A NEW GENUS AND SPECIES OF CALLIANASSID GHOST SHRIMP FROM KYUSHU, JAPAN (DECAPODA: THALASSINIDEA)

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ABSTRACT

Grynaminna tamakii, new genus, new species, is described from specimens taken in a small area near the south end of Shimabara Peninsula, western Kyushu, Japan. The new genus shares with the eight known callichirine callianassid genera presence of a dorsal oval, maxilliped 3 with ovate propodus and slender dactylus, and pleopods 3–5 with "stubby" appendices internae. It most resembles Callichirus but differs in possessing an elongate-oval uropodal endopod, absence of a meral hook on the major cheliped, and absence of dorsal sculpture on abdominal somites 3–5.

The family Callianassidae is clearly diagnosed (Manning and Felder, 1991; Poore, 1994). Its subfamily Callichirinae Manning and Felder, 1991, is defined by the presence of a dorsal oval, maxilliped 3 with ovate propodus and slender dactylus, and pleopods 3–5 with "stubby" appendices internae. Manning and Felder (1991) listed five genera: Callichirus Stimpson, 1866; Coralliannassa Manning, 1987; Glypturus Stimpson, 1866; Lepidophthalmus Holmes, 1904; and Neocallichirus Sakai, 1988. To these need to be added Gilvossius Manning and Felder, 1992; Poti Rodrigues and Manning, 1992; and Sergio Manning and Lemaitre, 1994; which all share these diagnostic features. Poore (1994) provided a key to all eight genera and other thalassinideans.

Sakai (1987) listed the species of Callianassidae from Japan, all in the genus Callianassa. Several of these have been moved to other genera. The callianassid fauna now includes nine species: Callianassa (Calliacctites) longicauda Sakai, 1967; Calliach sakaii de Saint Laurent in de Saint Laurent and Le Loeuff, 1979; Calliach nakasonei (Sakai, 1967); Cheramus spinophthalma (Sakai, 1970); Neocallichirus indicus (de Man, 1905) (see Sakai, 1988); Nihonotrypaea japonica (Ortmann, 1891); Nihonotrypaea petalura (Stimpson, 1860); Nihonotrypaea hardmani (Bouvier, 1901), and Trypaea bouvieri (Nobili, 1904). See Heard and Manning (1998) and Manning and Tamaki (1998) for the most recent comments on the Japanese fauna.

Collections of callianassids from sand flats in a small area of Kyushu Island, Japan, by Akio Tamaki discovered numerous callianassid specimens which could not be any of the known Japanese species. They belong to a new species which could be placed within Callichirinae. The species not only differed from the only known Japanese callichirines, Callichirus nakasonei and Neocallichirus indicus, but also differed from all callichirine genera as presently defined. A new genus is erected for it here.

Most type material is lodged in National Science Museum, Tokyo (NSMT), Japan, but paratypes are also placed in the collections of Museum Victoria, Melbourne (NMV) and the National Museum of Natural History, Washington (USNM). Abbreviations are: cl, carapace length; tl, total length.

Grynaminna, new genus

Diagnosis.—Dorsal oval present. Rostral spine absent. Abdominal somite 2 as long as abdominal somite 6; abdominal somites 3–5 without patterns of dorsal grooves. Telson wider than long. Cornea dorsal, subterminal, disk-shaped. Antenna 1 peduncle longer and stouter than antenna 2 peduncle, furnished with 2 rows of dense long setae along lower margin. Maxilliped 3 without exopod; merus not projecting beyond articulation of carpus; with propodus ovate, dactylus much longer than wide. Chelipeds unequal (in adult males, barely so in females). Major cheliped without meral hook, blade-like denticulate margin instead; upper margin of merus–propodus smooth. Male pleopod 1 present, article 2 with distal hook. Male pleopod 2 biramous, with terminal digitiform appendix interna. Fe-
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male pleopod 1 uniramous. Female pleopod 2 biramous, with subterminal digitiform appendix interna. Pleopods 3–5 foliaceous; appendix interna triangular and embedded in margin of endopod. Uropodal endopod elongate-ovate, longer than telson.

Type Species.—Grynaminna tamakii, new species.

Etymology.—The new generic name is an anagram of Ray Manning, whose significant contribution to callianassid systematics is recognised by this offering.

Remarks.—The new genus most resembles Callichirus but differs from it in possessing an elongate-oval uropodal endopod (rather than a strap-like endopod), by the absence of a meral hook on the major cheliped, and by the absence of symmetrical dorsal sculpture on abdominal somites 3–5. The major cheliped does not have an especially elongate carpus, and the telson is not mediadly emarginate (Manning and Felder, 1986). Neocallichirus is also similar in lacking the meral hook, but its antenna 1 peduncle is shorter than that of antenna 2 and its uropodal endopod is broadened distally rather than tapering (Sakai, 1988; Manning, 1993). Grynaminna differs from all callichirine genera in the digitiform appendix interna of the second male pleopod.

The new genus keys by elimination to Sergio in Poore’s (1994) key but differs from this genus in relative lengths of antennae, non-tapering chelipeds and the longer appendix interna on pleopod 2 of both sexes.

Grynaminna tamakii, new species

Figs. 1–4

Material Examined.—Holotype: Japan, Kyushu, Nagasaki Prefecture, near S end of Shimabara Peninsula, Minami-Arima-cho sandflat (32°37’N, 130°13’E), A. Tamaki, 8 Jul 1998, NSMT-Cr 12525 (male, cl. 16 mm, tl. 64 mm). Paratypes: 22 specimens collected from type locality by A. Tamaki: 8 Jul 1998, NSMT-Cr 12526–12531 (2 males, tl. 40–54 mm; 4 females, tl. 32–37 mm, one with pair of bopyrid isopod parasites); NMV J47048–J47050 (1 male, 44 mm; 2 females, tl. 42–60 mm); USNM 291272 (2 males, tl. 26–67 mm); NSMT-Cr 12532–12535 (2 males, tl. 57–69 mm; 1 female, tl. 57 mm); NMV J47051–J47053 (4 males, tl. 26–67 mm); USNM 291273 (2 males, tl. 67–68 mm; 2 females, tl. 19–50 mm).

Description.—Males to 69 mm total length, females to 60 mm total length (largest carrying single egg). Carapace 25% of total length; ratio of lengths of abdominal somites and telson relative to second somite: 34:100:89:66:73:100:43. Rostrum and ocular lobes obtuse and similar; dorsal oval and linear thalassinica well defined; abdominal somites smooth; abdominal somites 3–5 widest, with dense tufts of lateral setae.

Eyestalks, contiguous on midline, flattened, 1.6 times as wide as base, cornea disk-shaped, distolateral, protruding slightly from otherwise convex lateral margin of eyestalk. Antenna 1 peduncle as long as carapace, 1.28 times as long as antenna 2 peduncle and stouter, bearing 2 rows of long setae along lower margin; article 3 length 3.2 times article 2. Antenna 2 peduncle more sparsely setose than antenna 1; article 5 half length of article 4.

Mandible, maxillae 1 and 2, and maxilliped 1 as in Fig. 2. Maxilliped 2 with carpus–dactylus 75% length of merus; exopod longer than merus; epipod triangular. Maxilliped 3 ischium–merus evenly expanded from base, 40% as wide at widest point of merus as long; merus 57% length of ischium, distolaterally rounded, mesiodistally with triangular lobe; carpus ovate, half as wide as long; propodus more or less square, as wide as long, distal margin square; dactylus 25% width of propodus, 2.75 times as long as wide, with rounded apex; exopod absent.

Pairs of arthrobranchs on maxilliped 3 and pereiopods 1–4, first pair reduced.

Pereiopods 1 (chelipeds) of male dissimilar. Major cheliped ischium finely tuberculate along lower margin; merus with irregularly tuberculate blade on lower margin; carpus about as wide as dorsal length, unarmed; propodus dorsal length 1.07 times dorsal length of carpus, slightly narrower than dorsal length, finely denticulate along edge of dactylus articulation and in mesial gape; fixed finger triangular, 40–46% length of dorsal length of propodus, with groove along cutting edge; dactylus as long as fixed finger, either tapering to bifid tip engaging groove on fixed finger or convex along upper margin and with tooth on cutting edge proximal to bifid tip. Minor cheliped about two-thirds length of major; ischium and merus unarmed; carpus width 70% dorsal length, unarmed; propodus dorsal length 70% dorsal length of carpus, 1.2 times as wide as dorsal length, finely denticulate near gape; fixed finger broadly triangular, 70% as long as dorsal length of propodus;
Fig. 1. *Grynaminna tamakii*, new species, holotype male: a, dorsal habitus; b, c, anterior of carapace, eyestalks and peduncles of antennae 1 and 2 (only bases of most setae in one row shown on antenna 1). Scale bar = 10 mm and refers to dorsal habitus only.
Fig. 2. *Gynaminna tamakii,* new species, holotype male: a, mandible; b, c, maxillae 1, 2; d-f, maxillipeds 1–3. Scale bars = 1 mm.

Dactylus as long as fixed finger, evenly curved, with concave cutting edge.

Pereiopods 1 (chelipeds) of female more similar than in male. Major cheliped ischium finely tuberculate along lower margin; merus with smooth convex blade on lower margin; carpus width 87% dorsal length, unarmed; propodus dorsal length as long as dorsal length of carpus, as wide as dorsal length, finely denticulate near gape; fixed finger broadly triangular, 60% as long as dorsal length of propodus; dactylus as long as fixed finger, evenly curved, with straight cutting edge. Minor cheliped about 90% length of major; ischium and merus unarmed; carpus width 75% dorsal length, unarmed; propodus dorsal length 88% dorsal length of carpus, as wide as dorsal length; fixed finger triangular, 70% as long as dorsal length of propodus; dactylus as long as fixed finger, with slightly curved tip.

Pereiopod 2 carpus twice as long as wide; propodus with larger upper lobe than lower...
lobe, distal margin slightly concave; dactylus as long as wide. Pereiopod 3 slightly less than half as wide as long; propodus length 1.3 times greatest width. Pereiopod 4 propodus with cylindrical fixed finger one-quarter length of propodus; dactylus broadened and exceeding fixed finger. Pereiopod 5 fully chelate.
Pleopod 1 of male distal article ovate, with medially directed fine distal lobe. Pleopod 2 of male biramous; endopod 3 times as long as wide, distally truncate, with digitiform appendix interna; exopod reaching about 80% length of endopod, about 5 times as long as wide. Pleopods 3-5 endopods with triangular appendices internae embedded in mesial margins.

Pleopod 1 of female with article 2 shouldered and bent at midpoint. Pleopod 2 of female biramous; endopod 2-articulate, 4.5 times as long as wide, distally rounded, with digitiform appendix interna at end of article 1; exopod reaching as far as endopod, almost 6 times as long as wide.

Uropod greatly exceeding telson; exopod broadly triangular, lateral margin regularly convex, evenly curved to posterior margin, greatest width 70% length; endopod elongate-ovate, tapering to rounded apex, greatest width 44% length.

Telson hexagonal, with obtuse angles along lateral margins, length 70% greatest width, posterior margin slightly sinuous.
Etymology.—For Akio Tamaki, Faculty of Fisheries, Nagasaki University, Japan.

Distribution.—One hundred three intertidal sandflat sites were visited by A. Tamaki along the central western coast of Kyushu Island between the entrances of Omura Bay and Yatsushiro Sound and including all of the coast of Tachibana Bay and Ariake Sound. The species was found at only three sites within 15 km on the southern end of Shimabara Peninsula and one across Hayasaki Inlet on Oyano Island, 25 km away.

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Literature Cited


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Note added in proof
Sakai (1999), in a paper appearing since completion of this paper, synonymized the subfamily Callichirinae with Callianassinae and some of its genera with others. He believes Callianassa includes species of Poti and Gilvossius, Glypturus includes species of Corallianassa and Corallichirus, and Neocallichirus includes species of Sergio and Corallianassa (part). His conclusions are based on perceived similarities and differences. Tudge et al. (2000) show in a phylogenetic analysis that Callianasinae is a small monophyletic clade and Callichirinae a larger paraphyletic group of slightly different generic composition than presented here. Most of the callichrine genera are well defined by synapomorphies. Clearly, much remains to be done to reach a final agreement on the composition and relationships of the genera but Sakai’s synonymies seem to me to be retrograde steps.