Trawling impacts on Mediterranean seagrass

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Photography by Gérard Pergent
THERE IS GROWING CONCERN about the worldwide decline of seagrass meadows. The amplitude of the decline varies depending on the species, the area and the human pressure. In the Mediterranean Sea, loss of seagrass meadows is mainly due to coastal development, trawling (fishing with trawl gear), pollution, anchoring, competition with invasive species and sea level rise.

Trawling in the Mediterranean is probably the most severe and worrying current cause of loss of the seagrass *Posidonia oceanica*. In theory, trawling is prohibited between 0 and 50-100 metres depth and/or within the ca. 5,600 m coastal strip in almost all Mediterranean countries. However, this legislation is rarely enforced.

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slow growing:

*Posidonia oceanica* is a large, long-living but very slow growing seagrass. Its shoots, which are able to live for at least 30 years, are produced at a slow rate from rhizomes which grow horizontally by only 1-2 cm each year. Over short periods the rhizome forms mats which rise up in Molluscs that help to trap sediment and mediate the motion of waves, thus stabilizing the water and protecting beaches from erosion. *Posidonia oceanica* is an important habitat for many species and provides habitat for many species, nursery grounds for the juvenile of many commercially important fishes and marine mammals. *Posidonia oceanica* also grazed by the Green Sea Turtle (*Chelonia mydas*).

The damage caused by trawling is linked to the lead weights fixed to the lower part of the net's opening, which keep it in contact with the seabed, and to the heavy 'otter boards' fixed to the net, in a way that widens the opening of the trawl. Trawling opens up furrows in the P. oceanica meadow, up to 100,000 to 364,000 shoots per hour, severely reduces the seagrass cover and induces resuspension of the sediment. In addition, trawling constitutes a vector of dissemination of invasive species (e.g., Caulerpa taxifolia and C. cylindracea).

Otter trawling has also resulted in major changes in the structure of demersal communities with differences in fish assemblages inhabiting healthy and disturbed Posidonia meadows.

**The mechanical impact of otter doors causes continuous furrows in seagrass meadows, where 93% of Posidonia shoots in the healthiest meadows are uprooted.**

The effects of trawling on the megabenthos in Posidonia meadows has resulted in the reduction or elimination of species typical of hard bottoms and their replacement by ubiquitous species and others typical of sandy/muddy bottoms, as a result of the sediments being enriched with finer particles.
Trawling has caused marked reductions of some Posidonia oceanica meadows: 12% of the surface area in northeastern Costa Brava, Spain; almost 50% in the region of Alicante, Spain; at least 80% in the Gulf of Gabès, Tunisia; and trawling is the main cause of deep meadow losses along the Lattium coast, Italy.

Recovery of seagrass meadows may occur after trawling is banned, but the very low growth rate of Posidonia oceanica rhizomes (a few centimetres per year) results in a recuperation time in the order of at least one century.

To ensure seagrasses continue to thrive in the Mediterranean coastal waters, they must be protected from bottom trawling and fishing pressure reduced as much as possible; current regulations banning trawling on Posidonia meadows in most Mediterranean coastal areas need to be enforced and greater areas of seagrasses included in marine protected areas totally closed to fishing. Campaigns to raise awareness together with effective monitoring and surveillance may be an effective way forward.