.51 Supralittoral sands
Supralittoral compacted terrigenous clays
MA5.52 Mediolittoral sands
Mediolittoral compacted terrigenous clays
Littoral sediments dominated by marine angiosperms
- MB1.5 Mediterranean infralittoral rock
MB1.51 Infralittoral algae
Exposed to moderately exposed rocks, well illuminated, with Fucales
Community of *Cystoseira mediterranea*
MB1.513 Community of *Cystoseira amentacea* var. *stricta*
MB1.512 Community of *Cystoseira tamariscifolia*
Community of *Cystoseira sedoides*
Community of *Cystoseira barbatula*, *C. crinitophylla*, *C. corniculata*

⁴ Final code will be harmonised once the final version of the new EUNIS classification is adopted.

Exposed to moderately exposed rocks, well illuminated, without Fucales
Community of *Titanoderma trochanter*
MA1.543 Community of *Tenarea tortuosa*

Exposed to moderately exposed rocks, shaded
MB1.51O Exposed to moderately exposed and shaded upper
infralittoral rock with *Astroides calycularis*

Sheltered upper infralittoral rock, well illuminated with Fucales
MB1.51G with *Cystoseira crinita*
MB1.51F with *Cystoseira brachycarpa* var. *balearica*
with *Cystoseira spinosa* var. *tenuior*
with *Cystoseira algeriensis*
with *Cystoseira caespitosa*
with *Cystoseira foeniculacea*
MB1.51I with *Cystoseira sauvageauana*
MB1.51U with *Cystoseira compressa*
with *Cystoseira elegans*
with *Cystoseira compressa* var. *pustulata*
MB1.51H with *Cystoseira crinitophylla*
MB1.51K with *Sargassum vulgare*
with *Cystoseira barbatula*
with *Cystoseira* spp.
with *Cystoseira barbata*/*C. foeniculacea* f. *tenuiramosa*

Sheltered upper infralittoral rock, well illuminated without Fucales
with Rhodomelaceae (*Halopithys incurva*/*Digenea simplex*/*Rytiphlaea tinctoria*/*Alsidium* spp.)
MB1.51E with *Cladocora caespitosa*

Sheltered, shaded, upper infralittoral rock
MB1.51Y Coralligenous (in enclave)

Lower infralittoral rock, moderately illuminated with Fucales
MB1.51J with *Cystoseira spinosa*
with *Cystoseira funkii*
with *Cystoseira dubia*
with *Cystoseira corniculata*
with *Cystoseira usneoides*
with *Cystoseira squarrosa*
with *Cystoseira foeniculacea* f. *latiramosa*
with *Sargassum acinarium*/*S. trichocarpum*

Lower infralittoral rock, moderately illuminated, without Fucales
Kelp beds of *Laminaria ochroleuca*
Kelp beds of *Saccorhiza polyschides*/*Phyllariopsis* spp.
with *Eunicella singularis*
with *Cladocora caespitosa*

Sheltered and shaded, invertebrate dominated infralittoral rock

with *Cladocora caespitosa*
with *Pourtalosmilia anthophyllites*
with *Corallium rubrum*
with *Astroides calycularis*

Infralittoral rock affected by sediments
with *Eunicella singularis*
with *Axinella* spp.
with *Eunicella gazella*, *E. labiata*, *E. singularis*, *Leptogorgia* spp.

Infralittoral rocky outcrops (“tègne”)
with *Rhodomenia ardissoni* and encrusting *Peyssonnelia* spp.
with *Cryptonemia lomation* and Ceramiales
with *Ulva laetevirens*, *U. linza*, *Radicilingua thysanorhizans*

MB1.52 Euryhaline and/or eurythermal lagoon biocoenosis on rock
MB1.524 with *Cystoseira barbata*

MB2.5 Mediterranean infralittoral biogenic habitat

MB2.51 Biogenic reef assemblages of the infralittoral algae biocoenosis
MB2.511 with *Dendropoma* spp.

MB2.52 Meadows of *Posidonia oceanica*

MB2.521 Superficial meadows
Striped meadows
Barrier reefs/Fringing reefs/Reef platforms
Atolls

MB2.522 Meadows on well developed matte
Meadows on hard substrate
Meadows on soft substrate

MB2.524 Facies of dead "mattes" of *Posidonia oceanica* without much epiflora

MB2.525 Association with of dead “matte” of *Posidonia oceanica* with important epiflora (e.g. *Caulerpa prolifera*, *Penicillus capitatus* and *Cymodocea nodosa*)

MB2.54 Biogenic reefs on fine sands in very shallow waters

MB2.541 Infralittoral reefs by *Sabellaria alveolata*/*S. spinulosa*

MB5.5 Mediterranean infralittoral sand

MB5.53 Superficial muddy sands in sheltered waters

MB5.534 with *Cymodocea nodosa*

MB5.535 with *Zostera noltei*

MB5.537 Hydrothermal oozes with *Tritia neritea* and nematodes

MB5.54 Euryhaline and/or eurythermal lagoon biocoenosis on sand

MB5.541 Association with *Ruppia cirrhosa* and/or *Ruppia maritima*

MB5.542 Association with *Stuckenia pectinatus*

MB5.544 with *Zostera noltei*

MB5.545 with *Zostera marina*

with *Cymodocea nodosa*

MB6.52 Euryhaline and/or eurythermal lagoon biocoenosis on mud

MB6.521 Association with *Ruppia cirrhosa* and/or *Ruppia maritima*

MB6.522 Association with *Stuckenia pectinatus*

MB6.524 with *Zostera noltei*

MB6.525 with *Zostera marina*

MC1.5 Mediterranean circalittoral rock

Algal dominated circalittoral rock with Fucales

MC1.511 with *Cystoseira zosteroides*/*C. spinosa* var. *compressa*

MC1.512 with *Cystoseira usneoides*

MC1.513 with *Cystoseira dubia*

MC1.514 with *Cystoseira corniculata*

MC1.515 with *Sargassum* spp.

Algal dominated circalittoral rock with kelps

MC1.518 with *Laminaria ochroleuca*

with *Laminaria rodriguezii*

with *Phyllariopsis brevipes*/*P. purpurascens*

with *Saccorhiza polyschides*

Algal dominated circalittoral rock, without Fucales or kelps

with *Osmundaria volubilis*/*Phyllophora crispa*

Algal dominated coralligenous

with *Halimeda tuna* and *Mesophyllum* spp.

MC1.51D with laminar soft red algae

MC1.517 with *Lithophyllum* spp.

MC1.515 with *Mesophyllum* spp.

with *Ptilophora mediterranea*

Invertebrate-dominated circalittoral rock

MC1.51E with *Leptogorgia sarmentosa*/*Eunicella verrucosa*

MC1.51B with *Paramuricea clavata*

MC1.51A with *Eunicella singularis*

MC1.519 with *Eunicella cavolini*

with *Eunicella verrucosa*

with big sponges (*Spongia lamella* and others)

with *Agelas oroides*, *Biemna* sp. and big Dictyoceratida (*Spongia* spp., *Ircinia* spp., *Sarcotragus* spp.)

with big bryozoans (*Pentapora* spp., *Reteporella* spp., *Hornera frondiculata*, *Adeonella* spp.)

with *Corallium rubrum*

with *Ellisella paraplexauroides*, *Eunicella* spp., *Leptogorgia* spp. and *Paramuricea clavata*

with *Dendrophyllia ramea*

with *Phakellia ventilabrum*/*Phakellia robusta* and axinellid sponges

with *Dendrophyllia cornigera*

with *Savalia savaglia* banks

with *Leptogorgia* spp.
Walls and slopes dominated by *Cladocora debilis*
Walls and rims with *Madracis asperula*
Walls and rims with *Leptopsammia pruvoti*
with *Reteporella* spp.
with *Dendrophyllia ramea* banks
with *Ellisella paraplexauroides* banks
with *Dendrophyllia cornigera* and sponge grounds made of *Phakellia ventilabrum*/*P. robusta* and *Poecillastra compressa* and *Pachastrella monilifera*

Circalittoral rock covered by sediments
Serpulid and/or Vermetid reefs, *Filograna implexa* included
with *Neopycnodonte cochlear*
with sponges (mainly *Axinella* spp.)
with *Dendrophyllia ramea*
with *Anomocora profunda* and *Anomocora* sp.
with *Cerianthus* sp.
with *Leptogorgia* spp.
with *Swiftia* spp.

Invertebrate-dominated coralligenous bioconstructions
with *Paramuricea clavata*
with *Eunicella verrucosa*
with *Alcyonium acaule*
with *Leptopsammia pruvoti*
with tube-forming polychaetes (*Filograna implexa*, *Salmacina dysteri*)
with *Astroides calycularis*
with *Corallium rubrum*
with *Agelas oroides*
with *Axinella* spp.
with Erythraean aliens

MC1.52 Shelf edge rock with macroscopic vegetation

Circalittoral rock
with coralligenous outcrops
with coralligenous outcrops affected by sedimentation
with *Paramuricea clavata*
with *Eunicella verrucosa*
with *Paralcyonium spinulosum*/*Alcyonium palmatum*/*Alcyonium coralloides*
dominated by Axinellida/Haplosclerida
dominated by Dictyoceratida/Hadromerida
dominated by bryozoans (*Myriapora truncata*, *Pentapora fascialis*,
Reteporella grimaldi)
with *Antipathella subpinnata*
with alcyonarians
with various suspension feeders (sponges, hydrozoans, bryozoans, ascidians,
and others)

with gorgonians (*Eunicella* spp., *Paramuricea clavata*)
with *Corallium rubrum*
with *Neopycnodonte cochlear* and/or polychaetes and/or brachiopods

Deep circalittoral banks

of *Astroides calycularis*
of *Dendrophyllia ramea*
of *Antipathella wollastoni*
MC1.521 of *Antipathella subpinnata*
of *Nidalia studeri* or *Chironophthya mediterranea*

MC1.53 Semi-dark caves and overhangs

Walls of infralittoral and circalittoral semi-dark caves and tunnels
with *Phyllangia americana mouchezii*
with *Corallium rubrum*
with lithistid sponges (ex-“Lithistida in brackish-water caves or caves
subjected to freshwater runoff

Walls of infralittoral and circalittoral semi-dark caves and tunnels affected by
high hydrodynamism

with massive sponges
with *Paramuricea clavata* and *Eunicella* spp.
with *Corallium rubrum*
with *Astroides calycularis*
dominated by scleractinian corals (*Caryophyllia*, *Hoplangia*,
Paracyathus, *Polycyathus*, *Phyllangia*)

Ceilings of infralittoral and circalittoral semi-dark caves and tunnels

with *Schizoretopena serratimargo*
with *Corallium rubrum*

MC2.5 Mediterranean circalittoral biogenic habitat

MC2.51 Coralligenous platforms

MC3.5 Mediterranean circalittoral coarse sediment

MC3.51 Coastal detritic bottoms (without rhodoliths)

dominated by *Leptometra phalangium* or *Leptometra celtica*

MC3.513 with large bryozoa

with Pennatulaceans (*Pennatula*, *Pteroides*, *Virgularia*)

with *Eunicella filiformis*

with *Alcyonium palmatum*

with *Laminaria ochroleuca*, *Saccorhiza polyschides*, *Phyllariopsis* spp.

MC3.515 with *Phyllophora crispa*/*Osmundaria volubilis*

MC3.521 with *Laminaria rodriguezii*

MC3.52 Coastal detritic bottoms with rhodoliths

MC3.523 Maërl beds dominated by *Phymatolithon calcareum*/*Lithothamnion
corallioides*

Maërl beds dominated by *Lithothamnion corallioides*/*Lithothamnion crispatum*

Maërl beds dominated by *Lithothamnion corallioides*/*L. crispatum* and *Macrorhynchia philippina*

Maërl beds dominated by *Lithothamnion minervae*

Maërl beds dominated by *Neogoniolithon* spp.

Rhodolith beds dominated by *Lithothamnion minervae*

Rhodolith beds dominated by *Lithophyllum racemus*

Rhodolith beds dominated by *Lithothamnion valens*

Rhodolith beds dominated by *Lithophyllum dentatum*

Rhodolith beds mainly composed of cobble-sized “boxwork” rhodoliths with sessile invertebrates

Rhodolith beds with mixed nodules and “boxwork” rhodoliths

MC3.522 Rhodolith beds with *Peyssonnelia* spp.

Rhodolith beds with zoanthids

Rhodolith and cobble beds dominated by invertebrates, with *Alcyonium palmatum*

Rhodolith and cobble beds dominated by anthozoans (*Veretillum*, *Sarcodictyon catenatum*, *Epizoanthus arenaceus*, *Paralcyonium spinulosum*)

MC4.5 Mediterranean circalittoral mixed sediment

MC4.51 Muddy detritic bottoms

with *Alcyonium palmatum*, *Pennatula rubra* and *Spinimuricea* spp.

MC6.5 Mediterranean circalittoral mud

MC6.51 Coastal terrigenous muds

MC6.513 Sticky muds with *Virgularia mirabilis* and *Pennatula phosphorea*

Circalittoral mud with Pennatulaceans and accompanying fauna

MD1.5 Mediterranean offshore circalittoral rock

MD1.51 Offshore circalittoral rock

Invertebrate-dominated circalittoral rock with *Leptogorgia sarmientosa*/*Eunicella verrucosa*

Invertebrate-dominated circalittoral rock with *Eunicella verrucosa*

Invertebrate-dominated circalittoral rock with *Paramuricea clavata*

Invertebrate-dominated circalittoral rock with *Eunicella cavolini*

Invertebrate-dominated circalittoral rock with *Ellisella paraplexauroides*, *Eunicella* spp., *Leptogorgia* spp. and *Paramuricea clavata*

Circalittoral rock covered by sediments, with *Swiftia* spp.

Circalittoral rock with *Savalia savaglia* banks

Circalittoral rock dominated by *Leptogorgia* spp.

Circalittoral rock covered by sediments, with *Leptogorgia* spp.

Invertebrate-dominated circalittoral rock with *Corallium rubrum*

Circalittoral rocks with *Paralcyonium spinulosum* and/or *Alcyonium palmatum* and/or *Alcyonium coralloides*

Deep circalittoral banks of *Nidalia studeri* or *Chironophthya mediterranea*

Deep circalittoral banks of *Antipathella subpinnata*

Deep circalittoral banks of *Antipathella wollastoni*

Invertebrate-dominated circalittoral rock with *Dendrophyllia ramea*

Circalittoral rock covered by sediments, with *Dendrophyllia ramea*

Deep circalittoral banks of *Dendrophyllia ramea*

Circalittoral rock dominated by *Dendrophyllia cornigera*

Circalittoral walls and slopes dominated by *Cladocora debilis*

Circalittoral rock covered by sediments with *Anomocora profunda* and *Anomocora* sp.
Circalittoral rock covered by sediments, with *Cerianthus* sp.
Invertebrate-dominated circalittoral rock with big sponges (*Spongia lamella* and others)
Deep circalittoral rock dominated by invertebrates with *Phakellia ventilabrum*/*Phakellia robusta* and axinellid sponges
Circalittoral rock dominated by *Dendrophyllia cornigera* and sponge grounds made of *Phakellia ventilabrum*/*P. robusta* and *Poecillastra compressa* and *Pachastrella monilifera*
Circalittoral rock covered by sediments, with sponges (mainly *Axinella* spp.)
Circalittoral rocks dominated by Axinellida /Haplosclerida
Circalittoral rocks dominated by Dictyoceratida/Hadromerida
Invertebrate-dominated circalittoral rock with big bryozoans (*Pentapora* spp., *Hornera frondiculata*, *Adeonella* spp., *Reteporella* spp.)
Circalittoral rocks dominated by bryozoans (*Myriapora truncata*, *Pentapora fascialis*, *Reteporella grimaldii*)
Circalittoral rock with *Neopycnodonte cochlear* and/or polychaetes and/or brachiopods

MD2.1 Mediterranean offshore circalittoral biogenic habitat
Serpulid and Vermetid reefs, *Filograna implexa* included

MD4.5 Mediterranean offshore circalittoral mixed sediment
MD4.51 Open sea detritic bottoms on shelf edge
MD4.512 with *Leptometra phalangium*

MD6.5 Mediterranean offshore circalittoral mud
MD6.51 Coastal terrigenous muds
MD6.511 Sticky muds with *Virgularia mirabilis* and *Pennatula phosphorea*

ME1.5 Mediterranean upper bathyal rock
ME1.51 Upper bathyal rock
ME1.511 *Lophelia pertusa* reefs
ME1.521 *Madrepora oculata* reefs
ME1.513 *Madrepora oculata* and *Lophelia pertusa* reefs
Bathyal rocks with Scleractinia and Alcyonacea
with *Madrepora oculata* and/or *Lophelia pertusa* and *Corallium rubrum*
Bathyal rocks with Alcyonacea
Bathyal rocks with *Corallium rubrum*
Bathyal rocks with *Acanthogorgia hirsuta*/*A. armata*
Bathyal rock with *Paramuricea macrospina* and/or *Bebryce mollis* and/or *Villogorgia bebrycoides*
Bathyal rock with *Viminella flagellum* and/or *V. furcata* and/or *Callogorgia verticillata*
Bathyal rock with *Placogorgia massiliensis* and/or *Muriceides lepida*
Bathyal rock with *Nicella granifera*
Bathyal rock with *Swiftia pallida*
Bathyal rock with *Dendrobrachia bonsai*

Bathyal rocks with Antipatharia
Bathyal rocks with *Leiopathes glaberrima* and/or *Antipathes dichotoma*
and/or *Parantipathes larix*
Bathyal rock with Aphanipathidae

Bathyal rocks with Scleractinia
Bathyal rocks with *Dendrophyllia cornigera*
Bathyal rocks with *Desmophyllum dianthus*
Bathyal rocks with *Caryophyllia calveri*
Bathyal rocks with *Madracis pharensis*

Bathyal rocks with Scleractinia and Tetractinellida
Bathyal rocks with *Madrepora oculata* and/or *Lophelia pertusa* and/or
Desmophyllum dianthus with *Pachastrella monilifera* and/or
Poecillastra compressa

Bathyal rocks with Hexactinellida
Bathyal rocks with *Asconema setubalense* and/or *Tretodictyum tubulosum*

Bathyal rocks with Demospongiae
Bathyal rocks with Tetractinellida
Bathyal rocks with Geodiidae
Bathyal rocks with desma-bearing demosponges (ex-“Lithistida”)

Bathyal rocks with Crustacea Balanopmorma
Bathyal rocks with *Pachylasma giganteum*

Bathyal rocks with Echinodermata Antedonoidea
Bathyal rocks with *Leptometra phalangium* or *Leptometra celtica*
and/or *Antedon mediterranea*

Bathyal rocks with Bivalvia
Bathyal rocks with *Neopycnodonte zibrowii*

ME1.52 Caves and ducts in total darkness (in enclave in upper zones)

Muddy detritic bottoms

Walls and ceilings

with *Dendroxea lenis*/*Diplastrella bistellata*

with *Penares euastrum*/*Rhabderemia minutula*/*Myrmekioderma spelaum*

Walls and ceilings in anchialine environments

ME2.1 Mediterranean upper bathyal biogenic habitat

Bathyal Anthozoa bioconstructions

Madrepora oculata/*Lophelia pertusa*/*Desmophyllum dianthus* reefs

Madrepora oculata and *Serpula vermicularis* reefs

Bathyal Bivalvia bioconstructions

Neopycnodonte zibrowii and/or *Neopycnodonte cochlear* reefs

Bathyal sponge bioconstructions
Leiodermatium reefs

ME3.5 Mediterranean upper bathyal coarse sediment

Bathyal coarse sediment with Alcyonacea

Bathyal coarse sediments with *Chironephthya mediterranea* and/or *Nidalia studeri* and/or *Paralcyonium spinulosum* and/or *Alcyonium palmatum*

Bathyal coarse sediments with *Bebryce mollis* and/or *Villogorgia bebrycoides* and/or *Paramuricea macrospina* and/or *Muriceides lepida*

ME5.5 Mediterranean upper bathyal sand

ME5.51 Upper bathyal detritic sands

Bathyal sands with Pennatulacea

Bathyal sands with *Pennatula* spp. and/or *Pteroeides spinosum*

Bathyal sands with Demospongiae

Bathyal sands with *Rhizaxinella* spp.

Bathyal sands with Antedonidae

Bathyal sands with *Leptometra phalangium* and/or *Antedon mediterranea*

ME6.5 Mediterranean upper bathyal muds

Bathyal muds with Hexactinellida

ME6.514 Bathyal muds with *Pheronema carpenteri*

Bathyal muds with *Asconema setubalense*

Bathyal muds with Tetractinellida

ME6.511 Bathyal muds with *Thenaea muricata* and/or *Cladorhiza abyssicola*

Bathyal muds with Pennatulacea

ME6.513 Bathyal muds with *Funiculina quadrangularis* and/or *Protoptilum carpenteri*

Bathyal muds with *Kophobelemnnon stelliferum*

Bathyal muds with *Pennatula* spp.

Bathyal muds with Alcyonacea

ME6.515 Bathyal muds with *Isidella elongata*

Bathyal muds with Scleractinia

Bathyal muds with *Madrepora oculata* and/or *Lophelia pertusa*

Bathyal muds with *Dendrophyllia cornigera*

Bathyal muds with *Dendrophyllia ramea*

Bathyal muds with Pennatulacea, Alcyonacea and Crustacea Decapoda

Bathyal muds with *Funiculina quadrangularis* and/or *Isidella elongata* with *Aristeus antennatus*, *Aristaeomorpha foliacea* and/or *Nephrops norvegicus*

Bathyal muds with Antedonidae

Bathyal muds dominated by *Leptometra phalangium* and/or *Antedon mediterranea*

MF1.5 Mediterranean lower bathyal rock

MF1.51 Lower bathyal rock

MF1.511 *Lophelia pertusa* reefs

MF1.512 *Madrepora oculata* reefs

MF1.513 *Madrepora oculata* and *Lophelia pertusa* reefs

MF6.5 Mediterranean lower bathyal mud

MF6.51 Lower bathyal muds

MF6.511 Sandy muds with *Thenia muricata*

MF6.513 Compact muds with *Isidella elongata*

MG1.1 Mediterranean abyssal rock

MG6.1 Mediterranean abyssal mud

Cold seeps and hydrothermal vents

Methane seeps

Sulfide vents

Table 1: Combinations are codes for marine EUNIS level 2

Combinations codes for marine EUNIS level 2

| Zone | | Substrate | | | | | |
|---|------------------------|-----------|-------------------|--------|-------|------|-----|
| | | Hard/firm | | Soft | | | |
| | | Rock* | Biogenic habitat* | Coarse | Mixed | Sand | Mud |
| Phytal gradient / hydrodynamic gradient | Littoral | MA1 | MA2 | MA3 | MA4 | MA5 | MA6 |
| | Infralittoral | MB1 | MB2 | MB3 | MB4 | MB5 | MB6 |
| | Circalittoral | MC1 | MC2 | MC3 | MC4 | MC5 | MC6 |
| Aphytal/ hydrodynamic gradient | Offshore circalittoral | MD1 | MD2 | MD3 | MD4 | MD5 | MD6 |
| | Upper bathyal | ME1 | ME2 | ME3 | ME4 | ME5 | ME6 |
| | Lower bathyal | MF1 | MF2 | MF3 | MF4 | MF5 | MF6 |
| | Abyssal | MG1 | MG2 | MG3 | MG4 | MG5 | MG6 |

Bibliography

Bakran-Petricioli, T. (2011). *Priručnik za određivanje morskih stanista u Hrvatskoj prema Direktivi o stanistima EU*. Državni zavod za zaštitu prirode. Zagreb. 184 pp.

FAO (2009). *International Guidelines for the Management of Deep-sea Fisheries in the High Seas*

Michez, N., M. Fourt, A. Aish, G. Bellan, D. Bellan-Santini, P. Chevaldonné, M.C. Fabri, A. Goujard, J.G. Harmelin, C. Labrune, G. Pergent, S. Sartoretto, J. Vacelet, M. Verlaque (2014). *Typologie des biocénoses benthiques de Méditerranée. Version 2*. Muséum National d'Histoire Naturelle. 26 pp.

Templado, J., E. Ballesteros, I. Galparsoro, A. Borja, A. Serrano, L. Marín, A. Brito (2012). *Inventario español de Hábitats y Especies Marinos. Guía Interpretativa: Inventario Español de Hábitats Marinos*. Ministerio de Agricultura, Alimentación y Medio Ambiente. 229 pp.
URL:
http://www.mapama.gob.es/es/costas/publicaciones/GUIA_INTERP_HABITATS_WEB_tcm7-270736.pdf