TWO NEW EXAMPLES OF SYMBIOSIS OR PARASITISM IN CYPRIDACEAN OSTRACODA

BY

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Nearly all members of the podocopid ostracode superfamily Cypridacea are thought to be free-living, feeding on microscopic algae, bacteria and organic detritus. Hitherto, only the genus Pontocypria of the family Pontocyprididae has been known to include commensal species. Maddocks (1968) described P. helenae from three species of antarctic starfish and P. humeiri from a sponge near Nosy Bé, Madagascar. Here, a new species of Pontocypria is reported from the North Atlantic on Echinocardium flavescens (O. F. Müller), a spatangoid echinoid. The manner of its attachment was not recorded in the museum data accompanying these specimens, and the exact nature of this association, whether commensal, parasitic, or accidental, cannot now be determined. Until now, the only known ostracode-associates of echinoids have been parasitic Cytheraceans belonging to Echinocystis, family Paradoxostomatidae, described by Schornikov (1973).

The other new species described here belongs to a marine branch of the family Cyprididae (tribe Thalassocypridini, subfamily Candoninae). Mungava riseri n. sp. was found attached to and apparently eating the gills of an amphipod polychaete worm, Eurythoe parvecarunculata Horst, 1912. It is the first time such predatory or parasitic behavior has been reported in marine Cyprididae, although some freshwater Cyprididae are known to harass and even kill young snails (Sohn & Kornicker, 1975). The worm, itself, is a commensal of wood-boring bivalves, inhabiting burrows of Teredo and Nototeredo in the Caribbean (Riser, 1970).

Although it is now more than 200 years since O. F. Müller first described Ostracoda, we still know very little about the basic ecology of most ostracodes: What do they eat? Why do they live where they live? How do they interact with other taxa? What are their roles in marine communities? For this reason, it was decided to describe these two species formally here and to call attention to the possibly symbiotic or parasitic nature of these associations, even though the collection-data are inadequate to clarify the exact nature of these associations, and the specimens are not as well preserved as might be wished. It is hoped that their description will encourage closer attention to these questions. For the sake of completeness, two other occurrences of Ostracoda on marine invertebrates should also be mentioned here, although the associations appear to be accidental, rather than symbiotic or parasitic.
R. U. Gooding in 1972 sent me four populations totalling 46 ostracodes, found on *Diadema setosum* (Leske) in the Gulf of Suez. These were collected as part of a world-wide survey of the commensals, parasites, and other associates of tropical diadematid sea urchins. The ostracodes are Cytheraceans, belonging to one species of *Xestoleberis* and two species of *Loxocorniculum*, probably identifiable with free-living species described from the Red Sea by Hartmann (1964). These species wander freely over algae, sponges, coralline debris and other reef substrates (according to observations summarized in Maddocks, 1966), and their presence on the echinoid appears to be accidental.

Joan M. Uebelacker in 1977 sent me 44 ostracodes collected from the interior and exterior of 12 specimens of *Callyspongia vaginalis* (Lamarck) as part of her research concerning the fauna associated with this Bahaman sponge. The Ostracoda include species of *Paranesidea*, *Neonesidea*, *Bairdoppilata*, *Macrocyprina*, *Pontocypris*, *Propontocypris*, *Xestoleberis* and *Paradoxostomatidae*. This assemblage includes 13 species in 5 families of 3 superfamilies and appears to be a representative cross-section of the free-living reef ostracode fauna of the Bahamas. According to Ms. Uebelacker's data, these ostracodes occur both inside and outside the sponges, in roughly equal numbers and taxonomic distribution. There is no evidence to suggest that any of these species are deliberate symbionts or parasites of the sponge.

In the descriptions and text-figures following, the individual setae of antennules and antennae are designated by identity-numbers. This numbering system was established (Maddocks, 1976) during an attempt to clarify homologies of these setae among different Cypridacea taxa, for use in investigating the phylogeny of Podocopida. An earlier (and less satisfactory) lettering system was used (Maddocks, 1968) in an ontogenetic study of *Pontocypris*. Those letters are also included here for the new species of *Pontocypris*. It is hoped that application of this code will help to recognize and specify homologous structures of ostracode appendages more accurately.

Absurdly, even the homologies of the ostracode legs with those of other Crustacea have long been a matter of dispute. Although considerable evidence is accumulating for the nomenclature discussed by Hartmann (1966), in order to facilitate comparison of these new species with others described earlier by me, the following names are used here for the seven legs: antennule, antenna, mandible, maxilla, first, second and third thoracic legs.

**SYSTEMATIC DESCRIPTIONS**

*Thalassocypridini* Hartmann & Puri, 1974

This relatively new taxon includes marine cypridids with very thin, smooth, elongate-oval carapaces, very narrow fused zones, broad duplicatures containing testes and ovaries, inconspicuous radial pore-canals, and other soft-part distinctions. According to the spelling of this name, the type-genus (not formally designated) is presumably *Thalassocypris* Hartmann, 1955. Other included genera are *Thalas*-