



New species of *Tridentella* Richardson, 1905 (Isopoda: Cymothoidea: Tridentellidae), tropical marine isopod crustaceans from the Banda Sea, Indonesia

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Abstract

Tridentella memikat **sp. nov.**, *Tridentella tanimbar* **sp. nov.** and *Tridentella brandtae* **sp. nov.** are described and figured. *T. memikat* **sp. nov.** is the largest species in the family and can be identified by the broadly rounded pleotelson posterior margin, complete lack of dorsal ornamentation and antennule peduncle articles 2 and 3 each with the posterodistal angle produced. *T. tanimbar* **sp. nov.** is a sister species to *T. recava* Bowman, 1986, both species characterised by a flattened body shape, lack of dorsal ornamentation and deep excision to the pleotelson apex; *T. tanimbar* **sp. nov.** is identified by free lateral margins to pleonite 5, antennal flagellum extending to pereonite 5 or 6, pleon wider than pereon, the propodus of pereopods 1–3 lacking long slender robust setae, uropod exopod shorter (0.8) than endopod and the uropods not extending beyond the pleotelson. *Tridentella brandtae* **sp. nov.** is characterised by the posterior margin of the pleotelson being subtruncate and weakly emarginate; posterior margins of pereonites 6 and 7, pleonites 3–5 and the dorsal surface of the pleotelson weakly nodulose; inferior margins of the propodus of pereopods 2 and 3 with a double row of robust setae; the shape and setation of the uropods; adult males are further characterised by the presence of a large bluntly rounded robust seta at the inferodistal angle of the carpus. These species constitute the first record of the family from the Indian Ocean.

Key words: Taxonomy, Isopoda, Tridentellidae, Banda Sea, Indonesia; Indian Ocean

Introduction

The Tridentellidae is a small family with a world-wide distribution (see Bruce 2002; Brandt & Poore 2001 for recent discussions and species lists), but only three of the 17 species have been recorded from tropical latitudes. Examination of the isopod collections held at the Muséum national d'Histoire naturelle in Paris revealed, potentially, as many as 13 mostly undescribed species of *Tridentella* Richardson, 1905 from tropical localities in the southwestern Pacific as far east as Fiji, and in the eastern Indian Ocean in the vicinity of the Banda Sea. This contribution describes three of these new species, all from the Banda Sea, including the largest species recorded for the genus, and is the first record of the genus from the Indian Ocean.

The Tridentellidae are part of the paraphyletic 'Cymothooidea' of Brandt and Poore (2003), clearly similar to the micropredatory families Aegidae and Corallanidae. Tridentellids are characterised and differentiated from other related families by having an elongate maxilliped endite that extends beyond the third palp article, and simple single-lobed maxilla distally provided with numerous serrated scales, but without recurved spines or hooked robust setae.

The species descriptions were prepared in DELTA (Descriptive Language for Taxonomy, see Dallwitz *et al.* 1997) using a general Tridentellidae character set. Some *integer numeric* character states in the description

may include a zero (0) rather than the more usual 'without' or 'none'; minor details qualifying a coded character state are given within parentheses.

Abbreviations: MNHN—Muséum national d'Histoire naturelle, Paris; RS—robust seta/setae; PMS—plumose marginal setae.

Taxonomy

Suborder Cymothoida Wägele, 1989

Family Tridentellidae Bruce, 1984

Tridentella Richardson, 1905

Restricted synonymy: Brandt & Poore, 2001: 200.

Remarks: Many species of *Tridentella* are highly ornamented, some with cephalic processes, or with heavily spinose dorsal surfaces, and the pleotelson often has longitudinal ridges and serrate lateral margins. A few species totally lack any form of ornamentation, these being *T. japonica* Thielemann, 1910, *T. recava* Bowman, 1986, *T. laevicephalax* Menzies, 1962 (Carvacho 1977) and now *Tridentella memikat* **sp. nov.** and *Tridentella tanimbar* **sp. nov.**; *Tridentella brandtae* **sp. nov.**, is so weakly nodulose as to appear without ornamentation. Brandt and Poore (2001) list the species known to date.

Tridentella memikat **sp. nov.**

(Figs 1–4)

Material examined. All material Kei Is., Banda Sea, Indonesia; coll. KARUBAR expedition.

Holotype: ♂ (32 mm), 07°40'S, 132°27'E, 28 October 1991, stn. CP38, 620–666 m, *Baruna Jaya 1* (MNHN Is.5983).

Paratypes: ♂ (18.0 mm, immature), 3 ♀ (non-ovig. 18.0, 18.5 [mouth dissection], 27 [uropod] mm), 3 manca (14.0, 15.0, 15.5 mm), 3 pre-manca (10.8, 11.0, 11.2 mm), same data as holotype (MNHN Is.5984). ♂ (33 mm, damaged [main dissection]), 4 ♀ (non-ovig. 20, 24, 29, 40 mm), 05°15'S, 132°59'E, 25 October 1991, stn. CP20, 769–809 m, *Baruna Jaya 1* (MNHN Is.5985). ♀ (15 mm, non-ovig., damaged), 05°14'S, 133°00'E, 25 October 1991, stn. CC21, 688–694 m, *Baruna Jaya 1* (MNHN Is.5986).

Description. *Body* 2.2 times as long as greatest width, dorsal surfaces smooth, widest at pereonite 6, lateral margins weakly ovate. *Rostral point* present, weakly developed. *Eyes* separated by about 54% width of head, each eye made up of ~8 transverse rows of ommatidia, each row with ~13 ocelli, eye colour black. *Pereon* with transverse impressed line on pereonites 2–7; *pereonite 1 and coxae 2–3* each with posteroventral angle acute, posteriorly produced; *coxae 5–7* with entire oblique carina; posterior margins of pereonites 5–7 smooth. *Pleon* with pleonite 1 largely concealed by pereonite 7; 3–5 posterior margin smooth; posterolateral angles of pleonite 2 forming acute point, not posteriorly produced; pleonite 3 with posterolateral margins not extending to posterior margin of pleonite 4, narrowly rounded; not extending beyond posterior margin of pleonite 5, posterolateral margin of pleonite 4 rounded; pleonite 5 with posterolateral angles free, not overlapped by lateral margins of pleonite 4. *Pleotelson* 0.7 as long as anterior width, dorsal surface without longitudinal carinae; lateral margins convex, posterior margins weakly crenulate, posterior margin converging to caudomedial point, without median point, with 0 RS.

Antennule peduncle articles 1 and 2 distinct, articulated; article 2 1.0 times as long as article 1, posterodistal angle produced to an acute point (posterior margin blade-like); articles 3 and 4 1.6 times as long as com-

bined lengths of articles 1 and 2; article 3 3.0 times as long as wide, posterodistal angle produced to an acute point; flagellum with 26 articles, extending to posterior of pereonite 1. *Antenna* peduncle article 4 1.9 times as long as wide, 2.0 times as long as article 3, inferior margin with 0 plumose setae, and 0 short simple setae; article 5 1.3 times as long as article 4, 2.4 times as long as wide, inferior margin with 0 pappose setae, anterodistal angle with cluster of 10 short simple setae; flagellum with 32 articles, extending to pereonite 5.

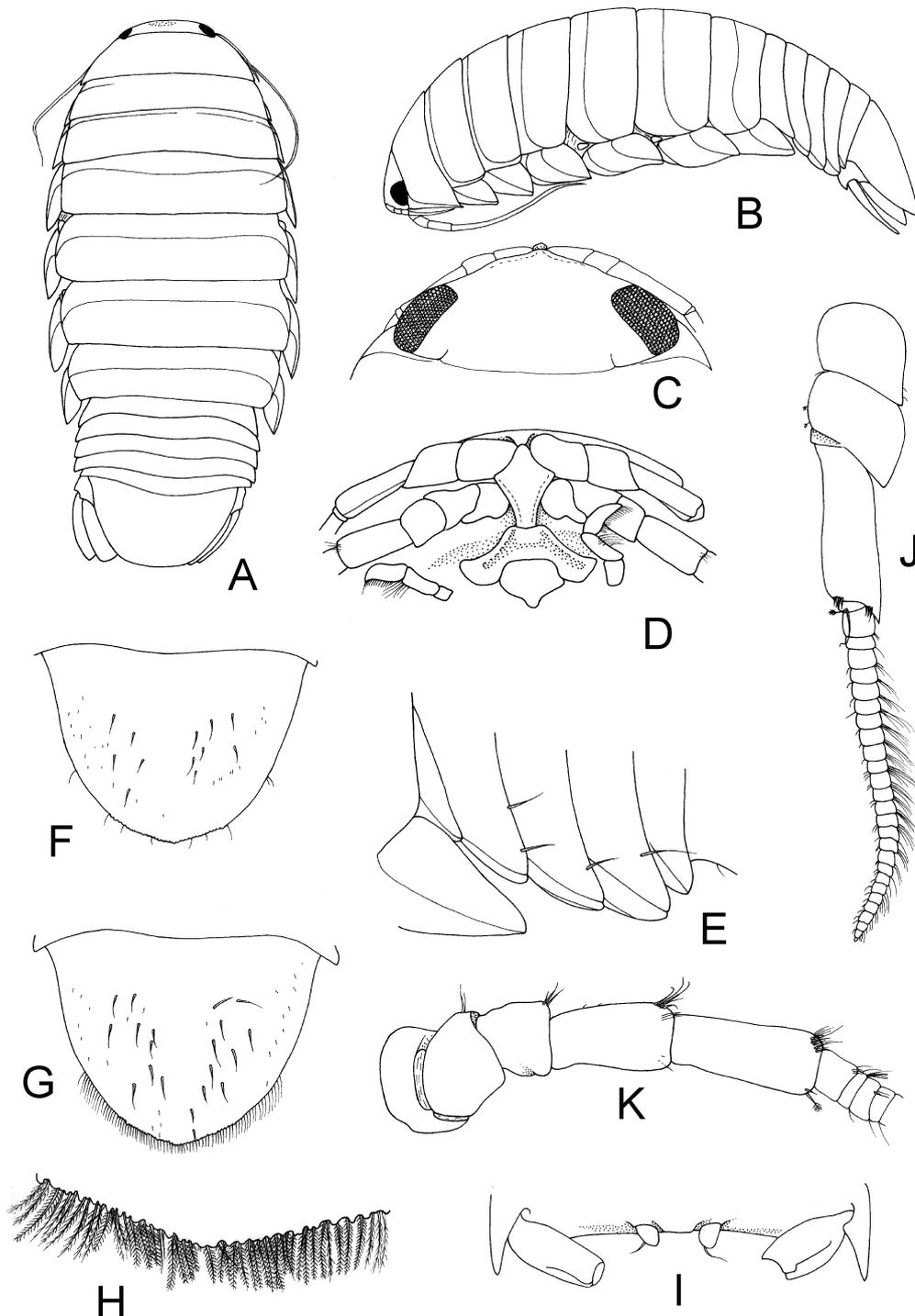


FIGURE 1. *Tridentella memikat* sp. nov. A–D, F, I, holotype; J, K, ♂ 33 mm and E, G and H, ♀ 27 mm, paratypes. A, dorsal view; B, lateral view; C, head; D, frons; E, pleonites, lateral view; F, pleotelson, holotype; G, pleotelson, ♀ paratype; H, pleotelson posterior margin, apex; I, penial processes, in situ; J, antennule; K, antenna peduncle.

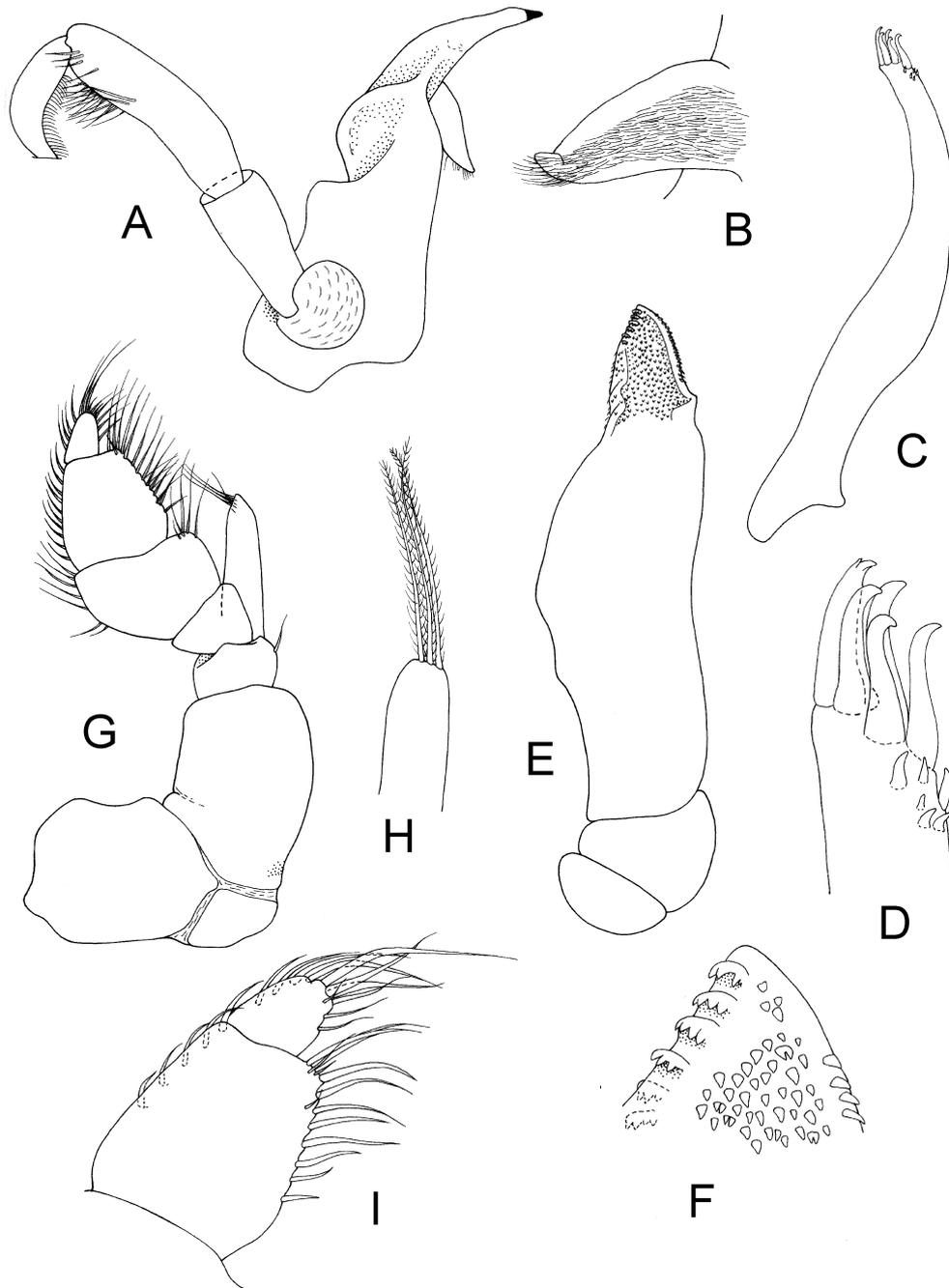


FIGURE 2. *Tridentella memikat* sp. nov. Paratype ♂ 33 mm. A, mandible; B, mandibular molar process; C, maxillule; D, maxillule apex; E, maxilla; F, maxilla apex; G, maxilliped; H, maxilliped endite, apex; I, maxilliped palp articles 4 and 5.

Frontal lamina pentagonal, longer than greatest width, lateral margins concave, anterior margins concave, anterior margin narrowly rounded. *Mandible* incisor uni-cuspid; molar process with abundant setae; palp article 2 with ~40 distolateral setae, article 3 with ~30 RS. *Maxillule* with 5 terminal RS (and 6 small sub-terminal RS). *Maxilla* distomesial margin with 6 serrated scales. *Maxilliped palp* article 2 mesial margin with 0 slender setae, lateral margin distally with 0 slender setae, article 3 mesial margin with 6 slender setae, lateral margin with 7 slender setae, article 4 mesial margin with 18 slender setae, lateral margin with 10 slender setae, article 5 distomesial margin with 8 setae, lateral margin with 7 setae; endite extending beyond distal margin of palp article 3, with 3 long circumplumose setae.

Pereopod 1 basis 2.8 times as long as greatest width, superior distal angle with cluster of 0 acute setae; ischium 0.4 as long as basis, inferior margin with 5 setae (very small), superior distal margin with 0 RS (1 slender seta); merus inferior margin with 3 RS, set as single row, superior distal angle with 2 setae; carpus inferior margin with 0 RS; propodus 1.7 times as long as wide, inferior margin with 3 RS (very minute, scarcely visible acute); dactylus 1.0 as long as propodus, inferior margin strongly concave. *Pereopod 2* ischium inferior margin with 2 stout RS (widely separate, 1 ventral, 1 mesial), superior distal margin with 1 RS (and 1 slender seta); merus inferior margin with 6 stout RS, set as two groups, superior distal margin with 2 acute RS; carpus inferodistal angle with 2 RS (1 large, 1 minute; and single seta). *Pereopod 3* similar to pereopod 2. *Pereopod 6* similar to pereopod 7. *Pereopod 7* basis 2.6 times as long as greatest width, superior margin weakly convex, inferior margin with 0 palmate setae; ischium 0.5 as long as basis, inferior margin with 3 RS (set as 1 and 2), superior distal angle with 5 RS, inferior distal angle with 9 RS; merus 0.9 as long as ischium, 1.3 times as long as wide, inferior margin with 6 RS (set as 1, 2 and 3), superior distal angle with 8 RS, inferior distal angle with 7 RS; carpus 0.7 as long as ischium, 1.2 times as long as wide, inferior margin with 3 RS (set singly), superior distal angle with ~25 RS, inferior distal angle with 5 RS; propodus 1.0 times as long as ischium, 3.4 times as long as wide, inferior margin with 4 RS (set singly), superior distal angle with 0 slender setae (1 RS), inferior distal angle with 2 RS.

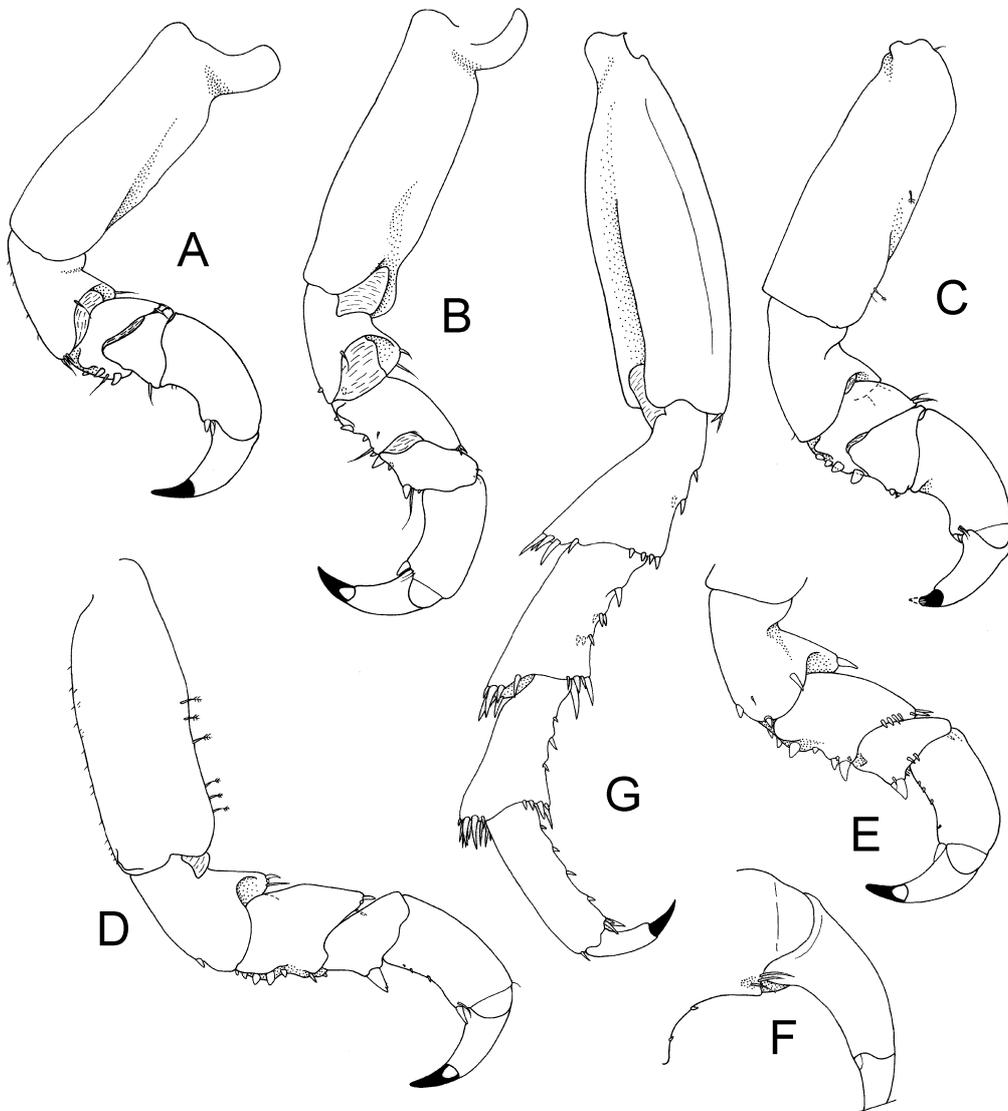


FIGURE 3. *Tridentella memikat* sp. nov. A, B, G, holotype, remainder paratype ♂ 33 mm. A, pereopod 1; B, pereopod 2; C, pereopod 1; D, pereopod 2; E, pereopod 3; F, pereopod 1 dactylus; G, pereopod 7.

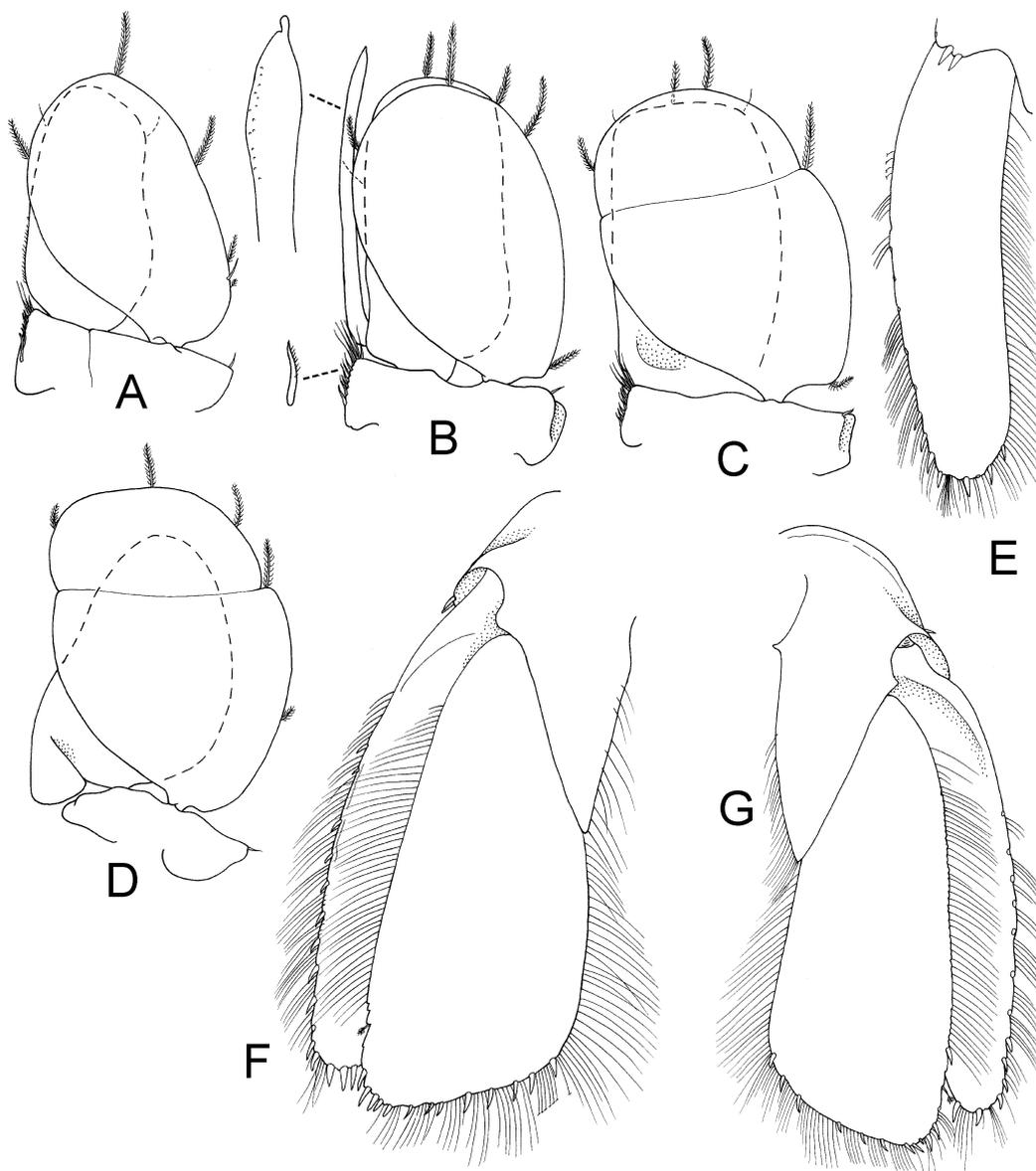


FIGURE 4. *Tridentella memikat* sp. nov. Paratype ♂ except F, paratype ♀ 27 mm. A–D, pleopods 1–3, 5; E, uropod exopod, ventral view; F, G, uropods dorsal view.

Penes flat articulating lobes, penial openings separated by 13% of sternal width, penial process 1.4 times as long as basal width (apex broadly rounded).

Pleopod 1 exopod 1.6 times as long as wide, lateral margin straight, distally broadly rounded, mesial margin strongly convex, with PMS from distal one-third; endopod 1.9 times as long as wide, distally broadly rounded, lateral margin weakly concave, with PMS from on distal margin only, mesial margin with PMS from distal one-third; peduncle 2.7 times as wide as long; mesial margin with 6 coupling hooks. *Pleopod 2 appendix masculina* with parallel margins, 1.0 times as long as endopod, distally acute (with small apical lobe). Pleopods 2–5 peduncle distolateral margin without prominent acute RS; pleopods 3–5 endopods without distomesial serrate scales.

Uropod peduncle ventrolateral margin with 2 RS, lateral margin with medial short acute RS, posterior lobe about one-third as long as endopod; rami extending to pleotelson apex, marginal setae in single tier, apices broadly rounded. *Endopod* apically not bifid; lateral margin straight, proximal lateral margin with 0 RS; distal lateral margin with 0 RS, mesial margin strongly convex, with 9 RS. *Exopod* not extending to end of

endopod, 3.8 times as long as greatest width, apically not bifid; lateral margin weakly convex, with 11 RS; mesial margin weakly convex or weakly concave, with 4 RS.

Female: Similar to male but for the sexual characters.

Variation: *Robust setae*: pleotelson ($n=11$) always without RS. Uropod setation far from uniform, and pattern is only loosely as stated in the description. Uropod exopod mesial margin ($n=22$) with 3–5 RS, 3 (36%), 4 (55%) or 5 (9%), lateral margin ($n=20$) with 7–13 RS, 11 (45%) or 12 (20%) most frequent; uropod endopod mesial margin ($n=22$) with 7–12 RS, 7 (18%), 8 (50%) or 9 (14%) most frequent, 0 and 12 each occurring once, lateral margin ($n=20$) with only 0+3 (45%) or 0+2 (40%), 1+3 occurring twice, 0+4 once. There is no discernable difference between males and females; the number of RS are frequently different on the left and right rami, as well as between individuals; in smaller or juvenile individuals the apex of the pleotelson is more evident (Fig. 1G) than in the larger (> 30 mm) specimens (Fig. 1F).

Pereopods 2 and 3: Males of several species of *Tridentella* have a large, conical robust seta at the inferodistal angle of pereopods 2 and 3. Development and maturity changes have not been recorded in the genus, but this difference is not solely due to size. The two large specimens recorded here are of similar size, and both have equally developed penial processes and appendix masculina, but only one has the large carpal robust setae, and furthermore has more robust setae on the inferior margins of pereopods 1–3 (Figs 3A and C, 3B and D).

Size: Adult males 32 and 33 mm; non-ovigerous females 15–40 mm (mean = 21 mm); manca 14.0–15.5 mm.

Remarks: The large size, broadly rounded pleotelson posterior margin, complete lack of dorsal ornamentation and antennule peduncle articles 2 and 3 each with the posterodistal angle being produced, distinguishes *Tridentella memikat* sp. nov. from all other species in the family.

Distribution: Banda Sea Indonesia, at depths from 620 to 809 metres.

Etymology: The epithet is an Indonesian word meaning engross or fascinating (noun in apposition).

Tridentella tanimbar sp. nov.

(Figs 5–8)

Material examined. *Holotype*: ♂ (31 mm), Indonesia, Banda Sea, Tanimbar Is, 08°41'S, 131°18'E, 2 November 1991, KARUBAR stn. CP70, 413–410 m, *Baruna Jaya 1* (MNHN Is.5987).

Description: *Body* 2.1 times as long as greatest width, dorsal surfaces smooth, sparsely punctate, widest at pereonite 6, lateral margins weakly ovate. *Rostral point* present, weakly developed. *Eyes* separated by about 46% width of head, each eye made up of ~16 transverse rows of ommatidia, each row with 7 or 8 ocelli, eye colour pale brown. *Pereonites* without transverse impressed line; *pereonite 1 and coxae 2–3* each with posterodistal angle right-angled; *coxae 5–7* with entire oblique carina; posterior margins of pereonites 5–7 smooth. *Pleon* with pleonite 1 visible in dorsal view; pleonites 3–5 posterior margin smooth; posterolateral angles of pleonite 2 forming acute point, not posteriorly produced; pleonite 3 with posterolateral margins not extending to posterior margin of pleonite 4, acute; clearly extending beyond posterior margin of pleonite 5, posterolateral margin of pleonite 4 acute; pleonite 5 with posterolateral angles overlapped by lateral margins of pleonite 4. *Pleotelson* 1.2 times as long as anterior width, dorsal surface without longitudinal carinae; surface smooth; lateral margins sinuate, posterior margin smooth, posterior margin with deep notch, with small distinct median point, without RS.

Antennule peduncle articles 1 and 2 distinct, articulated; article 2 1.2 times as long as article 1, posterodistal angle not produced; articles 3 and 4 1.7 times as long as combined lengths of articles 1 and 2; posterodistal angle not produced; flagellum with 32 articles, extending to pereonite 2. *Antenna* flagellum with 44 articles, extending to pereonite 5 or pereonite 6.

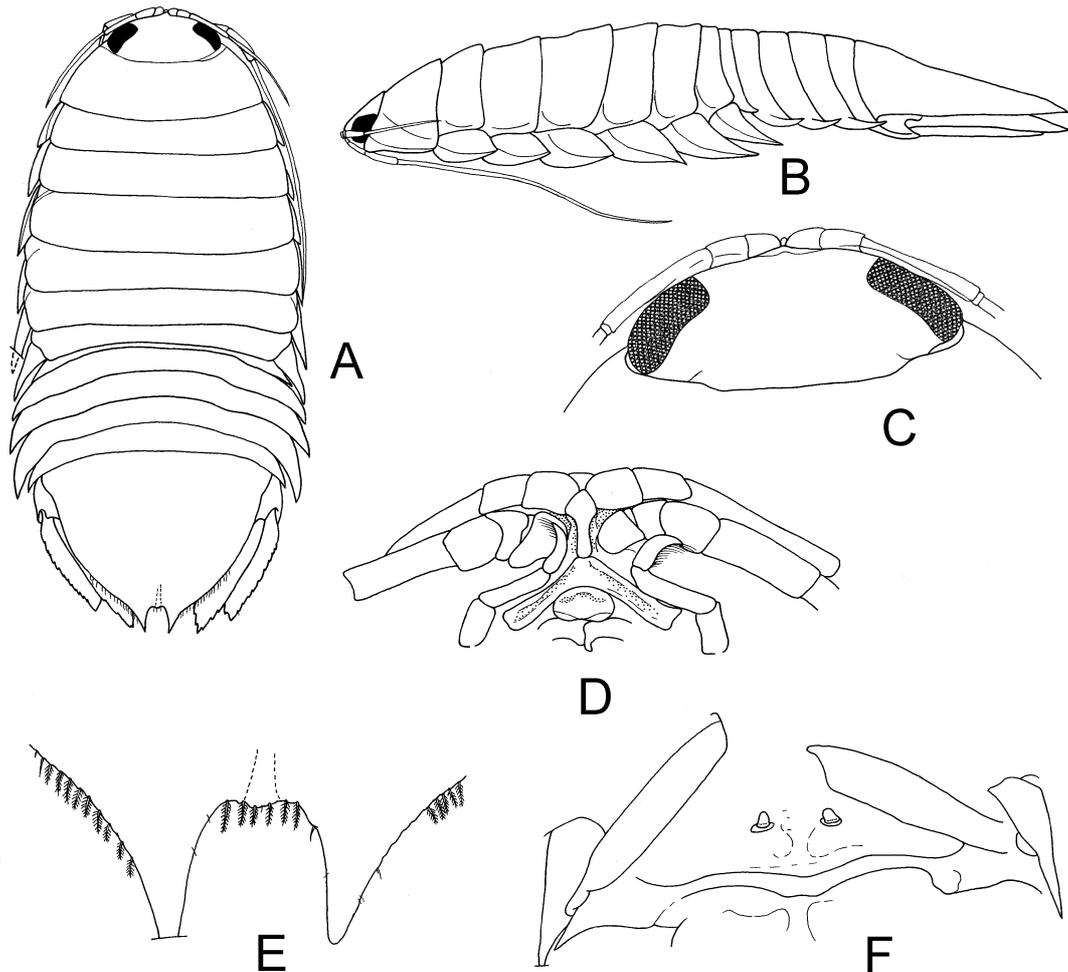


FIGURE 5. *Tridentella tanimbar* sp. nov. Holotype. A, dorsal view; B, lateral view; C, head; D, frons; E, pleotelson apex; F, sternite 7 showing penial processes.

Frontal lamina lateral margins convex, not angled, longer than greatest width, lateral margins converging to anterior, anterior margins convex, anterior margin forming median point. *Mandible* incisor tricuspid; molar process with abundant setae; palp article 2 with 35–40 distolateral setae, article 3 with ~40 RS. *Maxillule* with 6 terminal RS (and 5 small sub-terminal RS). *Maxilla* distomesial margin with 6 serrated scales. *Maxilliped* article 2 mesial margin with 1 slender seta, lateral margin distally with 0 slender setae, article 3 mesial margin with 6 slender setae, lateral margin with 3 slender setae, article 4 mesial margin with 11 slender setae, lateral margin with 7 slender setae, article 5 distomesial margin with 12 setae, lateral margin with 2 setae; endite extending beyond distal margin of palp article 3, with 0 long circumplumose setae (1 small hooked RS).

Pereopod 1 basis 3.1 times as long as greatest width, superior distal angle without; ischium 0.3 as long as basis, inferior margin with 0 setae, superior distal margin with 1 RS; merus inferior margin with 4 RS (very small), set as two groups, superior distal angle with 1 setae; carpus inferior margin with 1 RS; propodus 2.4 times as long as wide, inferior margin with 0 RS; propodal palm weakly concave; dactylus 0.8 as long as propodus. *Pereopod 2* more slender than pereopod 1; ischium inferior margin with 1 stout RS, superior distal margin with 1 RS (and 1 slender seta); merus inferior margin with 8 small stout RS, set as two rows, superior distal margin with 1 acute RS (and 1 slender seta); carpus inferodistal angle with 2 RS; propodal palm with 3 RS (minute, acute). *Pereopod 3* similar to pereopod 2. *Pereopod 6* similar to pereopod 7. *Pereopod 7* basis 4.7

times as long as greatest width, superior margin weakly convex, inferior margin with 9 palmate setae; ischium 0.4 as long as basis, inferior margin with 5 RS (set as 1, 1 and 3), superior distal angle with 3 RS, inferior distal angle with 3 RS; merus 1.1 times as long as ischium, 3.4 times as long as wide, inferior margin with 5 RS (set as 1, 2 and 2), superior distal angle with 5 RS, inferior distal angle with 5 RS; carpus 0.9 as long as ischium, 2.9 times as long as wide, inferior margin with 4 RS (set as 1, 1 and 2), superior distal angle with 21 RS, inferior distal angle with 7 RS; propodus 0.8 as long as ischium, 4.8 times as long as wide, inferior margin with 4 RS (set as 1, 1 and 2), superior distal angle with 1 slender seta, inferior distal angle with 3 RS.

Penes flat articulating lobes, penial openings separated by 11% of sternal width, penial process 1.0 times as long as basal width.

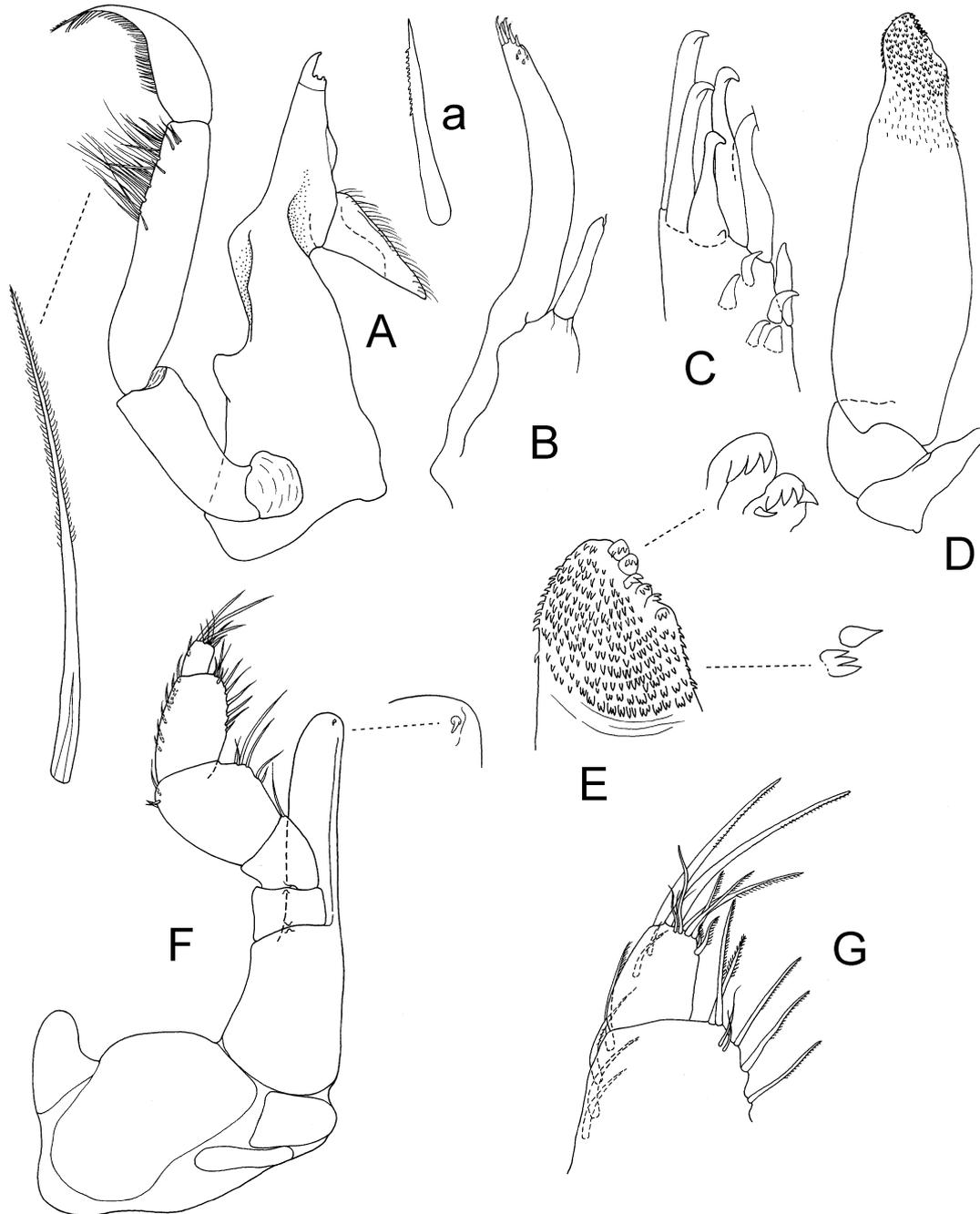


FIGURE 6. *Tridentella tanimbar* sp. nov. Holotype. A, mandible; a, seta from molar process; B, maxillule; C, maxillule apex; D, maxilla; E, maxilla apex; F, maxilliped; G, maxilliped palp articles 4 and 5.

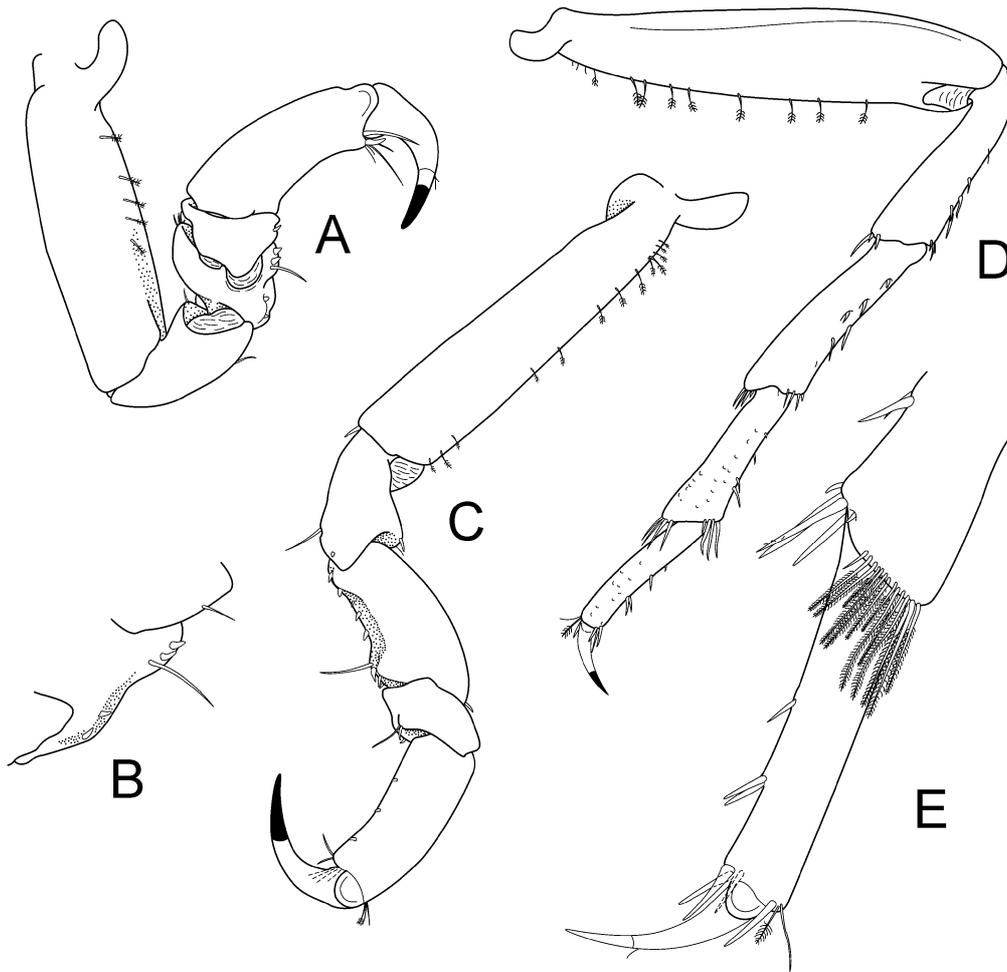


FIGURE 7. *Tridantella tanimbar* sp. nov. Holotype. A, pereopod 1; B, pereopod 1, merus inferior margin; C, pereopod 2; D, pereopod 7; E, pereopod 7, distal articles.

Pleopod 1 exopod 1.6 times as long as wide, lateral margin strongly convex, distally broadly rounded, mesial margin strongly convex, with PMS from distal half; endopod 1.9 times as long as wide, distally broadly rounded, lateral margin strongly concave, with PMS from on distal margin only, mesial margin with PMS from distal one-third; peduncle 2.3 times as wide as long; mesial margin with 8 coupling hooks. *Pleopod 2 appendix masculina* basally widest, 0.8 as long as endopod, distally narrowly rounded. Pleopods 2–5 peduncle distolateral margin with small acute RS.

Uropod peduncle ventrolateral margin with 1 RS, lateral margin without medial short acute RS, posterior lobe about one-third as long as endopod (0.28); rami not extending beyond pleotelson, apices acute. *Endopod* apically shallowly bifid; lateral margin proximally convex or distally straight, proximal lateral margin with 3–5 RS; distal lateral margin with 1 or 2 RS, mesial margin weakly convex, with 4 or 5 RS. *Exopod* not extending to end of endopod, 3.4 times as long as greatest width, apically shallowly and equally bifid; lateral margin weakly sinuate, with 10 RS; mesial margin straight, distally convex, with 3 or 4 RS.

Remarks: *Tridantella tanimbar* sp. nov. species bears a remarkable similarity to *Tridantella recava* Bowman, 1986, on several characters, such as body shape, coxal morphology and the shape of the pleotelson and uropods, and the species can be considered ‘sister species’. The pleotelson is unique within the family in being prominently excavate with the margins forming two acute points on either side of the excavation. The mouthparts and pleopods of the two species are effectively the same and, while differing in details of the

robust setae, the overall form of the pereopods and uropods is also the same. Despite this general similarity, *T. tanimbar* differs from *T. recava* in numerous details, the most obvious of which are: free lateral margins to pleonite 5 (laterally overlapped by pleonite 4 in *T. recava*), more slender pereopods 2 and 3, lack of long slender robust setae on the inferior margins of pereopods 1–3, uropods not extending beyond the pleotelson, and a uropod exopod that is shorter than the endopod (0.87) and falls well short of the endopod apex in *T. tanimbar* compared to about as long (0.95) as the endopod and extends nearly to the endopod apex in *T. recava*.

Etymology: The epithet is the Indonesian name for the island near the type locality (noun in apposition).

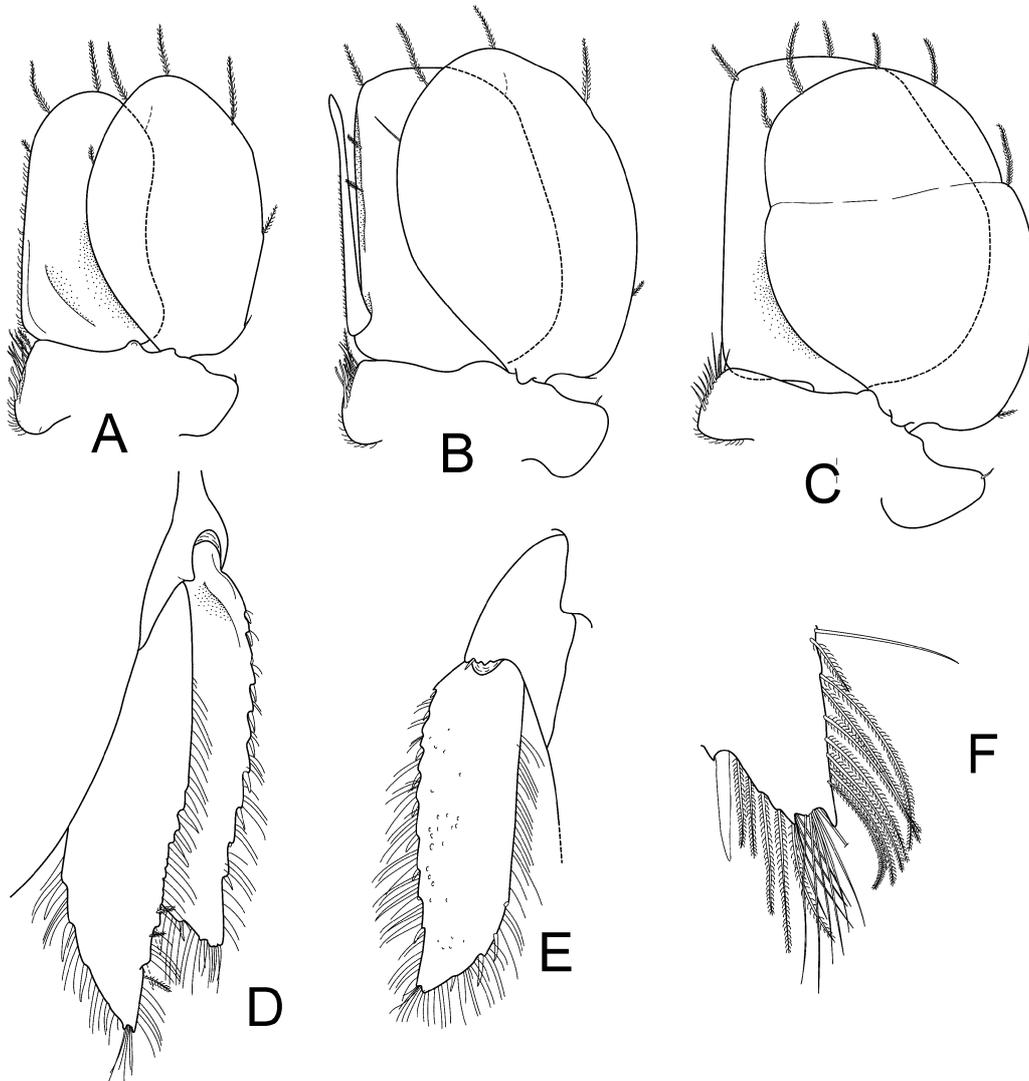


FIGURE 8. *Tridentella tanimbar* sp. nov. Holotype. A–C, pleopods 1–3 respectively; D, uropod exopod, dorsal view; E, uropod exopod, ventral view; F, uropod endopod apex.

***Tridentella brandtae* sp. nov.**

(Figs 9–11)

Material examined. *Holotype:* ♂ (10.5, slightly damaged), Indonesia, Banda Sea, Kei Is, 05°26'S, 132°38'E, 24 October 1991, stn. DW13, 417–425 m, *Baruna Jaya I* (MNHN Is.5988).

Paratypes: ♂ (9.4 mm), ♀ (ovig. 11.8 mm), same data as holotype (MNHN Is.5989).

Description: *Body* 2.6 times as long as greatest width, dorsal surfaces polished in appearance, widest at pereonite 5, lateral margins subparallel. *Rostral point* absent. *Eyes* separated by about 40% width of head, each eye made up of ~8 transverse rows of ommatidia, each row with ~6–8 ommatidia, eye colour black. *Pereon* without transverse impressed line on pereonites; *pereonite 1 and coxae 2–3* each with posteroventral angle rounded; *coxae 5–7* with entire oblique carina; posterior margins of pereonites 5–7 with irregular, weak submarginal nodules. *Pleon* with pleonite 1 visible in dorsal view; 3–5 posterior margin with irregular small nodules; posterolateral angles of pleonite 2 forming acute point, not posteriorly produced; pleonite 3 with posterolateral margins not extending to posterior margin of pleonite 5, narrowly rounded; posterolateral margins of pleonite 4 not extending beyond posterior margin of pleonite 5, rounded. *Pleotelson* 0.7 as long as anterior width, dorsal surface without longitudinal carinae; surface weakly nodular; posterior margin weakly crenulate, posterior margin sub-truncate, without median point, without RS.

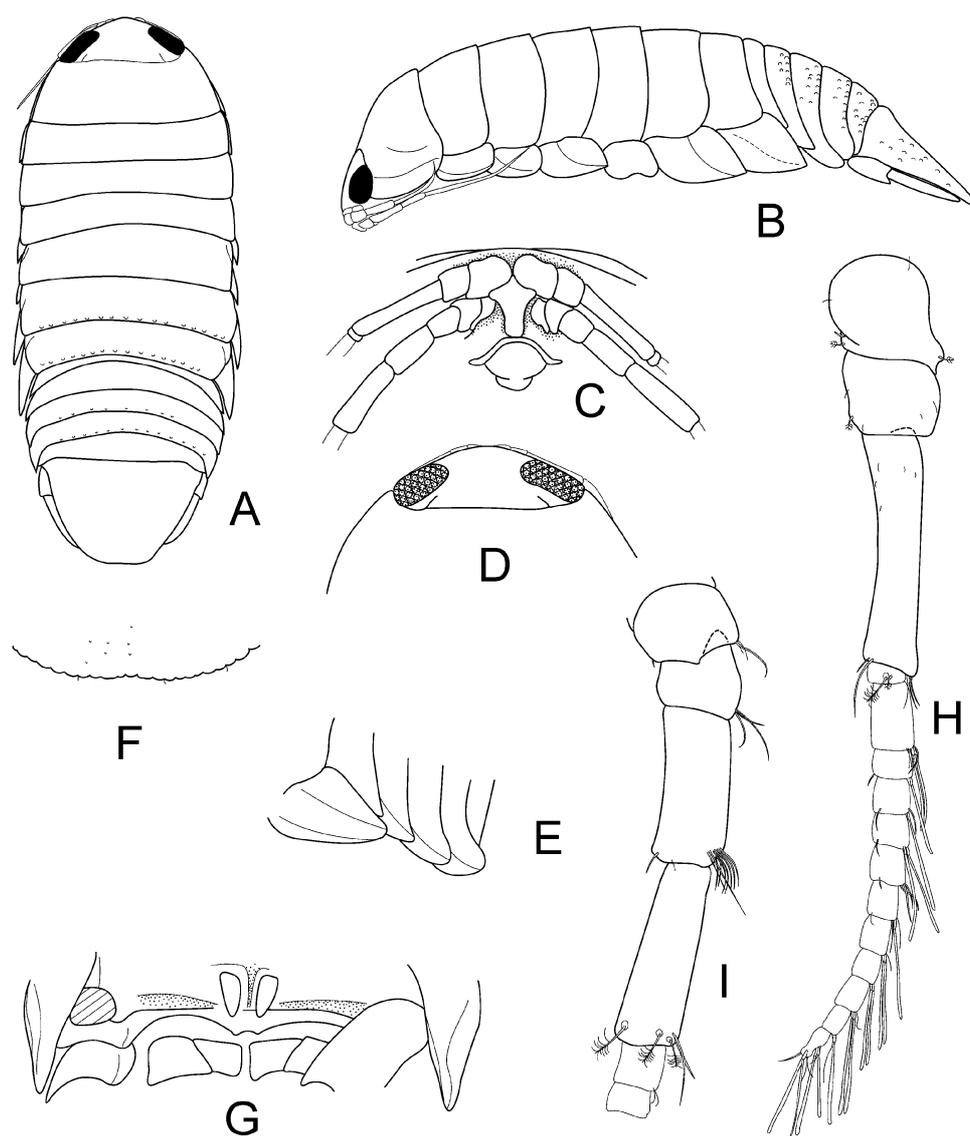


FIGURE 9. *Tridentella brandtae* sp. nov. B–G, holotype; A, H, I, male paratype. A, dorsal view; B, lateral view; C, frons; D, head; E, pleonites, lateral view; F, pleotelson, posterior margin; G, sternite 7 showing penial processes; H, antennule; I, antenna peduncle.

Antennule peduncle articles 1 and 2 distinct, articulated; article 2 0.7 as long as article 1, posterodistal angle not produced; articles 3 and 4 1.4 times as long as combined lengths of articles 1 and 2; article 3 4.8 times as long as wide, posterodistal angle not produced; flagellum with 11 articles, extending to anterior of

pereonite 1. *Antenna* peduncle article 4 2.4 times as long as wide, 2.6 times as long as article 3, inferior margin with 0 plumose setae, and 0 short simple setae; article 5 1.2 times as long as article 4, 3.0 times as long as wide, inferior margin with 0 pappose setae, anterodistal angle with cluster of 2 short simple setae (distal margin with 3 pappose setae); extending to posterior of pereonite 3.

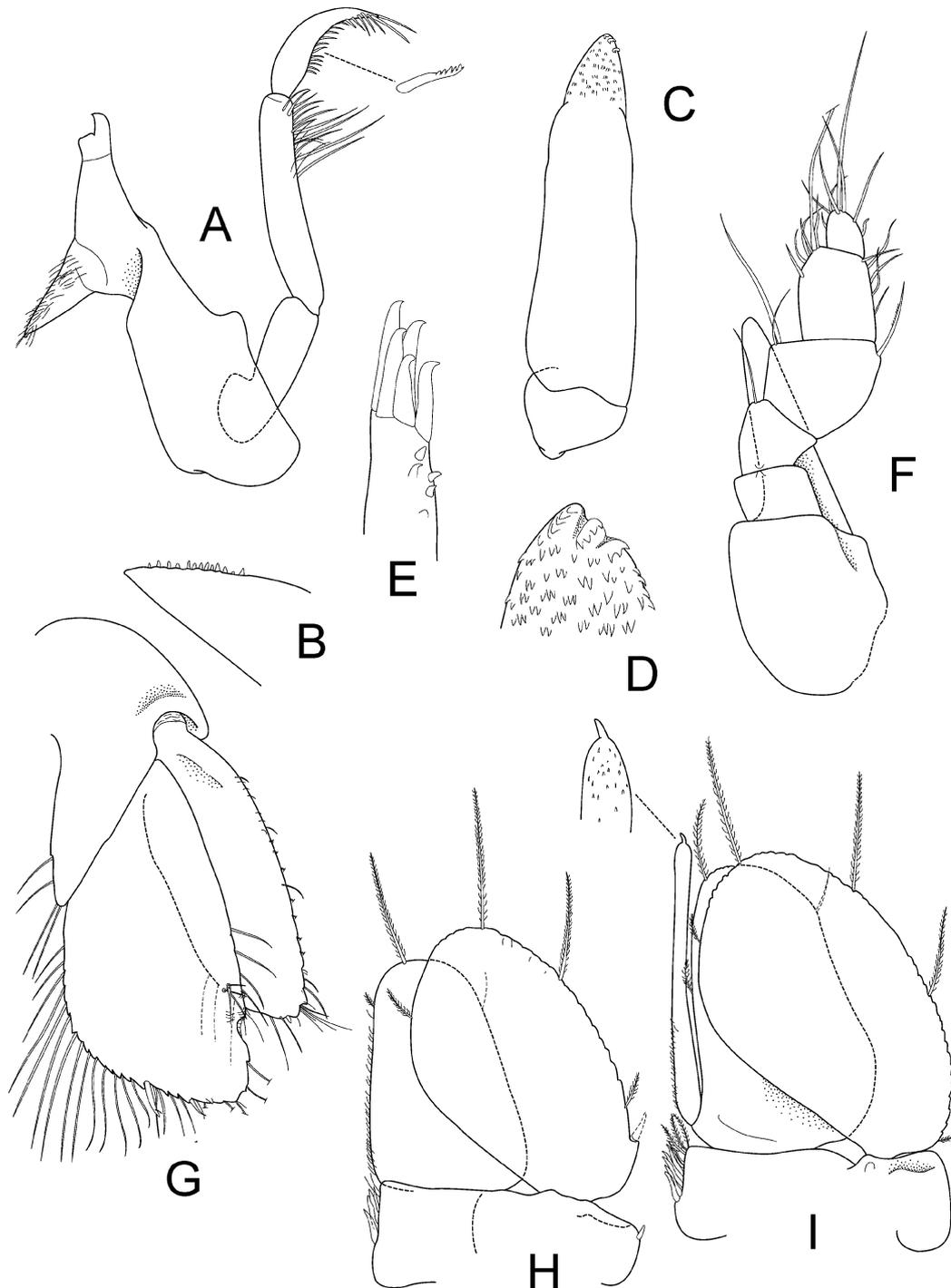


FIGURE 10. *Tridentella brandtae* sp. nov. A–G, male paratype; H and I, holotype. A, mandible; B, molar process margin; C, maxilla; D, maxilla apex; E, maxillule apex; F, maxilliped; G, uropod; H, pleopod 1; I pleopod 2.

Frontal lamina pentagonal, longer than greatest width, lateral margins concave, anterior margins concave, anterior margin forming median point. *Mandible* incisor bicuspid; molar process with abundant setae (with marginal spines); palp article 2 with 24 distolateral setae, article 3 with 19 RS. *Maxillule* with 5 terminal RS

(and 4 small sub-terminal RS). *Maxilla* distomesial margin with 3 serrated scales. *Maxilliped palp* article 2 mesial margin with 1 slender seta, lateral margin distally with 0 slender setae, article 3 mesial margin with 2 slender setae, lateral margin with 1 slender seta, article 4 mesial margin with 6 slender setae, lateral margin with 4 slender setae, article 5 distomesial margin with 5 setae, lateral margin with 2 setae; endite extending beyond distal margin of palp article 3, with 0 long circumplumose setae.

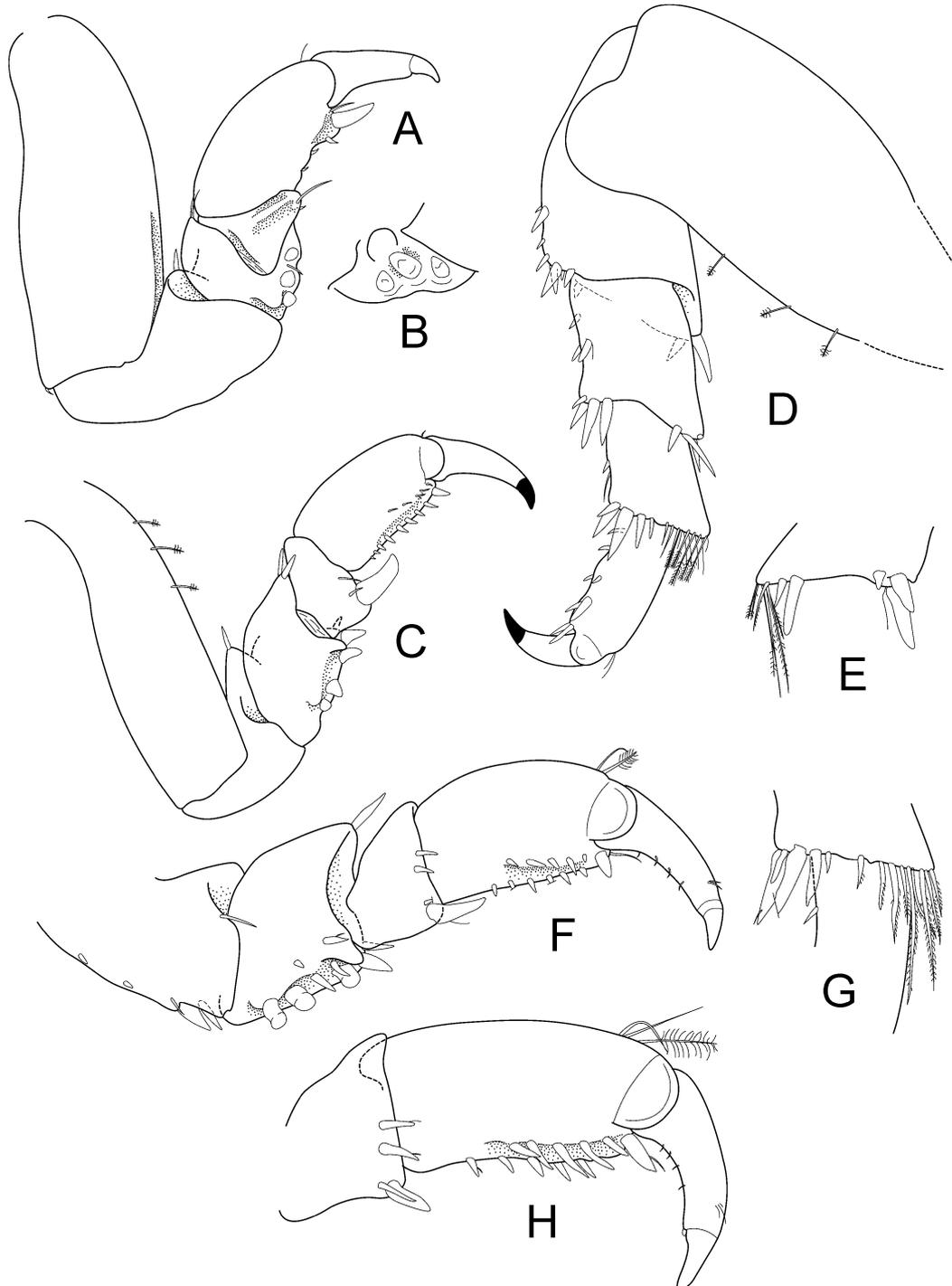


FIGURE 11. *Tridentella brandtae* sp. nov. A–E, holotype; F, G, male paratype; H, female paratype. A, pereopod 1; B, pereopod 1, merus inferior margin, ventral view; C, pereopod 2; D, pereopod 7; E, pereopod 7, carpus distal margin; F, pereopod 2; G, pereopod 6, carpus distal margin; H, pereopod 2 female, distal articles.

Pereopod 1 basis 2.5 times as long as greatest width, superior distal angle with cluster of 0 acute simple setae; ischium 0.6 as long as basis, inferior margin with 0 setae, superior distal margin with 1 RS; merus inferior margin with 3 RS (stout molariform), set as single row, superior distal angle with 2 setae; carpus inferior margin with 2 RS (minute; and 1 slender seta); propodus 1.7 times as long as wide, inferior margin with 4 RS (small, large RS opposing base of dactylus); propodal palm weakly concave; dactylus 0.6 as long as propodus. *Pereopod 2* more slender than pereopod 1; ischium inferior margin with 5 stout RS (3 minute, 2 large), superior distal margin with 1 RS; merus inferior margin with 4 stout RS, set as two groups, superior distal margin with 2 acute RS; carpus inferodistal angle with 1 RS (large, blunt; about as long as carpus inferior margin). *Pereopod 2* propodal palm 13 RS (in two rows of 8 marginal and 5 submarginal). *Pereopod 3* similar to pereopod 2. *Pereopod 6* similar to pereopod 7. *Pereopod 7* basis 2.2 times as long as greatest width, superior margin strongly convex, inferior margin with 3 palmate setae (or more); ischium 0.7 as long as basis, inferior margin with 4 RS, superior distal angle with 4 RS, inferior distal angle with 4 RS; merus 0.5 as long as ischium, 1.4 times as long as wide, inferior margin with 3 RS, superior distal angle with 6 RS, inferior distal angle with 5 RS; carpus 0.4 as long as ischium, 1.1 times as long as wide, inferior margin with 1 RS, superior distal angle with 18 RS, inferior distal angle with 6 RS; propodus 0.5 as long as ischium, 2.4 times as long as wide, inferior margin with 6 RS (set as 1, 1, 2 and 2, increasing in size distally), superior distal angle with 2 slender setae, inferior distal angle with 3 RS.

Penes flat articulating lobes, penial openings separated by 5% of sternal width, penial process 2.7 times as long as basal width.

Pleopod 1 exopod 1.7 times as long as wide, lateral margin weakly convex, distally broadly rounded, mesial margin strongly convex, with PMS from distal one-third, with ~36 PMS; endopod 1.6 times as long as wide, distally broadly rounded, lateral margin straight, with PMS on distal margin only, mesial margin with PMS on distal margin only, endopod with ~18 PMS; peduncle 2.3 times as wide as long; mesial margin with 4 coupling hooks. *Pleopod 2 appendix masculina* basally widest, 1.0 times as long as endopod, distally narrowly rounded (with apical 'nipple'). Pleopods 2–5 peduncle distolateral margin with small acute RS, pleopods 3–5 endopods without distomesial serrate scales.

Uropod peduncle ventrolateral margin with 0 RS, lateral margin without medial short acute RS, posterior lobe about one-half as long as endopod; rami not extending beyond pleotelson, marginal setae in single tier, apices narrowly rounded. *Endopod* apically shallowly bifid; lateral margin weakly convex; distal lateral margin without RS, mesial margin weakly convex, with 3 RS. *Exopod* not extending to end of endopod, 2.5 times as long as greatest width, apically shallowly and equally bifid; lateral margin weakly convex, without RS; mesial margin straight, distally convex, with 1 RS.

Female: Similar to males, but lack the large robust seta at the inferodistal angle of the carpus of pereopods 2 and 3; the posterior pereopods seem less robust than in the male.

Size: Approximately 9 to 12 mm.

Variation: *Robust setae*: pleotelson always without RS. Uropod exopod mesial margin with 1 RS (all), lateral margin without RS. Uropod endopod mesial margin with 2–4 RS, with 2 RS most frequent (3 times) and 4 occurring once on the smallest specimen; lateral margin without RS.

Pereopods 2 and 3: Male pereopods 2 and 3 with prominent, blunt robust seta and inferodistal angle of carpus, this being larger in the large male; in the female the robust setae is no larger than the meral robust setae.

Remarks: *Tridentella brandtae* sp. nov. can be identified by the largely unornamented dorsal surfaces, the posterior margins of pereonites 5 and 6 and of pleonites 3–5 having very weak nodules; the dorsal surface of the pleotelson has very weakly developed low nodules (only just visible in lateral view); the pleotelson posterior margin is subtruncate, weakly medially indented and lacking a medial point; the inferior margin of the propodus of pereopods 2 and 3 with a double row of robust setae; and uropods with even margins, weakly bifid and rounded apices, rami without robust setae on the lateral margins, and only one robust seta on the

mesial margin of the exopod, 2–4 robust setae on the mesial margin of the endopod. Males are further characterised by the presence of a large bluntly rounded robust seta at the inferodistal angle of the carpus.

The only similar species is the briefly described *Tridentella japonica* Thielemann, 1910. Thielemann's description and figures are of insufficient detail to allow comparisons between the two species, and the collections holding the types are believed to have been destroyed in World War II (O. Coleman, personal communication). Apparent differences between the two species are, in *T. japonica*, the clypeus being relatively long (vs a thin band in *T. brandtae*), the uropodal endopod posterior margin straight (vs convex). Other potential differences cannot be assessed, but if the drawings are accurate a further difference would be the lack of weak dorsal nodules on *T. japonica*. Without a redescription from the type material *T. japonica* can only be considered as *nomen dubium*.

Distribution: Banda Sea, Indonesia; depth of 417–425 metres.

Etymology: Named in honour of Professor Angelika Brandt, recognising her great contribution to knowledge of the marine Isopoda.

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