

Molluscs in Offshore Fouling at Ravenna and Crotona

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Fouling of some offshore platforms situated in the North Adriatic (Ravenna 0-20 m) and Ionian Sea (Crotona 0-65 m) was investigated several years ago by direct observations, sampling, and panels immersed for periods of 1 to 12 months. The immersion technique and the characteristics of fouling at two localities have been reported previously (RELINI et al., 1976).

The list of Bivalve Molluscs found on the AGO A and PCWA platforms at Ravenna and the LUNA A platform at Crotona is recorded in Table 1. Among ten species, seven were found at both the localities, two species indicated with * in Table 1 were not found on the panels but on platform structures. Among Gasteropoda *Hinia reticulata* (L.) was common at Ravenna while some Nudibranch *Facelina* sp. and *Flabellina* sp. were recorded at both sites.

Table 1 - Presence of Molluscs on 19 panels examined at each site during one year

BIVALVE MOLLUSCS	RAVENNA						CROTONE			
	AGO A			PCW A			LUNA A			
	0	-9m	-20m	0	-5m	-11m	0	-14m	-20m	-65m
<i>Mytilus galloprovincialis</i> Lamarck	5	5	3	5	5	4	5	4	2	-
<i>Ostrea edulis</i> L.	+	2	1	+	+	1	+	+	+	+
<i>Anomia ephippium</i> L.	+	1	2	+	+	+	+	1	+	-
<i>Hiatella arctica</i> (L.)	2	3	4	+	2	+	2	4	3	-
<i>Musculus subpictus</i> (Cantraine)	+	2	+	+	+	+	1	1	1	-
<i>Aequipecten opercularis</i> L.	-	1	+	-	+	+	+	+	+	-
<i>Modiolus barbatus</i> L.	+	1	+	+	-	-	-	+	+	-
<i>Neopycnodonte cochlear</i> (Poli)	-	-	-	-	-	-	+	1	+	4
<i>Lima inflata</i> Link	-	-	-	-	-	-	-	*	-	-
<i>Pteria hirundo</i> (L.)	-	-	-	-	-	-	-	-	-	*

* species collected on platform structures

+	< 5	individuals/19 dm ²	3	50-100	individuals/19 dm ²
1	5-10	" "	4	100-500	" "
2	10-50	" "	5	> 500	" "

The data collected showed the undisputed role of mussels not only among molluscs but also in the formation of fouling on the offshore structures examined in the two Italian seas (RELINI and MONTANARI 1988), at least in the first 10 m of depth, where they represent 80 to 95% of total wet weight of fouling. Nevertheless, their importance assumed a different character in relation to the eutrophic state of the waters (Table 2). In the Adriatic, mussels form the largest biomass (up to 96.6 kg/m²) and show a more rapid growth. The harvesting of this large amount of mussels has been suggested (RELINI 1977). Other species of Molluscs (Table 1), with the exception of *Hiatella arctica*, a species of small size and no economic value, are scarce.

At Ravenna, mussels show two periods of settlement over the year; the first and by far the more important is in the spring-summer period, reaching a maximum in June, and the second in autumn with a peak in November-December. The mussels prove to be dominant after three or four months on the panels immersed in May and after six months on those immersed in October. As the length of exposure increases, there is a corresponding increase in the accumulation of fouling and in particular of mussels and thus of the weight of the biomass. In general, one can say that the weight of mussels as a percentage of the total weight of fouling relates directly to the immersion time and inversely to the depth, with a maximum at about 1 meter.

At Crotona the period of settlement and of greatest growth is the spring and dominance is reached after 6-8 months, depending on the season in which the substrata are immersed.

An appreciable settlement of mussels was recorded only after one year at the surface with 379 individuals/dm², with a maximum length of 35 mm and a biomass of 4.1 Kg/m². At 14 m there were 93/dm² and at 20 m 25/dm². At 65 m the panel was completely covered with *Neopycnodonte cochlear*, some of which reached a size of 40 mm in diameter. On the whole, the largest development of Molluscs was found at the surface with seven species, providing a total of 596 individuals/dm², of which about 90% in number were *Mytilus galloprovincialis*. At 14 m there were nine species of Molluscs, giving 298/dm², of which 45% were *Mytilus* and 45% *H. arctica*. At 20 m the number of Molluscs was fewer (105 individuals/dm²) with 55% *Hiatella* and 26% *Mytilus*. At 65 m *N. cochlear* dominated the settlement on all kind of substrata covered by a strong layer of calcareous shells and there were no mussels.

Table 2 - Hydrological data at 2 m depth for the three sites

	RAVENNA		CROTONE	
	PCW - A	AGO - A	LUNA - A	
T°C	13.32 ± 7.02	13.88 ± 6.67	17.12 ± 3.66	
S‰	32.84 ± 2.39	33.73 ± 2.28	38.18 ± 0.24	
O ₂ mg/l	9.47 ± 1.63	9.06 ± 1.79	7.41 ± 0.32	
N-NO ₂ ug/l	6.52 ± 5.22	4.72 ± 3.70	3.66 ± 2.89	
N-NO ₃ ug/l	103.40 ± 98.07	76.26 ± 68.76	22.26 ± 13.83	
P-PO ₄ ug/l	4.39 ± 2.02	4.44 ± 3.38	4.29 ± 2.20	

References

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