

# Preliminary results of fouling investigations carried out at a depth of 200 m in the Ligurian Sea

by

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## Résumé

On a étudié la fixation des salissures biologiques sur des panneaux immergés en pleine mer au large de Cap Mesco (mer Ligurienne orientale) à 200 m de profondeur. Les données préliminaires sont examinées et comparées avec celles des salissures côtières.

## Summary

Biofouling on panels immersed at 200 m depth off Mesco Point (Eastern Ligurian Sea) is preliminarily described and compared with inshore fouling.

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## Introduction

Published data on fouling in the Mediterranean [DE PALMA, 1963; BELLAN-SANTINI *et coll.*, 1970; LE CAMPION ALSUMARD, 1970; JONES & LE CAMPION ALSUMARD, 1970; ZIBROWIUS, 1971, BELLAN, 1973] found at depths greater than 50 m, are rather limited in that they are industrial or military secrets.

Aware of the increasing importance of off-shore research, and that at depths greater than normal port waters, the Laboratorio per la Corrosione Marina dei Metalli agreed to collaborate in international cooperative investigations promoted by C.O.I.P.M. in which it has played a part for several years [WODON, 1972].

The hoped for collaboration from the Italian Navy (who have at their disposal buoys anchored at depths greater than 100 m in the Ligurian Sea, also) being less than desired, it was necessary to study and experiment a system of immersion that would be both sure, and economic at the same time.

The data furnished here, form part of this preliminary research, the scope of which was primarily that of prove the experimental equipment and the mode of immersion and recovery, and secondly that of gathering initial data on the alteration of several materials and on fouling settlement : on this occasion only preliminary data on the fouling of asbestos and p.v.c. panels are presented.

## Method

On the 10.7.1973 two metal panel-holding racks were immersed roughly at 200 m depth about four miles off Punta del Mesco (Mesco Point) (Lat. 44°6'30" Long. 9°33') separated by about 280 m of cable.

*Rapp. Comm. int. Mer Médit.*, **23**, 2, pp. 105-107 (1975).

Each structure had a system of buoyancy and anchorage regulated in such a manner that the panels were at not less than 150 cm from the muddy bottom. The presence of a large rudder and of appropriate joints allowed the structure always to be orientated in the direction of the prevailing current.

Recovery was made after one year (i.e. 24.7.1974), by dredging perpendicularly in the direction of the cable between the two racks. The position of the stations was established by alignment with landmarks, no surface signals having been laid.

### Fouling

Despite the fact that the greater part of the material has yet to be classified into species, one can put forward several observations concerning the systematic groups present, and several particulars on fouling.

FUNGI : sterile mycelium, probably of *Papulaspora halima* Anast (1), often settled on Hydroids, was fairly common.

PROTOZOA : besides different *Foraminifera* attached directly to the panel, or on the Hydroids, *Ciliata heterotricha* were found, the latter probably of the *Folliculina* genus found in port water also.

PORIFERA : two species of the *Calcarea* sponges were found, but small and in scarce number.

COELENTERATA : these were represented by a pair of individuals of *Madreporaria* and *Alcyonaria* and a species of *Actinaria*. The Hydroids, instead, were fairly abundant, found with at least 3 species that are not amongst those generally collected in port waters.

ANNELIDA POLYCHAETA : Serpulids and Sabellids were, by far, the most numerous groups of Polychaetes. Of the Serpulids were recorded *Salmacina* sp., *Hydroides norvegica* Gunn. (2), *Serpula concharum* Lang. (2), *Pomatoceros triqueter* (L.) (2) and probably *Microserpula inflata* Dons (2) also. The Polychaetes were qualitatively and quantitatively much less numerous than that reported by BELLAN [1973].

The Errant Polychaetes were completely absent, perhaps due the scarce settling of other organisms.

CRUSTACEA : only stalked Cirripeds of the *Scalpellum scalpellum* (L.) species were present in some number. Barnacles were completely lacking.

PANTOPODA : were present, in at least two species more or less frequent probably tied the Hydroids.

MOLLUSCA : Lamellibranchs *Pteria hirundo* (L.), *Heteranomia squamula* (L.) (3) were quite common, less *Chlamys opercularis* (L.) (3) and *C. flexuosa* (Poli); early stages of *Picnodonta cochlear* (Poli), (which were found in abundance on residual wrecks near the stations) probably also present; Gasteropods *Fusinus rostratus* (Olivi) too was found.

BRYOZOA : many colonies of two species of *Ctenostomata* of which one is probably *Arachnidium clavatum* Hinks (4) and only one colony of *Cheilostomata anasca* belonging to *Scrupocellaria scrupea* (L.) (4) were found.

ECHINODERMATA : the presence of a sessile stage of Crinoids (probably *Leptometra phalangium* J. Müll.) in considerable number was interesting.

TUNICATA : were present by at least 3 species of Solitary Ascidians (2 of genus *Ascidia*) present with few individuals.

### Preliminary conclusions

Above all, a substantial difference, both qualitative and quantitative, exists in the fouling of the panels placed at 200 m as against that of the substrata immersed in inshore and port waters, in fact amongst the species recorded during the research, only a very limited number of these species was found in port waters also. A larger number of species are in common with the those found on the panels immersed on the coralligenous bottom off Riva Trigoso [RELINI, RELINI-ORSI & VALSUANI, 1973; GERACI & VALSUANI, 1973].

From the quantitative point of view, fouling expressed in terms of wet weight is far less than that appeared after one year, both in port and coralligenous environments, and was near to that found on car bodies sunk off Varazze [RELINI & RELINI-ORSI, 1971]. Those parts of the panels, or of the structure directly exposed to the current were much more fouled, particularly with Hydroids and Bryozoans. Hydroids and *Scalpellum* showed a decided preference for the corners. A difference between fouling on the upper face as against the lower one of horizontal panels, was also noticeable.

### Acknowledgements

The Author wishes to express his acknowledgment of the assistance of the specialists who classified the following species :

- (1) identified by CORTE MONTEMARTINI
- (2) identified by BAZZICALUPO
- (3) identified by BARSOTTI
- (4) identified by GERACI.

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