B-I10

The Regression of *Posidonia oceanica* Meadows in El Campello (Spain)

J.-L. SANCHEZ LIZASO , J.-E. GUILLEN NIETO and A.-A. RAMOS ESPLA'

Institut d'Ecologia Litoral, Ctra. Benimagrell s/n. 03560 El Campello. Alicante (Espana)

B

ABSTRACT
    The regression of *Posidonia oceanica* meadows has been studied along a 7 km coastal sector on the El Campello littoral. Changes of shallow *Posidonia* beds in the last 30 years are described. Deep *Posidonia* meadow is badly damaged due to illegal trawling. The first symptoms of trawling are detected at 13 m depth. But the deeper we go, the more degraded the meadow gets, reaching densities under 1 sh/m^2. Dead *Posidonia* is seen even suggest at 29 m depth. In order to protect the deep meadow, we suggest as a feasible solution the installation of artificial reefs.

INTRODUCTION
    Posidonia oceanica meadow regression has been studied by a great number of scientists (see PERES, 1984). Studies on the effects of illegal trawling in *Posidonia* beds have been carried out in the Tyrrhenian Sea (ARDIZZONE & MIGLIUOLO, 1982; ARDIZZONE & PELUSI, 1983, 1984).
    If we concentrate on Spain's situation, we can state that trawling has been forbidden since 1962 at less than 50 m for the whole year (*Orden de 7 de julio de 1962, Reglamento de la pesca de arrastre a remolque. B.O.E. N° 16*). In summer trawling is even forbidden at less than 130m depth (*Orden de 30 de julio de 1975 sobre pesca de arrastre en el Mediterraneo. B.O.E. N° 193*). However, trawling ships often work on *P. oceanica* meadow at less depth.

MATERIAL AND WORKING METHODOLOGY
    This piece of research was conducted on a 7 km coastal sector at El Campello (Alicante, SE of Spain). In order to complete this study we carried out nine perpendicular transects to the coastline from the upper level of the *P. oceanica* meadows to a depth of 29m and, in addition, several precise dives. The obtained points were positioned by means of a sextant and enfilades to the coast (RAMOS, 1984). The reconstruction of the *Posidonia*'s upper level was made with the aid of aerial photographs taken in the years 1956, 1978 and 1987.

RESULTS
    Two little breakwaters have been built in the area of research, between 1956 and 1987. If we compare the aerial photographs, we can clearly see that shallow *Posidonia* meadows have moved back. The greatest regression appears in the north of Cala Baeza and La Coveta, between 1978 and 1987. At the same period the little port of Cala Baeza was filled up, and now boats cannot tie up in this port.
    Deep *Posidonia oceanica* meadow is destroyed due to illegal otter trawling. The depth at which the first symptoms appear increases gradually from north to south. In the northern part of the studied area, which is off Carritxal beach, the first degradation symptoms were observed at 13 m depth; in the intermediate sector, at Cala Baeza, they appear at either 15 or 16 m; finally, in the southern part, Barranc d'Aigues-Morro Blanc, at 17 m depth. At this depth 0.5 m wide channels parallel to the coast line are detected as well as pulled up rhizomes on account of the mechanical effect of trawl boards.
    As we go deeper, channels become more frequent and wider; there seem to be more pulled up rhizomes and the proportion of dead matte increases. *Posidonia* meadow density decreases quickly until it reaches values under 1 sh/m^2. From 22 m depth, the sea bottom presents a desolating sight; there are very few *Posidonia* spots and a great mass of dead matte frequently covered with light layers of sediments. *Posidonia oceanica* remains have been detected at 25 m depth at Carritxal and even at 29 m depth between Barranc d'Aigues and Morro Blanc.

CONCLUSIONS
    Regression in a shallow *Posidonia oceanica* meadow due to coastal line modifications is seen. More serious seems to be the regression due to illegal trawling.
    It is believed that along 7 km of coast, 290 Has of *Posidonia* meadow have been destroyed due to otter trawling. Unfortunately all the province of Alicante seems to be threatened by the same devastating problem.
    Moreover several unpublished issues point out that the *Posidonia* meadow at Tabarca's island, La Vila Joiosa and El Campello is largely altered or destroyed at a depth which may fluctuate between 13 and 24 m. Likewise, according to some fishermen, the same thing is happening at other ports in the province of Alicante.
    Vigilance committees have clearly proved to be inadequate and insufficient in the battle against illegal trawling and its ravaging effect on *Posidonia oceanica*. In our view, the only feasible solution to this problem is to install artificial antitrawling reefs, like those installed in Tabarca's Marine Reserve (Ramos et al., in press).

REFERENCES

ARDIZZONE, G.D. & MIGLIUOLO, A. 1982. Modificazioni di una prateria di *Posidonia oceanica* (L.) Delile del Medio Tirreno sottoposta ad attività di pesca a strascico. Atti XIII Congr. Soc. Ital. Biol. Mar., Cefalù, It. su Nat. sicil., S.IV, VI (Suppl.): 509-515.

ARDIZZONE, G.D. & PELUSI, P. 1983. Fish population exposed to coastal bottom trawling along a Tyrrhenian Sea. Rapp. Commis. internation. Explor. sci. Mer Médit., Monaco: 107-110.

ARDIZZONE, G.D. & PELUSI, P. 1984. Yield and damage of bottom trawling on *Posidonia* meadows. International Workshop on *Posidonia oceanica* beds. Boudouresque C.F., Jeudy de Grissac A. & Olivier, J. (edict.) G.I.S. Posidonie publ. 1 Fr: 63-72.

PERES, J.M. 1984. La regression des herbiers a *Posidonia oceanica*. International Workshop on *Posidonia oceanica* beds. Boudouresque, C.F.; Jeudy de Grissac, A. & Olivier, J. (edict.) G.I.S. Posidonie publ. 1 Fr: 445-454.

RAMOS A.A. 1984. Cartografia de la pradera superficial de *Posidonia oceanica* en la bahia de Alicante (SE, Espana). Internationa Workshop on *Posidonia oceanica* beds. Boudouresque, Ch. F.; Jeudy de Grissac, A. & Olivier, J. (edict.) G.I.S. Posidonie publ. 1 Fr: 57-61.

RAMOS *et al.* (in press).