REGRESSION OF A TYRRHENIAN *Posidonia oceanica* PRAIRIE EXPOSED TO NEARSHORE TRAWLING

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RESUME - *Au cours d'une série d'observations conduites dans la Mer Tyrrhénienne, pour évaluer les effets de la pêche au chalut pratiquée illégalement à l'intérieur des trois milles de la côte, a été étudié l'état d'un herbier de Posidonia, soumis a cétte activité. Les résultats ont montré une situation d'altération grave, avec régression de la limite inférieure et réduction de la densité jusqu'à moins de 50 faisceaux/m^2 pour une grande partie de la zone observée.*

The problem of the regression of the *Posidonia oceanica* beds has been studied by numerous authors in various areas of the Mediterranean Sea (Molinier and Piccard, 1952; Augier and Boudouresque, 1970; Ghirardelli, Giaccone and Orel, 1974; Cooper, 1976; etc.).

In the Tyrrhenian Sea, the natural regression of the Posidonia, a phenomenon common to other areas of the Mediterranean, is further aggravated by the mechanical action of nearshore bottom trawling which in recent years has been practiced illegally with ever increasing intensity (Ardizzone and Migliuolo, 1981).

Trawling within 3 milles or in water depths of less than 50 meters is prohibited by the Italian law (n°963 of 1965, art.111). However the frequent presence of valuable commercial species in these waters and the fuel savings obtained by nearshore fishing have progressively induced the trawlers to move in closer and closer to the coast. At moment valuable commercial species are only caught rarely and the catch is composed, for the most part, of Octopoda. Nevertheless this catch joined to the sensible fuel savings still renders the activity economically rewarding. Linked to these trawling operations is the evident damage caused by ripping large quantities of Posidonia leaves from the bottom.

Observations were carried out in the Gulf of Gaeta (1980-82) on an area where trawlers are known to operate, in order to assess the effects of trawling on the Posidonia.

The distribution and density of the prairie were determined by SCUBA diving inspection. The density evaluation was based on the number of shoots per square meter (Giraud, 1977). Documentation on the past extent of the Posidonia beds was obtained from charts prepared by the Merchant Marine Ministry (Fusco, 1961).

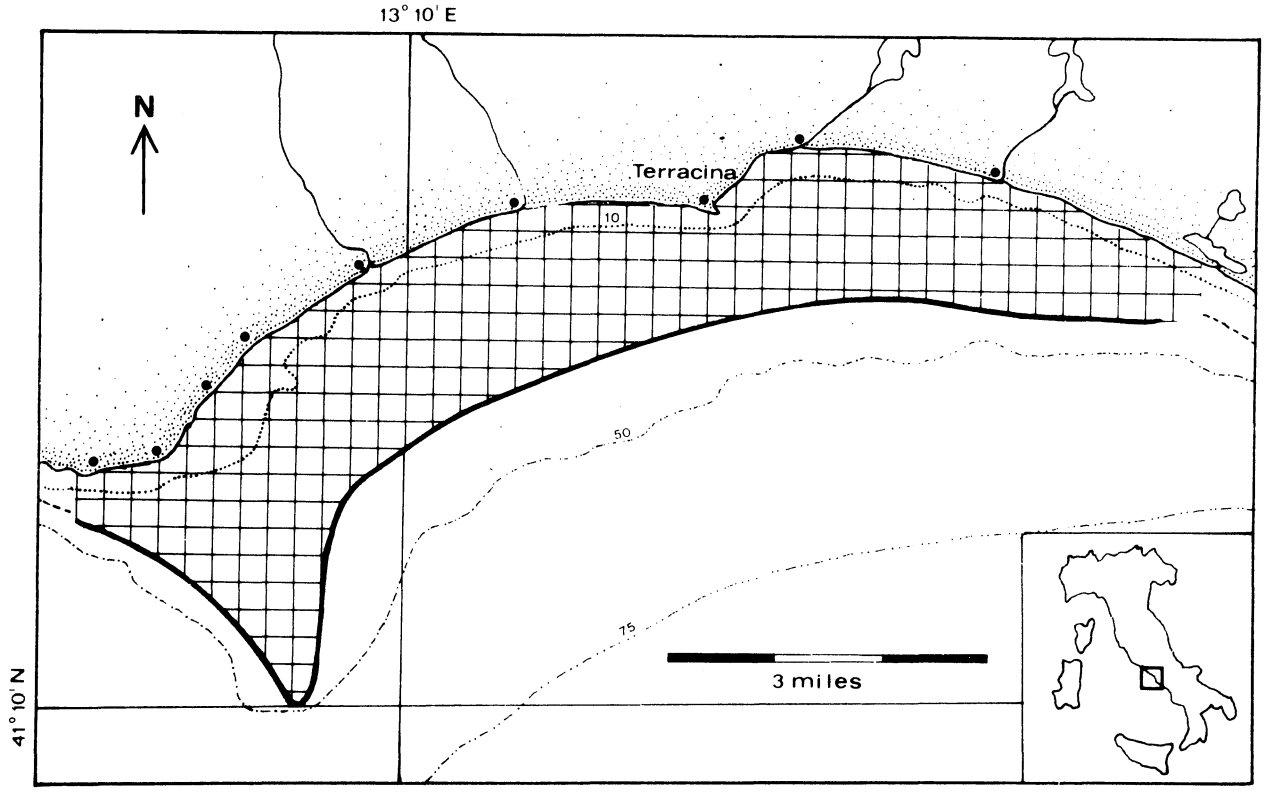
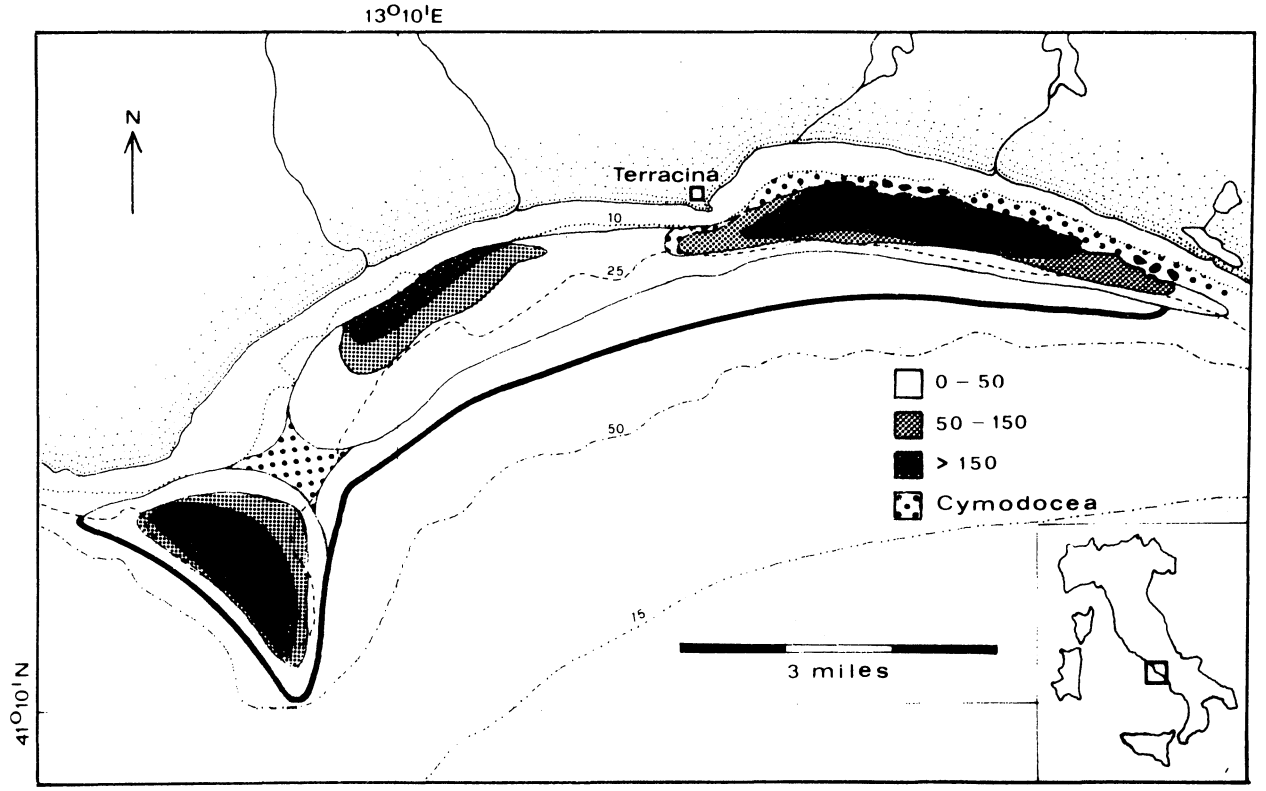


Fig.1: Sampling sub-areas for the survey of Posidonia beds, with the lower limit according to Fusco (1961). (above)
Actual density evaluation of the prairie (number of shoots per square meter). (below)



The present survey shows that a large part of the prairie has been reduced to a density of less than 50 shoots/m^2 (actually with densities of this order, one can not rightfully speak of a prairie, but rather of isolated plants). This condition, according to Giraud (1977), is the last stage of regression preceding a total disappearance of the species.

Only in a few zones a density between 50 to 300 shoots/m^2 has been observed (stage IV and V). Isolated points had densities between 300 and 400 shoots/m^2 (stage III). Densities superior to the latter were completely lacking. The inferior limit of the Posidonia beds, although difficult to clearly define due to the extremely low density of shoots (often less than 1 shoot/m^2), has greatly receded with respect to previous records (Fig.1).

No flowering has been observed in the area.

Large areas of dead mats are present and often colonized by *Cymodocea nodosa*.

The general situation is therefore one of a prairie in serious decline and the continuous mechanical damage brought on by trawling only worsens the situation.

Any serious intervention must be, above all, aimed at halting nearshore trawling. Experience has, over the years, demonstrated the ineffectiveness of the present laws and surveillance systems. The only solution (already experimented in adjacent areas) is to sink artificial obstacles capable of mechanically interfering with the trawling operations. In such a protected zone it would be possible to populate the damaged areas by re-planting Posidonia, a practice which has already been experimented successfully (Cooper 1976; Giaccone 1980).

In conclusion, the risk of seeing in a few years all the Posidonia along the coast of Central Italy disappear, considering the increasing and widespread practice of nearshore trawling, is not at all remote as it has already occurred in the Gulf of Trieste (Ghirardelli, Giaccone and Orel, 1974).

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