

NOTES

A Gastropod Parasite of Solitary Corals in Hawaii¹

H. F. BOSCH²

OF THE SPECIES of wentletraps (marine gastropods of the family Epitoniidae) that live with or feed upon anthozoan coelenterates, most are associated with sea anemones. Robertson (1963) lists four species of these snails that are known to be either predators or ectoparasites of sea anemones, as well as two others that are assumed to be so. A seventh wentletrap, however, associates itself with a scleractinian, rather than with an actinian. Found attached to solitary corals of the genus *Fungia* in the Philippine Islands (Root, 1958), this wentletrap has been tentatively identified as *Epitonium* aff. *costulatum* by Robertson, who considered it likely that the snail was feeding upon the coral. Thorson (1957) suggested that perhaps all members of the Epitoniidae were adapted for a parasitic mode of life. Evidence supporting both these ideas comes from a similar *Epitonium-Fungia* relationship recently noted in Hawaii.

Specimens of the solitary coral, *Fungia scutaria* Lamarck, collected in Kaneohe Bay, Oahu, during the summer and fall of 1963, occasionally had masses of small white eggs attached to them. Usually one or two fragile white snails also clung to the corals or to the egg masses. These snails were identified as *Epitonium ulu* Pilsbry, a wentletrap previously reported only from Hilo, Hawaii (Pilsbry, 1921:376; Edmondson, 1946:138). While only a small percentage of the corals taken in the field had adherent eggs or snails, all corals kept in

aquaria eventually became infested with them during the course of several separate experiments carried out at the Hawaii Marine Laboratory. Thirty *Fungia*, in one instance, became infested within three weeks after having been placed in a large holding tank in order to test their ability to survive in an artificial environment. These corals had been routinely inspected for damages due to collecting prior to being placed in the freshly cleaned tank, and seemed free of *Epitonium* eggs or adults. Yet each coral harbored from one to six snails, with attendant egg masses, at the end of the three week period. The increase in the snail population escaped notice during the interim as neither the snails nor their eggs ever appeared on the upper, feeding surface of the corals. Rather they restricted themselves to the un-tentacled areas of their host: the periphery or undersurface. By what means the snails were introduced into the tank is not known. Possibly a few eggs had escaped notice when the corals were inspected, or larvae had entered with the sea water when the tank was initially filled. In either instance, it is clear that a number of larvae had rapidly matured and had subsequently produced large clutches of new eggs. Although the sea water in the tank was not filtered or renewed during the three weeks, conditions seemed favorable for larval viability and growth, as many active veligers were prominent whenever egg masses were examined under the microscope. This seemingly rapid development of sexually mature wentletraps, the largest of which attained a length of 16.5 mm, provides an index of maximal growth for *Epitonium ulu*.

Tissue lesions on the undersurfaces of some of the corals (Fig. 1) may have been caused by *Epitonium*, but this was difficult to prove

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² Present address: Department of Oceanography, The Johns Hopkins University, Baltimore, Maryland.

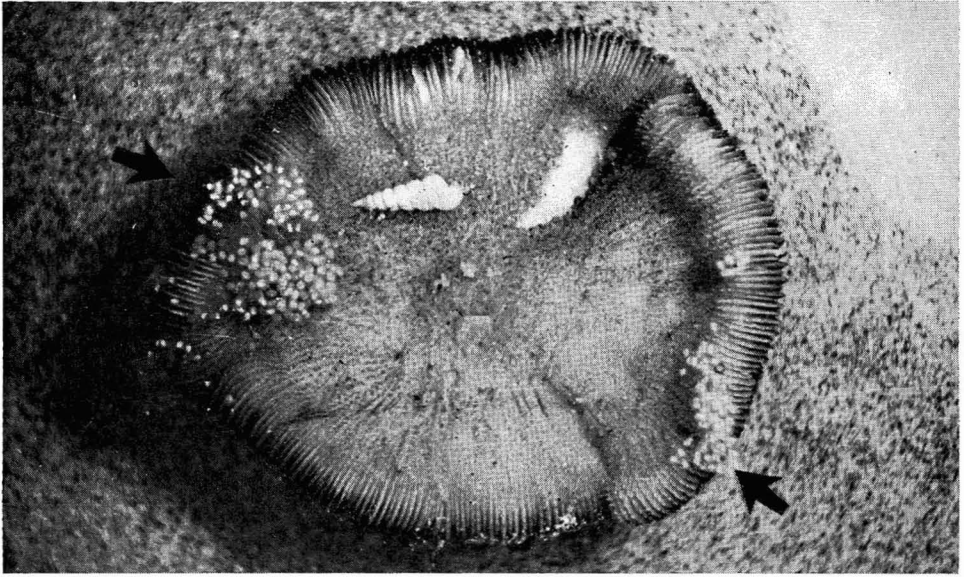


FIG. 1. The undersurface of the solitary coral *Fungia scutaria* Lamarck with the wentletrap *Epitonium ulu* Pilsbry and egg masses (arrows). The wentletrap is 16.5 mm long. White area to the right of the snail is a lesion in the coral's tissue.

inasmuch as the snails avoided the light. While no direct observations of wentletraps feeding on the corals were made, indirect evidence for this behavior was furnished by dissection. Viscera of snails taken from a coral invariably contained copious amounts of pink tissue in which were imbedded symbiotic algal cells (zooxanthellae) and nematocysts, all characteristic of the corals. Moreover, wentletraps placed near corals which had been stained with a vital dye (neutral red) soon became suffused with the same color due to the ingestion of dyed coral tissue. (For such feeding to occur, it was necessary to keep the corals and the snails in the dark.)

Wentletraps in the absence of their egg masses were never found on *Fungia*. Thus the relationship between these two animals may be correlated with the breeding cycle of the snails and may be only intermittent or temporary. The foregoing observations, however, show that *Epitonium ulu* is at least an occasional ectoparasite of *Fungia scutaria*. This evidence supports Thorson's contention that the Epitoniidae in general are adapted to parasitism and also Robertson's view of the parasitic nature of *Epitonium* aff. *costulatum*.

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