Nomination
Cymodocea meadows

Cymodocea beds, Cymodocea meadows, Seagrass beds (Cymodocea nodosa Ucria (Ascherson), 1869

EUNIS Code: A5.531, A5.5312, A5.53131 and A5.53132

Definition for Habitat Mapping
Cymodocea nodosa Ucria (Ascherson), 1869

Cymodocea nodosa forms large and dense patches with green leaves that can reach 100 cm long and 8 mm wide in well sorted fine sands or on superficial muddy sands in sheltered waters at depths of 1-30 meters. Frequently is mixed with other habitat forming phanerogams (*Zostera noltii* and *Zostera marina*) at muddy sands rich in organic nutrients. Shallow meadows of *Cymodocea* and *Zostera* are usually found in sheltered bays close to harbours, e.g. Cadiz Bay, or in areas subject to human impact.

C. nodosa has a tropical origin, nowadays restricted to the Mediterranean and scattered locations in the North Atlantic from southern Portugal and Spain to Senegal, including Canary Island and Madeira. Southern Portugal constitutes the current northern geographic limit of its distribution.

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Current status

Geographical extent

- OSPAR Regions: IV
- Biogeographic zones: South European Atlantic shelf (IXa ICES Area); Benthic and neritic of the shelf and upper continental shelf (<1000 m depth) (from Dinter, 2001)
- Region & Biogeographic zones specified for decline and/or threat: as above

Application of the Texel-Faial criteria

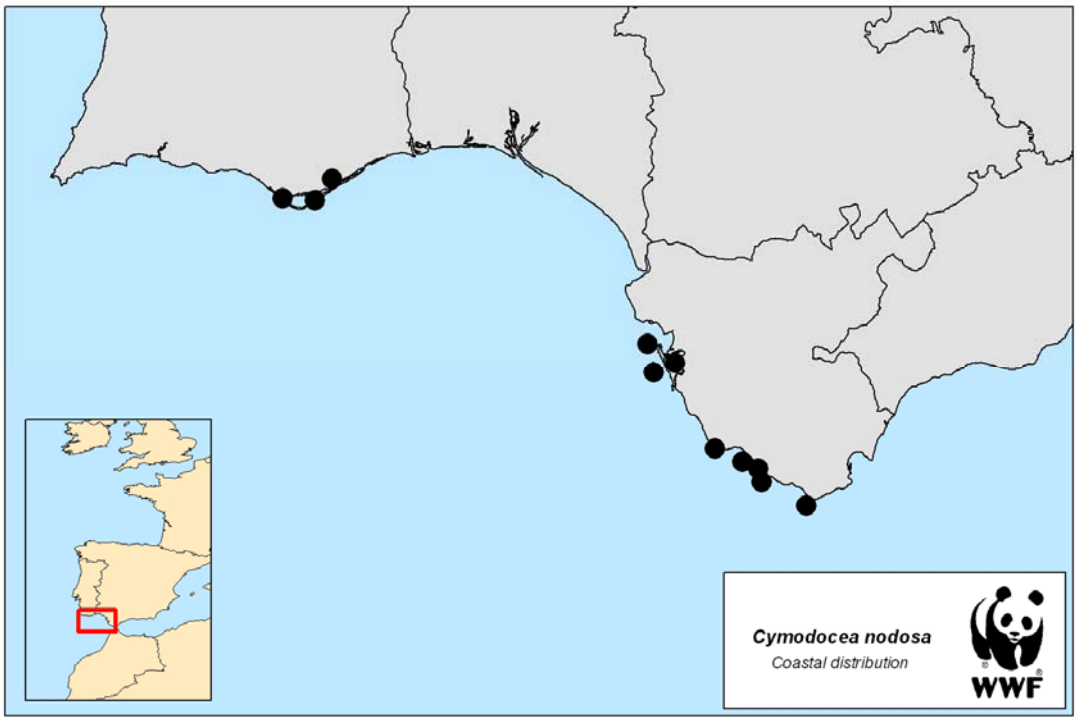
Global importance
No

Regional importance

Yes. The distribution range of the Atlantic population fall entirely on Region IV, limited to Portugal and Spain

Decline
Significantly declined.
It has been reported the decrease of *Cymodocea* at the Strait of Gibraltar during 30 years (Luque and Templado, 2004) as a result of industrial and coastal destruction that have increased turbidity to the system for a long-term period that estimated the decline by between 15% and 80% of its former natural distribution at the Gulf of Cadiz. There is a severe reduction in effective population size caused by habitat fragmentation and isolation. The absence of reproductive success of Ria Formosa Natural Park (Portugal) and its low genetic variability led to affect to the habitat quality. In other areas the decline is not well documented due to the lack of previous mapping studies.

After *Cymodocea* regression, it is replaced by invasive and opportunistic *Caulerpa prolifera,* that reduces significantly the associated fauna and produces great densities of the polychaete worm *Capitella capitata*.



Sensitivity

Sensitive
Cymodocean meadows are much influenced by physical stress caused by hydrodynamic forces. Mayor disturbances such as dredging or water pollution cause extensive damage. Apparently healthy *Cymodocea nodosa* beds are know to exist in areas subject to low-level contamination using this bed as water-quality bio-indicators (Schneider *et al*. 2002). Since sexual reproduction is not successful, disturbed areas will only recover by horizontal vegetative propagation from residual meadows (Alberto *et al.* 2001). It has a low resistance to turbidity that would reduce light penetration and prevent adequate photosynthesis. It has to be permanently submerged.

The habitat is rare, as there are only a limited number of locations where it occurs, based on Red List of Spanish Vascular Flora (evaluation according to IUCN categories)

Ecological significance

Seagrass meadows constitute a complex ecosystem, which play a pivotal role in the coastal benthos. They strongly influence the local environment by amplifying the primary substrate, supplying nutrients to the seafloor and by providing a spatially diverse habitat structure and resources for rich algal and animal communities. Also contributes to global marine productivity. Where the habitat is well-developed algae, actinians, ascidians and hydroids as *Aglaophenia harpago* or *Plumularia obliqua*, might colonize the leaves. The main taxonomic groups of macrofauna associated with the seagrass are generally similar to species occurring in shallow areas in a variety of substrata (e.g. amphipods, polychaeta, worms, bivalves and echinoderms). The mollusks gastropods are the most abundant within the community (Cancemi *et al.* 2002). The shelter provided by seagrass beds makes them an important nursery area for cuttlefish (*Sepia officinalis*) or the common octopus (*Octopus vulgaris*) an fishes as the gilthead seabream (*Sparus aurata*) or the stripped red mullet (*Mullus surmuletus*).

Relevant additional considerations

Sufficiency of data

There are many studies on seagrass beds and mainly general mapping of their extent and of the associated communities has been carried out in particular locations. Despite this, there is still a poor spatial analysis of the habitat.

Changes in relation to natural variability

The extent of seagrass beds may change as a result of natural factors such as severe storms, exposure to air and freshwater pulses. Warm sea temperatures coupled with low level of sunlight may cause significant stress and mortality of seagrass.

ICES Evaluation

ICES (BDC 07/3/6) advised on including the Cymodocea meadows on the OSPAR List. It was considered that there was good evidence of decline for this species on the edge of its distribution range. The interaction of *Cymodocea* beds with the spreading *Caulerpa prolifera* green algae would deserve further investigation. The evidence of threat from a variety of human activities (particularly from construction and associated changes in local water flow/chemistry was considered reasonable for inclusion on the list.

Threat and link to human activities

A number of the threats to *Cymodocea* beds are directly linked to human activities. There are extraction of sediments, dumping of solid waste and dredged spoils, constructions, land-based activities, placement of submarine cables and pipelines, anchoring and mobile fishing gears or fish cage farms. In Cadiz Bay, *Cymodocea* meadows are suffering from different impacts, including construction works, eutrophication, dredging and increased water turbidity due to shell-fishing. Another potential threat to *Cymodocea* beds comes from the spreading of *Caulerpa prolifera*, however the ecological links are not yet established (Hernandez in ICES review of habitat).

Management considerations

Due to genetic isolation in some areas all plans and management affecting the seagrass habitat should consider *C. nodosa* dynamics in a metapopulation perspective (i.e. the seagrass patch extinction and recolonization) with selected patches preserved to allow vegetative recolonization in disturbed areas. Management could also include the establishment of protected areas, restoration and the control of substratum removal or physical damage to the habitat. Research actions might be implemented. Promoting awareness of the importance of seagrass beds could assist in minimizing anchor damage. Protected areas could be designated under the proposed OSPAR MPA network although the EU Habitats Directive and the Bern Convention cover seagrass.

Further information

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Useful References

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