Fourteenth Meeting of SPA/BD Thematic Focal Points
Portorož, Slovenia, 18-21 June 2019

Agenda item 5: Conservation of Species and Habitats

5.3. Updating of the Action Plan for the Conservation of Marine Vegetation in the Mediterranean Sea and the 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

Report of the Meeting of Experts on the finalization of the Classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean

For environmental and economy reasons, this document is printed in a limited number and will not be distributed at the meeting. Delegates are kindly requested to bring their copies to meetings and not to request additional copies.
Meeting of Experts on the finalization of the Classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean
Rome, Italy, 22-23 January 2019

Agenda item 7: Adoption of the report

Report of the Meeting of Experts on the finalization of the Classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean

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Introduction

1. In accordance with the Decision of the twentieth Ordinary Meeting (Tirana, Albania, 17-20 December 2017), of the Contracting Parties to the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols, the Specially Protected Areas Regional Activity Centre (SPA/RAC) was requested to finalize, in consultation with its focal points, the Classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean, with a view to submitting them to the Contracting Parties at their Twenty-first Ordinary Meeting (Decision IG.23/8).

2. The Meeting of Experts on the finalization of the Classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean was held in Rome, Italy from 22 to 23 January 2019 in the premises of the Italian National Institute for Environmental Protection and Research, ISPRA (Via Brancati, 48 - 00144 Rome, Italy).

Participation

3. All the focal points for SPAs had been invited to attend the meeting or to designate their representatives. The following Contracting Parties were represented at the meeting: Albania, Algeria, Bosnia & Herzegovina, Egypt, France, Israel, Italy, Lebanon, Libya, Malta, Morocco, Montenegro, Slovenia, Spain and Turkey.

4. The following institutions and organisations were represented by observers: European Topic Centre for Biological Diversity (ETC/DB) and OCEANA.

5. SPA/RAC acted as the Secretariat for the meeting.

6. The list of participants is attached as Annex I to the present report.

Agenda item 1 Opening of the meeting

7. The meeting was opened on Tuesday, 22 January 2019, at 9 a.m., by the representatives of the host country, the Coordinating Unit of the UN Environment/Mediterranean Action Plan (UNEP/MAP) and SPA/RAC.

8. Mr Alessandro Bratti, General Director of ISPRA, welcomed the participants. He explained the role that ISPRA is playing in relation to the MSFD but also as regards the EUNIS classification. ISPRA is one of the specialized institutions of the multidisciplinary expert consortium of the European Topic Centre on Biological Diversity in charge of the marine section of EUNIS.
9. Mrs Tatjana Hema, Deputy Coordinator of UNEP/MAP, recalled some of the achievements of the MAP system of the Barcelona Convention, such as the Mediterranean Strategy for Sustainable Development, the Ecosystem Approach with the aim to create “A healthy Mediterranean with marine and coastal ecosystems that are productive and biologically diverse for the benefit of present and future generations”, and thus a “Good Environmental Status in the Mediterranean Sea and Coast”, the Integrated Monitoring and Assessment Programme (IMAP). She commended the support of Italy for hosting this important Expert Meeting and facilitating its organization. The deputy Coordinator acknowledged that the updating of the classification and reference list of marine habitat types is an important step towards supporting the implementation of the IMAP and the Ecosystem Approach as whole.

10. After welcoming the participants, Mrs Maria Carmela Giarratano, General Director of Nature Protection, Italian Ministry of the Environment, Land and Sea, underlined the importance of the meeting as Italy has 29 MPA from which 10 are included in the SPAMI list. She reminded also that Italy will hold the 21th Barcelona CoP meeting in Naples in 2019. She informed the participant that Italy is supporting a Mediterranean project with UNEP/MAP and SPA/RAC for twining between SPAMIs to exchange experience and best practices like the standardised management of the Italian MPA (ISEA). The kick-off meeting of this project will be held in April 2019 in the Torre del Cerrano Italian MPA concerned by this project.

11. Mr Khalil Attia, Director of SPA/RAC, welcomed the participants and thanked the Italian authorities and ISPRA for hosting the meeting and expressed its gratefulness to the MAVA Foundation for Nature, for contributing financially in the organisation of this Meeting, through Med Key Habitats Project. He reminded the context of the meeting, the decision IG 23/8, where the Contracting Parties requested UNEP-MAP-SPA/RAC to finalize, in consultation with focal points, the classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean, with a view to submitting them to the Contracting Parties at their twenty-first meeting. He emphasized that the documents of the meeting were elaborated in a participatory process and that during the meeting will discuss, review, and endorse the classification of benthic marine habitat types and the Reference List of Marine Habitat Types already pre-finalized through the online work and email exchange.

**Agenda item 2 Rules of procedure**

12. The internal rules adopted for meetings and conferences of the Contracting Parties to the Convention for the Protection of the Marine Environment and Coastal Region of the Mediterranean and its Protocols (UNEP/IG.43/6, Appendix XI) were applied mutatis mutandis to this meeting.

**Agenda item 3 Adoption of the agenda and election of officers**

13. The Secretariat introduced the provisional agenda, which had been distributed as document UNEP/MED.457/1, and the annotated version in document UNEP/MED.457/2.

14. After reviewing the two documents, the meeting approved the Agenda and the proposed timetable. The Agenda of the meeting appears as Annex 2 to this report.
15. The Secretariat proposed that the meeting be held in daily sessions from 9:00 to 13:00 and from 14:30 to 18:00, subject to adjustments as necessary.

16. The working languages of the meeting were English and French. Simultaneous interpretation was available for all the plenary sessions.

17. The meeting unanimously elected the following officers:

   Chairperson: Mr Leonardo TUNESI (Italy)
   Vice-Chairpersons: Mr Moustapha FOUDA (Egypt)
                    Mr Samir BEQIRAJ (Albania)
   Rapporteur: Mr Hocein BAZAIRI (Morocco)

**Agenda item 4 Draft Updated Classification of benthic marine habitat types for the Mediterranean region**

18. The Secretariat introduced document UNEP/MED WG.457/3 entitled “Draft Updated Classification of benthic marine habitat types for the Mediterranean region”. The representative of the Secretariat reminded the decision IG.23/8 where the Contracting Parties requested the Specially Protected Areas Regional Activity Centre to finalize, in consultation with focal points, the classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine and Coastal Habitat Types in the Mediterranean, with a view to submitting them to the Contracting Parties at their twenty-first meeting.

19. The representative of the European Topic Centre on Biological Diversity (ETC/BD) made a brief presentation of the EUNIS habitat classification and the revision of its marine section for the levels 1 to 4. He emphasised that the levels 4 to 6 will be developed and aligned with the ones of the regional seas Conventions and in the case of the Mediterranean, the Barcelona Convention lists. He remarked that the final publishing of the updated EUNIS habitat list by EEA is planned by summer 2019.

20. The secretariat gave a brief presentation on the approach used to update the Classification of benthic marine habitat types for the Mediterranean region.

21. The meeting considering the disparity of knowledge between countries in relation to the marine habitats recommended capacity building programme in this regard.

22. Several countries recommended to elaborate an interpretation manual and lexicon for the updated classification list.

23. The meeting agreed on the aggregation approach, proposed amendments to the elements contained in document UNEP/MED WG.457/3 and invited SPA/RAC to submit the revised version (Annex III to this report) to the 14th Meeting of SPA/BD Focal Points and MAP Focal Points meetings and to the 21st Ordinary Meeting of the Contracting Parties, for adoption.
Agenda item 5  Draft Updated Reference List of Marine Habitat Types for the Mediterranean region

24. The Secretariat introduced document UNEP/MED WG.457/4 containing the “Draft Updated Reference List of Marine Habitat Types for the Mediterranean region”. A brief presentation was given on the criteria used to select the draft updated reference list from draft updated classification of benthic marine habitat types for the Mediterranean region.

25. The meeting agreed that for the specific case of habitats characterised by non-indigenous species, it should not be selected for the reference list whatever is its final rating as the purpose of the reference list is conservation.

26. Discussion took place on the criteria used for the selection of reference list as well as on the level of priority for conservation purposes. The meeting noted that the criteria may be revisited in the future.

27. The meeting highlighted also the fact that some habitats could have different values from one sub-region to another.

28. The meeting highlighted the need to better link the classification and reference lists with the regional Action Plans of species and habitats.

29. The meeting considered the alternative classification of the habitats in 4 categories but, due to some possible knowledge gaps and with the view to facilitating conservation actions, it was agreed to apply the two levels classification.

30. Based on the above considerations, the meeting proposed amendments to the elements contained in document UNEP/MED WG.457/4 and invited SPA/RACPA to submit the revised version (Annex IV to this report) to the 14th Meeting of SPA/BD Focal Points and MAP Focal Points meetings and to the 21st Ordinary Meeting of the Contracting Parties, for adoption.

Agenda item 6  Any other matters

31. No other issues were requested to be discussed under this agenda item.

Agenda item 7  Adoption of the meeting report

32. The Meeting reviewed the draft report prepared by the Secretariat, modified it and adopted the present report.

Agenda item 8  Closure of the meeting

33. After the customary exchange of courtesies, the Meeting was closed on Wednesday 23 January 2018, at 17h55.
Annexes

Annex I: List of participants
Annex II: Agenda of the meeting
Annex III: Draft Updated Classification of benthic marine habitat types for the Mediterranean region
Annex IV: Draft Updated Reference List of Marine Habitat Types for the Mediterranean region
Annex I
List of participants
List of participants

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Annex II
Agenda of the meeting
Agenda of the meeting

Agenda item 1. Opening of the Meeting

Agenda item 2. Rules of Procedure

Agenda item 3. Adoption of the agenda and election of officers

Agenda item 4. Draft Updated classification of benthic marine habitat types for the Mediterranean region

Agenda item 5. Draft Updated Reference List of Marine Habitat Types for the Mediterranean region

Agenda item 6. Any other business

Agenda item 7. Adoption of the report

Agenda item 8. Closure of the meeting
Annex III
Draft Updated Classification of benthic marine habitat types for the Mediterranean region
LITTORAL

MA1.5 Littoral rock

MA1.51 Supralittoral rock
- MA1.511 Association with Cyanobacteria and lichens (e.g. *Verrucaria* spp.)
- MA1.512 Association with Ochrophyta
- MA1.513 Facies with Gastropoda (e.g. Littorinidae, Patellidae) and Chthamalidae
- MA1.51a Supralittoral euryhaline and eurythermal pools (enclave of mediolittoral)
- MA1.51b Wracks of dead leaves of macrophytes

MA1.52 Medioliittoral caves
- MA1.521 Association with encrusting Corallinales or other Rodophyta

MA1.53 Upper medioliittoral rock
- MA1.531 Association with encrusting Corallinales creating belts (e.g. *Lithophyllum bissoides*, *Neogoniolithon* spp.)
- MA1.532 Association with Bangiales or other Rodophyta, or Chlorophyta
- MA1.533 Facies with Bivalvia (e.g. *Mytilus* spp.)
- MA1.534 Facies with Gastropoda (e.g. *Patella* spp.) and with Chthamalidae

MA1.54 Lower medioliittoral rock
- MA1.541 Association with encrusting Corallinales creating belts (e.g. *Lithophyllum bissoides*, *Neogoniolithon* spp.)
- MA1.542 Association with Fucales
- MA1.543 Association with algae (algal belts), except Fucales and Corallinales
- MA1.544 Facies with *Pollicipes pollicipes*
- MA1.545 Facies with Vermetidae (*Dendropoma* spp.) (vermetid reefs)
- MA1.546 Facies with Bivalvia (e.g. *Mytilus* spp.)
- MA1.547 Facies with Gastropoda (e.g. *Patella* spp.)
- MA1.54a Medioliittoral euryhaline and eurythermal pools (enclave of infralittoral)

MA2.5 Littoral biogenic habitat

MA2.51 Lower medioliittoral biogenic habitat
- MA2.511 Association with encrusting Corallinales creating platforms
- MA2.512 Facies with *Sabellaria* spp. (reefs of *Sabellaria*)
- MA2.513 Facies with Vermetidae (*Dendropoma* spp.) (vermetid reefs)
- MA2.51a Banks of dead leaves of macrophytes (*banquette*)

MA3.5 Littoral coarse sediment

MA3.51 Supralittoral coarse sediment
MA3.51 Association with macrophytes
MA3.51a Deposit of dead leaves of macrophytes
MA3.51b Beaches with slowly-drying wracks

MA3.52 Mediolittoral coarse sediment
MA3.521 Association with indigenous marine angiosperms
MA3.522 Association with *Halophila stipulacea*
MA3.52a Deposit of dead leaves of macrophytes

MA4.5 Littoral mixed sediment
MA4.51 Supralittoral mixed sediment
MA4.511 Association with macrophytes
MA4.51a Deposit of dead leaves of macrophytes
MA4.51b Beaches with slowly-drying wracks
MA4.52 Mediolittoral mixed sediment
MA4.521 Association with indigenous marine angiosperms
MA4.522 Association with *Halophila stipulacea*
MA4.52a Deposit of dead leaves of macrophytes

MA5.5 Littoral sand
MA5.51 Supralittoral sands
MA5.511 Association with macrophytes
MA5.51a Deposit of dead leaves of macrophytes
MA5.51b Beaches with slowly-drying wracks
MA5.52 Mediolittoral sands
MA5.521 Association with indigenous marine angiosperms
MA5.522 Association with *Halophila stipulacea*
MA5.523 Facies with Polychaeta
MA5.524 Facies with Bivalvia
MA5.52a Deposit of dead leaves of macrophytes

MA6.5 Littoral mud
MA6.51 Supralittoral mud
MA6.511 Association with macrophytes
MA6.51a Beaches with slowly-drying wracks under glassworts
MA6.52 Mediolittoral mud
MA6.52a Habitats of transitional waters (e.g. estuaries and lagoons)
MA6.521a Association with halophytes (*Salicornia* spp.) or marine angiosperms (e.g. *Zostera noltei*, *Ruppia maritima*)

MA6.522a Habitats of salinas

**INFRALITTORAL**

MB1.5 Infra littoral rock

MB1.51 Algal-dominated infra littoral rock

MB1.51a Well illuminated infra littoral rock, exposed

MB1.511a Association with Fucales

MB1.512a Association with photophilic algae, except Fucales, Corallinales and Caulerpales

MB1.513a Association with encrusting Corallinales creating belts (e.g. *Titanoderma trochanter*, *Tenarea tortuosa*)

MB1.514a Association with indigenous Mediterranean *Caulerpa* spp.

MB1.515a Association with non-indigenous Mediterranean *Caulerpa* spp.

MB1.516a Facies with Scleractinia (e.g. *Cladocora caespitosa*)

MB1.517a Facies with Bivalvia (e.g. *Mytilus* spp.)

MB1.518a Facies with Echinoidea on encrusting Corallinales (barren ground)

MB1.51b Moderately illuminated infra littoral rock, exposed

MB1.511b Association with encrusting Corallinales

MB1.512b Association with indigenous Mediterranean *Caulerpa* spp.

MB1.513b Association with non-indigenous Mediterranean *Caulerpa* spp.

MB1.514b Facies with Hydrozoa

MB1.515b Facies with Scleractinia (e.g. *Astroides calycularis*)

MB1.51c Well illuminated infra littoral rock, sheltered

MB1.511c Association with Fucales

MB1.512c Association with photophilic algae, except Fucales, Corallinales and Caulerpales

MB1.513c Association with encrusting Corallinales

MB1.514c Association with indigenous Mediterranean *Caulerpa* spp.

MB1.515c Association with non-indigenous Mediterranean *Caulerpa* spp.

MB1.516c Facies with Scleractinia (e.g. *Cladocora caespitosa*)

MB1.51d Moderately illuminated infra littoral rock, sheltered

MB1.511d Association with encrusting Corallinales
MB1.512d Association with indigenous Mediterranean *Caulerpa* spp.
MB1.513d Association with non-indigenous Mediterranean *Caulerpa* spp.
MB1.514d Facies with Alcyonacea (e.g. *Eunicella* spp.)

**MB1.51e Lower infralittoral rock moderately illuminated**
MB1.511e Association with Fucales
MB1.512e Association with Laminariales (kelp beds)
MB1.513e Association with indigenous Mediterranean *Caulerpa* spp.
MB1.514e Association with non-indigenous Mediterranean *Caulerpa* spp.
MB1.515e Facies with Alcyonacea (e.g. *Eunicella* spp.)
MB1.516e Facies with Scleractinia (e.g. *Cladocora caespitosa*)

**MB1.52 Invertebrate-dominated infralittoral rock**
**MB1.52a Moderately illuminated infralittoral rock, sheltered**
MB1.521a Association with indigenous Mediterranean *Caulerpa* spp.
MB1.522a Association with non-indigenous Mediterranean *Caulerpa* spp.
MB1.523a Facies with small sponges (sponge ground)
MB1.524a Facies with Scleractinia (e.g. *Astroides calycularis*, *Cladocora caespitosa*, *Polycyathus muellerae*, *Pourtalosmilia anthophyllites*)
MB1.525a Facies with Alcyonacea (e.g. *Eunicella* spp., *Paramuricea clavata*, *Corallium rubrum*)

**MB1.53 Infralittoral rock affected by sediments**
MB1.531 Facies with small sponges (sponge ground)
MB1.532 Facies with large and erect sponges (e.g. *Axinella polypoides*, *Axinella cannabina*)
MB1.533 Faciès with Scleractinia (e.g. *Cladocora caespitosa*)
MB1.534 Facies with Alcyonacea (e.g. *Eunicella* spp., *Leptogorgia* spp.)
MB1.535 Facies with Asciidaeae
MB1.536 Facies with Bivalvia (e.g. *Pholas dactylus*)
MB1.537 Facies with endolitic species (e.g. *Lithophaga lithophaga*, *Cliona* spp.)

**MB1.54 Habitats of transitional waters (e.g. estuaries and lagoons)**
MB1.541 Association with marine angiosperms or other halophyta
MB1.542 Association with Fucales

**MB1.55 Coralligenous (enclave of circalitoral, see MC1.51)**

**MB1.56 Semi-dark caves and overhangs (see MC1.53)**
MB2.5 Infralittoral biogenic habitat

MB2.51 Reefs in algal-dominated habitat
    MB2.511 Facies with Vermetidae (*Dendropoma* spp.) (vermetid reefs)

MB2.52 Reefs on fine sand in very shallow waters
    MB2.521 Facies with *Sabellaria* spp. (reefs of *Sabellaria*)

MB2.53 Reefs of *Cladocora caespitosa*

MB2.54 *Posidonia oceanica* meadows
    MB2.541 *Posidonia oceanica* meadow on rock
    MB2.542 *Posidonia oceanica* meadow on matte
    MB2.543 *Posidonia oceanica* meadow on sand, coarse or mixed sediment
    MB2.544 Dead matte of *Posidonia oceanica*
    MB2.545 Natural monuments/Ecomorphoses of *Posidonia oceanica* (fringing reef, barrier reef, atolls)
    MB2.546 Association of *Posidonia oceanica* with *Cymodocea nodosa* or *Caulerpa* spp.
    MB2.547 Association of *Cymodocea nodosa* or *Caulerpa* spp. with dead matte of *Posidonia oceanica*

MB3.5 Infralittoral coarse sediment

MB3.51 Infralittoral coarse sediment mixed by waves
    MB3.511 Association with maërl or rhodolithes (e.g. *Lithothamnion* spp., *Neogoniolithon* spp., *Lithophyllum* spp., *Spongites fruticulosa*)

MB3.52 Infralittoral coarse sediment under the influence of bottom currents
    MB3.521 Association with maërl or rhodolithes (e.g. *Lithothamnion* spp., *Neogoniolithon* spp., *Lithophyllum* spp., *Spongites fruticulosa*)
    MB3.522 Facies with Polychaeta

MB3.53 Infralittoral pebbles
    MB3.531 Facies with *Gouania willdenowi*

MB4.5 Infralittoral mixed sediment

MB5.5 Infralittoral sand

MB5.51 Fine sand in very shallow waters
    MB5.511 Facies with Bivalvia (e.g. *Lentidium Mediterraneanum*)

MB5.52 Well sorted fine sand
    MB5.521 Association with indigenous marine angiosperms
    MB5.522 Association with *Halophila stipulacea*
MB5.523 Association with photophilic algae

MB5.53 Fine sand in sheltered waters

MB5.531 Association with indigenous marine angiosperms
MB5.532 Association with *Halophila stipulacea*
MB5.533 Association with indigenous Mediterranean *Caulerpa* spp.
MB5.534 Association with non-indigenous Mediterranean *Caulerpa* spp.
MB5.535 Association with photophilic algae, except Caulerpales

MB5.536 Facies with Bivalvia
MB5.537 Facies with Polychaeta
MB5.538 Facies with Crustacea Decapoda
MB5.539 Facies of *Tritia neritea* and nematodes (in hydrothermal vents)

MB5.54 Habitats of transitional waters (e.g. estuaries and lagoons)

MB5.541 Association with marine angiosperms or other halophyta
MB5.542 Association with Fucales
MB5.543 Association with photophilic algae, except Fucales
MB5.544 Facies with Polychaeta
MB5.545 Facies with Bivalvia (e.g. *Mytilus* spp.)

MB6.5 Infralittoral mud sediment

MB6.51 Habitats of transitional waters (e.g. estuaries and lagoons)
MB6.511 Association with marine angiosperms or other halophyta

**CIRCALITTORAL**

MC1.5 Circalittoral rock

MC1.51 Coralligenous

MC1.51a Algal-dominated coralligenous

MC1.511a Association with encrusting Corallinales
MC1.512a Association with Fucales or Laminariales
MC1.513a Association with algae, except Fucales, Laminariales, Corallinales and Caulerpales
MC1.514a Association with non-indigenous Mediterranean *Caulerpa* spp.

MC1.51b Invertebrate-dominated coralligenous

MC1.511b Facies with small sponges (sponge ground, e.g. *Ircinia* spp.)
MC1.512b Facies with large and erect sponges (e.g. *Spongia lamella, Sarcotragus foetidus*, *Axinella* spp.)
MC1.513b Facies with Hydrozoa
MC1.514b Facies with Alcyonacea (e.g. *Eunicella* spp., *Leptogorgia* spp., *Paramuricea* spp., *Corallium rubrum*)
MC1.515b Facies with Ceriantharia (e.g. *Cerianthus* spp.)
MC1.516b Facies with Zoantharia (e.g. *Parazoanthus axinellae*, *Savalia savaglia*)
MC1.517b Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Leptopsammia pruvoti*, *Madracis pharensis*)
MC1.518b Facies with Vermetidae and/or Serpulidae
MC1.519b Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)
MC1.51Ab Facies with Ascidiacea
MC1.51c Invertebrate-dominated coralligenous covered by sediment
   See MC1.51b for examples of facies

MC1.52 Shelf edge rock
MC1.52a Coralligenous outcrops
   MC1.521a Facies with small sponges (sponge ground)
   MC1.522a Facies with Hydrozoa
   MC1.523a Facies with Alcyonacea (e.g. *Alcyonium* spp., *Eunicella* spp., *Leptogorgia* spp., *Paramuricea* spp., *Corallium rubrum*)
   MC1.524a Facies with Antipatharia (e.g. *Antipathella subpinnata*)
   MC1.525a Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madracis pharensis*)
   MC1.526a Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)
   MC1.527a Facies with Polychaeta
   MC1.528a Facies with Bivalvia
   MC1.529a Facies with Brachiopoda
MC1.52b Coralligenous outcrops covered by sediment
   See MC1.52a for examples of facies

MC1.52c Deep banks
   MC1.521c Facies with Antipatharia (e.g. *Antipathella subpinnata*)
   MC1.522c Facies with Alcyonacea (e.g. *Nidalia studeri*)
   MC1.523c Facies with Scleractinia (e.g. *Dendrophyllia* spp.)

MC1.53 Semi-dark caves and overhangs
MC1.53a Walls and tunnels
   MC1.531a Facies with sponges (e.g. *Axinella* spp., *Chondrosia reniformis*, *Petrosia ficiformis*)
MC1.532a Facies with Hydrozoa
MC1.533a Facies with Alcyonacea (e.g. *Eunicella* spp., *Paramuricea* spp., *Corallium rubrum*)
MC1.534a Facies with Scleractinia (e.g. *Leptopsammia pruvoiti*, *Phyllangia mouchezi*)
MC1.535a Facies with Zoantharia (e.g. *Parazoanthus axinellae*)
MC1.536a Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)
MC1.537a Facies with Ascidiacea
MC1.53b Ceilings
See MC1.53a for examples of facies
MC1.53c Detritic bottom
See MC3.51 for examples of associations and facies
MC1.53d Brackish water caves or caves subjected to freshwater runoff
MC1.531d Facies with *Lithistida* spp. sponges

MC2.5 Circalittoral biogenic habitat
MC2.51 Coralligenous platforms
MC2.511 Association with encrusting Corallinales
MC2.512 Association with Fucales
MC2.513 Association with non-indigenous Mediterranean *Caulerpa* spp.
MC2.514 Facies with small sponges (sponge ground, e.g. *Ircinia* spp.)
MC2.515 Facies with large and erect sponges (e.g. *Spongia lamella*, *Sarcotragus foetidus*, *Axinella* spp.)
MC2.516 Facies with Hydrozoa
MC2.517 Facies with Alcyonacea (e.g. *Alcyonium* spp., *Eunicella* spp., *Leptogorgia* spp., *Paramuricea* spp., *Corallium rubrum*)
MC2.518 Facies with Zoantharia (e.g. *Parazoanthus axinellae*, *Savalia savaglia*)
MC2.519 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madracis pharensis*, *Phyllangia mouchezi*)
MC2.51A Facies with Vermetidae and/or Serpulidae
MC2.51B Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)
MC2.51C Facies with Ascidiacea

MC3.5 Circalittoral coarse sediment
MC3.51 Coastal detritic bottoms (without rhodoliths)
MC3.511 Association with Laminariales
MC3.512 Facies with large and erect sponges (e.g. *Spongia lamella*, *Sarcotragus foetidus*, *Axinella* spp.)

MC3.513 Facies with Hydrozoa

MC3.514 Facies with Alcyonacea (e.g. *Alcyonium* spp., *Eunicella* spp., *Leptogorgia* spp.)

MC3.515 Facies with Pennatulacea (e.g. *Pennatula* spp., *Virgularia mirabilis*)

MC3.516 Facies with Polychaeta (Salmacina-Filograna complex included)

MC3.517 Facies with Bivalvia (e.g. *Pecten jacobaeus*)

MC3.518 Facies with Bryozoa (e.g. *Tubicellepora incrassata*, *Frondipora verrucosa*, *Pentapora fascialis*)

MC3.519 Facies with Crinoidea (e.g. *Leptometra* spp.)

MC3.51A Facies with Ophiuroidea (e.g. *Ophiura* spp., *Ophiothrix* spp.)

MC3.51B Facies with Echinoidea (e.g. *Neolampas* spp., *Spatangus purpureus*)

MC3.51C Facies with Asciidiacea

MC3.52 Coastal detritic bottoms with rhodoliths

MC3.521 Association with maërl (e.g. *Lithothamnion* spp., *Neogoniolithon* spp., *Lithophyllum* spp., *Spongites fruticulosa*)

MC3.522 Association with *Peyssonnelia* spp.

MC3.523 Association with Laminarias

MC3.524 Facies with large and erect sponges (e.g. *Spongia lamella*, *Sarcotragus foetidus*, *Axinella* spp.)

MC3.525 Facies with Hydrozoa

MC3.526 Facies with Alcyonacea (e.g. *Alcyonium* spp., *Paralcyonium spinulosum*)

MC3.527 Facies with Pennatulacea (e.g. *Veretillum cynomorium*)

MC3.528 Facies with Zoantharia (e.g. *Epizoanthus* spp.)

MC3.529 Facies with Asciidiacea

MC4.5 Circalittoral mixed sediment

MC4.51 Muddy detritic bottoms

MC4.511 Facies with Hydrozoa (e.g. *Lytocarpia myriophyllum*, *Nemertesia* spp.)

MC4.512 Facies with Alcyonacea (e.g. *Alcyonium* spp., *Spinimuricea* spp.)

MC4.513 Facies with Pennatulacea (e.g. *Veretillum cynomorium*)

MC4.514 Facies with Polychaeta

MC4.515 Facies with Ophiuroidea (e.g. *Ophiothrix* spp.)

MC4.516 Facies with Asciidiacea
MC5.5 Circalittoral sand

MC6.5 Circalittoral mud sediment

MC6.51 Coastal terrigenous muds

MC6.511 Facies with Alcyonacea (e.g. *Alcyonium* spp.) and Holothuroidea (e.g. *Parastichopus* spp.)

MC6.512 Facies with Pennatulacea (e.g. *Pennatula* spp., *Virgularia mirabilis*)

MC6.513 Facies with Gastropoda (e.g. *Turritella* spp.)

**OFFSHORE CIRCALITTORAL**

MD1.5 Offshore circalittoral rock

MD1.51 Offshore circalittoral rock invertebrate-dominated

MD1.511 Facies with small sponges (sponge ground, e.g. *Halicona* spp., *Phakellia* spp., *Poecillastra* spp.)

MD1.512 Facies with large and erect sponges (e.g. *Spongia lamella*, *Axinella* spp.)

MD1.513 Facies with Alcyonacea (e.g. *Alcyonium* spp., *Callogorgia verticillata*, *Ellisella paraplexauroides*, *Eunicella* spp., *Leptogorgia* spp., *Paramuricea* spp., *Swiftia pallida*, *Corallium rubrum*)

MD1.514 Facies with Antipatharia (e.g. *Antipathella subpinnata*)

MD1.515 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madracis pharensis*)

MD1.516 Facies with Ceriantharia (e.g. *Cerianthus* spp.)

MD1.517 Facies with Zoantharia (e.g. *Savalia savaglia*)

MD1.518 Facies with Polychaeta

MD1.519 Facies with Bivalvia

MD1.51A Facies with Brachiopoda

MD1.51B Facies with Bryozoa (e.g. *Myriapora truncata*, *Pentapora fascialis*)

MD1.52 Offshore circalittoral rock invertebrate-dominated covered by sediments

See MD1.51 for examples of facies

MD1.53 Deep offshore circalittoral banks

MD1.531 Facies with Antipatharia (e.g. *Antipathella subpinnata*)

MD1.532 Facies with Alcyonacea (e.g. *Nidalia* spp.)

MD1.533 Facies with Scleractinia (yellow corals forest, e.g. *Dendrophyllia* spp.)

MD2.5 Offshore circalittoral biogenic habitat

MD2.51 Offshore reefs

MD2.511 Facies with Vermetidae and/or Serpulidae
MD2.52 Thanatocoenosis of corals, or Brachiopoda, or Bivalvia (e.g. Modiolus modiolus)

See MD1.51 for examples of facies

MD3.5 Offshore circalittoral coarse sediment

MD3.51 Offshore circalittoral detritic bottoms

MD3.511 Facies with Bivalvia (e.g. Neopycnodonte spp.)
ME2.512 Facies with Brachiopoda
MD3.513 Facies with Polychaeta
MD3.514 Facies with Crinoidea (e.g. Leptometra spp.)
MD3.515 Facies with Ophiuroidea
MD3.516 Facies with Echinoidea

MD4.5 Offshore circalittoral mixed sediment

MD4.51 Offshore circalittoral detritic bottoms

See MD3.51 for examples of facies

MD5.5 Offshore circalittoral sand

MD5.51 Offshore circalittoral sand

See MD3.51 for examples of facies

MD6.5 Offshore circalittoral mud

MD6.51 Offshore terrigenous sticky muds

MD6.511 Facies with Pennatulacea (e.g. Pennatula spp., Virgularia mirabilis)
MD6.512 Facies with Polychaeta
MD6.513 Facies with Bivalvia (e.g. Neopycnodonte spp.)
MD6.514 Facies with Brachiopoda
MD6.515 Facies with Ceriantharia (e.g. Cerianthus spp., Arachnanthus spp.)

UPPER BATHYAL

ME1.5 Upper bathyal rock

ME1.51 Upper bathyal rock invertebrate-dominated

ME1.511 Facies with small sponges (sponge ground; e.g. Farrea bowerbanki, Halcona spp., Podospongia loveni, Tretodictyum spp.)
ME1.512 Facies with large and erect sponges (e.g. Spongia lamella, Axinella spp.)
ME1.513 Facies with Antipatharia (e.g. Antipathes spp., Leiopathes glaberrima, Parantipathes larix)
ME1.514 Facies with Alcyonacea (e.g. Acanthogorgia spp., Callogorgia verticillata, Placogorgia spp., Swiftia pallida, Corallium rubrum)
ME1.515 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*, *Lophelia pertusa*, *Madracis pharensis*)

ME1.516 Facies with Cirripeda (e.g. *Megabalanus* spp., *Pachylasma giganteum*)

ME1.517 Facies with Crinoidea (e.g. *Leptometra* spp.)

ME1.518 Facies with Bivalvia (e.g. *Neopycnodonte* spp.)

ME1.519 Facies with Brachiopoda

ME1.52 Caves and ducts in total darkness

ME2.5 Upper bathyal biogenic habitat

ME2.51 Upper bathyal reefs

ME2.511 Facies with small sponges (sponge ground)

ME2.512 Facies with large and erect sponges (e.g. *Leiodermatium* spp.)

ME2.513 Facies with Scleractinia (e.g. *Madrepora oculata*, *Desmophyllum cristagalli*)

ME2.514 Facies with Bivalvia (e.g. *Neopycnodonte* spp.)

ME2.515 Facies with Serpulidae reefs (e.g. *Serpula vermicularis*)

ME2.516 Facies with Brachiopoda

ME2.52 Thanatocoenosis of corals, or Brachiopoda, or Bivalvia, or sponges

See ME1.51 for examples of facies

ME3.5 Upper bathyal coarse sediment

ME3.51 Upper bathyal coarse sediment

ME3.511 Facies with Alcyonacea (e.g. *Alcyonium* spp., *Chironephthya mediterranea*, *Paralcyonium spinulosum*, *Paramuricea* spp., *Villogorgia bebricoides*)

ME4.5 Upper bathyal mixed sediment

ME4.51 Upper bathyal mixed sediment

ME4.511 Facies with Bivalvia (e.g. *Neopycnodonte* spp.)

ME4.512 Facies with Brachiopoda

ME5.5 Upper bathyal sand

ME5.51 Upper bathyal detritic sand

ME5.511 Facies with small sponges (sponge ground, e.g. *Rhizaxinella* spp.)

ME5.512 Facies with Pennatulacea (e.g. *Pennatula* spp., *Pteroeides griseum*)

ME5.513 Facies with Crinoidea (e.g. *Leptometra* spp.)

ME5.514 Facies with Echinoidea

ME5.515 Facies with Bivalvia (e.g. *Neopycnodonte* spp.)

ME5.516 Facies with Brachiopoda
ME5.517 Facies with Bryozoa
ME5.518 Facies with Scleractinia (e.g. *Caryophyllia cyathus*)

ME6.5 Upper bathyal muds

ME6.51 Upper bathyal muds

ME6.511 Facies with small sponges (sponge ground, e.g. *Pheronema* spp., *Thenea* spp.)
ME6.512 Facies with Pennatulacea (e.g. *Pennatula* spp., *Funiculina quadrangularis*)
ME6.513 Facies with Alcyonacea (e.g. *Isidella* elongata)
ME6.514 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*)
ME6.515 Facies with Crustacea Decapoda (e.g. *Aristeus antennatus*, *Nephrops norvegicus*)
ME6.516 Facies with Crinoidea (e.g. *Leptometra* spp.)
ME6.517 Facies with Echinoidea (e.g. *Brissopsis* spp.)
ME6.518 Facies with Bivalvia (e.g. *Neopycnodonte* spp.)
ME6.519 Facies with Brachiopoda
ME6.51A Facies with Ceriantharia (e.g. *Cerianthus* spp., *Arachnanthus* spp.)
ME6.51B Facies with Bryozoa (e.g. *Candidae* spp., *Kinetoskias* spp.)
ME6.51C Facies with giant Foraminifera (e.g. *Astrorhizida*)

**LOWER BATHYAL**

MF1.5 Lower bathyal rock

MF1.51 Lower bathyal rock

MF1.511 Facies with small sponges (e.g. *Stylocordyla* spp.)
MF1.512 Facies with Alcyonacea (e.g. *Dendrobrachia* spp.)
MF1.513 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*, *Lophelia pertusa*)
MF1.514 Facies with chemiosynthetic benthic species (e.g. *Siboglinidae*, *Lucinoma* spp.)

MF2.5 Lower bathyal biogenic habitat

MF2.51 Lower bathyal reefs

MF2.511 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*, *Lophelia pertusa*)

MF2.52 Thanatocoenosis of corals, or Brachiopoda, or Bivalvia, or sponges
See MF1.51 for examples of facies

MF6.5 Lower bathyal muds

MF6.51 Sandy muds

MF6.511 Facies with small sponges (e.g. *Thenea* spp.)
MF6.512 Facies with Alcyonacea (e.g. *Isidella elongata*)
MF6.513 Facies with Echinoidea (e.g. *Brisopsis* spp.)
MF6.514 Facies with Pennatulacea (e.g. *Pennatula* spp., *Funiculina quadrangularis*)
MF6.515 Facies with bioturbations

**ABYSSAL**

MG1.5 Abyssal rock

MG1.51 Abyssal rock

MG1.511 Facies with small sponges
MG1.512 Facies with Alcyonacea
MG1.513 Facies with Polychaeta
MG1.514 Facies with Crustacea (Amphipoda, Isopoda, Tanaidacea)

MG6.5 Abyssal muds

MG6.51 Abyssal muds

MG6.511 Facies with small sponges
MG6.512 Facies with Alcyonacea (e.g. *Isidella elongata*)
MG6.513 Facies with Polychaeta
MG6.514 Facies with Crustacea (Amphipoda, Isopoda, Tanaidacea)
MG6.515 Facies with bioturbations
There are some geomorphologic / hydrologic features not included in the above list because their presence is independent from the depth zone and the substrate type, but they must also be considered due to the role they play in the Mediterranean ecosystem. They can hold a “complex of habitats” and geoforms that cannot be treated in isolation, and therefore, they do not fit inside other categories. Among them:

- Hydrothermal vents
- Cold seeps (sulfide, methane – e.g. pockmarks, mud volcanoes)
- Brine pools
- Freshwater resurgences
- Seamounts (including banks, hills, etc.)
- Submarine canyons
- Escarpments
- Boulders fields

1 Action Plan for the conservation of habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena in the Mediterranean Sea (Dark Habitats Action Plan)
Annex IV
Draft Updated Reference List of Marine Habitat Types for the Mediterranean region
**LITTORAL**

**MA1.5 Littoral rock**

**MA1.51 Supralittoral rock**
- **MA1.51a Supralittoral euryhaline and eurythermal pools (enclave of mediolittoral)**
- **MA1.51b Wracks of dead leaves of macrophytes**

**MA1.52 Mediolittoral caves**

**MA1.53 Upper mediolittoral rock**
- **MA1.531 Association with encrusting Corallinales creating belts (e.g. *Lithophyllum bissoides*, *Neogoniolithon* spp.)**

**MA1.54 Lower mediolittoral rock**
- **MA1.541 Association with encrusting Corallinales creating belts (e.g. *Lithophyllum bissoides*, *Neogoniolithon* spp.)**
- **MA1.542 Association with Fucales**
- **MA1.544 Facies with *Pollicipes pollicipes***
- **MA1.545 Facies with Vermetidae (*Dendropoma* spp.) (vermetid reefs)**
- **MA1.54a Mediolittoral euryhaline and eurythermal pools (enclave of infralittoral)**

**MA2.5 Littoral biogenic habitat**

**MA2.51 Lower mediolittoral biogenic habitat**
- **MA2.511 Association with encrusting Corallinales creating platforms**
- **MA2.512 Facies with *Sabellaria* spp. (reefs of *Sabellaria*)**
- **MA2.513 Facies with Vermetidae (*Dendropoma* spp.) (vermetid reefs)**
- **MA2.51a Banks of dead leaves of macrophytes (banquette)**

**MA3.5 Littoral coarse sediment**

**MA3.51 Supralittoral coarse sediment**
- **MA3.511 Association with macrophytes**
- **MA3.51a Deposit of dead leaves of macrophytes**

**MA3.52 Mediolittoral coarse sediment**
- **MA3.521 Association with indigenous marine angiosperms**
- **MA3.52a Deposit of dead leaves of macrophytes**

**MA4.5 Littoral mixed sediment**

**MA4.51 Supralittoral mixed sediment**
- **MA4.511 Association with macrophytes**
- **MA4.51a Deposit of dead leaves of macrophytes**

**MA4.52 Mediolittoral mixed sediment**
MA4.521 Association with indigenous marine angiosperms
MA4.52a Deposit of dead leaves of macrophytes

MA5.5 Littoral sand
MA5.51 Supralittoral sands
MA5.511 Association with macrophytes
MA5.51a Deposit of dead leaves of macrophytes
MA5.52 Mediolittoral sands
MA5.521 Association with indigenous marine angiosperms
MA5.52a Deposit of dead leaves of macrophytes

MA6.5 Littoral mud
MA6.51 Supralittoral mud
MA6.511 Association with macrophytes
MA6.52 Mediolittoral mud
MA6.52a Habitats of transitional waters (e.g. estuaries and lagoons)
MA6.521a Association with halophytes (Salicornia spp.) or marine angiosperms (e.g. Zostera noltei, Ruppia maritima)

INFRALITTORAL

MB1.5 Infralittoral rock
MB1.51 Algal-dominated infralittoral rock
MB1.51a Well illuminated infralittoral rock, exposed
MB1.511a Association with Fucales
MB1.513a Association with encrusting Corallinales creating belts (e.g. Titanoderma trochanter, Tenarea tortuosa)
MB1.514a Association with indigenous Mediterranean Caulerpa spp.
MB1.516a Facies with Scleractinia (e.g. Cladocora caespitosa)
MB1.51b Moderately illuminated infralittoral rock, exposed
MB1.512b Association with indigenous Mediterranean Caulerpa spp.
MB1.515b Facies with Scleractinia (e.g. Astroides calycularis)
MB1.51c Well illuminated infralittoral rock, sheltered
MB1.511c Association with Fucales
MB1.514c Association with indigenous Mediterranean Caulerpa spp.
MB1.516c Facies with Scleractinia (e.g. Cladocora caespitosa)
MB1.51d Moderately illuminated infralittoral rock, sheltered
MB1.512d Association with indigenous Mediterranean Caulerpa spp.
MB1.514d Facies with Alcyonacea (e.g. Eunicella spp.)

MB1.51e Lower infralittoral rock moderately illuminated
MB1.511e Association with Fucales
MB1.512e Association with Laminariales (kelp beds)
MB1.513e Association with indigenous Mediterranean Caulerpa spp.
MB1.515e Facies with Alcyonacea (e.g. Eunicella spp.)
MB1.516e Facies with Scleractinia (e.g. Cladocora caespitosa)

MB1.52 Invertebrate-dominated infralittoral rock
MB1.52a Moderately illuminated infralittoral rock, sheltered
MB1.521a Association with indigenous Mediterranean Caulerpa spp.
MB1.524a Facies with Scleractinia (e.g. Astroides calycularis, Cladocora caespitosa, Polycyathus muellerae, Pourtalosmilia anthophyllites)
MB1.525a Facies with Alcyonacea (e.g. Eunicella spp., Paramuricea clavata, Corallium rubrum)

MB1.53 Infra-littoral rock affected by sediments
MB1.532 Facies with large and erect sponges (e.g. Axinella polypoides, Axinella cannabina)
MB1.533 Facies with Scleractinia (e.g. Cladocora caespitosa)
MB1.534 Facies with Alcyonacea (e.g. Eunicella spp., Leptogorgia spp.)
MB1.537 Facies with endolitic species (e.g. Lithophaga lithophaga, Cliona spp.)

MB1.54 Habitats of transitional waters (e.g. estuaries and lagoons)
MB1.541 Association with marine angiosperms or other halophyta
MB1.542 Association with Fucales

MB1.55 Coralligenous (enclave of circalitoral, see MC1.51)
MB1.56 Semi-dark caves and overhangs (see MC1.53)

MB2.5 Infra-littoral biogenic habitat
MB2.51 Reefs in algal-dominated habitat
MB2.511 Facies with Vermetidae (Dendropoma spp.) (vermetid reefs)
MB2.52 Reefs on fine sand in very shallow waters
MB2.521 Facies with Sabellaria spp. (reefs of Sabellaria)

MB2.53 Reefs of Cladocora caespitosa
MB2.54 Posidonia oceanica meadows
MB2.541 Posidonia oceanica meadow on rock
MB2.542 *Posidonia oceanica* meadow on matte
MB2.543 *Posidonia oceanica* meadow on sand, coarse or mixed sediment
MB2.545 Natural monuments/Ecomorphoses of *Posidonia oceanica* (fringing reef, barrier reef, atolls)
MB2.546 Association of *Posidonia oceanica* with *Cymodocea nodosa* or *Caulerpa* spp.
MB2.547 Association of *Cymodocea nodosa* or *Caulerpa* spp. with dead matte of *Posidonia oceanica*

MB3.5 Infra littoral coarse sediment
MB3.51 Infra littoral coarse sediment mixed by waves
MB3.511 Association with maërl or rhodolithes (e.g. *Lithothamnion* spp., *Neogoniolithon* spp., *Lithophyllum* spp., *Spongites fruticulosa*)
MB3.52 Infra littoral coarse sediment under the influence of bottom currents
MB3.521 Association with maërl or rhodolithes (e.g. *Lithothamnion* spp., *Neogoniolithon* spp., *Lithophyllum* spp., *Spongites fruticulosa*)

MB5.5 Infra littoral sand
MB5.52 Well sorted fine sand
MB5.521 Association with indigenous marine angiosperms
MB5.53 Fine sand in sheltered waters
MB5.531 Association with indigenous marine angiosperms
MB5.533 Association with indigenous Mediterranean *Caulerpa* spp.
MB5.539 Facies of *Tritia neritea* and nematodes (in hydrothermal vents)
MB5.54 Habitats of transitional waters (e.g. estuaries and lagoons)
MB5.541 Association with marine angiosperms or other halophyta
MB5.542 Association with Fucales

MB6.5 Infra littoral mud sediment
MB6.51 Habitats of transitional waters (e.g. estuaries and lagoons)
MB6.511 Association with marine angiosperms or other halophyta

**CIRCALITTORAL**
MC1.5 Circalittoral rock
MC1.51 Coralligenous
MC1.51a Algal-dominated coralligenous
MC1.512a Association with Fucales or Laminariales
MC1.51b Invertebrate-dominated coralligenous

MC1.512b Facies with large and erect sponges (e.g. *Spongia lamella*, *Sarcotragus foetidus*, *Axinella* spp.)

MC1.514b Facies with *Alysonacea* (e.g. *Eunicella* spp., *Leptogorgia* spp., *Paramuricea* spp., *Corallium rubrum*)

MC1.516b Facies with the Zoantharia *Savalia savaglia*

MC1.517b Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Leptopsammia pruvoti*, *Madracis pharensis*)

MC1.518b Facies with Vermetidae and/or Serpulidae

MC1.519b Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)

MC1.51c Invertebrate-dominated coralligenous covered by sediment

See MC1.51b for examples of reference facies

MC1.52 Shelf edge rock

MC1.52a Coralligenous outcrops

MC1.523a Facies with *Alysonacea* (e.g. *Aleyonium* spp., *Eunicella* spp., *Leptogorgia* spp., *Paramuricea* spp., *Corallium rubrum*)

MC1.524a Facies with Antipatharia (e.g. *Antipathella subpinnata*)

MC1.525a Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madracis pharensis*)

MC1.526a Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)

MC1.52b Coralligenous outcrops covered by sediment

See MC1.52a for examples of reference facies

MC1.52c Deep banks

MC1.521c Facies with Antipatharia (e.g. *Antipathella subpinnata*)

MC1.522c Facies with *Alysonacea* (e.g. *Nidalia studeri*)

MC1.523c Facies with Scleractinia (e.g. *Dendrophyllia* spp.)

MC1.53 Semi-dark caves and overhangs

MC1.53a Walls and tunnels

MC1.531a Facies with sponges (e.g. *Axinella* spp., *Chondrosia reniformis*, *Petrosia ficiformis*)

MC1.533a Facies with *Alysonacea* (e.g. *Eunicella* spp., *Paramuricea* spp., *Corallium rubrum*)

MC1.534a Facies with Scleractinia (e.g. *Leptopsammia pruvoti*, *Phyllangia mouchezii*)

MC1.536a Facies with Bryozoa (e.g. *Reteporella grimaldii*, *Pentapora fascialis*)
MC1.53b Ceilings
See MC1.53a for examples of reference facies

MC1.53c Detritic bottom
See MC3.51 for examples of reference associations and facies

MC1.53d Brackish water caves or caves subjected to freshwater runoff
MC1.531d Facies with Lithistida spp. sponges

MC2.5 Circalittoral biogenic habitat

MC2.51 Coralligenous platforms
MC2.512 Association with Fucales
MC2.515 Facies with large and erect sponges (e.g. Spongia lamella, Sarcotragus foetidus, Axinella spp.)
MC2.517 Facies with Alcyonacea (e.g. Alcyonium spp., Eunicella spp., Leptogorgia spp., Paramuricea spp., Corallium rubrum)
MC2.518 Facies with the Zoantharia Savalia savaglia
MC2.519 Facies with Scleractinia (e.g. Dendrophyllia spp., Madracis pharensis, Phyllangia mouchezi)
MC2.51A Facies with Vermetidae and/or Serpulidae
MC2.51B Facies with Bryozoa (e.g. Reteporella grimaldii, Pentapora fascialis)

MC3.5 Circalittoral coarse sediment

MC3.51 Coastal detritic bottoms (without rhodoliths)
MC3.511 Association with Laminariales
MC3.512 Facies with large and erect sponges (e.g. Spongia lamella, Sarcotragus foetidus, Axinella spp.)
MC3.514 Facies with Alcyonacea (e.g. Alcyonium spp., Eunicella spp., Leptogorgia spp.)
MC3.515 Facies with Pennatulacea (e.g. Pennatula spp., Virgularia mirabilis)
MC3.518 Facies with Bryozoa (e.g. Turbicellepora incrassata, Frondipora verrucosa, Pentapora fascialis)
MC3.519 Facies with Crinoidea (e.g. Leptometra spp.)

MC3.52 Coastal detritic bottoms with rhodoliths
MC3.521 Association with maërl (e.g. Lithothamnion spp., Neogoniolithon spp., Lithophyllum spp., Spongites fruticulosa)
MC3.522 Association with Peyssonnelia spp.
MC3.523 Association with Laminariales
MC3.524 Facies with large and erect sponges (e.g. Spongia lamella, Sarcotragus foetidus, Axinella spp.)
MC3.526 Facies with Alcyonacea (e.g. Alcyonium spp., Paralcyonium spinulosum)
MC3.527 Facies with Pennatulacea (e.g. Veretillum cynomorium)

MC4.5 Circalittoral mixed sediment
  MC4.51 Muddy detritic bottoms
    MC4.512 Facies with Alcyonacea (e.g. Alcyonium spp., Spinimuricea spp.)
    MC4.513 Facies with Pennatulacea (e.g. Veretillum cynomorium)

MC6.5 Circalittoral mud sediment
  MC6.51 Coastal terrigenous muds
    MC6.511 Facies with Alcyonacea (e.g. Alcyonium spp.) and Holothuroidea (e.g. Parastichopus spp.)
    MC6.512 Facies with Pennatulacea (e.g. Pennatula spp., Virgularia mirabilis)

OFFSHORE CIRCALITTORAL

MD1.5 Offshore circalittoral rock
  MD1.51 Offshore circalittoral rock invertebrate-dominated
    MD1.512 Facies with large and erect sponges (e.g. Spongia lamella, Axinella spp.)
    MD1.513 Facies with Alcyonacea (e.g. Alcyonium spp., Callogorgia verticillata, Ellisella paraplexaroides, Eunicella spp., Leptogorgia spp., Paramuricea spp., Swiftia pallida, Corallium rubrum)
    MD1.514 Facies with Antipatharia (e.g. Antipathella subpinnata)
    MD1.515 Facies with Scleractinia (e.g. Dendrophyllia spp., Madracis pharensis)
    MD1.517 Facies with the Zoantharia Savalia savaglia
    MD1.51B Facies with Bryozoa (e.g. Myriapora truncata, Pentapora fascialis)
  MD1.52 Offshore circalittoral rock invertebrate-dominated covered by sediments
    See MD1.51 for examples of reference facies

MD1.53 Deep offshore circalittoral banks
  MD1.531 Facies with Antipatharia (e.g. Antipathella subpinnata)
  MD1.532 Facies with Alcyonacea (e.g. Nidalia spp.)
  MD1.533 Facies with Scleractinia (e.g. Dendrophyllia spp.)

MD2.5 Offshore circalittoral biogenic habitat
  MD2.51 Offshore reefs
    MD2.511 Facies with Vermetidae and/or Serpulidae
MD2.52 Thanatocoenosis of corals, or Brachiopoda, or Bivalvia (e.g. *Modiolus modiolus*)
See MD1.51 for examples of reference facies

MD3.5 Offshore circalittoral coarse sediment
MD3.51 Offshore circalittoral detritic bottoms
MD3.511 Facies with the Bivalvia *Neopycnodonte* spp.
MD3.514 Facies with Crinoidea (e.g. *Leptometra* spp.)

MD4.5 Offshore circalittoral mixed sediment
MD4.51 Offshore circalittoral detritic bottoms
See MD3.51 for examples of reference facies

MD5.5 Offshore circalittoral sand
MD5.51 Offshore circalittoral sand
See MD3.51 for examples of reference facies

MD6.5 Offshore circalittoral mud
MD6.51 Offshore terrigenous sticky muds
MD6.511 Facies with Pennatulacea (e.g. *Pennatula* spp., *Virgularia mirabilis*)
MD6.513 Facies with the Bivalvia *Neopycnodonte* spp.

**UPPER BATHYAL**

ME1.5 Upper bathyal rock
ME1.51 Upper bathyal rock invertebrate-dominated
ME1.512 Facies with large and erect sponges (e.g. *Spongia lamella*, *Axinella* spp.)
ME1.513 Facies with Antipatharia (e.g. *Antipathes* spp., *Leiopathes glaberrima*, *Parantipathes larix*)
ME1.514 Facies with Alcyonacea (e.g. *Acanthogorgia* spp., *Callogorgia verticillata*, *Placogorgia* spp., *Swiftia pallida*, *Corallium rubrum*)
ME1.515 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*, *Lophelia pertusa*, *Madracis pharensis*)
ME1.516 Facies with Cirripeda (e.g. *Megabalanus* spp., *Pachyasma giganteum*)
ME1.517 Facies with Crinoidea (e.g. *Leptometra* spp.)
ME1.518 Facies with the Bivalvia *Neopycnodonte* spp.

ME1.52 Caves and ducts in total darkness

ME2.5 Upper bathyal biogenic habitat
ME2.51 Upper bathyal reefs
ME2.512 Facies with large and erect sponges (e.g. *Leiodermatium* spp.)
ME2.513 Facies with Scleractinia (e.g. Madrepora oculata, Desmophyllum cristagalli)
ME2.514 Facies with the Bivalvia Neopycnodonte spp.
ME2.515 Facies with Serpulidae reefs (e.g. Serpula vermicularis)
ME2.52 Thanatocoenosis of corals, or Brachiopoda, or Bivalvia, or sponges
See ME1.51 for examples of reference facies

ME3.5 Upper bathyal coarse sediment
ME3.51 Upper bathyal coarse sediment
ME3.511 Facies with Alcyonacea (e.g. Alcyonium spp., Chironephthya mediterranea, Paralcyonium spinulosum, Paramuricea spp., Villogorgia bebrycoides)

ME4.5 Upper bathyal mixed sediment
ME4.51 Upper bathyal mixed sediment
ME4.511 Facies with the Bivalvia Neopycnodonte spp.

ME5.5 Upper bathyal sand
ME5.51 Upper bathyal detritic sand
ME5.512 Facies with Pennatulacea (e.g. Pennatula spp., Pteroeides griseum)
ME5.513 Facies with Crinoidea (e.g. Leptometra spp.)
ME5.515 Facies with the Bivalvia Neopycnodonte spp.
ME5.517 Facies with Bryozoa
ME5.518 Facies with Scleractinia (e.g. Caryophyllia cyathus)

ME6.5 Upper bathyal muds
ME6.51 Upper bathyal muds
ME6.512 Facies with Pennatulacea (e.g. Pennatula spp., Funiculina quadrangularis)
ME6.513 Facies with Alcyonacea (e.g. Isidella elongata)
ME6.514 Facies with Scleractinia (e.g. Dendrophyllia spp., Madrepora oculata, Desmophyllum cristagalli)
ME6.516 Facies with Crinoidea (e.g. Leptometra spp.)
ME6.518 Facies with the Bivalvia Neopycnodonte spp.
ME6.51B Facies with Bryozoa (e.g. Candidae spp., Kinetoskias spp.)
ME6.51C Facies with giant Foraminifera (e.g. Astrorhizida)

LOWER BATHYAL

MF1.5 Lower bathyal rock
MF1.51 Lower bathyal rock
MF1.512 Facies with Alcyonacea (e.g. *Dendrobrachia* spp.)
MF1.513 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*, *Lophelia pertusa*)
MF1.514 Facies with chemiosynthetic benthic species (e.g. Siboglinidae, *Lucinoma* spp.)

MF2.5 Lower bathyal biogenic habitat
   MF2.51 Lower bathyal reefs
      MF2.511 Facies with Scleractinia (e.g. *Dendrophyllia* spp., *Madrepora oculata*, *Desmophyllum cristagalli*, *Lophelia pertusa*)
      MF2.52 Thanatocoenosis of corals, or Brachiopoda, or Bivalvia, or sponges
         See MF1.51 for examples of reference facies

MF6.5 Lower bathyal muds
   MF6.51 Sandy muds
      MF6.512 Facies with Alcyonacea (e.g. *Isidella elongata*)
      MF6.514 Facies with Pennatulacea (e.g. *Pennatula* spp., *Funiculina quadrangularis*)

**ABYSSAL**

MG1.5 Abyssal rock
   MG1.51 Abyssal rock
      MG1.512 Facies with Alcyonacea

MG6.5 Abyssal mud
   MG6.51 Abyssal mud
      MG6.512 Facies with Alcyonacea (e.g. *Isidella elongata*)
There are some geomorphologic / hydrologic features not included in the above list because their presence is independent from the depth zone and the substrate type, but they must also be considered due to the role they play in the Mediterranean ecosystem\(^2\). They can hold a “complex of habitats” and geoforms that cannot be treated isolated, and therefore, they do not fit inside other categories. Among them:

- Hydrothermal vents
- Cold seeps (sulfide, methane – e.g. pockmarks, mud volcanoes)
- Brine pools
- Freshwater resurgences
- Seamounts (including banks, hills, etc.)
- Submarine canyons
- Escarpments
- Boulders fields

\(^2\) Action Plan for the conservation of habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena in the Mediterranean Sea (Dark Habitats Action Plan)