

LABORATORY OBSERVATIONS ON A FEMALE ARGONAUTA ARGO (MOLLUSCA: CEPHALOPODA)

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R é s u m é . Une femelle d'Argonauta argo , capturée dans le port de Banyuls-sur-Mer (Méditerranée occidentale), a été maintenue en aquarium pendant une semaine. Un dispositif original a permis d'immobiliser l'animal en dehors des séances d'observation et d'alimentation.

I n t r o d u c t i o n

Argonauta argo Linnaeus, 1758, is an epipelagic octopod occurring throughout the world in tropical and warm temperate seas. It has been observed alive many times in the past , but aquarium studies of the living female with its peculiar papery brood shell have always been very limited in time (Lacaze-Duthiers, 1892, Naef , 1923, Young, 1960, Zeiller and Compton, 1970). In the area of Banyuls-sur-Mer (Western Mediterranean) , the species is rarely encountered (cf. Boletzky and Centelles, 1978-1979).

O b s e r v a t i o n s

In the morning hours of 12 December 1980 , a living female Argonauta argo was observed in the Banyuls harbour . It was dip-netted and brought to the laboratory. The animal was in good condition except for extensive skin damage around the end of the funnel tube. In order to prevent further injury, the animal was placed in a glass aquarium with running sea water in which an inverted glass funnel (opaque) was installed above the bottom. The animal remained under this shelter. A stream of air bubbles ascending from an air stone placed beneath the glass funnel maintained the water in motion; it did not apparently disturb the animal.

When the glass funnel was removed , the animal would float at the water surface due to the buoyancy provided by air trapped in the upper part of the brood shell. The arms were held within the shell in the inverted position typical of female Argonauta . The web of the dorsal arms was not observed to spread over the brood shell for several days (see below) . When the animal was swimming around by expelling water through its funnel tube, the gentle rocking movement resulting from the water jets was fully compensated by the eyes, which maintained their orientation in space by counterrotating. When the air was artificially removed from the brood shell to test the behavioural response of the animal, the latter sank to the bottom and fell on its side. Apparently it was unable to cope with the situation, in particular to turn the brood shell into its normal upright position. Air was then pipetted into the apex of the brood shell to restore normal conditions.

As the animal showed no interest in live, small shrimp placed in the aquarium, it was hand fed from the second day onward. Entire small crangonid prawn (Philoche-ras sp.) and partially stripped crab legs were touched to its mouth . The animal grabbed these items with the circumoral suckers and manoeuvred them into posi-

tion for the beaks to reduce the prey to pieces that could be drawn in by the actively protruded radula. Soft material such as pieces of crab gonad were drawn in swiftly as if by suction.

On the fourth day, the animal expelled the entire egg mass from the brood shell, but continued to feed as before. On the sixth day, one of the dorsal arms was exposed, with the web spread over one side of the brood shell. On all arms, suckers that had been constantly exposed showed signs of skin degeneration. On day seven, the animal was found outside its brood shell, to which it remained attached only with one dorsal arm. Within a few hours, it became moribund.

Close inspection of the brood shell revealed complete repair of breaks, which had been covered with transparent organic material. Presumably this was achieved some time during the days spent in the aquarium.

D i s c u s s i o n

Available reports suggest that female Argonauta hardly survive in an aquarium for more than a few days or weeks. The fact that our specimen survived one week, notwithstanding extensive skin damage on the funnel tube, is probably due in part to the holding conditions chosen at the outset of the experiment. If allowed to remain quiescent in a shelter, an intact animal might survive much longer than our damaged specimen. Although Argonauta is a pelagic octopod, its tendency to remain firmly attached to the inside of the continually enlarged brood shell may have a parallel in other types of "thigmotactic" responses. Indeed a different (not yet identified) species of Argonauta has been observed in an extremely peculiar attitude, several females forming a string by holding on to each other (Voss and Williamson, 1971). Although such behaviour has not so far been reported of A. argo, this species apparently tends to hold on to solid substrates on occasion (Young, 1960). This tendency might explain the surprising fact that an individual of this species was found in the Banyuls harbour, many miles from its usual off-shore habitat without strong wind or currents being involved (cf. Boletzky and Centelles, 1978-1979). It is interesting that the individual observed was found shortly after a sailing boat that had cruised off-shore entered the Banyuls harbour. It is conceivable that the animal had somehow been attracted by the floating substrate far from shore, held on to it and was carried off to inshore waters.

A c k n o w l e d g m e n t s . I thank Mr. J. Ribes and Mr. J.-L. Binche (Laboratoire Arago) for providing the animal described here.

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