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Grandidierella trispinosa, a new species of amphipod from the Karachi coast, Pakistan (Crustacea: Amphipoda: Aoridae)

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Abstract: *Grandidierella trispinosa* sp. nov., the first species of the genus *Grandidierella* Coutiére, 1904 from Pakistan, is described from specimens collected at Sandspit backwater, west of Karachi. The new species is illustrated and compared with allied species. The holotype is housed in the Marine Reference Collection and Resource Centre, University of Karachi.

Key words: *Grandidierella*, new species, Pakistan

Introduction

Only few works have been published on the amphipods from the northern Arabian Sea that borders the coast of Pakistan. Amphipods of the genus *Grandidierella* Coutiére, 1904, belong to the family Aoridae, and typically occur in brackish waters where they construct tubes on a variety of hard substrates (Myers, 1970). The present work reports on the first record of this genus occurring in Pakistani waters, at Sandspit backwater, just west of Karachi. The genus *Grandidierella* contains 37 species (Myers, pers. comm.): *G. africana* Schellenberg, 1936, *G. bispinosa* Schellenberg, 1938, *G. bonnieri* Stebbing, 1908, *G. bonnieroides* Stephensen, 1948, *G. cabindae* (Schellenberg, 1925), *G. chelata* Barnard, 1951, *G. cohauensis* Hau & Li, 2002, *G. dentimera* Myers, 1970, *G. elongata* Chevereux, 1926, *G. exilis* Myers, 1981, *G. fasciata* Ariyama, 1996, *G. gilesi* Chilton, 1921, *G. gravipes* Barnard, 1935, *G. grossimana* Ledoyer, 1967, *G. indentata* Ledoyer, 1979, *G. insulae*, Myers, 1981, *G. japonica* Stephensen, 1938, *G. kanakensis* Myers, 1998, *G. koa* Barnard, 1977, *G. lignorum* Barnard, 1935, *G. longidactyla* Ledoyer, 1982, *G. lutosa* K.H. Barnard, 1952, *G. macronyx* Barnard, 1935, *G. mahafalensis* Coutiére, 1904, *G. makena* (J.L. Barnard, 1970), *G. megnae* Giles, 1888, *G. nottoni* Shoemaker, 1935, *G. nyala* Griffiths, 1974, *G. osakaensis* Ariyama, 1996, *G. palama* Baranard, 1977, *G. perlata* Scellenberg, 1938, *G. propodentata* Moore, 1986, *G. robusta* Ledoyer, 1982, *G. spinicoxa* Myers, 1972, *G. teres* Myers, 1981, *G. tihuensis* Morino & Dai, 1990, *G. vietnamica* Dang, 1968. Seven of these species have been recorded from the Indian Ocean: *G. megnae*, *G. glesi*, *G. macronyx*, *G. gravipes*, *G. lignorum*, *G. bonnieroides*, and *G. exilis*. The new species, *Grandidierella trispinosa,* is the 8th species in this

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genus from the Indian Ocean, and is described and figured here, based on unique characters of the presence of a spine on each of coxa 2, 3, and 4 in the male. The type material is deposited in the Marine Reference Collection and Resource Center, University of Karachi, Pakistan.

Systematics

Grandidierella trispinosa n. sp. (Figures 1, 2, and 3)

Material: Holotype 1 Adult Male, TL: 6.6 mm (MRC. Cat. No. AMP.11).

Paratype 1 Adult Female, TL: 6.8 mm (MRC. Cat. No. AMP. 12).

Type locality: Sandspit backwater, Karachi Coast, Pakistan, 24°50′24″N, 66°54′24″E.

Date of Collection: 25th May, 2006. Collector: Mr. Maqsoood

Diagnosis: Pereon segment 1 has a sternal spine. Coxae 2-4 have spines. Coxa 2 has a prominent and pointed spine, coxae 5 and 6 are bilobed. Gnathopod 1 without slender tooth on posterior margin. Male gnathopod 2 without brush of fine setae. Uropod 1 peduncle longer than rami.

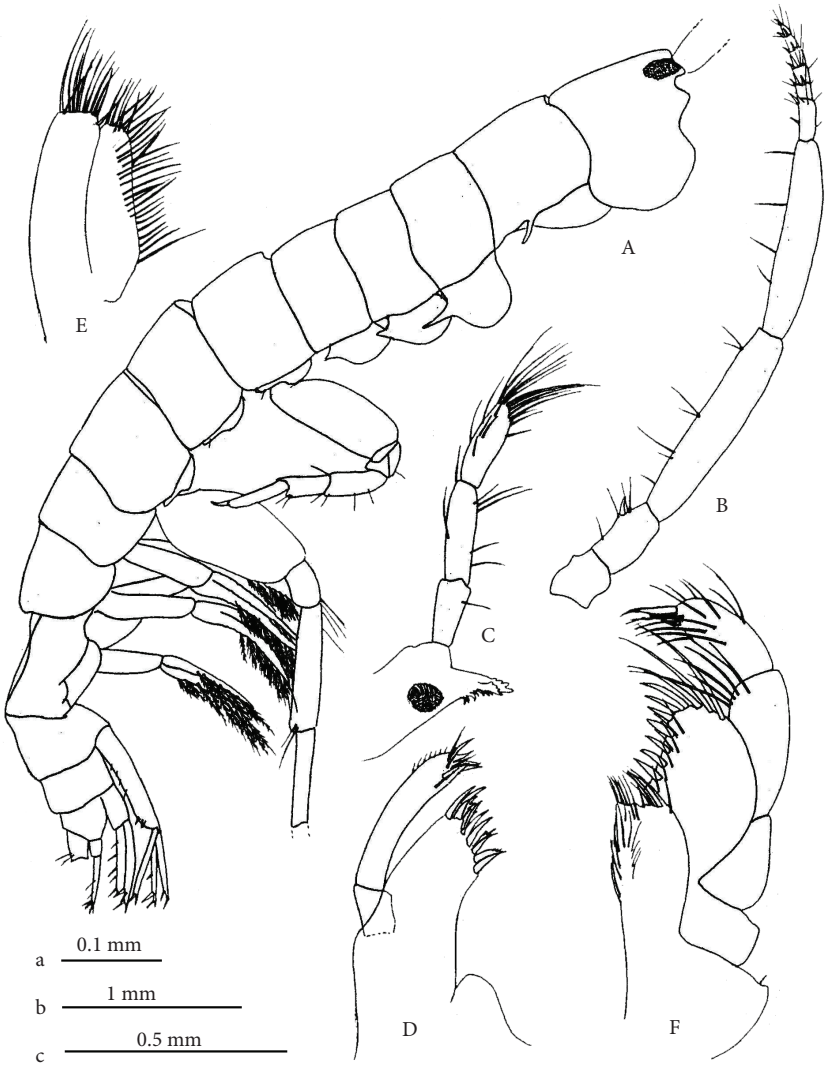

Figure 1. *Grandidierella trispinosa* n. sp. male holotype. A, entire animal, dorsal view; B, antenna 2; C, mandible; D, maxilla 1; E, maxilla 2; F, maxilliped. A and B at scale c, D-F at scale a.

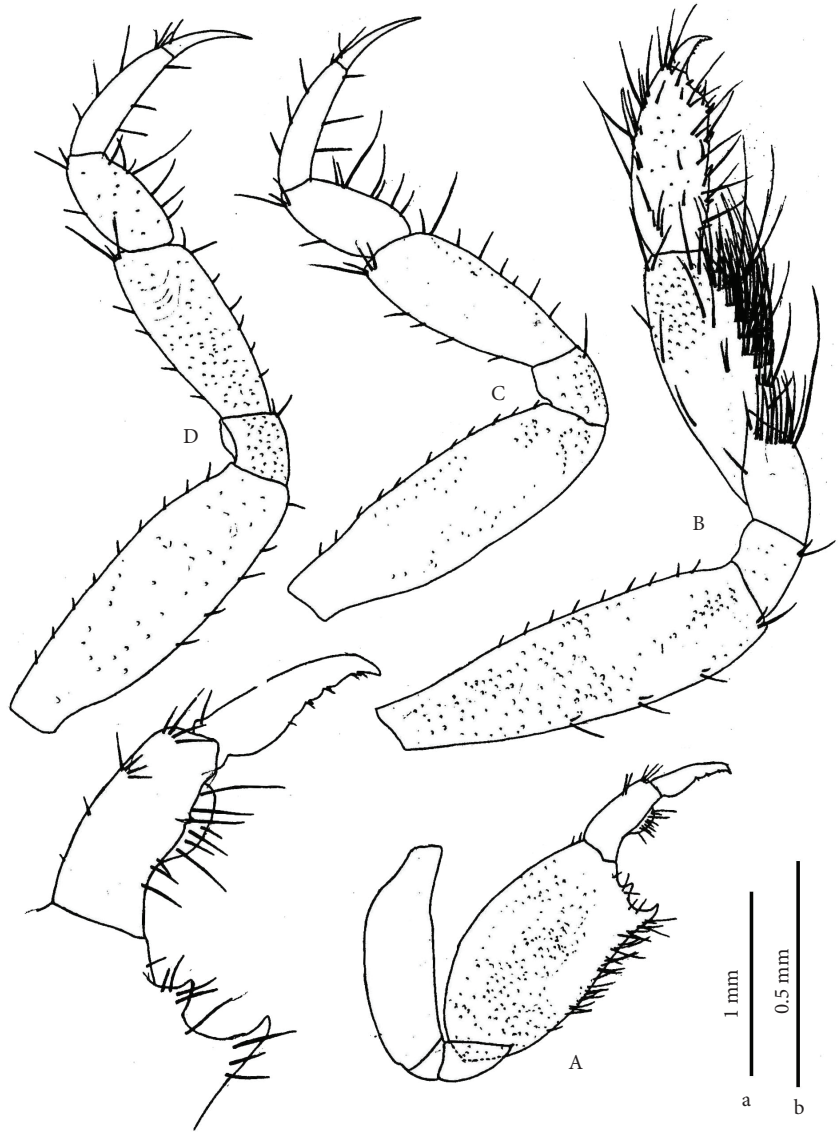

Figure 2. *Grandidierella trispinosa* n. sp. male holotype. A, gnathopod 1; B-D, pereopods 3-4. A at scale a, B-D at scale b.

Description of male holotype: Body slender. Antenna 1 missing, antenna 2 with robust peduncle, with 4 articles, article 3 with a single spine and setae on posterior distal margin; flagellum with 6 articles, with 1 stout spine on each article. Mandible well developed; palp with 3 articles, article 1 shorter than article 3, article 2 longer than article 1, with setae on anterior and posterior margins, article 3 with apical setae and posterior marginal setae. First maxilla with palp with 2 articles, with robust terminal setae; inner plate small, naked; outer plate with robust terminal setae. Maxilliped palp with 3 articles, inner plate with setae, outer plate with setae and robust spines. Gnathopod 1 coxa shallow unproduced; basis slender; ischium short; merus longer than ischium; carpus longer than broad, 3 times longer than propodus, with a posterior distal tooth, and smaller distal tooth, posterior margin with simple setae; propodus posterior margin concave proximally, convex distally, anterior distal margin with few setae; dactylus shorter than propodus, posterior margin widening proximally, with 3 small spines and setae. Gnathopod 2 coxa with posteriorly directed spine; basis slender; anterior, posterior margins with small setae; ischium

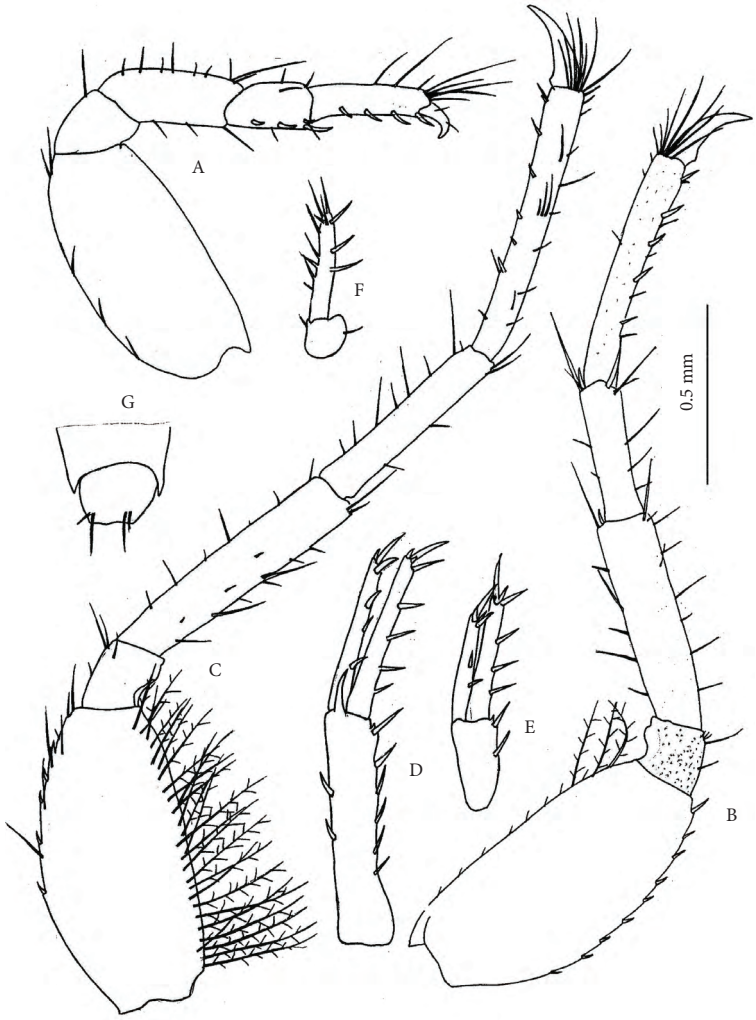

Figure 3. *Grandidierella trispinosa* n. sp. male holotype. A-C, pereopods 5-7; D-F, uropods 1-3; G, telson.

short with 2 setae on posterior distal margin; merus longer than ischium, anterior margin with row of setae; carpus longer than propodus, anterior margin densely setose, posterior distal surface scalloped; propodus slender, anterior margin with setae, posterior margin with small robust spine and setae, palm short, transverse, defined by spine; dactylus with short, serrated, posterior margin. Pereopod 3 coxa with a posteriorly-directed spine; basis slender; anterior surface scalloped, anterior margin with small setae; ischium short with a small seta on posterodistal margin; merus broadened distally, longer than carpus, with setae on anterior and posterior margins; carpus shorter than propodus, with setae on anterior and posterior margins; propodus long, narrow, with setae on anterior and posterior margins; dactylus long, smooth, anterior margin with a seta. Pereopod 4 coxa with a posteriorly-directed spine; basis slender; with setae on anterior and posterior margins; ischium short scalloped; merus longer than carpus, scalloped with setae on anterior and posterior margins; carpus with setae on anterior and posterior margins; propodus long, narrow distally, with setae on anterior and posterior margins; dactylus long smooth, with a single seta on anterior margin. Pereopod 5 basis broad, anterior margin with setae; ischium with a seta on anterior margin; merus longer than carpus, with setae on anterior and posterior margins; carpus short, with setae on anterior distal margin, curved robust spines on posterior margin; propodus long, with setae

on anterior distal margin, spines on posterior margin; dactylus short, curved, with setae on anterior margin. Pereopod 6 basis broad, anterior margin with long and short setae, posterior margin with marginal spines; ischium short scalloped, posterior margin with setae; merus longer than carpus with setae on anterior and posterior margins and a posterior distal spine; carpus shorter than propodus, with anterior and posterior distal spine on each side, and with setae on anterior and posterior margins; propodus long anterior distal margin with bunch of setae, posterior margin with marginal spines and small setae; dactylus smooth, curved. Pereopod 7 longer than all pereopods; basis broad, anterior margin with long setae, posterior margin with spines and setae; ischium short with posterior distal setae; merus longer than carpus; carpus shorter than propodus; propodus long, anterior distal margin with bunch of setae, posterior margin with spines, ventral surface with a row of setae; dactylus curved, smooth. Uropod 1 biramous; peduncle longer than rami; rami subequal, distoventral interramal spine present. Uropod 2 biramous; peduncle shorter than rami; inner ramus shorter than outer ramus. Uropod 3 uniramous; peduncle short; ramus more than two times longer than peduncle. Telson entire, with fine setae.

Description of female paratype (Figure 4): Similar to male, but pereon segment 1 lacking sternal spine. Gnathopod 2 and pereopods 3-4 coxae not pointed.

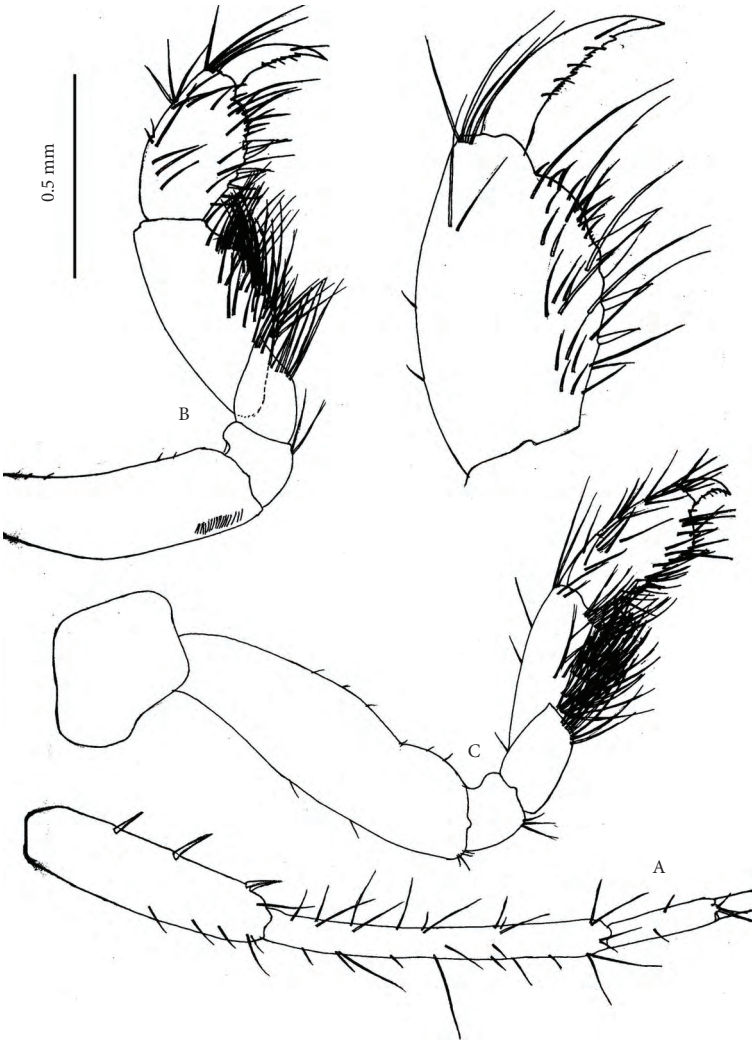

Figure 4. *Grandidierella trispinosa* n. sp. female paratype. A, antenna 1; B, gnathopod 1; C, gnathopod 2.

Antenna 1 peduncle with 3 articles; accessory flagellum vestigial; flagellum with 18 articles. Gnathopod 1 propodus shorter than carpus with 4 robust setae on posterior margin; dactylus overlapping, palm posterior margin serrated and with submarginal setae. Gnathopod 2 merus with distal row of setae; carpus anterior distal margin with setae, posterior margin with rows of long setae; propodus shorter than carpus, palm transverse, anterior and posterior margins setose; dactylus short, fitting palm, posterior margin serrated.

This benthic species is found in the Arabian Sea near Sandspit, Karachi coast, Pakistan, especially on sandy substrates, and no tube was observed in the present material. Sandspit back water is known as a nursery ground of various species and is connected to the Arabian through the Manora Channel. The intertidal area of Sandspit back waters is mostly muddy with some sandy patches (Sultana & Mustaqeem, 2003).

Discussion

Grandidierella trispinosa n. sp. is closely related to the Madagascan species *G. spinicoxa* Myers, 1972. The new species resembles *G. spinicoxa* in that the shape of gnathopod 2 and the ratio of peduncle and rami of uropod 2 and 3 are similar, but differs in the following important characters. Pereon segment 1 has a posteriorly-directed sternal spine, coxae 2-4 have posteriorly-directed spines, coxa 2 has a prominent and pointed spine, coxae 5 and 6 are bilobed; antenna 2 peduncular article 3 has a single spine. Gnathopod 1 basis is slender and the posterior margin is not serrated; the second small tooth on the distal margin of the carpus of gnathopod 1 is pointed and the slender tooth on the posterior margin is absent; the dactylus is broader proximally, and its posterior margin is serrated, not toothed. Male gnathopod 2 carpus anterior margin lacking a brush of fine setae. Female gnathopod 2 carpus anterior margin less setose than male. Uropod 1 peduncle longer than rami.

Etymology

The specific name *trispinosa* is from the Latin meaning 3-spined and refers to the presence of a spine on each of coxa 2, 3, and 4 in the male.

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