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A New Species of Athecate Hydroid, *Podocoryne bella* (Hydractiniidae), Living on the Pigfish, *Congiopodus leucopaecilus*

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Abstract

A new species of athecate hydractiniid hydroid, *Podocoryne bella*, is described from Otago Harbour, N.Z. The new species is known only as a commensal symbiont of the Pigfish, *Congiopodus leucopaecilus*. In view of the frequency of symbiotic associations in the family Hydractiniidae, it is **concluded that the normal habitat of this new hydroid is on the Pigfish.**

IN the aquaria at the Portobello Marine Station it is a common sight to see a Pigfish, ***Congiopodus leucopaecilus***, which is heavily overgrown with various marine organisms. That this is not an unusual phenomenon and that the same is at least partially true of this fish in its native haunts seems to be testified to by the statement of Graham **(1953,** pp. **354-355),** to wit, "Owing to their leathery skin and sluggish nature, those Pigfish caught in weedy or muddy situations, even those kept in the large concrete ponds with muddy foundation, at the Station, carried a good deal of foreign substance in the way of slime and marine growth." Graham does not go into much further detail on this, although he does note that he found "large numbers of small forms of life such as small worms and crustacea."

Three specimens of Pigfish with an overgrowth of fouling organisms have been examined and an interesting list of fouling organisms has been compiled. The primary fouling organism is a filamentous diatom which in the extreme covers all of the fish except the lips, eyes and edges of the fins. This growth is commonly several millimetres thick and imparts a greenish-brown colour to the whole animal. Among the diatoms there also occur filamentous blue-green algae and minute thalli of red and green algae. The animal life present reminds one of the surface of almost any alga-covered rock or piling along the shore. There were numerous small rotifers, harpacticoid copepods, vorticellid protozoan colonies, isopods, polychaetes, acoelous flatworms, young sponges, amphipods, folliculinid ciliates **and** pedicellinid entoprocts. Two small nemertines were noted on one Pigfish, as was a small and immature hydroid, ***Turritopsis*** sp. This hydroid could have been an **ex-**

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ceedingly young colony of *T. nutricula* (see Ralph, 1953, p. 64), but consisted of only about a dozen zooids which arose individually from a branched, creeping, hydrorhizal network. Since the colony was small, and no gonophores were present, it seems best not to attempt a more definitive identification of this hydroid. However, on all three Pigfish examined another hydroid was abundant and upon examination this was found to be an undescribed species of *Podocoryne*. *Podocoryne* is a member of the athecate, anthomedusan family Hydractiniidae and is a genus new to the New Zealand fauna. The hydractiniid hydroids are apparently not well represented in this part of the world. To date the only species recorded from New Zealand is *Hydractinia purvispina* (see Ralph, 1953, p. 63), and only *Stylactella niotha* (see Pennycuik, 1959, p. 162) is known from Australia. On the

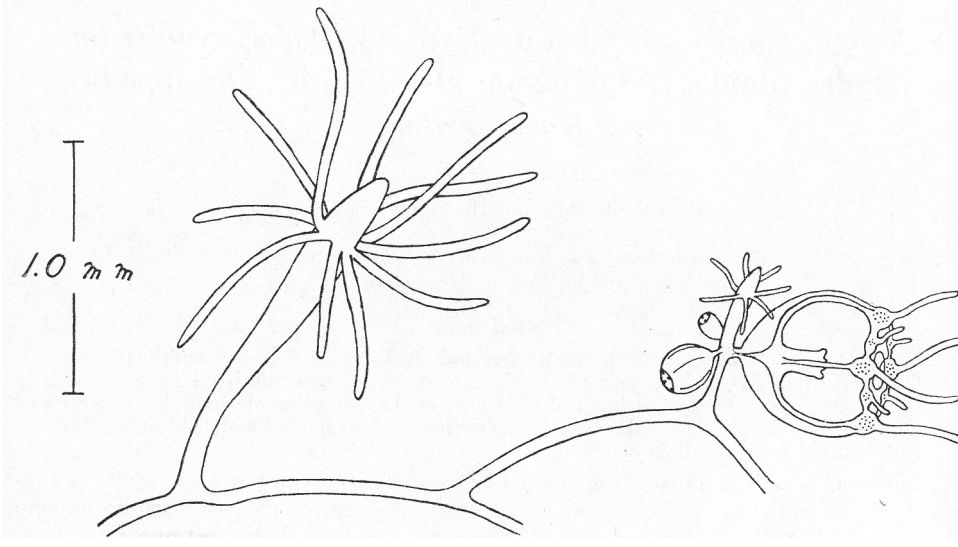

FIG. 1.

other hand, several genera *(Hydractinia, Podocoryne, Podocorella, Stylactis* and *Stylactella)* with numerous species are known from the North Atlantic and North Pacific.

Podocoryne bella Hand, n.sp.

DESCRIPTION. (See Figure 1.)

The colonies consist of two types of zooids, gastrozooids and gonozooids, united by a branched and anastomosing hydrorhizal network. The gastrozooids have from 10 to 12 tentacles arranged in a single whorl, although individuals with as few as six, or as many as 15, tentacles have been noted. The gastrozooids can elongate to about 2 mm in length by about 0.2 mm or less in diameter. They may be nearly the same diameter throughout but usually broaden from about 0.1 mm at the base to 0.2 mm where the tentacles arise. Beyond the tentacles lies the short and rather blunt hypostome with its apical mouth. The colour of the gastrozooids is usually a pale, translucent white, although sometimes individuals are a delicate pink, perhaps reflecting a recent meal of some small crustacean. The nematocysts of the gastrozooids were as follows:

Desmonemes	4.5 — 6.0 × 3.0 — 4.0 μ
Microbasic euryteles	8.0 — 12 × 3.0 — 4.0 μ

Gastrozooids and gonozooids are united by a delicate hydrorhizal net. The hydrorhizae are 0.1 mm or less in diameter and are translucent to transparent. The hydrorhizae branch frequently and branches apparently anastomose with other branches when they come in contact. There was no coenenchyme, nor were spines, dactylozooids or tentaculozooids observed. The hydrorhizae grow upon the film of diatoms on the fish and also directly upon the fish where diatoms are absent.

The gonozooids occur as scattered individuals in the colonies. None were observed at the margins of the colonies and were always well within the colonies. They are about half the size of the gastrozooids and had 6 to 8 tentacles. From 1 to 7 medusa buds were present and these occur at approximately the midpoint between base and tentacles on the hydranths. The colour of the gonozooids was the same as the gastrozooids, and the same types and sizes of nematocysts were present.

The medusa buds are arranged in a whorl and all sizes may occur on a single gonozooid. The largest medusa observed was approximately 0.5 mm in diameter and was pulsating. No free medusae were observed. It is assumed that they are released, however, since all medusae noted were completely immature and showed no signs of gonads. The largest medusae possess 8 tentacles; 4 large ones in the axes of the radial canals and 4 smaller ones between. The tentacle bulbs were obvious and were orange in colour. The manubrium was about half as long as the subumbrellar cavity and had 4 nematocyst clusters surrounding the mouth. No peduncle was observed. The stomach was light yellow or pale orange in colour. Each medusa was attached to the gonozooid by a short stalk. The nematocysts of the medusae were the same as those of the gastrozooid but very slightly smaller in size.

Occurrence

This hydroid occurs on almost every part of Pigfish which are well covered with algae. Slightly heavier growths seem to occur near the joints of the fins, and one particularly luxuriant growth was noted growing along a dorsal fin-ray. Figure 1 was sketched from a colony growing just above the right pectoral fin joint on a Pigfish. That material is designated as the Holotype, and it, intact on the Pigfish, has been deposited in the Otago Museum.

Type locality is Otago Harbour.

Discussion

As noted earlier, the genus *Podocoryne* is new to the New Zealand fauna, and the family Hydractiniidae to which it belongs is known in this area only as represented by *Hydractinia parvispina*. *Hydractinia* differs from *Podocoryne* in that it has sessile gonophores (sporosacs) while *Podocoryne* has a free medusa. The medusa of *Podocoryne bella* should be present in the waters of Otago Harbour, but in view of the scarcity of plankton studies, and particularly studies on medusae in New Zealand waters, it is not surprising that it has not yet been recorded.

One obvious question about the new species of *Podocoryne* is whether or not the Pigfish is its normal host or whether this is an unusual habitat. Some insight into this question can be gained from a consideration of the habitats of other hydractiniid hydroids. As a generalization the hydractiniids may be said to be epizoic and enter into symbiotic associations with many different hosts in varying degrees of intimacy. No parasitic hydractiniids have been described, but numerous examples of obligate commensalism and even mutualistic associations are known. For example *Hydractinia epiconcha*, a Japanese species which lives on shells occupied by hermit crabs, overgrows the shell and enlarges the living space so that the paguirid does not have to seek a larger shell as it grows. In the genus *Hydractinia* several species are known only from the shells occupied by hermit crabs while perhaps an equal number are known as free-living species. Other genera are known only as associates of various hosts, for example *Hydricthella* on gorgonians, *Stylactis* on snails and fish and *Stylactella* on snails. *Podocoryne* itself is known as a commensal dwelling on snail shells, both those of live snails and shells inhabited by hermit crabs. Of all the hydractiniids only two have previously been reported on fish. The first was *Stylactis minoi* on the fish *Minos inermis* reported by Alcock (1892), and the second was *Stylactis pisicola* on the fish *Erosa erosa* reported by Komai (1932). Komai (1932) describes both of these hydroids and discusses their systematic position. He concluded that *S. minoi* should be placed in the genus *Podocorella*, not *Podocoryne* as suggested by Stechow (1909). It is interesting that the fish hosts of *Podocorella minoi* and *Stylactis pisicola* are both members of the family Scorpaenidae. *Congiopodus*, the host of *Podocoryne bella*, was at one time also considered to be a scor-

paenid (see Waite, 1911, p. 249), but more recently has been classified by Phillipps (1927, p. 53) as a member of a closely related family, the Congiopidae. All of these fish on which hydractiniids have been reported are slow-moving, bottom-feeding fish and apparently provide an ideal substrate for these hydroids. A review of the host relationships of these hydractiniids, and of hydroids in general, is to be found in a table compiled by Hand (1957).

From the foregoing general account it seems clear that the association of *Podocoryne bella* and the Pigfish may indeed be the natural way of life for this species. This cannot, of course, be stated with absolute certainty, but, in view of the normal occurrence of hydractiniids in symbiotic association with other organisms, such a conclusion seems reasonable.

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