

Natural and artificial settlements of red coral, *Corallium rubrum* (L.): preliminary observations

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Although the laboratory-rearing of Coelenterates has been particularly successful, several problems connected to larval cycle and development of early stages still arise for the red coral *Corallium rubrum* (STILLER & RIVOIRE, 1983).

A research program between the Istituto di Zootechnica of the University of Sassari and the Centre Scientifique de Monaco investigated the following points :

- rearing of larvae of *Corallium rubrum* in aquarium;
- morphological and anatomical studies on their development.

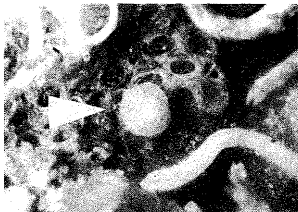
A first lot of larval stages, obtained from colonies caught offshore from Marseilles, were kept in open-circuit tanks where sea-water from a depth of 50 m arrived directly and without any filtration or sterilization. Light of 12.9 uE m⁻² s⁻¹ (12 hour/light, 12 hour/dark) was supplied. In addition to nutritional particles found in the sea-water, the larvae were fed with mussel juice twice a week.

Other larval stages, obtained from both deep (-100 m) and shallow (-15 m) colonies of a submarine cave, were kept in closedcircuit aquaria at atmospheric pressure, at a constant temperature (15°C), constant salinity (37‰), and constant pH (about 8.2) at Sassari University. The dissolved oxygen was always above saturation point. A double filtration system (mechanical and biological) and a UV lamp were used. Light was supplied by a blue lamp 18 W: a timer simulated the seasonal variations. Young settled stages were fed with mussel juice and valine twice a week.

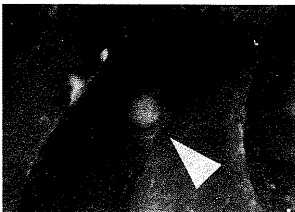
In this way two different types of aquarium conditions were tested. The emission of larvae was obtained in the aquaria in Monaco half way through June 1991 and one month later in Sardinia using thermic and osmotic shocks as well as by spontaneous liberation. The larval behaviour observed was very similar to that described by LACAZE-DUTHIERS (1864).

In consideration of the importance that bacterial and diatom films have on the settlement surface (LOYA, 1976), different types of hard substrata enriched by them were tested in Monaco. The preference scale was as follows: remains of coralligenous on the base of *Corallium rubrum* (60%), coralligenous only (30%), clay tile (6%), rough plexiglass surface (3%), glass (1%). The subsequent experiments showed that the planulae settle 10 days after birth. Two days later some sclerites were distinguishable: at first they appeared white but three days later became pink. Their pigmentation reached its maximum one week after settlement, when a second polyp appeared.

In Sardinia only coralligenous substrata and dead corals were used (i.e. *Corallium rubrum*, Madreporaria, etc.) as settlement surfaces where most of planulae settled during August. These findings are slightly different from those obtained in Monaco as well as those obtained by other Authors who observed settlements after 1-2 weeks (LACAZE-DUTHIERS, cit.; VIGHI, 1970). Six months later, at Sassari University, almost 20% of young stages were still alive, and we couldn't find any of them which bore more than two polyps.



Early *Corallium rubrum* settlement (two months old)



A two polyp stage of *C. rubrum* (three and a half months old)

These observations confirm the data reported by VIGHI (cit.). Conversely they don't correspond with the findings of GIACOMELLI *et al.* (1988) who said they had obtained colonies bearing about 50 polyps, 1 cm high, within a year!

The 20% of young stages from shallow colonies that we measured had a base diameter of about 0.8-1 mm, but the height of most of them was incalculable. On the other hand, after eight months from the fixation of larvae, young stages obtained in Monaco appeared similar to those in Sardinia but they showed a higher survival rate (70%).

In order to compare natural and artificial settled stages, we decided to collect deep rocky samples (-100 m) during the same period in Sardinia. We found several stages very similar to those obtained artificially. All examined individuals were settled on coralligenous formations and on dead coral branches or bases; they were often present in microcavities. We kept these samples in the same closedcircuit aquaria. After six months these forms were still alive and no appreciable growth, as described by VIGHI (cit.) for early stages of shallower colonies, was observed.

This period of life is most probably a real "bottle neck" for the biological cycle of red coral. Because of its slow growth it seems that it is possible to find young settlements of different sized diameters, with few polyps, in areas of regular recruitment all the year round.

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