THE PONTONIINE SHRIMP FAUNA OF AUSTRALIA

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Introduction

The caridean family Palaemonidae Samouelle consists of two major subfamilies. The Palaemoninae are conspicuous in tropical freshwater and temperate marine habitats and are almost entirely free-living. The Pontoniinae are almost exclusively tropical and subtropical marine commensals and are rarely found in temperate or fresh waters. They occur most abundantly in the warm shallow waters of tropical coral reefs and the species probably present in deeper waters here have so far been little studied. The use of scuba-diving as a collecting method in recent years has greatly increased the efficiency of sampling coral reefs and other shallow water marine animals. Precise information can now be obtained for many species with regard to their habitats or associations. Many of the more cryptic species could not be reliably collected by any earlier method and so remained 'rare' and little known. Coral reefs are famous for the diversity of the fauna that they support, and the Great Barrier Reef and the caridean shrimps are no exception to this generalisation. Among the marine shrimps in Australian seas only the snapping shrimps of the family Alpheidae exceed the number of species of the subfamily Pontoniinae.

The continent of Australia is provided with a richer fauna of pontoniine shrimps than has been reported from any other major geographical area. At present some 136 species have been recorded (and numerous new species, particularly of the genera *Periclimenaeus* and *Pontonia,* remain to be described).

The majority of these are well-known Indo-West Pacific species and they have been recorded principally from the shallow waters of Queensland and the associated Great Barrier Reef.

The fauna is represented by 36 genera, all except two of which are considered to contain species adapted to a 'commensal' way of life. That is to say, the adults live in permanent obligatory associations, often of a high degree of specificity, with a wide variety of other marine animals, particularly sponges, coelenterates, molluscs, echinoderms and ascidians. The hosts of many species are inadequately known, so that information concerning the degree of host-specificity between closely related species is incomplete.

The first pontoniine shrimp recorded from Australia was *Periclimenes aesopius,* described by Bate in 1863, and still known only from St. Vincent Gulf, South Australia from a small number of specimens. Although it is probably an associate of a coelenterate, its host animal has yet to be identified and the shrimp remains one of the least-known Australian species. Saville-Kent (1893) in his monograph of the Great Barrier Reef next illustrated the well-known species *Periclimenes brevicarpalis,* an associate of giant anemones, such as *Stoichactis* spp., throughout most of the Indo-West Pacific region. Miers (1884) reported on four species collected from Australian waters by H.M.S. "Alert", and Baker (1907) described the unusual and possibly endemic species *Pontonia minuta* from South Australia. Two species, *Anchistus custos* and *Periclimenes brevicarpalis* were reported from the Monte Bello Islands, Western Australia by Rathbun (1914). Balss (1921) reported a further six species from Cape Jaubert in the same state, in his report on the results of Dr E. Mjöberg's 1910-1913 Swedish Expedition. McCulloch and McNeill (1923) recorded more *Periclimenes brevicarpalis* from a number of Queensland localities and McNeill (1926) recorded *Periclimenes spiniferus, P. elegans* and *Conchodytes tridacnae* from North-West Island in the Capricorn Islands, at the southern end of the Great Barrier Reef. Hale (1927) confirmed the presence of these species in South Australian waters. The first detailed information concerning the coral-associated species in Queensland waters was provided by Patton (1966), and McNeill (1968) provided details of eight species collected mainly from the Low Isles by the Great Barrier Reef Expedition, 1928-1929. Preliminary descriptions of five new species of *Periclimenaeus* were provided by Bruce (1969b, 1970a), and details of a further eight species from Queensland waters and a report on pontoniine material in

the Australian Museum (Bruce, 1971, 1977c). Several other papers dealing with isolated species have also appeared. Wadley (1978) recorded several species of *Periclimenes* from Moreton Bay, Queensland. The fauna has been studied in most detail at Heron Island, the Capricorn Islands, in subtropical waters, at the southern end of the Great Barrier Reef. Over a hundred species occur at this locality and have been reported upon by Bruce (in press f).

The present report includes details of ten species not previously recorded from Australian waters. These are:

Dasycaris zanzibarica Bruce
Hamodactyloides incompletus (Holthuis)
Mesopontonia gorgoniophila Bruce
Periclimenaeus rastrifer Bruce
Periclimenes alcocki Kemp
Periclimenes attenuatus Bruce
Periclimenes investigatoris Kemp
Periclimenes kororensis Bruce
Periclimenes pectiniferus Holthuis
Periclimenes platycheles Holthuis

Further information on most of these shrimps, including descriptions, illustrations and synonymies are to be found in the works of Borradaile (1917), Kemp (1922) and Holthuis (1952).

Key to the genera of the pontoniine shrimps of Australia

1. Telson with at least three distinct pairs of posterior marginal spines 2
—— Telson with fewer than three pairs of posterior marginal spines 36
2. Mandible with palp ..... *Palaemonella*
—— Mandible without palp 3
3. Maxilla with basal endite absent 4
—— Maxilla with basal endite present 9
4. Rostrum absent, scaphocerite rudimentary; inhabiting galls in *Acropora* ..... *Paratypton*
—— Rostrum present, scaphocerite distinct 5
5. Rostrum toothless; body form strongly depressed; second pereiopods with large subequal similar chelae; associated with Scleractinia ..... *Platycaris*
—— Rostrum with several distal teeth; body not strongly depressed 6
6. Third maxilliped with fully functional exopod 8
—— Third maxilliped with exopod greatly reduced or absent 7
7. Body compressed; lateral border of exopod of uropod dentate; associated with oculinid corals ..... *Anapontonia*
—— Body not compressed; lateral border of exopod of uropod not dentate; associated with Alcyonaria ..... *Propontonia*
8. Dactyls of ambulatory pereiopods with rounded basal protuberance; several small post-antennal spines present; associated with Scleractinia ..... *Fennera*
—— Dactyls of ambulatory pereiopods without basal protuberances, single large acute antennal spine present; associated with Corallimorpharia ..... *Pliopontonia*
9. Third maxilliped with fully functional exopod 10
—— Third maxilliped lacking fully functional exopod 14
10. Dactyls of ambulatory pereiopods with distinct basal process 11
—— Dactyls of ambulatory pereiopods without distinct basal process 18
11. Basal process of ambulatory dactyls compressed 12
—— Basal process of ambulatory dactyls hoof-like 13
12. Basal process of ambulatory dactyls rounded; third maxilliped with an arthrobranch; movable hepatic spine present; associated with Ascidiacea ..... *Dasella*
—— Basal process of ambulatory dactyls acute or angular; third maxilliped without arthrobranch; hepatic spine absent; associated with Bivalvia ..... *Conchodytes*