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SOME PONTONIINAE (CRUSTACEA: DECAPODA: PALAEMONIDAE) FROM SOUTHERN OMAN

by

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Key words: Crustacea Decapoda: Pontoniinae; *Neoanchistus nasalis* new species; *Pontonia sibogae* Bruce; *Pontonia stylirostris* Holthuis; southern Oman.

Six species of Pontoniinae from Oman are dealt with; two are commensals of Lamellibranchia (*Neoanchistus nasalis* new species in *Chlamys townsendi*, *Conchodytes meleagrinae* Peters in *Pinctada radiata*), two are commensals on madreporal corals (*Philarius gerlachei* (Nobili) on *Acropora*, *Jocaste lucina* (Nobili) on *Stylophora*). Of the last two, *Pontonia sibogae* and *P. stylirostris*, no commensal habits were noted; *P. stylirostris* so far was only known from the holotype.

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INTRODUCTION

Recently Dr. P.J. Hogarth, Department of Biology, University of York, York, England, submitted to me for study a small collection of Pontoniine shrimps from southern Oman. Although only six species are represented, three of these proved to be of special interest. One is new to science, one had only been found once previously, and one was known from four previous records only. An account of the material is given here.

I wish to express my gratitude to Dr. Hogarth for allowing me to study these specimens and for providing me with information concerning their habitat and biology.

LIST OF THE SPECIES

Neoanchistus nasalis new species

(figs. 1, 2)

Material. — In *Chlamys townsendi* (G.B. Sowerby, 1895). Artificial reef near Raysut Harbour, Dhofar, southern Oman, 16° 57' 45'' N 54° 00' E. 24 February 1983. P.J. Hogarth, no. 41, Site no. IJI. 1 ♂, cl. 9.8 mm; 2 ovigerous ♀♀, cl. 12.4 and 14.3 mm.

In *Chlamys townsendi* (G.B. Sowerby, 1895). Raysut, southern Oman. Depth 10 m. 9 October 1983. P.J. Hogarth, no. 335. 1 specimen, cl. 10 mm.

Description. — The rostrum is entirely unarmed and bent down. It reaches to the middle or almost to the end of the second segment of the antennular peduncle. In dorsal view it is tongue-shaped, narrowing slightly and gradually towards the broadly rounded apex. In lateral view it is lowest at the base, becoming higher distally, and ending in a broadly rounded apex. The rostrum, especially in the distal part, is triangular or T-shaped in transverse section. The lower orbital angle is rounded. There are no spines at all on the carapace, neither on the anterior margin nor on the surface itself, not even a trace of an antennal spine. The rounded pterygostomial angle reaches farther forward than the lower orbital angle. The integument of the carapace is smooth to the naked eye, but under a strong magnification it shows to be pitted, most conspicuously so in the lateral area.

The abdomen is smooth like the carapace, here also pits can be observed under strong magnification. The pleura are rounded. The sixth somite is about 4/3 as long as the fifth; its pleura as well as its posterolateral angles are rounded. The telson is about 5/3 of the length of the sixth somite. It gradually tapers posteriorly and bears dorsally two minute pairs of spines, which are placed close to the lateral margins. The anterior of these pairs is placed just before the posterior third of the telson, the posterior pair stands about halfway between the anterior pair and the posterior margin of the telson. This posterior margin is rounded, and three pairs of spines are placed on it. The spines of the outer pair are about half as long as those of the intermediate pair. The outer pair is placed more anteriorly than the two other pairs, being situated just before the outer part of the base of the intermediate spines. These intermediate spines are the widest of the posterior spines, only in the distal part they narrow suddenly, ending in a slender point. The spines of the inner pair are slender throughout and almost as long as the intermediate spines.

The eyes are well developed, although the cornea is shorter and slightly narrower than the peduncle. The cornea is rounded and bears a small but conspicuous ocellus.

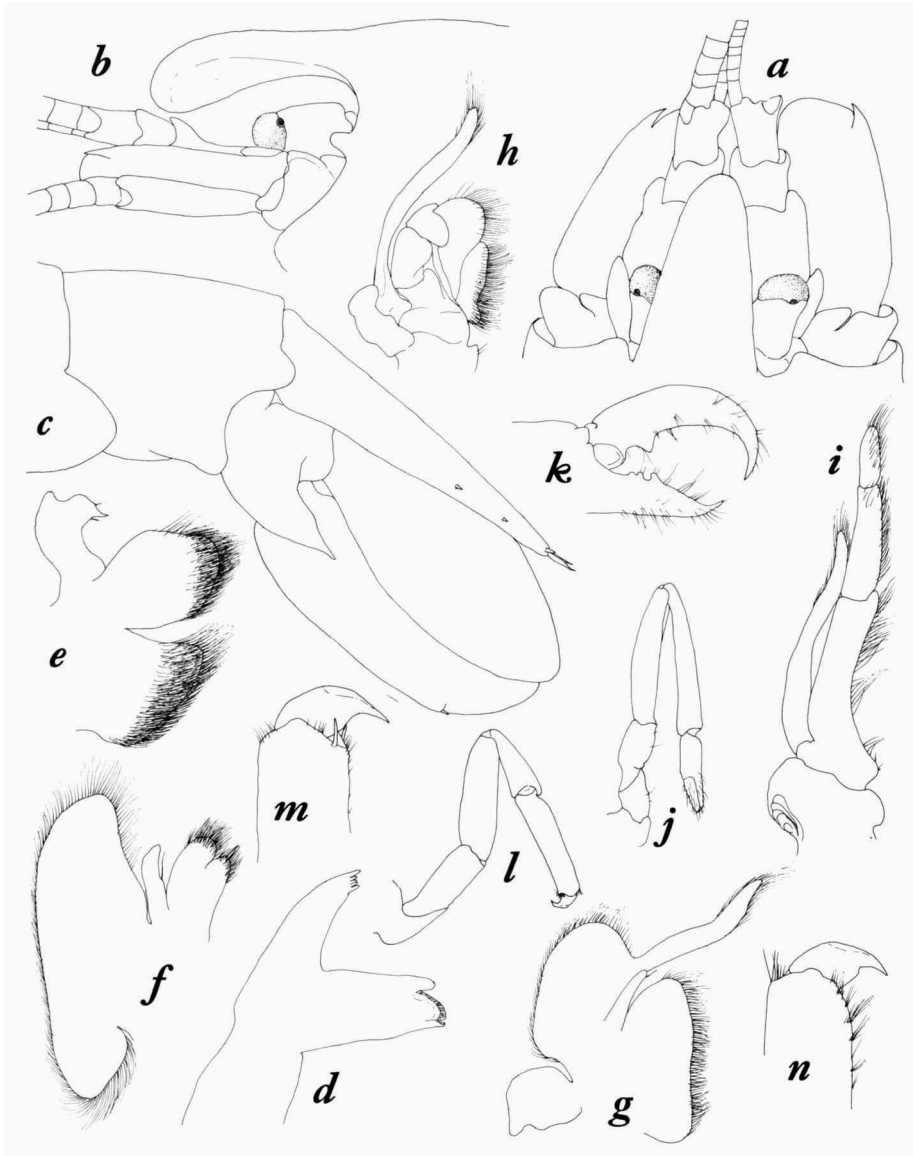


Fig. 1. *Neoanchistus nasalis* new species, ovigerous ♀. a, anterior part of body in dorsal view; b, anterior part of body in lateral view; c, end of abdomen in lateral view; d, mandible; e, maxillula; f, maxilla; g, first maxilliped; h, second maxilliped; i, third maxilliped; j, first pereiopod; k, fingers of second pereiopod; l, third pereiopod; m, dactylus of third pereiopod; n, dactylus of fifth pereiopod. a-c, f-i, k, × 10; d, e, m, n, × 20; j, l, × 5.

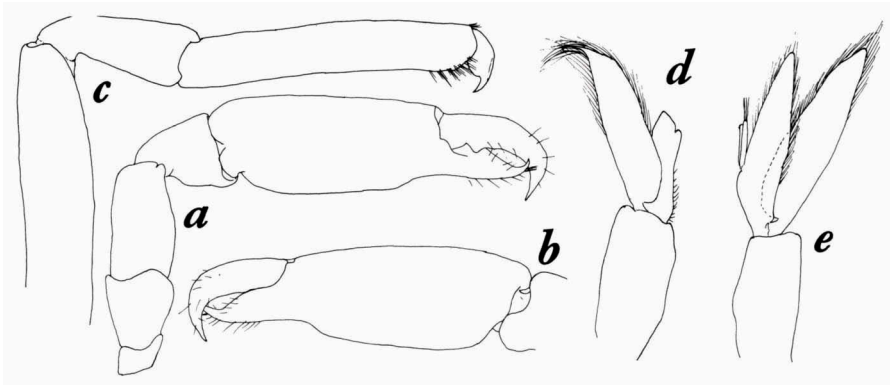


Fig. 2. *Neoanchistus nasalis* new species. a, second pereiopod of ovigerous female, internal view; b, chela of same, external view; c, fifth pereiopod; d, first pleopod of male; e, second pleopod of male. a, b, $\times 5$; c-e, $\times 10$.

The stylocerite is rather broad, ending in a blunt point; it reaches somewhat beyond the middle of the basal antennular segment. The anterolateral angle of the basal segment is broadly rounded and produced to about the middle of the second segment. The second segment is shorter than the first. The outer flagellum has the seven basal segments of the two rami fused, the free part of the shorter ramus consists of about four articles, and is about half as long as the fused part. The inner flagellum is simple and about half as wide as the outer.

The scaphocerite reaches about to the end of the antennular peduncle; it is about half as wide as long. The anterior margin is somewhat truncate with the inner angle slightly produced. The final tooth of the outer margin is strong but fails to reach beyond the antero-internal angle of the lamella. The last segment of the antennal peduncle falls somewhat short of the end of the lamella. There are no spines on any of the antennal segments.

The mouth parts are quite typical. The mandible bears no palp, the incisor process ends in about five small teeth, the outer of which are slightly larger than the rest; the molar process ends in a number of rounded lobes. The maxillula has the palp bilobed, the lower lobe ending in a point and showing a few small spinules or spine-like hairs. The two laciniae are blunt and are distally covered with many short, stiff hairs; the lower lacinia is broader than the upper. The maxilla is of the usual shape, the endite is cleft in two, the palp is well developed and so is the scaphognathite. The three maxillipeds all are provided with a well-developed exopod. The endites of coxa and basis of the first maxilliped are fused and show no incision; the palp is normal in shape; the caridean lobe is large and wide; the epipod in the examined specimen is large,

but due to unsatisfactory preservation is crumpled so that its true outline cannot be ascertained. The second maxilliped is of the usual shape. A large epipod is present; like that of the first, it is rather crumpled. The third maxilliped fails to reach the end of the antennal peduncle. The last segment is short, being about half as long as the penultimate. The antepenultimate segment is about as long as the distal two segments together. An epipod and a small arthrobranch are present.

The first pereopod is slender and folded back at the carpo-meral articulation. It reaches with this articulation to the end of the scaphocerite. The chela is oval in transverse section; the fingers are slightly shorter than the palm and carry rather many hairs; the cutting edges show a hardly perceptible gap in the basal part. The chela is somewhat more than half as long as the carpus. The merus is slightly shorter than the carpus. The peculiar peg-like spinules in the basal part of the inner margin of the merus as described by Bruce (1975: 154, figs. 5A, 6E) for *Neoanchistus cardiodytes* Bruce are not present in any of the present specimens. The second legs are equal and strong. They reach with the chela beyond the scaphocerite. The dactylus is much longer than the fixed finger and is strongly hook-shaped, its tip is curved down and ends in a sharp, slender point. The cutting edge of the dactylus bears one large tooth in the basal part. The fixed finger is straight and also ends in a sharp point which is slightly curved up. The cutting edge of the fixed finger is either without teeth or shows some small, blunt teeth in the basal half. The palm is about twice as long as the fixed finger and is slightly swollen. It narrows very gradually anteriorly, but near the base of the fixed finger the lower margin shows an abrupt curve, where the palm joins the narrower fingers. The carpus is short and cup-shaped, it has about 1/4 of the length of the chela, being somewhat shorter than the merus, but slightly longer than the ischium.

The third leg reaches slightly beyond the scaphocerite. The dactylus is simple and ends in a sharp and slender claw, the basal part of the dactylus is broad and somewhat swollen. A field of very short spinules is placed on the dorsal surface of the dactylus; these spinules are so small that even under a high magnification (about 50 times) the field still shows as a dull spot. The propodus is about 3.5 times as long as the dactylus and about four times as long as high; its distal margin bears some hairs and two spines. The posterior margin of the propodus shows no spinules. The carpus is about 3/4 as long as the propodus. The merus is slightly longer and distinctly wider than the propodus. The ischium is as wide as the merus, but somewhat shorter. The fourth leg almost reaches the end of the scaphocerite; it strongly resembles the third. The fifth leg is not attached to any of the specimens, but a loose leg in the jar evidently is that of the fifth pair. Unfortunately this leg is broken

off in the basal part of the merus. The dactylus is similar to that of the third leg, although the lower margin of the apex merges with that of the basal part more abruptly than in the third leg. The propodus is more than four times as long as the dactylus and about five times as long as high; it bears no spines distally, and the distal part of the posterior margin shows more setae than in the third leg. The carpus is slightly more than half as long as the propodus.

The endopod of the first pleopod of the male is oval and slightly more than half as long as the exopod. Its inner margin bears a number of short, stiff hairs in the basal part and shows a lobe in the distal part. In the second male pleopod the appendix masculina is slightly longer than the appendix interna, and ends in a few long, stiff, spine-like hairs.

The protopod of the uropod ends in a long, sharp point over the base of the exopod. The exopod has the outer margin slightly convex; the diaeresis is inconspicuous and bears a single small spine. The endopod is oval and slightly longer than the exopod; both are longer than the telson.

The eggs are numerous and small, having a diameter of about 0.5 mm.

Host. — *Chlamys townsendi* (G.B. Sowerby, 1895), belonging to the family Pectinidae. The genus evidently is not very restricted in its choice of hosts, as the type and only other known species of the genus, *Neoanchistus cardiodytes* Bruce, 1975, was found in *Trachycardium pectiniforme* (Born, 1780) of the family Cardiidae. The only species of the genus *Anchistus* found in association with molluscs of the family Pectinidae is *Anchistus pectinis* Kemp, 1925, of which *Anchistus misakiensis* Yokoya, 1936 is a synonym; it has been found in "Pectinid bivalves" (Bruce, 1976), *Pecten* spec. (Kemp, 1925), *Pecten albicans* (Schroeter, 1802) (Fujino & Miyake, 1967; Suzuki, 1971), *Amusium balloti* Bernardi, 1861 (Bruce, 1978), *Amusium japonicum* (Gmelin, 1790) (Yokoya, 1936; Suzuki, 1971).

Habitat. — The data for specimen no. 335 are not entirely certain as the label was lost: the locality near Raysut is correct, and the likelihood that the specimen was taken from *Chlamys townsendi* is very great, but no other data of the habitat are available except that the depth is 10 m. The material of sample 41 was taken from a *Chlamys townsendi* growing on an artificial reef created by dumping large boulders and concrete blocks, used in construction in the harbour area of Raysut, in the shallow sublittoral. These were covered with green filamentous algae, together with some red foliaceous species, and inhabited by many different species of reef fish — butterfly, trigger and parrot fish. Coral growth was very patchy. *C. townsendi* was abundant (notes by the collector).

Remarks. — *Neoanchistus nasalis* very closely resembles the type species of the genus, *N. cardiodytes* Bruce, 1975. In *N. cardiodytes* the rostrum is longer (reaching the end of the antennular peduncle) and more slender, but is

likewise curved down, and fully unarmed. The carapace of *N. cardiodytes* does not show any spines either. The outer antennular flagellum in *N. cardiodytes* is much shorter than in the new species, and the fused part consists of only two segments. The dactylus of the last three legs is much more slender in Bruce's species, and the propodus of the third leg bears some spines in the distal part of the posterior margin. Furthermore *N. cardiodytes* is a much smaller species, its carapace length, inclusive of the rostrum, being about 3 to 4 mm, as compared to 10 to 14 mm in *N. nasalis*. The eggs in *N. cardiodytes* are relatively much larger, measuring 0.55 mm against 0.5 mm in the present species. The difference in host species has already been mentioned above.

Bruce (1975: 152, figs. 3C, 6D) described the presence on the coxal segment of the antenna of "a tuft of short, acute, flattened setae arising from the medial border adjacent to the base of the basicerite in the male". No such setae were observed in either the male or the female of the new species, in which the opening of the antennal gland is found at the locality from where Bruce described the tuft of setae. It might be possible that the setae are no true setae, but are some secretion of the gland that has become solidified by the preservation fluid.

Neoanchistus cardiodytes was reported from Madagascar.

N. nasalis resembles *Anchistus pectinis* in the peculiar shape of the large chelae, which in *A. pectinis* also have the dactylus distinctly longer than the fixed finger and hook-shapedly curved down. In *A. pectinis*, however, the rostrum is provided with denticles and has a different shape, an antennal spine is present, but in many other characters *A. pectinis* resembles the present species. *A. pectinis* has a wide distribution: from Zanzibar and the Nicobar Islands (India) to Japan and Australia.

Etymology. — The specific name *nasalis* is proposed for the present species as the rostrum, in lateral view, somewhat resembles the nose of the Bornean Proboscis Monkey, *Nasalis larvatus* (Von Wurmb, 1781). The word *nasalis* therefore has to be treated here as a noun.

***Philarius gerlachei* (Nobili, 1905)**

Material examined. — Sudh, Dhofar, southern Oman. On *Acropora*. 21 October 1983. P.J. Hogarth, no. 230E. 1 specimen.

Philarius gerlachei is a well-known commensal of Madreporal corals.

It has a wide distribution in the Indo-West Pacific region (Red Sea to Australia and Polynesia). Its type locality lies N.E. of Arzana Island in the Arabian Gulf (Nobili, 1905).

Pontonia sibogae Bruce, 1973

Material examined. — South Fort, Mirbat, Dhofar, southern Oman, 16°58'20'' N 54° 41' 40'' E. 21 April 1983. P.J. Hogarth, no. 63A, Site 2F9. 1 ♂, cl. 5.5 mm; 1 ovigerous ♀, cl. 6 mm.

The species differs from all other species of the genus by the presence of five pairs of well-developed spines on the dorsal surface of the telson. These spines are very distinct in both specimens from Oman. An excellent account of the species has been provided by Bruce (1973).

P. sibogae has been reported from several localities in Queensland (Bruce, 1973: 182, 184; 1978: 179), from Indonesia (Damar Island, Moluccas; Holthuis, 1952: 158; Bruce, 1973: 184), and from N.W. Madagascar (Bruce, 1978: 180; 1978a: 280). It was found to live commensally in Ascidians: *Styela whiteleggei* Herdman (from Port Curtis, Queensland, 23 fathoms (= 42 m); Bruce, 1973: 184), from unidentified Ascidians (Queensland; Bruce, 1978: 179). No host is reported for the Indonesian specimen (found at a depth 45 m on a coral bottom), while those from Nosy Bé, Madagascar, were stated to be "captured free, from coral rock at 25 m". The habitat of the Oman specimens was described by Dr. P.J. Hogarth (in litt.) as follows: "The shore is largely igneous and consists of stones and boulders on bedrock. On the mid-lower shore the boulders are supplemented by chunks of coral rubble and bedded into a substrate of sand, gravel and finer coral debris. The *P. sibogae* specimens were found under boulders at about mid tide level, not obviously associated with ascidian, although some encrusting colonial ascidians may have been present. Other animals from the same sample include Sabellariid and Aphroditid annelids, ophiuroids, oxyrhynch crabs (*Menaethius*, *Tylocarcinus*), stomatopods (*Gonodactylus*) etc.". It is interesting that the species is found within Ascidians (as many other species of *Pontonia* do also), but that at the same time there are rather definite records that they also are found free-living. As most of the commensal Pontoniinae live in pairs within their host, it is significant that the present material also forms a perfectly matching pair.

Pontonia stylirostris Holthuis, 1952

Material examined. — Wadi Haart, 5 km N.E. of Sudh, Dhofar, southern Oman, 17° 04' 15'' N 55° 06' E. 16 April 1983. P.J. Hogarth, no. 116, Site 2J4a, XXVII. 1 ♀, cl. 4 mm.

The only specimen, a non-ovigerous female, unfortunately lacks all the legs except those of the first pair and the left third.

The rostrum, as in the type, is slender and styliform. It reaches to about

the middle of the second segment of the antennular peduncle. The upper margin shows a single distal tooth, not two as in the type. In other respects the specimen agrees well with the original description.

This is the second record of the species. The type and only specimen known so far was collected in Indonesia between New Guinea and Misool (1° 42.5' S 130° 47.5' E) at a depth of 32 m on a bottom of sand, small stones and shells (Holthuis, 1952: 169).

The habitat of the Oman specimen was described as follows by Dr. P.J. Hogarth: "Igneous rocky shore, mainly granitic. Steeper than at Mirbat, with fewer loose boulders but more fissures. Other species in the sample: porcellanids (*Petrolisthes*), *Eriphia*, *Nerita*, *Trochus* and *Turbo* spp.". Nothing is known of any commensalism of the species, although most species of *Pontonia* are associated with Ascidians or Molluscs.

***Jocaste lucina* (Nobili, 1901)**

Material examined. — Sudh, Dhofar, southern Oman. On *Stylophora*. 29 April 1983. P.J. Hogarth, no. 241C.

Jocaste lucina is a well-known commensal of Madreporal corals, and has a wide distribution throughout the Indo-West Pacific region (Red Sea to Australia and Polynesia).

***Conchodytes meleagrinae* Peters, 1852**

Material examined. — In *Pinctada margaritifera* (Linnaeus, 1758). Mirbat, Dhofar, southern Oman. 11 October 1983. P.J. Hogarth, no. 326, Site SR-2/SP-5. 1 ovigerous ♀.

In *Pinctada radiata* (Leach, 1814). South coast of Oman. 3 March 1983. P.J. Hogarth, no. 6, Site SP5 IT3. 1 ♂, 1 ovigerous ♀.

Conchodytes meleagrinae is a well-known pearl-oyster commensal, and has repeatedly been reported from *Pinctada margaritifera* (L.) and other species of the genus (*P. maxima* (Jameson, 1901) and *P. galtsoffi* Bartsch, 1931, the latter often considered a synonym of *P. margaritifera*). The record of the species from *P. radiata* seems to be a new host record.

Conchodytes meleagrinae inhabits the entire Indo-West Pacific region, from East Africa to Hawaii.

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