

# List of the benthic biocenoses in the Mediterranean Sea

Updated by Christian C. EMIG - April, 28 2008 from the cited references

## SUPRALITTORAL

### MUDS

**Biocenosis of beaches with slow-drying wracks under glassworts**

### SANDS

**Biocenosis of supralittoral sands**

Facies of sands without vegetation, with scattered debris

Facies of depressions with residual humidity

Facies of quickly-drying wracks

Facies of the trunks which have been washed ashore

Facies of phanerogams which have been washed ashore (upper part)

### STONES and GRAVELS

**Biocenosis of slow-drying wrack**

### HARD SUBSTRATES and ROCKS

**Biocenosis of supralittoral rock**

Association with *Entophysalis deusta* and *Verrucaria amphibia*

Pools with variable salinity (mediolittoral enclave)

## MEDIOLITTORAL

### MUDS, SANDY MUDS and SANDS

**Biocenosis of muddy sands and muds**

Association with halophytes

Facies of saltworks

### SANDS

**Biocenosis of mediolittoral sands**

Facies with *Ophelia bicornis*

### STONE and GRAVELS

**Biocenosis of mediolittoral coarse detritic bottoms**

Facies of banks of dead leaves of *Posidonia oceanica* and other phanerogams

### HARD SUBSTRATES and ROCKS

**Biocenosis of the upper mediolittoral rock**

Association with *Bangia atropurpurea*

Association with *Porphyra leucosticta*

Association with *Nemalion helminthoif* and *Rissoella verruculosa*

Association with *Lithophyllum papillosum* and *Polysiphonia* spp

**Biocenosis of the lower mediolittoral rock**

Association with *Lithophyllum lichenoides* (= Cornice of *L. tortuosum*)

Association with *Lithophyllum byssoides*

Association with *Tenarea undulosa*

Association with *Ceramium ciliatum* and *Corallina elongata*

Facies with *Pollicipes cornucopiae*

Association with *Enteromorpha compressa*

Association with *Fucus virsoides*

*Neogoniolithon brassica-florida* concretion

Association with *Gelidium* spp

Pools and lagoons sometimes associated with vermetids (infralittoral enclave)

**Mediolittoral caves**

Association with *Phymatolithon lenormandii* and *Hildenbrandia rubra*



SANDY MUDS, SANDS, GRAVELS and ROCKS in EURYHALINE and EURYTHERMAL ENVIRONMENT

#### **Euryhaline and eurythermal biocenosis (BEE)**

- Association with *Ruppia cirrhosa* and/or *Ruppia maritima*
- Facies with *Ficopomatus enigmaticus*
- Association with *Potamogeton pectinatus*
- Association with *Zostera noltii* in euryhaline and eurythermal environment
- Association with *Zostera marina* in euryhaline and eurythermal environment
- Association with *Gracilaria* spp
- Association with *Chaetomorpha linum* and *Valonia aegagropila*
- Association with *Halopithys incurva*
- Association with *Ulva laetevirens* and *Enteromorpha linza*
- Association with *Cystoseira barbata*
- Association with *Lamprothamnium papulosum*
- Association with *Cladophora echinus* and *Rytiphloea tinctoria*

FINE SANDS MORE or LESS MUDDY

#### **Biocenosis of fine sands in shallow waters (SFHN)**

- Facies with *Lentidium mediterraneum*

#### **Biocenosis of well-sorted fine sands (SFBC)**

- Association with *Cymodocea nodosa* on well sorted fine sands
- Association with *Halophila stipulacea*

#### **Biocenosis of superficial muddy sands in sheltered waters (SVMC)**

- Facies with *Callianassa tyrrhena* and *Kellia corbuloides*
- Facies with freshwater resurgences with *Cerastoderma glaucum*, *Cyathura carinata*
- Facies with *Loripes lacteus* and *Tapes* spp
- Association with *Cymodocea nodosa* on superficial muddy sands in sheltered waters
- Association with *Zostera noltii* on superficial muddy sands in sheltered waters
- Association with *Caulerpa prolifera* on superficial muddy sands in sheltered waters
- Facies of hydrothermal oozes with *Cyclope neritea* and nematodes

COARSE SANDS MORE or LESS MUDDY

#### **Biocenosis of coarse sands and fine gravels mixed by waves**

- Association with rhodolithes

#### **Biocenosis of coarse sands and fine gravels under bottom currents (SGCF) (also found in the Circalittoral)**

- Maërl facies (= Association with *Lithothamnion corallioides* and *Phymatolithon calcareum*) (can also be found as facies of the biocenosis of coastal detritic)
- Association with rhodolithes

STONES and GRAVELS

#### **Biocenosis of infralittoral pebbles**

- Facies with *Gouania wildenowi*

#### **Biocenosis of *Posidonia oceanica* meadow (HP) (= Association with *Posidonia oceanica*)**

- Ecomorphosis of stripped meadows
- Ecomorphosis of « barrier reef » meadows
- Facies of dead « mattes » of *Posidonia oceanica*
- Association with *Caulerpa prolifera*

HARD SUBSTRATES and ROCKS

#### **Biocenosis of infralittoral algae (AP)**

- Overgrazed facies with encrusting algae and sea urchins
- Association with *Cystoseira amentacea* (var. *amentacea*, var. *stricta*, var. *spicata*)
- Facies with vermetids
- Facies with *Mytilus galloprovincialis*
- Association with *Corallina elongata* and *Herposiphonia secunda*
- Association with *Corallina officinalis*
- Association with *Codium vermilare* and *Rhodymenia ardissoni*
- Association with *Dasycladus vermicularis*
- Association with *Alsidium helminthochorton*
- Association with *Cystoseira tamariscifolia* and *Saccorhiza polyschides*
- Association with *Gelidium spinosum hystrix*
- Association with *Lobophora variegata*
- Association with *Ceramium rubrum*
- Facies with *Cladocora caespitosa*
- Association with *Cystoseira brachycarpa*
- Association with *Cystoseira crinita*

- Association with *Cystoseira crinitophylla*
- Association with *Cystoseira sauvageauana*
- Association with *Cystoseira spinosa*
- Association with *Sargassum vulgare*
- Association with *Dictyopteris polypodioides*
- Association with *Calpomenia sinuosa*
- Association with *Stypocaulon scoparium* (= *Halopteris scoparia*)
- Association with *Trichosolen myura* and *Liagora farinosa*
- Association with *Cystoseira compressa*
- Association with *Pterocladia capillacea* and *Ulva laetevirens*
- Facies with large hydrozoans
- Association with *Pterothamnion crispum* and *Compsothamnion thuyoides*
- Association with *Schottera nicaeensis*
- Association with *Rhodymenia ardissoni* and *Rhodophyllis divaricata*
- Facies with *Astroides calycularis*
- Association with *Flabellia petiolata* and *Peyssonnelia squamaria*
- Association with *Halymenia floresia* and *Halarachnion ligulatum*
- Association with *Peyssonnelia rubra* and *Peyssonnelia* spp
- Facies and association of the coralligenous biocenosis (in enclave)

## CIRCALITTORAL



### MUDS

#### Biocenosis of coastal terrigenous muds (VTC)

- Facies of soft muds with *Turritella tricarinata communis*
- Facies of sticky muds with *Virgularia mirabilis* and *Pennatula phosphorea*
- Facies of sticky muds with *Alcyonium palmatum* and *Stichopus regalis*

### SANDS

#### Biocenosis of the muddy detritic bottom (DE)

- Facies with *Ophiotrix quinquemaculata*

#### Biocenosis the coastal detritic bottom (DC)

- Association with rhodolithes
- Maerl facies (*Lithothamnion corallioides* and *Phymatholithon calcareum*)
- Association with *Peyssonnelia rosa-marina*
- Association with *Arthrocladia villosa*
- Association with *Osmundaria volubilis*
- Association with *Kallymenia patens*
- Association with *Laminaria rodriguezii* on detritic
- Facies with *Ophiura texturata*
- Facies with Synascidies
- Facies with large bryozoans

**Biocenosis of coarse sands and fine gravels under the influence of bottom currents (SGCF) (can be found in the Infralittoral)**

### HARD SUBSTRATES and ROCKS

#### Coralligenous biocenosis (C)

- Association with *Cystoseira zosteroides*
- Association with *Cystoseira usneoides*
- Association with *Cystoseira dubia*
- Association with *Cystoseira corniculata*
- Association with *Sargassum* spp
- Association with *Mesophyllum lichenoides*
- Association with *Lithophyllum frondosum* and *Halimeda tuna*
- Association with *Laminaria ochroleuca*
- Association with *Rodriguezella strafforelli*
- Facies with *Eunicella cavolinii*
- Facies with *Eunicella singularis*
- Facies with *Lophogorgia sarmentosa*
- Facies with *Paramuricea clavata*
- Facies with *Parazoanthus axinellae*
- Facies with *Parazoanthus axinellae*

#### Semi-dark caves (also in enclave in the Infralittoral)

- Facies with *Corallium rubrum*
- Facies with *Leptosammia pruvoti*

## BATHYAL



### MUDS

**Biocenosis of muds of bathyal superior (VBS) (*hypothetic*)**

**Biocenosis of (bathyal) deep-sea muds (VP)**

Facies of sandy muds with *Thenia muricata*

Facies of fluid muds with *Brissopsis lyrifera*

Facies soft muds with *Funiculina quadrangularis* and *Apporhais seressianus*

Facies of compact muds with *Isidella elongata*

Facies with *Pheronema grayi*

### SANDS

**Biocenosis of shelf-edge detritic bottom (DL)**

**Biocenosis of bathyal detritic sands (SDB)**

Facies of *Neolampas rostellata*

### HARD SUBSTRATES and ROCKS

**Biocenosis of offshore rocks (RL)**

**Biocenosis of deep-sea (white) corals (CB)**

Facies of *Errina aspera* and *Pachylasma giganteum*

**Community of deep-sea cold-vent (hydrothermal vent)**

## ABYSSAL



### MUDS

**Biocenosis of the abyssal fango (VA)**