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New and poorly described stenothoids (Crustacea, Amphipoda) from the Pacific Ocean.

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Abstract Krapp-Schickel, T. 2009. New and poorly described stenothoids (Crustacea, Amphipoda) from the Pacific Ocean. *Memoirs of Museum Victoria* 66: 95–116.

Nine stenothoid species were found during different Danish expeditions to the Pacific Ocean at the end of the 19th and beginning of the 20th century. They belong to the genera *Stenothoe* (two new species and one probably new for the Central Pacific) and *Metopa* (three new species and three probably already known).

Keywords Stenothoidae, taxonomy, Pacific Ocean, *Stenothoe garpoorea* n.sp., *Stenothoe verrucosa* n.sp., *Stenothoe* cf. *miersii*, *Metopa eupraxiae* n.sp., *Metopa exigua* n.sp., *Metopa torbeni* n.sp., *Metopa koreana*, *Metopa* cf. *bulychevae*, *Metopa* cf. *clypeata*

Introduction

Many years ago Torben Wolff encouraged me to look at a small collection of Pacific stenothoid amphipods from the end of the 19th or begin of 20th century, stored at the Copenhagen Museum. I agreed with pleasure and interest, but soon understood that size as well as number of specimens was very small, and preferred to wait for additional material from similar localities, which never happened. When I now present them here, still some species cannot be fully described, as the material was scarce, appendages missing etc. But there is little knowledge about this group in the area concerned, thus every new contribution should be a step further.

Material and methods

The habitus of the amphipods was studied in alcohol or glycerine under a Reichert dissecting microscope and slides were prepared using Faure‘s medium. Body parts were drawn with pencil (and sometimes photographed, for offering as much additional information as possible) using an Olympus BX51 or Wild M5 microscope, both with a camera lucida. The inking of the pencil drawings I did partially the traditional way, partly I used the Illustrator program (see Coleman 2003, 2009). Acronyms for different morphological parts are as follows: **A1, 2** = antenna 1, 2; **Gn1, 2** = gnathopod 1, 2; **Mx1, 2** = maxilla 1, 2; **P3-7** = peraeopod 3**–**7; **T**= telson; **U1–3** = uropod 1**–**3. Species‘ diagnosis is provided in **bold** text within the description. Species examined are lodged at the Copenhagen Museum (ZMUC).

Taxonomy

Genus *Stenothoe* Dana, 1852

Diagnosis. Palp of mandible absent. Palp of maxilla 1 with 2 articles. Inner plate of maxilla 2 often reduced and outer plate sitting more or less upon the inner one. Inner plates of maxilliped well separated. Gnathopod 1 small, subchelate, propodus expanded, palm oblique and subequal to remaining hind margin of propodus, carpus shorter than propodus. Peraeopod 5 with rectolinear basis, peraeopod 6–7 with expanded basis. Telson entire, flappable.

Stenothoe garpoorea n.sp.

Figs. 1, 2

Holotype: male 2.5mm; from „Danske Expedition til Kei Oerne” by T. Mortensen, 1922; 15m sand and *Acanthogorgia*; slide ZMUC CRU-20183.

Type locality: Kai (or Kei) Islands (= Nuhu Evav, Tanat Evav), E-Banda-Sea, SE Indonesia, province Maluku (see also Mortensen, 1923).

Additional material: female, same locality, slide ZMUC CRU-20184.

Etymology: In 1997 and 2001 Gary Poore gave me the opportunity to work at the Victoria Museum in Melbourne and „take a dip“ in the rich amphipod collection there which primarily was built up by him personally. The present species is named after a combination of his first and family name, used as an adjective.

Description. Based on male, 2.5 mm.

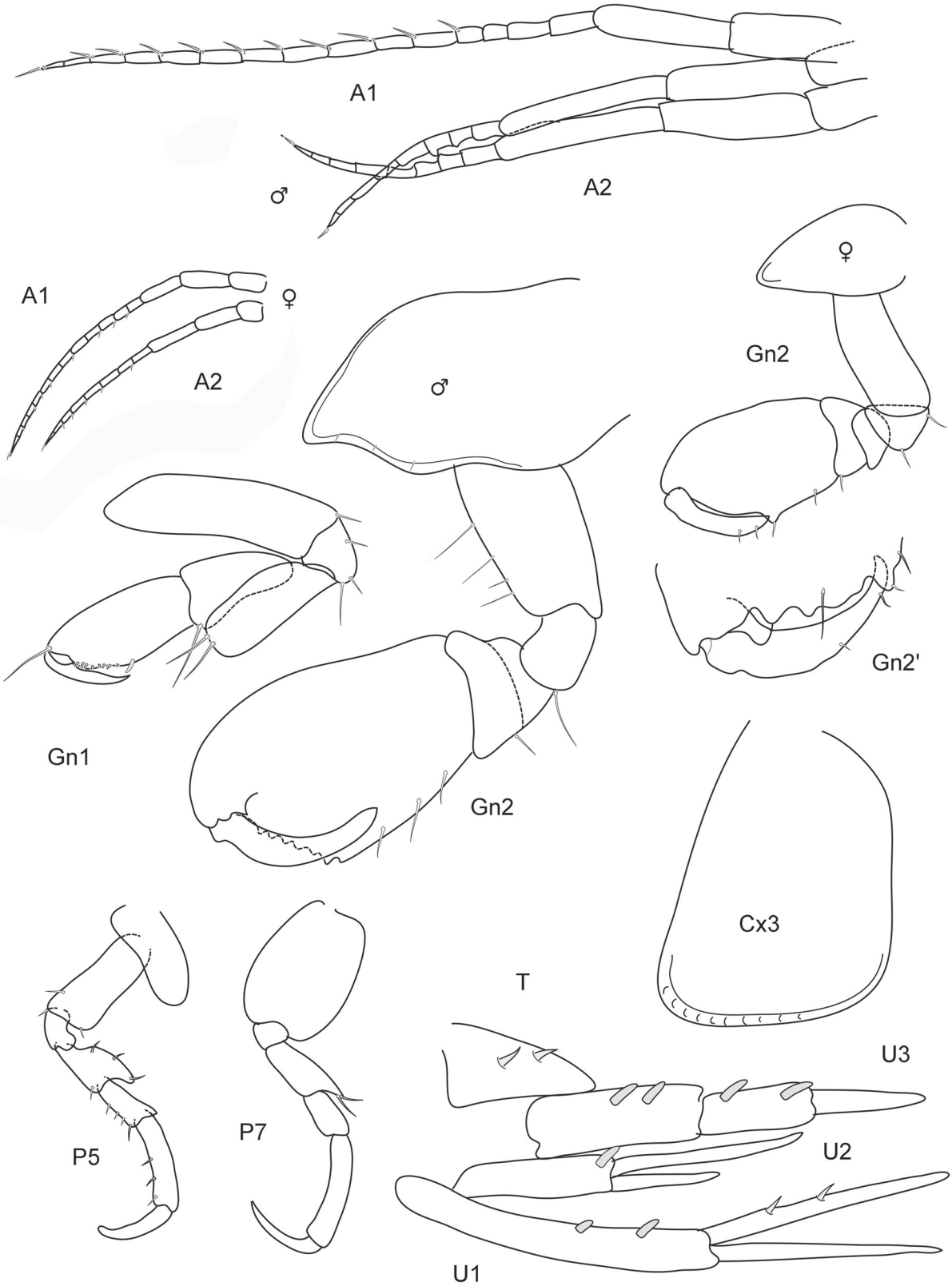

Figure 1: *Stenothoe garpoorea* n.sp.: holotype male 2.5 mm and paratype female 2.2mm, SE Indonesia.

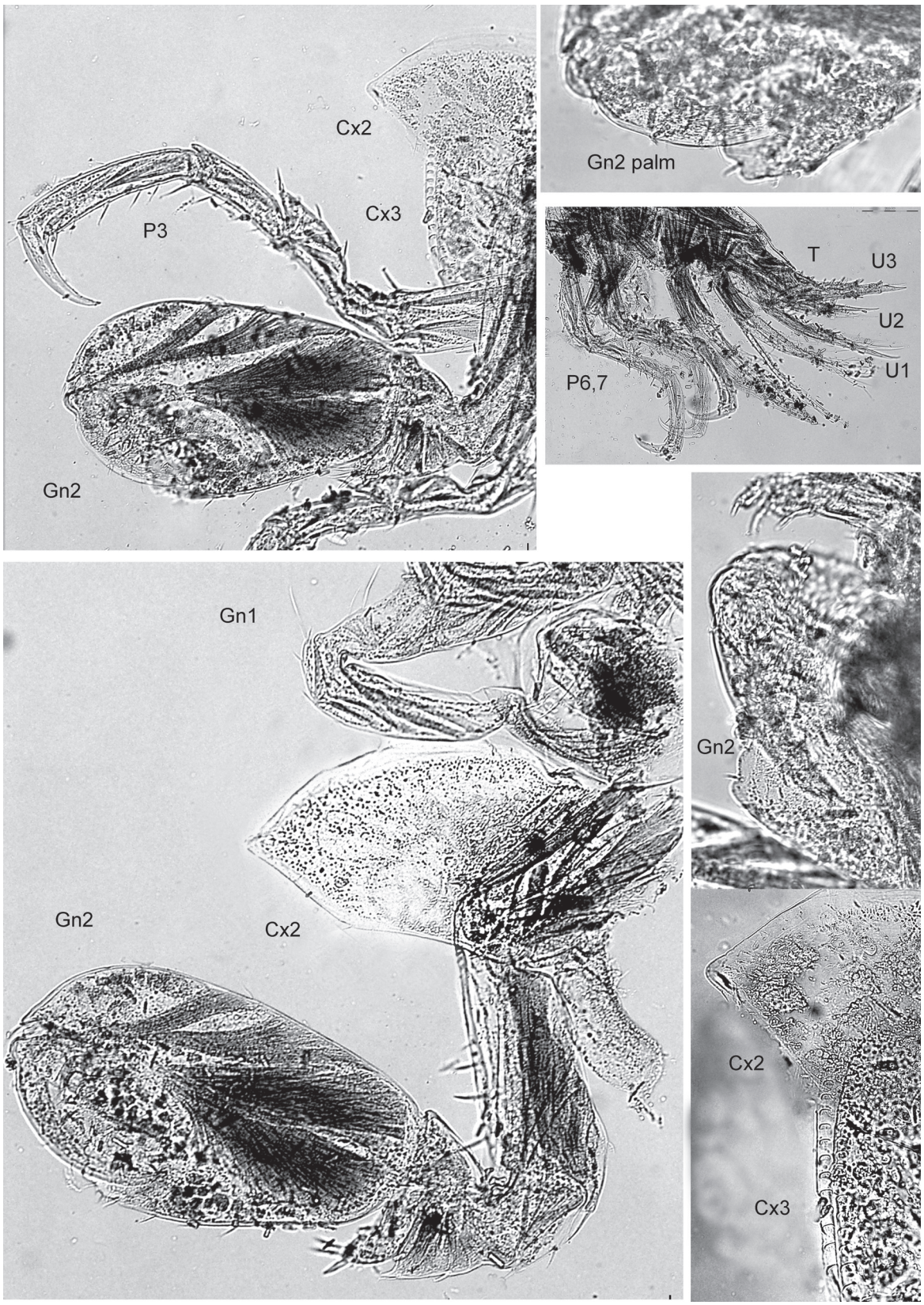

Figure 2: *Stenothoe garpoorea* n.sp.: holotype male 2.5 mm, SE Indonesia.

Head. *Eyes* rather big, round. *Antenna 1* longer than head and peraeonites 1–4, longer than antenna 2; peduncular article 2 longer than article 1; flagellum with 14 articles; accessory flagellum absent or not found. ***Antenna 2*** peduncle article 4 subequal or somewhat shorter than article 5, a bit thicker; **flagellum with 8 articles which have each a hump distally next to the articulation and only on one side**; obviously these second antennae are used to grip or hold on the host, as they are always kept symmetrically with these humps showing to the antenna of the other side.

Mouthparts. *Mandible* palp absent (at least not found). *Maxilla 1* palp 2–articulate. *Maxilliped* outer plate minute.

Peraeon. *Gnathopods 1–2* dissimilar in size and shape. *Gnathopod 1* subchelate; merus enlarged, produced distally, longer than carpus; carpus triangular, longer than wide; propodus about 2 x as long as broad, palm defined by obtuse corner. ***Coxa 2*** **triangular, distally with acute corner.** ***Gnathopod 2*** subchelate, carpus shorter than wide, cup-shaped; **propodus distally widened, similar to a fist, palm unevenly serrated**; dactylus reaching about half length of propodus. ***Coxa 3*** **distally with stridulation ridge.** *Peraeopod 5* basis not expanded, but linear, merus widened and distally also slightly lengthened, reaching about 1/3 along carpus. *Peraeopod 6, 7* basis fully expanded; merus distal expansion reaching about 1/3 length of carpus; dactylus large, subequal or larger than half propodus).

Pleon. *Epimeron 3* posteroventral corner subquadrate/ rounded. *Urosomites* free. *Uropod 1* peduncle without distoventral spine, subequal rami shorter than peduncle. ***Uropods 2*** **inner rami clearly shorter than outer ones.** ***Uropod 3*** **with peduncle and single ramus, which is longer than peduncle, 2 articulate, article 2 subequal in length to article 1; peduncle and ramus article 1 each with 2 robust setae.** *Telson* laminar, with 2 dorsolateral robust setae, apically subacute.

Female (sexually dimorphic characters). A1 relatively shorter. *Gnathopod 2* palm less serrated than in male, Cx2 narrower.

Habitat. Marine; among the gorgonacean *Acanthogorgia*. On sand, 15 m.

Distribution: Indonesia, Pacific Ocean.

Remarks. This species shares the very unusual and characteristic humps or „warts“ on the second antennae with *Stenothoe verrucosa* n.sp., which was found in the same habitat; but in the latter these humps are on the last peduncular and first flagellum article, while in the present species they are exclusively on the flagellum. No other members of this genus are reported with such a structure.

Stenothoe verrucosa n.sp.

Figs. 3, 4

Holotype: male 3.5mm; from „Danske Expedition til Kei Oerne” by T. Mortensen, 1922; 15m sand and *Acanthogorgia*; slide ZMUC CRU-20185.

Type locality: Kai (or Kei) Islands (= Nuhu Evav, Tanat Evav), E-Banda-Sea, SE Indonesia, province Maluku (see also Mortensen, 1923).

Etymology: „Warty“ is in Latin „verrucosus“; used as an adjective, indicating the very special structure of the second antenna.

Description. Based on male, 3.5 mm.

Head. *Eyes* normal size, roundish. *Antenna 1* longer than head and peraeonites 1–4, longer than antenna 2; peduncular article 2 longer than article 1; flagellum with 22 articles; accessory flagellum absent. ***Antenna*** *2* peduncle article 4 shorter than article 5 and thicker; **article 5 with 5 humps or „warts“ on the inner margin**; **flagellum article 1 thickened proximally and distally next to the articulations on the inner side**; obviously these second antennae are used to grip or hold on the host, as they are always kept symmetrically with these humps showing to the antenna of the other side.

Mouthparts. *Mandible* palp absent, molar absent. *Maxilla 1* palp 2–articulate. *Maxilliped* inner plate reaching along 1/3 of ischium, outer plate absent.

Peraeon. *Gnathopods 1–2* dissimilar in size and shape. *Gnathopod 1* subchelate; merus very much enlarged, produced distally, surpassing carpus; carpus triangular, much longer than wide, more than 2x as long as wide; propodus about 2x as long as broad, medially widened, palm defined by obtuse corner. ***Coxa 2*** **anterior margin rounded, posterior one straight, distally with rounded corner.** ***Gnathopod 2*** subchelate, carpus shorter than wide, cup-shaped; **propodus distally narrowing, palm with 4–5 small humps, no palmar corner**; **dactylus reaching along full length of propodus, inner margin beset with many short setae**. ***Coxa 3*** **distally with stridulation ridge, posterior margin excavated.** *Peraeopod 5* basis linear, merus widened and distally also shortly lengthened, reaching about 1/2 along carpus. *P 6, 7* basis fully expanded; merus distal expansion reaching about 1/2 length of carpus; dactylus subequal to half propodus.

Pleon. *Epimeron 3* posteroventral corner subquadrate/ rounded. *Urosomites* free. *Uropod 1* peduncle without distoventral spine, beset with many short robust setae; subequal rami shorter than peduncle. ***U 2*** **inner rami somewhat shorter than outer ones.** ***U 3*** **with peduncle and single ramus, which is shorter than peduncle, 2 articulate, article 2 shorter than article 1; ramus article 1 each with 1 robust seta.** *Telson* laminar, with 2 dorsolateral robust setae, apically subacute.

Female unknown.

Habitat. Marine; among the gorgonacean *Acanthogorgia*. On sand, 15 m.

Distribution: Indonesia, Pacific Ocean.

Remarks. This species shares the very unusual and characteristic humps or „warts“ on the second antennae with *Stenothoe garpoorea* n.sp., which was found in the same habitat; but in the latter these humps are not on the last peduncular and first flagellum article, but exclusively on the flagellum.

Stenothoe cf. *miersii* (Haswell, 1879)

Figs. 5, 6

Montagua Miersii Haswell, 1879: 323, pl. 24, fig. 4
Montagua longicornis Haswell, 1879: 323, pl. 24, fig. 5

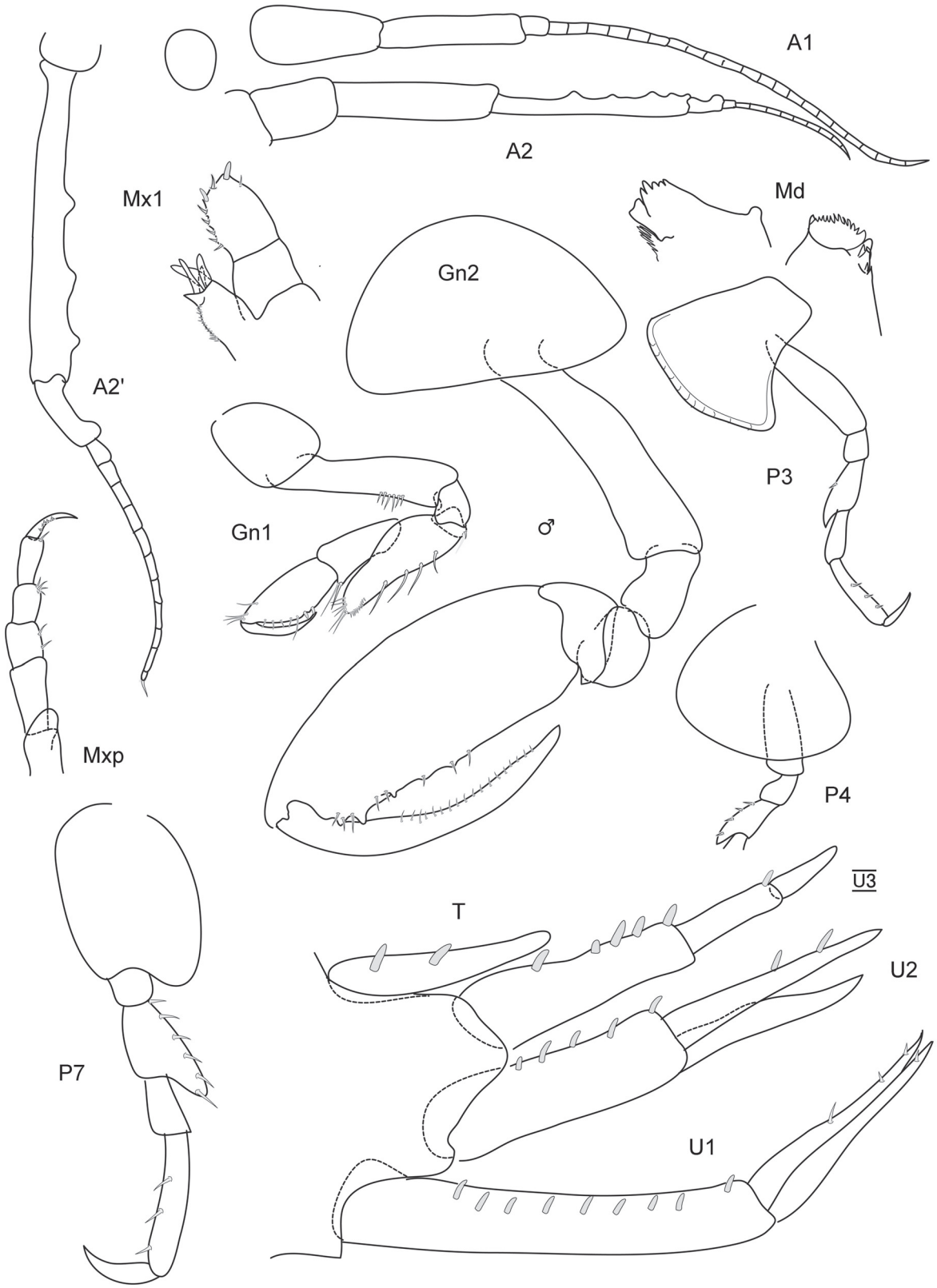

Figure 3: *Stenothoe verrucosa* n.sp.: holotype male 3.5mm, SE Indonesia.

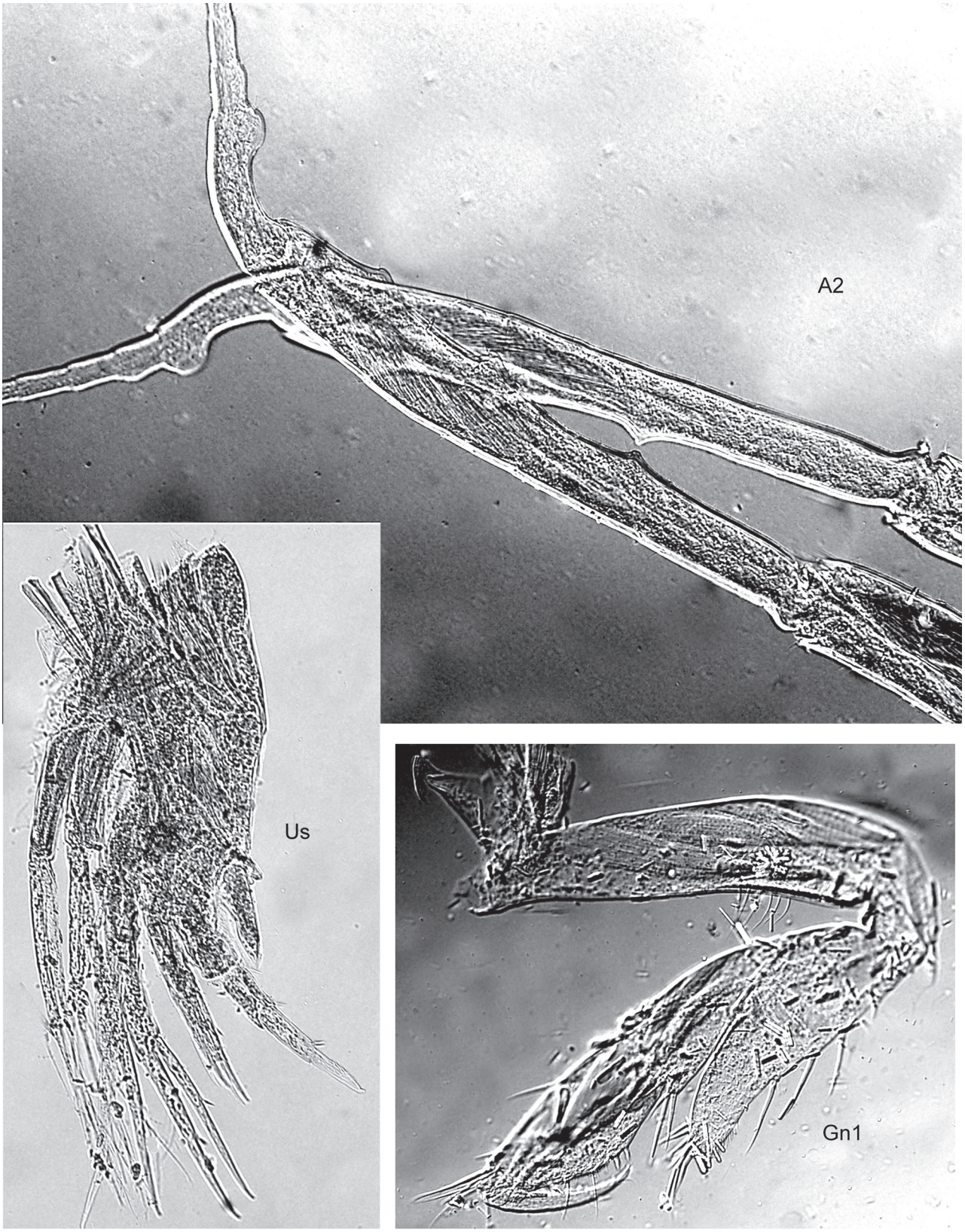

Figure 4: *Stenothoe verrucosa* n.sp.: holotype male 3.5mm, SE Indonesia.

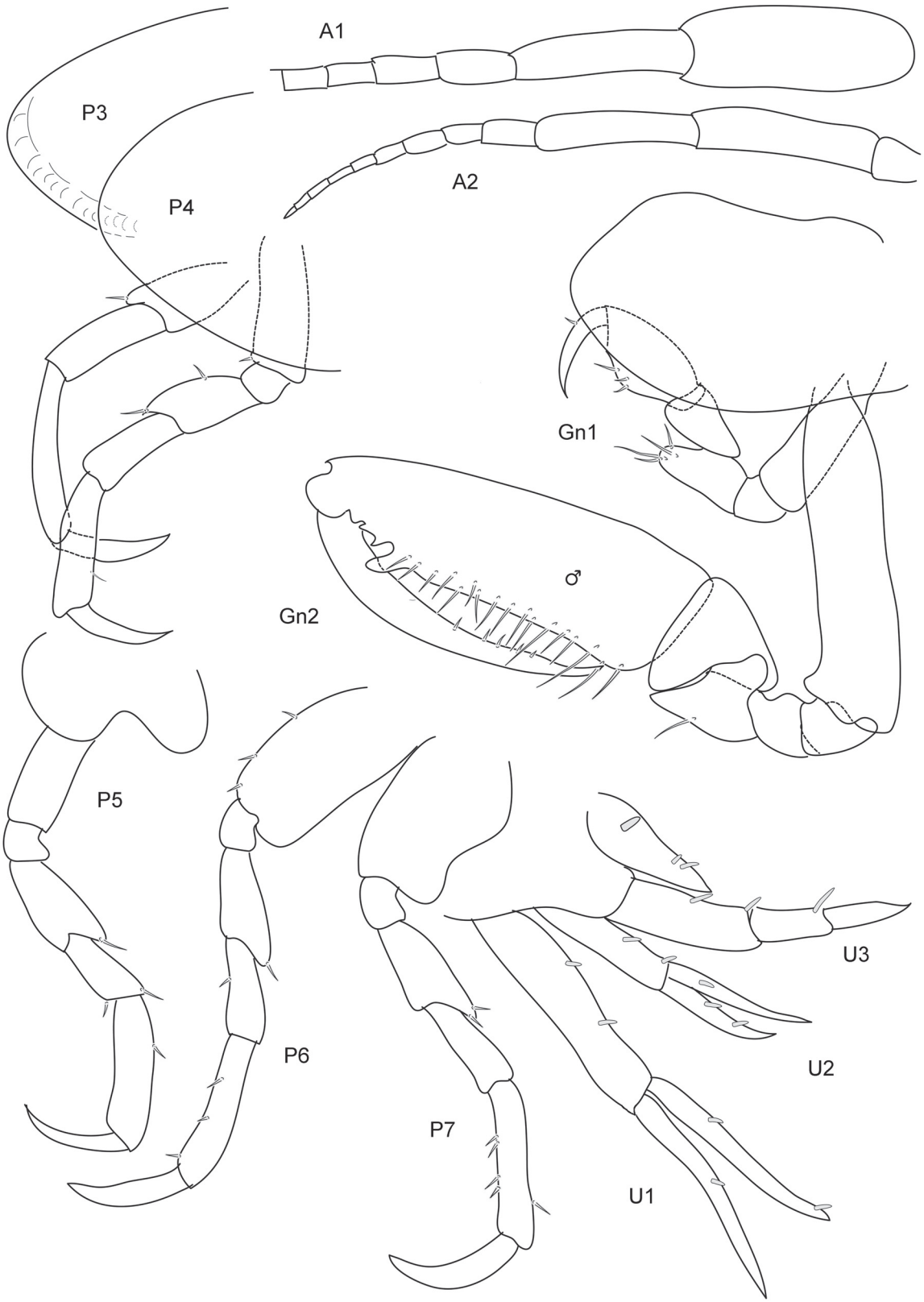

Figure 5: *Stenothoe* cf. *miersii*: male 2mm, SE Indonesia.

Figure 6: *Stenothoe* cf. *miersii*: male 2mm, SE Indonesia.

Material examined: male 2mm from „Danske Expedition til Kei Oerne" by T. Mortensen, 1922 (SE Indonesia); 15m sand and *Acanthogorgia*; slide ZMUC CRU-20186.

Remarks. There are several characters which fit perfectly to *Stenothoe miersii* (antennae, gnathopods, coxalplates, peraeopods), but the characteristic peduncular spur on U1 is only minutely developed, and the basis of P6 and P7 is not fully expanded. *Stenothoe miersii* is reported with a length of 3.5mm in fully adult specimens and the present single specimen measures only 2mm, thus both these characters could change with allometry. Until now it was reported around most of the Australian coasts; it would be new for Indonesia.

Genus *Metopa* Boeck, 1871

Diagnosis. Palp of mandible with 3–2 articles. Palp of maxilla 1 with 1 article. Inner plate of maxilla 2 ordinary. Inner plates of maxilliped often fused or well separated (type). Gnathopod 1 small, almost simple, but variable, propodus scarcely expanded, almost linear, carpus elongate. Peraeopod 5 with rectolinear basis, peraeopod 6–7 with expanded basis. Telson entire, flappable.

Metopa eupraxiae n.sp.

Figs. 7–9

Stenothoides carinatus Gurjanova 1953: 230–233, figs. 13, 14

Stenula carinata (Gurjanova) in: Barnard & Karaman 1991: 69 (change of genus for the illustration of the Md palp without articulation)

non *Metopa carinata* Hansen 1887:311 = *Metopella carinata* in Gurjanova 1951: 474, figs. 311

Holotype: Tsugaru Strait = Tsugaru-kaikyo (41° 37'N, 140° 52'E), N-Japan, between Japan Sea and Pacific Ocean, on hydroid *Sertularia crassicornis* Allman, coll. Suensen 1882, 200m depth; 1 male 4mm (18) slide ZMUC CRU-20187.

Additional material: same locality, same collector, 1 female slide ZMUC CRU-20188; 38 specimen (males, females, juveniles) in alcohol. 2 adult specimens 4mm in alcohol, coll. Suensen 1882 and 1893 ZMUC CRU-20201 & CRU-20202, 2 slides ZMUC CRU-20189 & CRU-20190; 2 specimens in alcohol, probably juveniles. ZMUC CRU-20203.

Etymology: In honour to Eupraxia Gurjanova.

Description. Based on male, 4 mm

Body. Posterior half carinate.

Head. Eyes rounded. *Antenna 1* peduncle robust, article 1 length about three times the width; flagellum 18 articles, accessory flagellum absent. ***A 2* clearly longer than A1**, peduncle robust, flagellum shorter than peduncle, with 14 articles.

Mouthparts. ***Mandible*** palp clearly visible with one rectangular basal article and a long second one which is more than 3x longer than article 1, with 3 distal and some marginal long setae; the **usual article 3 is missing**. *Maxilla 1* palp with 1 article; *Maxilla 2* plates in ordinary tandem position; *Maxilliped* IP not fused, about 2/3 length of ischium; OP visible as acute tooth-shaped prolongation; dactylus long, subequal to propodus.

Peraeon. *Coxae*. *Cx2* oval without tooth; *Cx3* tongue-shaped, 2.5x longer than wide, *Cx4* not excavated, anterior margin straight, posterior margin rounded, about 1.5 x wider than long.

Gnathopods. *Gn1, 2* propodi extremely different in shape and size. ***Gnathopod 1*** **propodus rectangular, palm oblique, well defined, remaining hind margin longer than palm; carpus clearly longer than propodus, with parallel margins, proximally somewhat narrower than distally; merus incipiently chelate, with free distal end;** all articles beset with groups of long setae. ***Gnathopod 2*** length of propodus subequal to longer than Cx2; **propodus trapezoid-shaped, rectipalmate; anterior margin beset with robust setae;** hind margin subequal to length of palm which has one deep excavation near thumb-shaped palmar corner and 5 humps next to dactylus insertion; incisions between these humps have long setae which get lost with age; dactylus same length like palm. **Gn2 carpus much shorter than wide, cup-shaped, merus not lobate.**

Peraeopods. ***P3*** **basis elongate but proximally swollen, with glands inside**; anterior margin regularly beset with many short setae; all other articles elongate and weak, dactylus longer than half propodus, weak and smooth; all articles except basis have short setae on posterior margin. *P4* all articles much more robust, but without setation; merus anterodistal margin lengthened and rounded; **dactylus on inner side strongly serrated like in P5–7.** ***P5–P7*** **merus about twice as wide as carpus** and only about 1.25% lengthened posterodistally, reaching ca the proximal third of carpuslength; basis P6, 7 widened with rounded posterodistal lobe.

Pleon. *Uropods*. *U1* peduncle shorter than subequal rami, with short robust setae on peduncle and rami; *U2* peduncle also beset with small robust setae, shorter than longer ramus, rami very unequal (about 3:2); ***U3*** **peduncle much shorter than ramus, article 1 of ramus subequal to peduncle and much longer than the claw-shaped robust article 2.**

Telson. Not reaching end of peduncle U3, with 3 robust setae on each side.

Habitat. On hydroids, 200m depth.

Distribution. Tsugaru Strait, between the Japan Sea and Pacific Ocean.

Remarks. Gurjanova, 1953 described a new species *Stenothoides carinatus* from the Kuril Islands East of Japan, between the Kamchatka Peninsula and the Japanese Hokkaido. Two years later she published another new species from a similar locality, *Metopa kobjakovae*. These two species differ mainly in the presence/absence of a third article in the mandibular palp, the length of U3 ramus article 1 and the spination of the telson with presence/absence of robust setae also on the upper surface.

The present material is very close to *Stenothoides carinatus* Gurjanova 1953, which was later given to *Stenula* by Barnard & Karaman, 1991 for the Md palp drawn without any articulation. But in the present specimens there is clearly visible a proximal first article on the Md palp, and furthermore the gnathopods are indicating a close relationship to *Metopa*, not to *Stenula*.

As the name *Metopa carinata* is already occupied, although in synonymy with other taxa, there had to be created

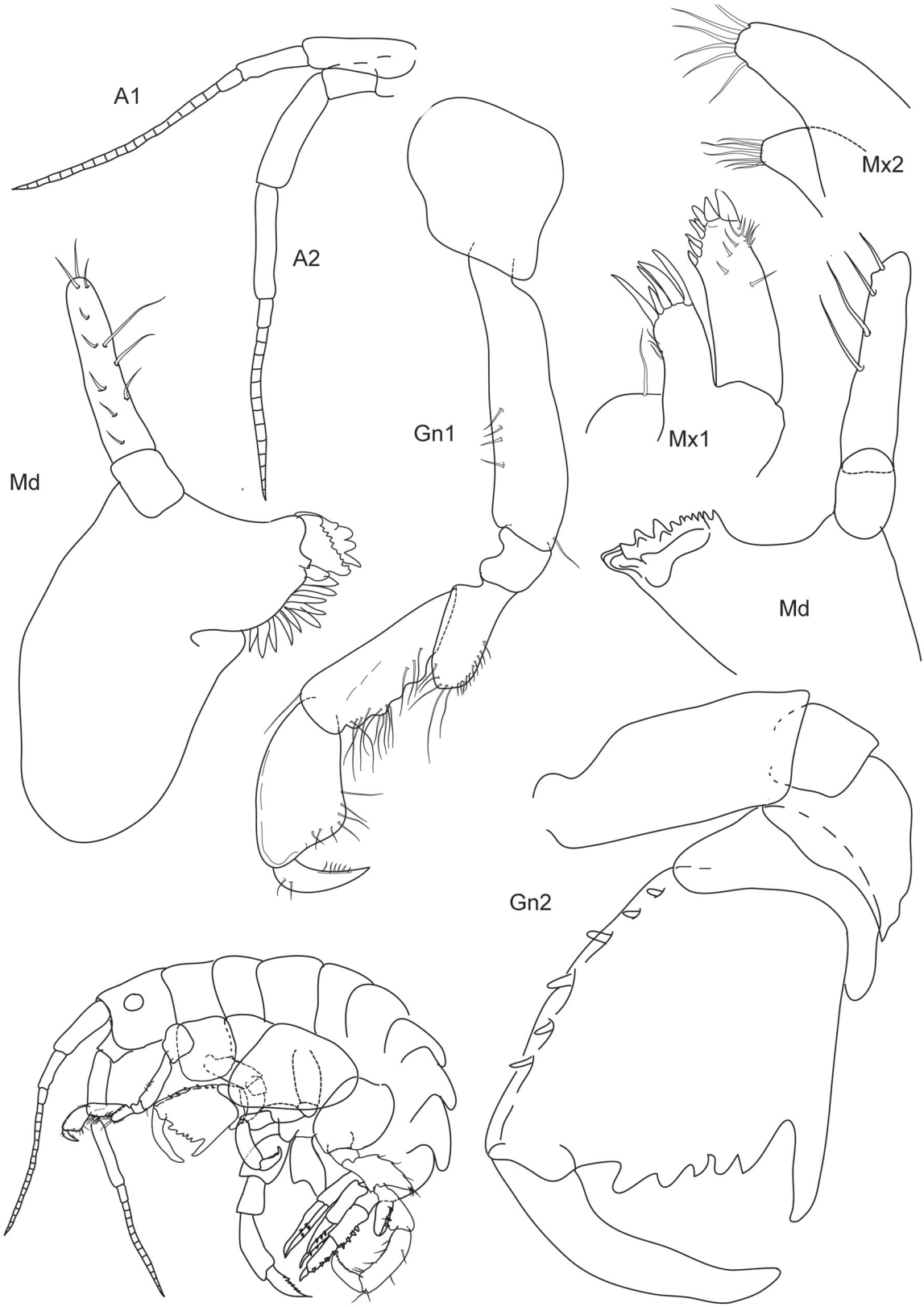

Figure 7: *Metopa eupraxiae* n.sp.: holotype male 4mm, N Japan.

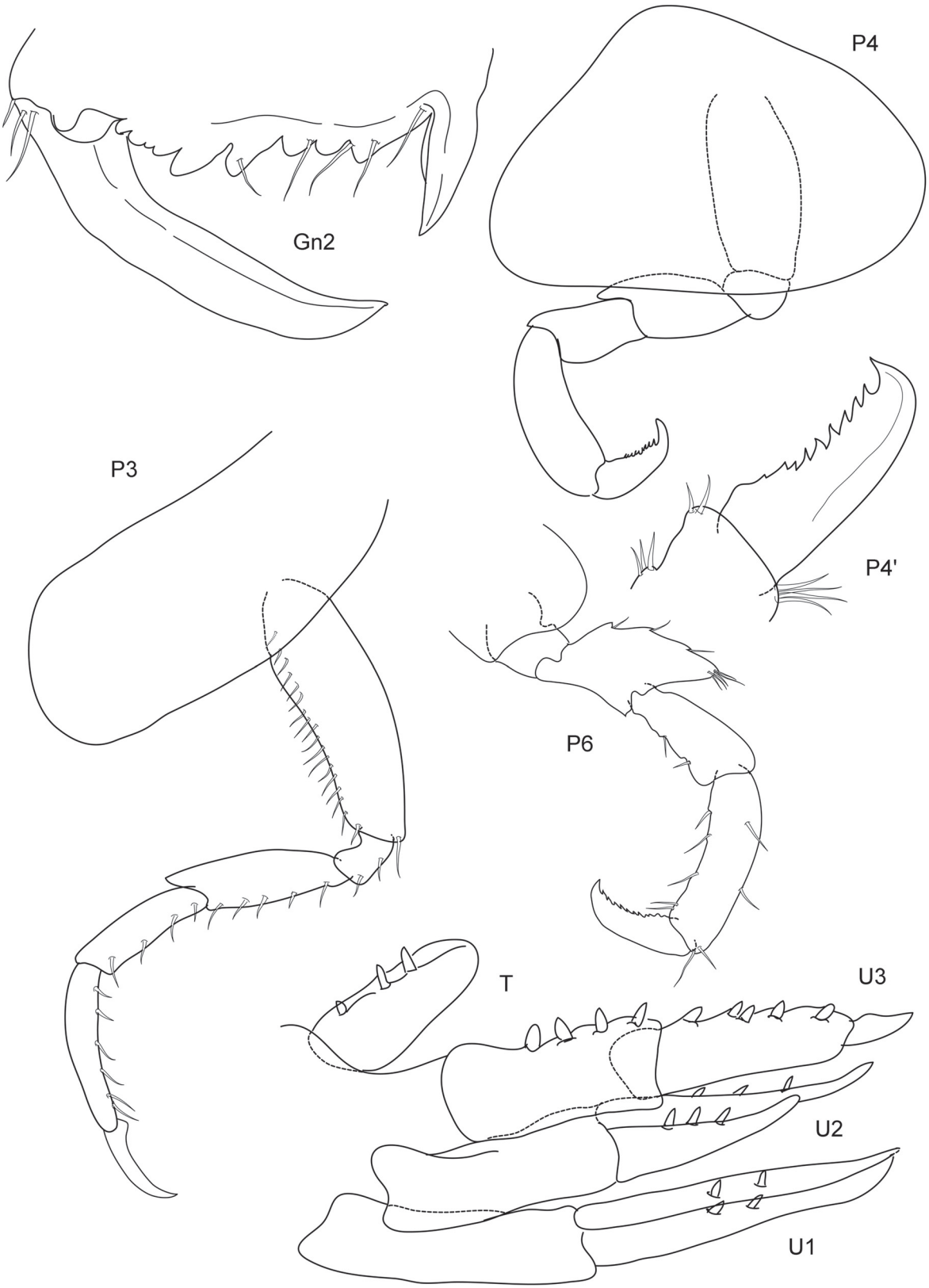

Figure 8: *Metopa eupraxiae* n.sp.: holotype male 4mm, N Japan.

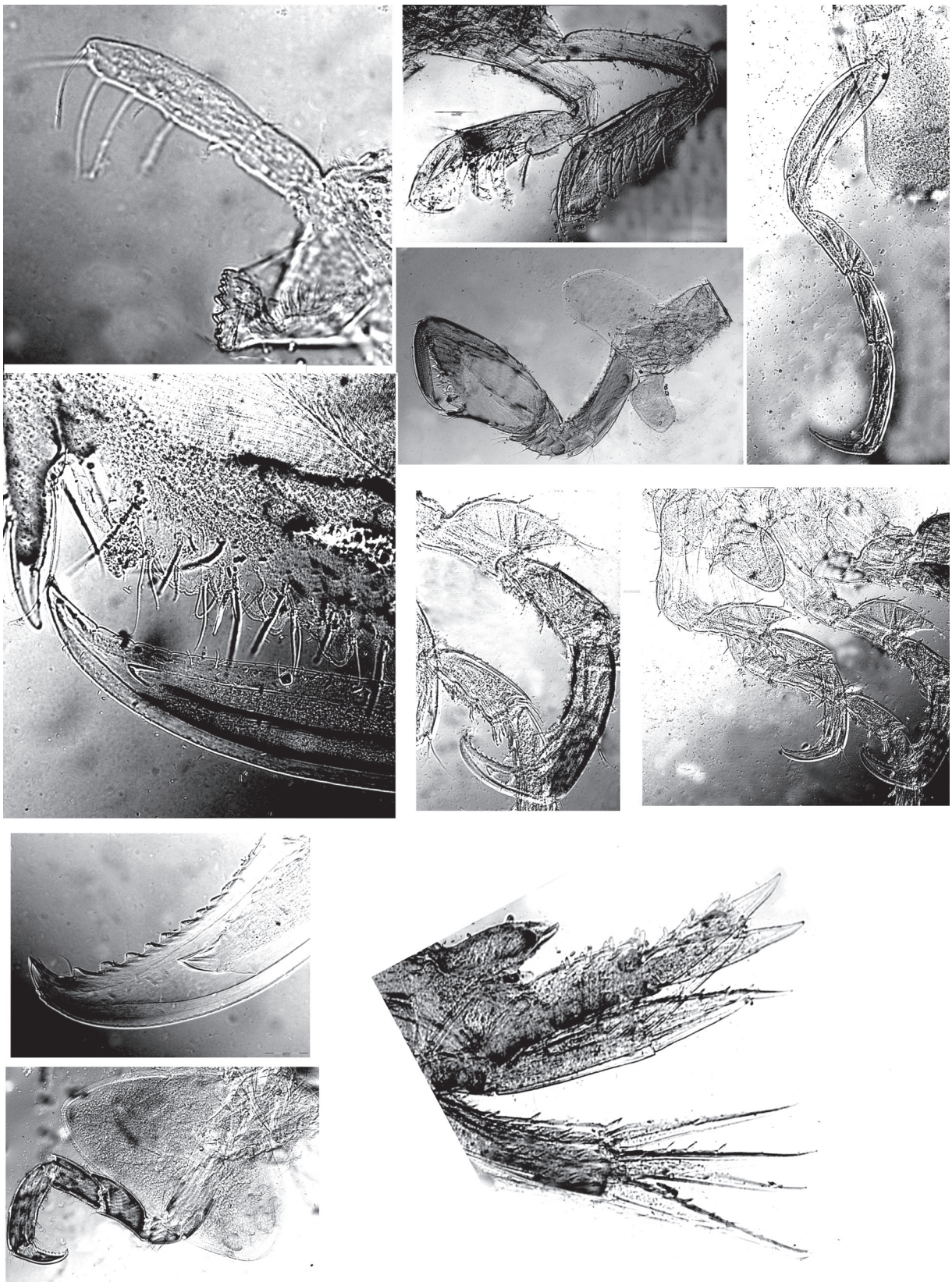

Figure 9: *Metopa eupraxiae* n.sp.: holotype male 4mm, N Japan.

a new name for this species. It matches well the drawings of Gurjanova, 1953 for *Stenothoides carinatus* except:

• Gn1 propodus palmar corner a bit wider than 90° (in Gurjanova exactly 90°)

• the shorter merus on P4–7 in our material,

• the not illustrated serration of the dactyli in P4–7 (clearly present in our material)

• the spination in U3 and T (richer in Gurjanova's species).

The differences from our material to *Metopa kobjakovae* are:

• Md palp with 3 articles

• Gn1 propodus palmar corner a bit wider than 90° (in Gurjanova exactly 90°)

• U3 ramus article longer

• T richly spinose

• nowhere mentioned a carinate body in *M. kobjakovae*, while the serration on P6, 7 is illustrated.

It could be that all three species are synonymous and show allometric differences, in this case the new species presented here would become junior synynym of *Metopa kobjakovae*; but for the time being I cannot check if *M. kobjakovae* also has a carinate body and if older specimens of the other species become more richly spinose.

***Metopa exigua* n.sp.**

Figs. 10–11

Holotype: one male 2mm. Off Korea, 38°15'N, 128°45'E, 200m depth, coll. Schönau IV/1897. Slide ZMUC CRU-20191.

Additional material: 2 females ov. 1.8mm same locality. Slides ZMUC CRU-20192.

Type locality: off Korea.

Etymology: from Latin „exiguus" meaning poor, weak, tiny, minute.

Description. Based on male 2mm, female 1.8mm

Body. Smooth.

Head. Eyes rounded. ***Antenna 1*** peduncle article 1 length about three times the width in female, in male slimmer; **article 2 in female shorter, in male much longer than article 1**; flagellum 13–14 articles, accessory flagellum absent. *A 2* clearly shorter than A1, peduncle article 4 the longest, flagellum shorter than peduncle, with 6–10 articles.

Mouthparts. ***Mandible*** **palp with one quadrangular basal article and a long, thickened second one which is more than 3x longer than article 1, and a very short and small third article carrying 1 long distal seta.** *Maxilla 1* palp with 1 article; *Maxilla 2* plates in ordinary tandem position; *Maxilliped* IP not fused; OP visible as acute tooth-shaped prolongation; dactylus long, shorter than propodus.

Peraeon. *Coxae*. *Cx2* oval without tooth; *Cx3* tongue-shaped to rectangular, *Cx4* not excavated, anterior margin straight, posterior one rounded.

Gnathopods. *Gn1, 2* propodi extremely different in shape and size. ***Gnathopod 1*** **propodus rectangular and narrow, palm not defined; carpus clearly longer and wider than propodus, proximally narrower than distally; merus without free distal end;** all articles beset with groups of short setae. ***Gnathopod 2*** **male propodus hind margin longer than length of palm which has one deep rounded excavation near thumb-shaped palmar corner and many small serrations next to dactylus insertion;** these incisions show single setae; dactylus somewhat shorter than length of palm. **Gn2 carpus longer than wide, triangular, merus not lobate.**

Peraeopods. ***P3*** **basis elongate and slender; all other articles elongate and weak, dactylus longer than half propodus, weak and smooth**. ***P4*** **all articles much more robust, with dense setation; merus somewhat curved;** dactylus longer than half propodus. ***P5–P7*** **merus wider than carpus and only shortly lengthened posterodistally;** basis P6, 7 widened with rounded posterodistal lobe; all peraeopods with short setation.

Pleon. *Uropods*. *U1* peduncle longer than subequal rami, with short robust setae on peduncle and rami; ***U2*** **peduncle also beset with small robust setae, longer than longer ramus, rami very unequal;** ***U3*** **peduncle shorter to subequal ramus, article 1 of ramus shorter or subequal to the spine-shaped robust article 2.**

Telson. Triangular, distally pointed, with few marginal robust setae.

Habitat. 200m depth.

Distribution. Off Korea, Pacific Ocean.

Remarks. At first sight this species looks similar to *Metopa wiesei* Gurjanova, 1933, as the second male gnathopod is nearly identical.

For a better comparison I provide here a detailed translation of the original description of the latter species:

„*Metopa wiesei* Gurjanova 1933: 123; 1951; 421 fig. 260

Type locality: Jugorsky Shar, 69° 46'N, 60°35'O, 20m depth.

Translation of original description in Gurjanova 1933:

Length 3.5mm. Eyes large, roundish. Antennae long; A1 article 1 as long as 2+3 together; flagellum 13 articles. A2 somewhat longer than A1, peduncle article 3 > article 2; flagellum short, 7 articles. Mxp inner plate not fused; last articles of palp with short stiff setae on inner margin and basis. Mx1 palp with 1 article, Md palp with 2 articles.

Cx 4 evenly rounded, very large. Peraeopods robust. P6,7 basis short, broad, merus broadened and lengthened.

Gn1 simple, dactylus on inner margin with short setae. Gn2 in male strongly developed with a long acute tooth on palmar corner; palm with 5 rounded humps which are stronger versus outer margin. Ep3 with acutely lengthened posterodistal corner. T oval, with acute tip and 3 pairs of thick dorsal robust setae. U3 peduncle with 3 thick robust setae, ramus articles subequal, but shorter than peduncle.

Stands near to *Metopa clypeata*, but Ep3, eyes, antennae, both gnathopods and telson shape are different."

This description, without any illustrations in Gurjanova 1933, but with some sketchy ones in Gurjanova 1951, makes clear that mainly the antennae (A1 article1 as long as article 2+3 together) and peraeopods (merus broadened and lengthened) are very different from the newly coined species. It seems also probable that *M. wiesei* has a more robust body living in 20m depth, while *M. exigua* n.sp. has the thin and delicate legs of

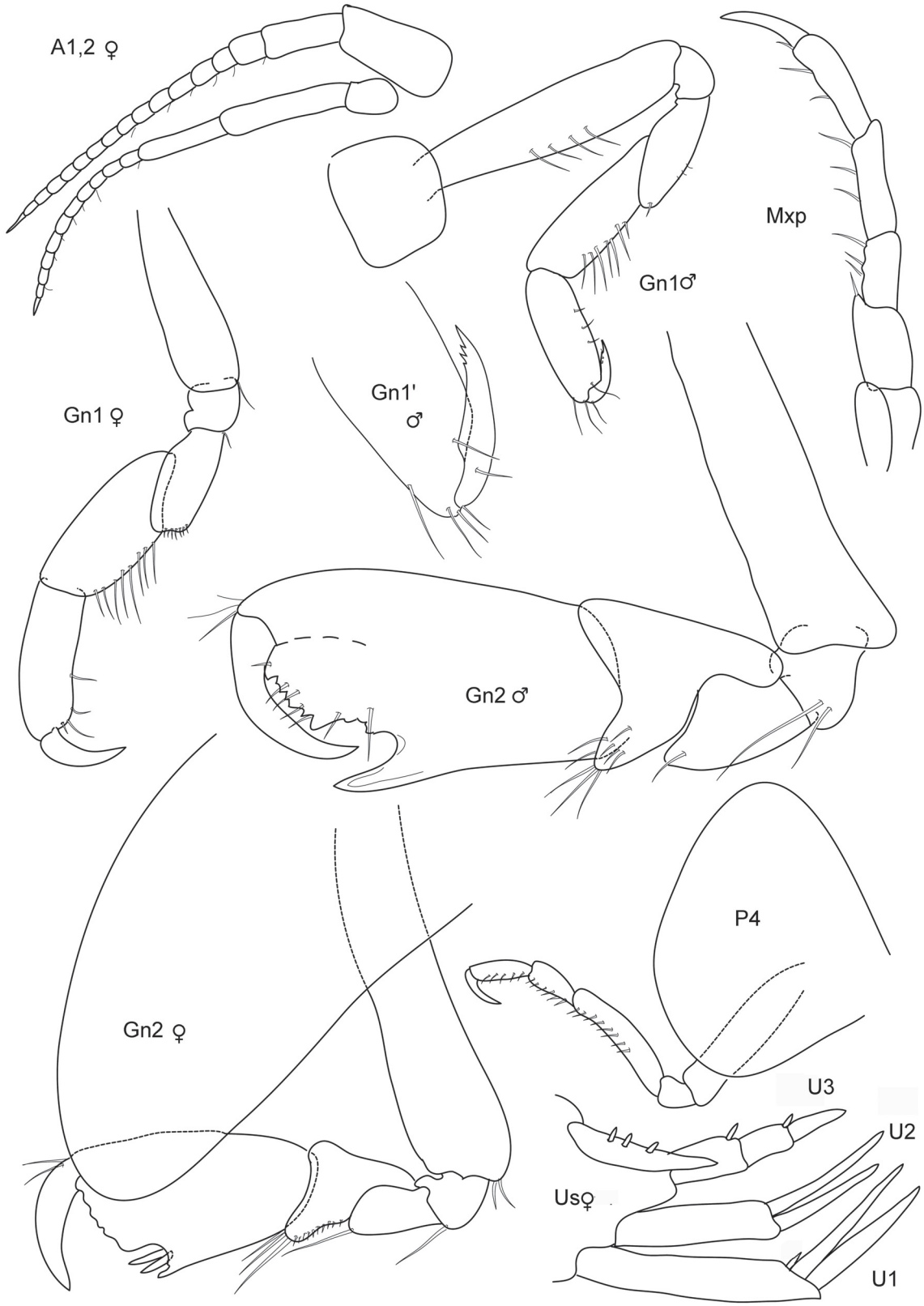

Figure 10: *Metopa exigua* n.sp.: holotype male 2mm, female 1.8mm, off Korea.

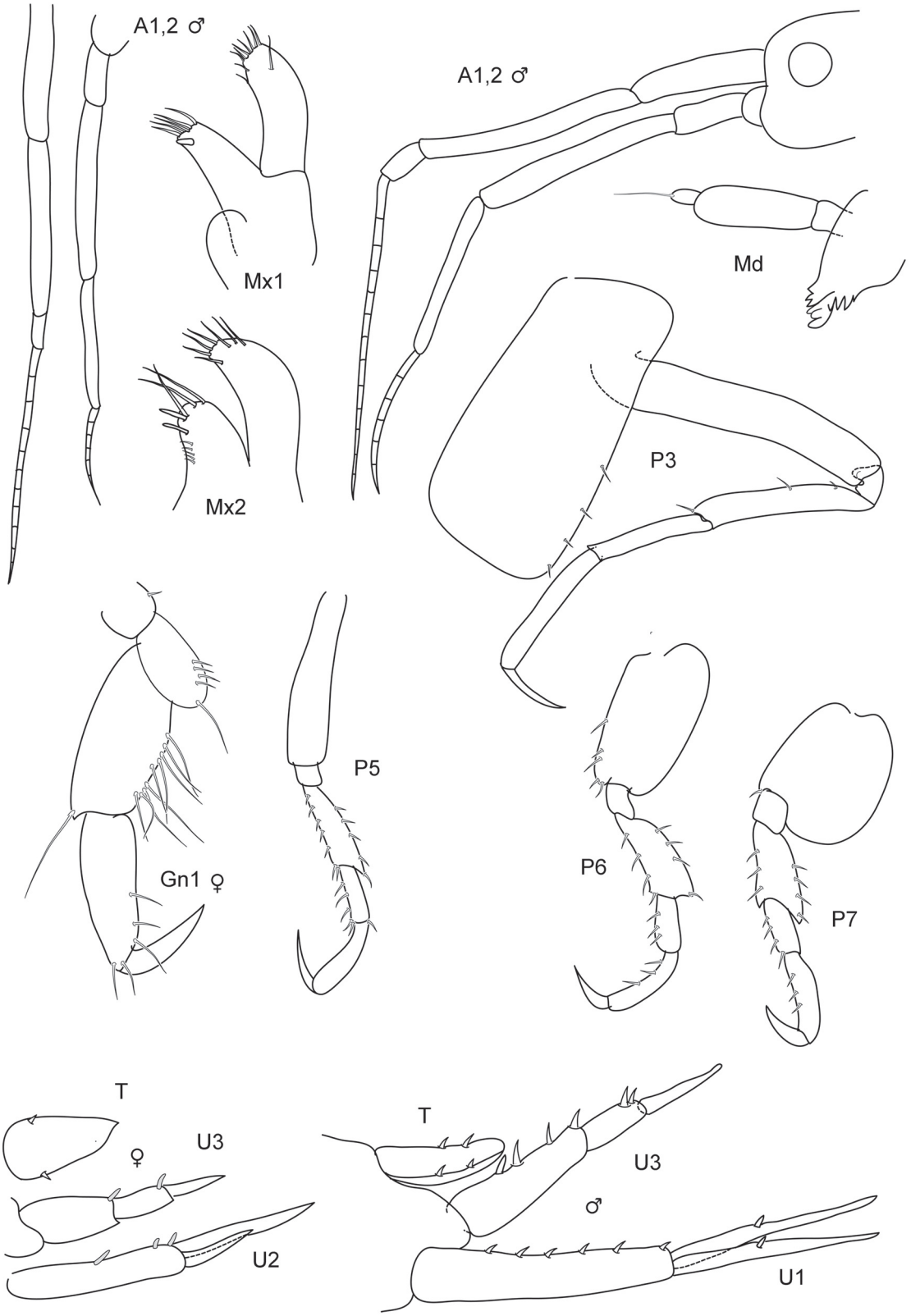

Figure 11: *Metopa exigua* n.sp.: holotype male 2mm, female 1.8mm, off Korea.

typical mud inhabitants (it comes from 200m depth).

The new species belongs to a difficult group with often not very clear morphological character-states: *Metopa abyssi* Pirlot, 1933*; M. angustimana* Gurjanova, 1948*; M. bruzelii* (Goes, 1866); *M. dawsoni* Barnard, 1962; *M. longicornis* Boeck, 1871; *M. longirama* Dunbar, 1942; *M. palmata* Sars, 1895; *M. quadrangula* Reibisch, 1905; *M. tenuimana* Sars, 1895*; M. wiesei* Gurjanova, 1933.

They all share the simple Gn1 with elongate propodus and carpus, which are similarly wide (vs. carpus much wider in the group around the type species *M. clypeata*) and should be separated from the other members of *Metopa*. It should also be checked, if all of them have the inner plates of the maxilliped well separated like the type *M. clypeata* and unlike many other *Metopa* members.

Metopa torbeni n.sp.

Fig. 12

Holotype: 1 spec. ?sex 3mm. Danish Exp. to Siam by Carl Mortensen, Gulf of Thailand, 1.6 km S of Ko(h) Chuen, shells; dredge; 1. February 1900; 30 Fv. = 54m; slide ZMUC CRU-20193.

Type locality: Gulf of Thailand.

Etymology: Dedicated to the 90th birthday of Torben Wolff, indefatigable crustaceologist at the Copenhagen Museum.

Description. Based on ?sex, 3mm.

Head. Eyes rounded. *Antenna 1* robust, longer than head and peraeonites 1–4, longer than antenna 2; peduncular article 1 length about two times the width; flagellum with 14 articles; accessory flagellum absent. *A2* much shorter than A1, peduncle robust, flagellum longer than peduncle article 5, with 8 articles.

Mouthparts. *Mandible* palp not clearly seen, with one long distal seta. *Maxilla 1* palp 1–articulate. *Maxilla 2* outer plate sitting next to inner one. *Maxilliped* inner plates not fused, surpassing length of ischium, rectangular; outer plate lacking, dactylus a bit shorter than propodus.

Peraeon. *Coxa* 2 oval without tooth; *Cx3* tongue-shaped; *Cx4* not excavated, anterior and posterior margin rounded, much wider than long. *Gnathopods 1–2* extremely dissimilar in shape and size. ***Gnathopod 1*** **dactylus short and thickened; propodus elongate, palm not defined, about 4 x as long as wide; carpus much longer than propodus, also with parallel margins, proximally wider than distally; merus incipiently chelate, with free obtuse distal end; all articles beset with groups of setae.** ***Gnathopod 2*** **length of propodus longer than Cx2, subpiriform; hind margin much shorter than length of palm which has one wide shallow excavation near palmar corner and 4 humps next to dactylus insertion; palmar corner not well defined. Dactylus same length like palm; carpus shorter than wide, cup-shaped, merus not lobate.** *Peraeopod 4* merus anterodistal margin somewhat lengthened. *Peraeopod 7* basis widened with rounded posterodistal lobe; merus lengthened and widened, reaching about 3/4 carpus length.

Pleon. *Urosomites* articulation not clearly visible. *Uropod 1* peduncle nearly twice as long as subequal rami, with 5 short robust setae; *U 2* peduncle also beset with small robust setae, longer than longer ramus, rami unequal; *U 3* peduncle longer than ramus, article 1 of ramus longer than article 2.

Telson. Not reaching end of peduncle U3, with 2 robust setae.

Female (sexually dimorphic characters). Unknown.

Habitat. Marine; among shells, 54m.

Distribution: Gulf of Thailand, Pacific Ocean.

Remarks. Despite the fact that the mandible palp of this small specimen was not clearly visible, this new species must belong to the group around the type of *Metopa*, having a very specialized Gn1 with a short dactylus, narrow propodus, elongate carpus distally narrowing and a short rectangular merus with a free distal margin. However, Gn2 propodus is different from all other members, as *M. clypeata* (Krøyer, 1842); *M. cristata* Gurjanova, 1955; *M. kobjakovae* Gurjanova, 1955; *M. koreana* Gurjanova 1952; *M. leptocarpa* Sars, 1883; *M. norvegica* (Liljeborg, 1851), *M. robusta* Sars, 1895; *M. spitzbergensis* Brüggen, 1907; *M. submajuscula* Gurjanova, 1948: all have a clearly pronounced tooth on the palmar corner, and most of these species are rectipalmate. Even if the present specimen is a young one, it is quite improbable that allometric growth will change the propodus to such a degree.

Metopa koreana Gurjanova 1952

Figs. 13–14

M. koreana Gurjanova 1952: 187–188, fig. 13

Material examined:

•off Korea, 42°N, 130' E; 1100m; 2.1.1901. Beautiful and rich material in alcohol (more than 30 males, females, juveniles). (27). ZMUC CRU-20198.

•36°45'N, 130°E 1.12.1934 6mm slide, 2 spec. in alcohol (51); „E-Asia“, Suensen leg., 19. 4. 1911: 1 specimen 6mm (22). ZMUC CRU-20194.

Length: 6–8mm

Remarks. There are only a few characters different to the very similar, but nearly twice as long type species *Metopa clypeata* (Krøyer) from the Atlantic: in the type the Gn2 is clearly rectipalmate and the palm seems nearly smooth, while the present material has a palmar corner of about 120° and in males there are two semicircular excavations near the palmar corner, whereas the females or juveniles have only shallow excavations; Gn2 carpus is dorsally similarly but somewhat less sculptured in *M. koreana*; Cx2 has an unusual blunt corner of about 120° on the hind margin (vs. linguiform rounded Cx2 in *M. clypeata*); Gn1 carpus is a bit stronger and more prominent in *M. clypeata*; A2 peduncle article 4 and article 5 are subequal and very long (vs. much more robust and shorter). P5–7 merus is less lengthened distoposteriorly, the legs are more slender. The differences which are most easily seen are in the usorome: U1,2 peduncle is clearly longer than the rami (vs. peduncle and rami subequal in *M. c*., see Tandberg & Vader 2009 Fig. 8), U3 has a long, slender peduncle with many robust setae (vs. a characteristical prolongation on the peduncle with few robust setae in *M. clypeata)*, T with many robust setae (vs. with few robust setae in *M. c.,* see also Tandberg & Vader 2009 figs. 8, 9).

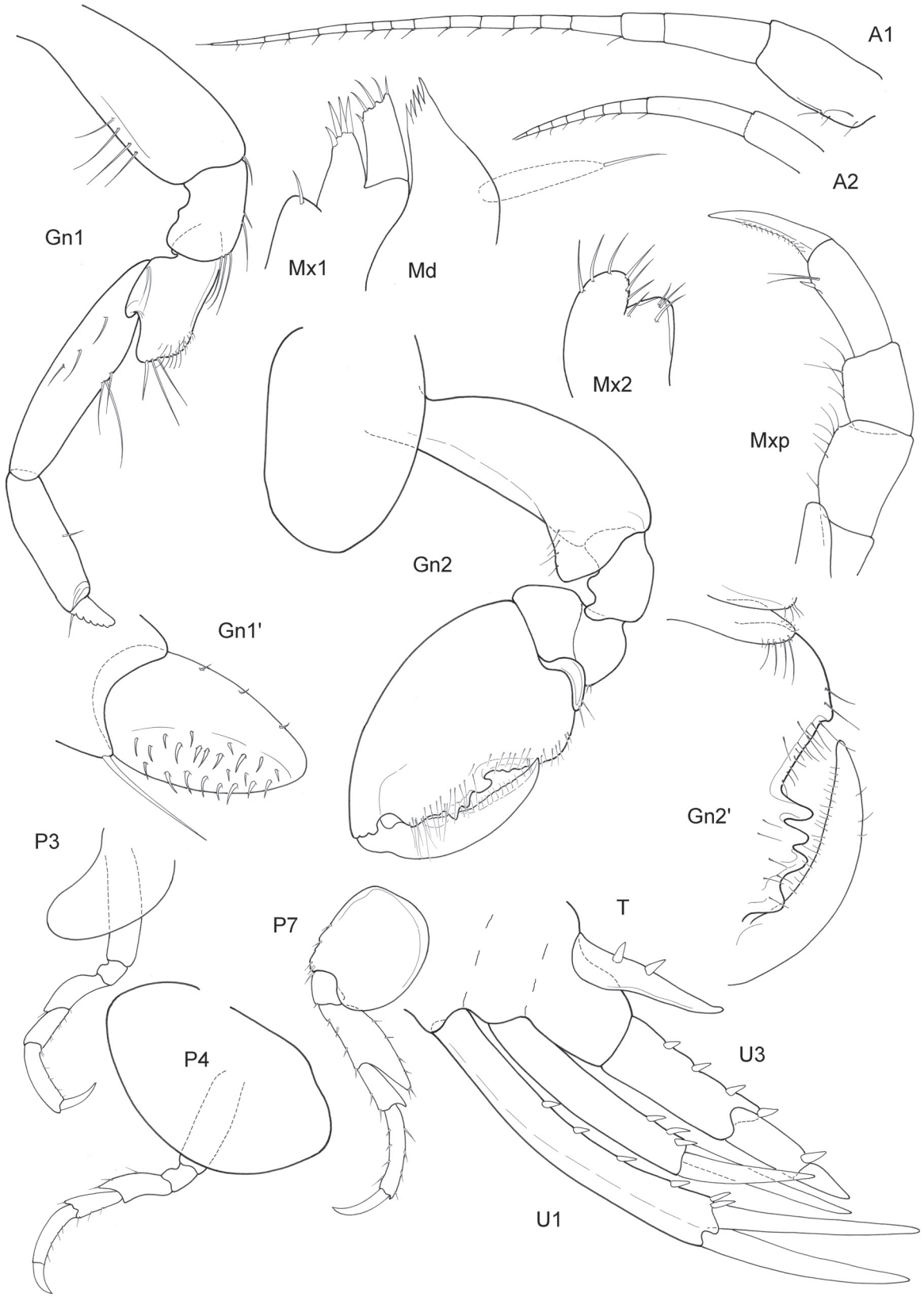

Figure 12: *Metopa torbeni* n.sp.: holotype ?sex 3mm, Gulf of Thailand.

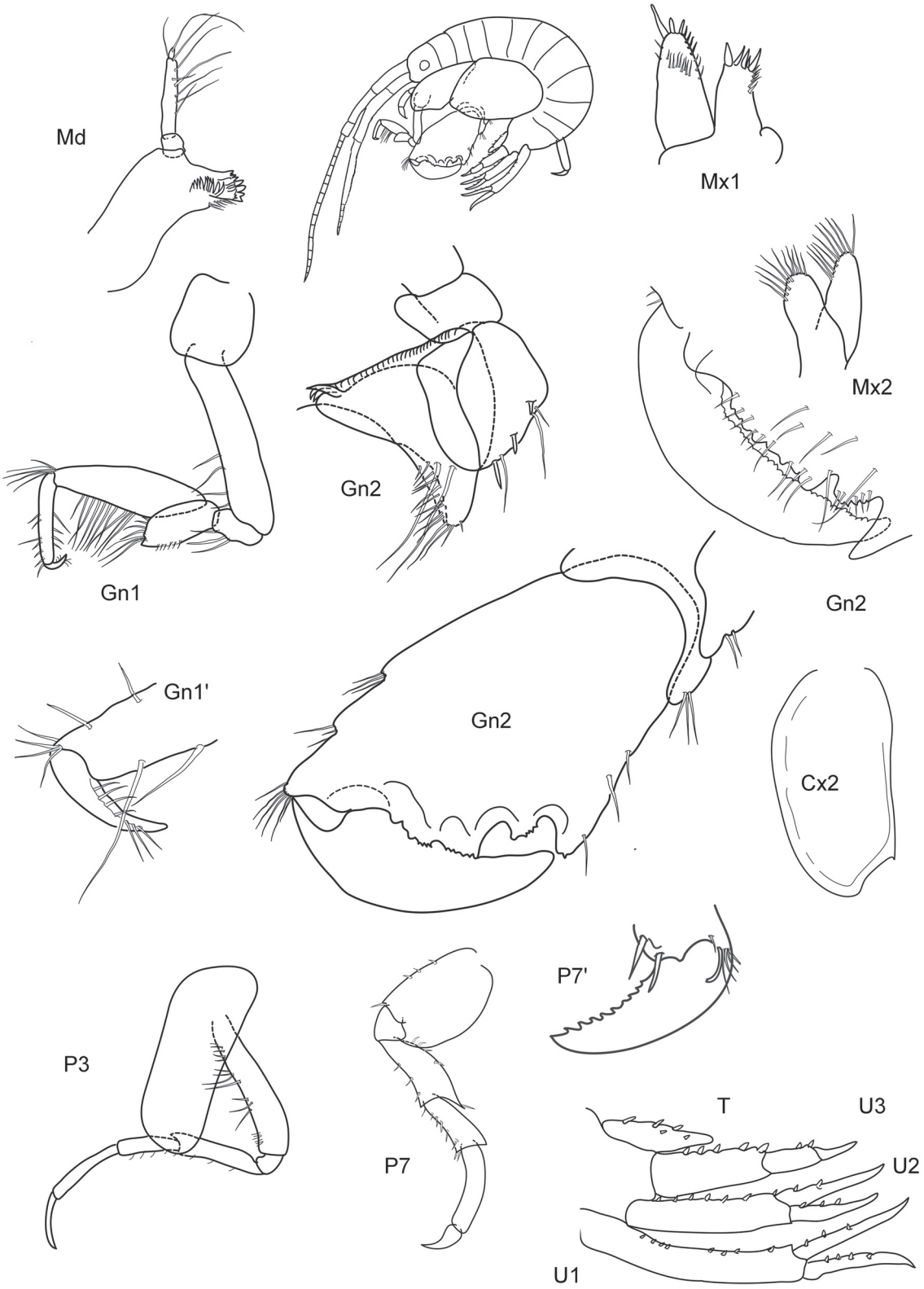

Figure 13: *Metopa koreana*: male 6mm, off Korea.

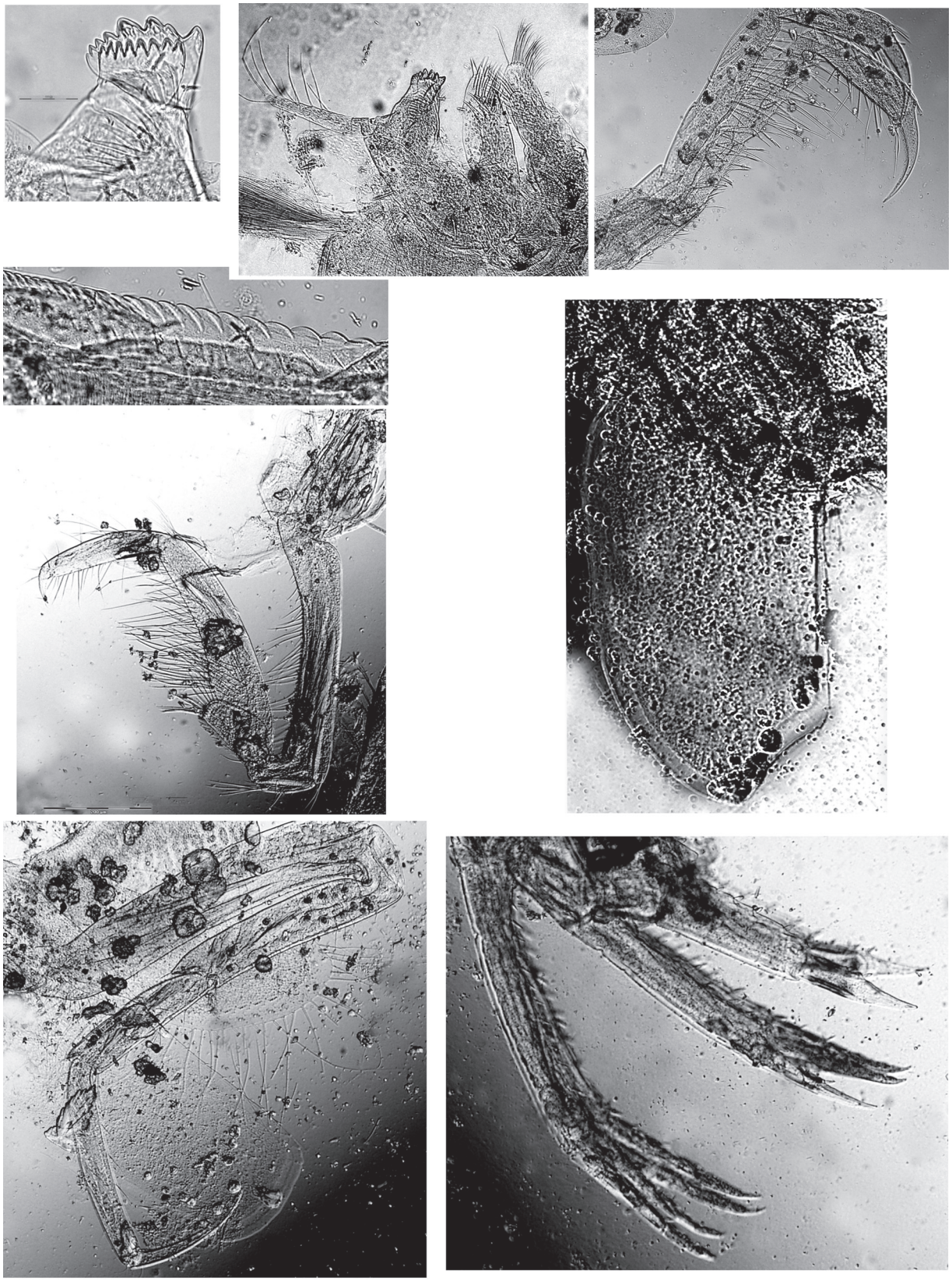

Figure 14: *Metopa koreana*: male 6mm, off Korea.

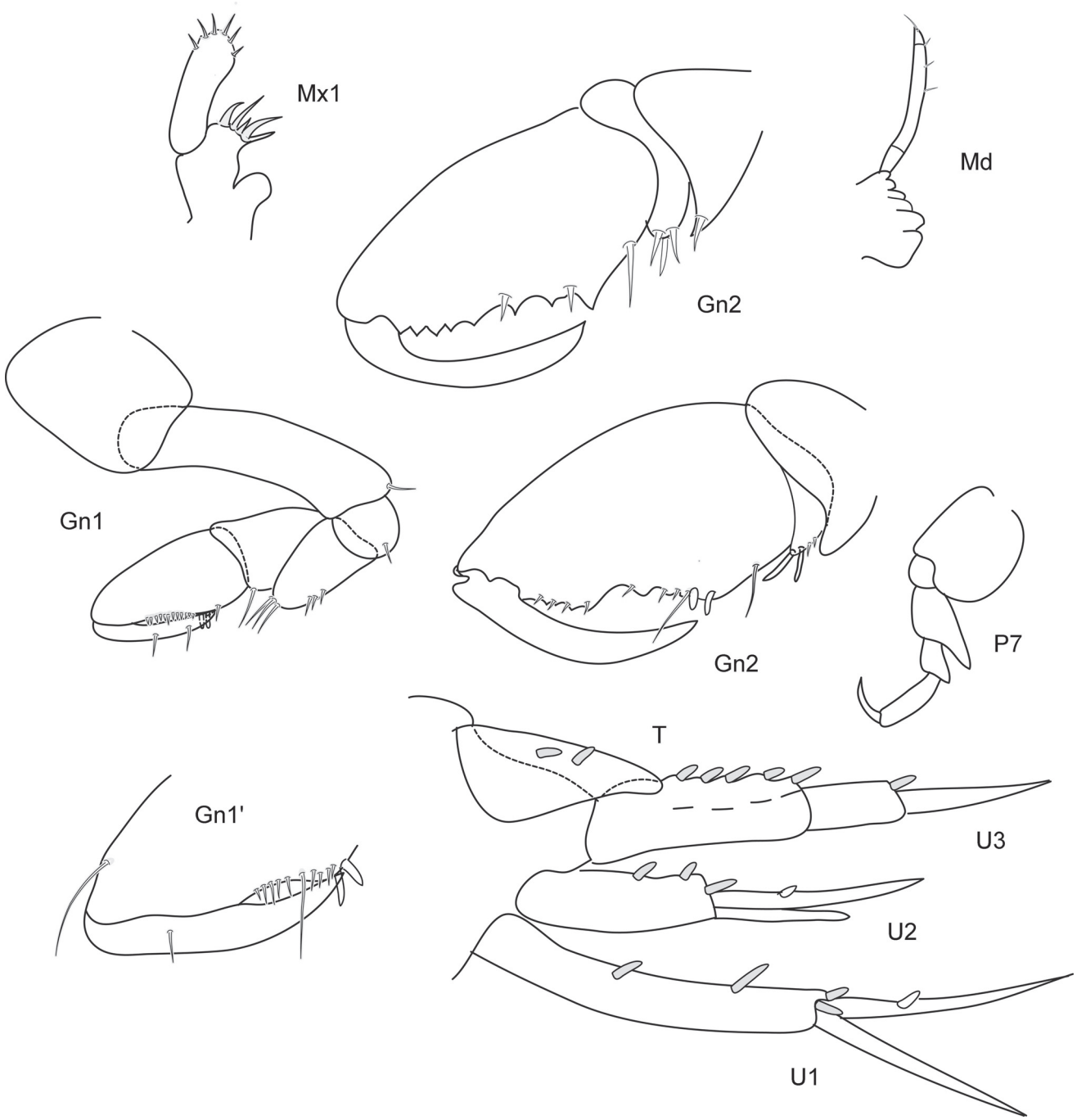

Figure 15: *Metopa* cf. *bulychevae*: ?juv. 1.5mm, Chinese coast.

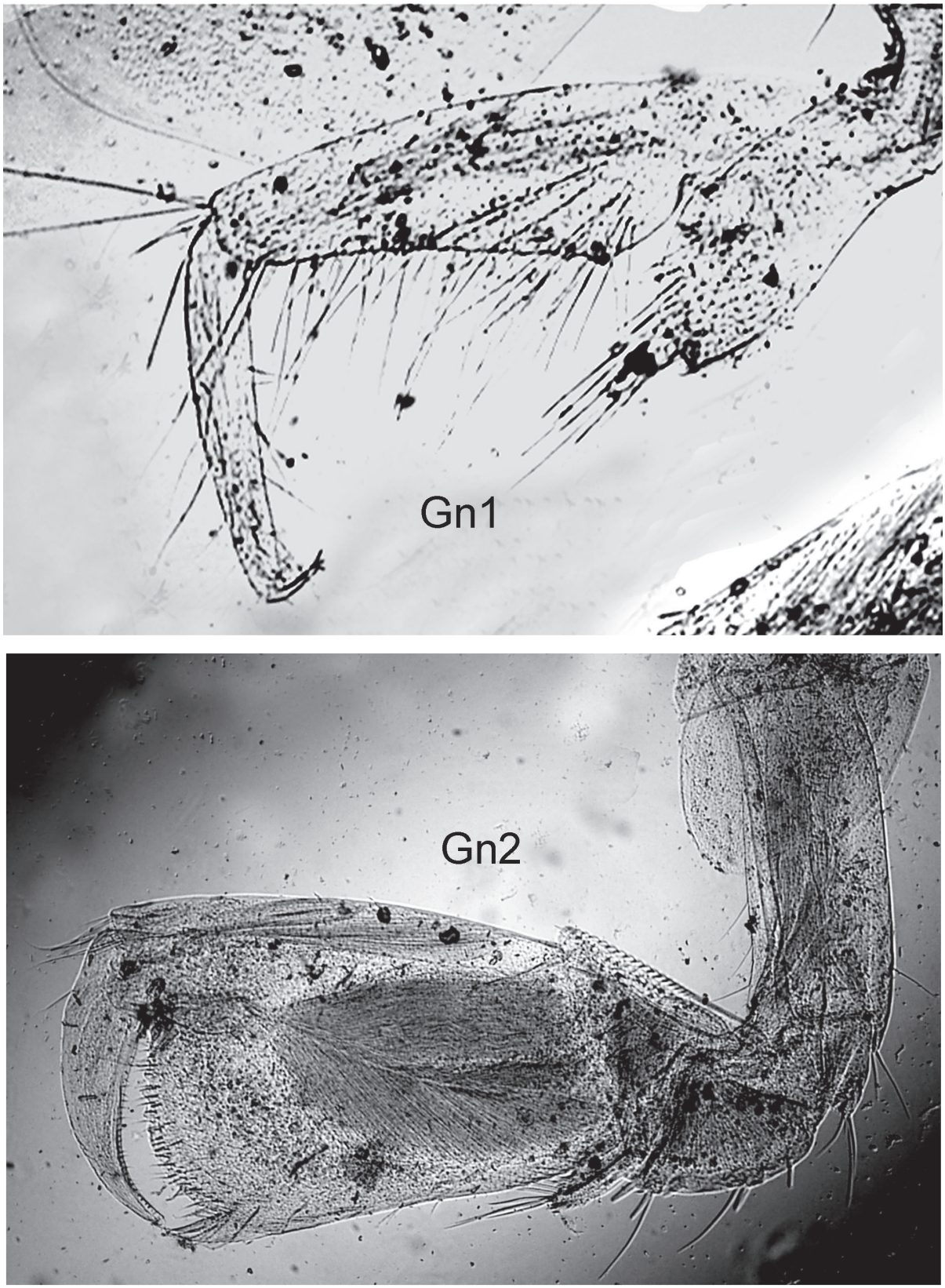

Figure 16: *Metopa* cf. *clypeata* : ?sex. 8mm, Japan Sea.

Metopa cf. *bulychevae* Gurjanova, 1955

Fig. 15

Metopa bulychevae Gurjanova 1955: 170–172, figs. 3, 4

Material examined: Small (juv.?) specimen (1.5 mm) in not very good condition, from 23°20'N, 118°30'E (coast of China) and 17 Fr depth, slide ZMUC CRU-20195.

Remarks. There is a (probably basic) group of *Metopa* species with a first gnathopod having a widened propodus which shows a palmar corner: the Atlantic species *M. aequicornis* Sars, 1879, *M. alderi* (Bate, 1857), *M. boeckii* Sars, 1895 belong here, as well as *M. spectabilis* Sars 1879, if it is not a synonym to *M. alderi*; but also the Pacific species *M. samsiluna* Barnard, 1966 and the Japanese ones, *M. uschakovi* Gurjanova, 1948 and *M. bulychevae* Gurjanova, 1955. Both are not completely described, but *Metopa uschakovi* has a Gn1 which is much more slender with a carpus much longer than broad, and in U3 the peduncle is less spinose, while the characters of gnathopods, P7 and U3 would fit quite well to *M. bulychevae*.

Metopa cf. *clypeata* (Krøyer, 1842)

Fig. 16

Leucothoe clypeata Krøyer 1842:157; 1845: 545 pl. 6, fig. 2a–f
Metopa clypeata Tandberg & Vader 2009: 3 figs. 1–9, 19–21 (see here for elaborate synonymy)

Material examined:
•42°N, 130° 30'E (Japan Sea), 16. 11.1881 Suensen coll., 8mm 1 es. alcohol. 1 slide, ZMUC CRU-20196.
•30° 50'N, 122° 40'E Japan, Nagasaki, Gutzloff & Schönau coll.: 21 specimens 6mm, 1 ad. 12mm. ZMUC CRU-20197.

Remarks. It seems strange that the Atlantic species *M. clypeata* is found also on the Northern Pacific Coasts, but morphologically there is absolutely no difference to the meticulously redescribed type in Tandberg & Vader, 2009. As already mentioned in *M. koreana*, *M. clypeata* can become quite large (up to 15mm), has a more or less smooth, only shallowly waved or finely serrated palm on Gn2 in both sexes with a 90° palmar corner, and robust, poorly spinose uropods and telson.

Gurjanova 1951:417 describes the species as follows:

„A1 longer than A2, Gn1 straight, article 4 expanded with wide hilly lobe, article 5 elongate and widening in the middle, distally narrowing, article 6 narrow, linear, shorter than article 5. Dactylus with 7–8 setae on ventral margin.

Gn2 with strong subchela; on surface of cup-shaped article 5 rows of small glistening humps, article 6 very big, 2x as long as article 5; distally somewhat widened. Palmar margin nearly horizontal with large tooth-shaped prolongation, in males near this tooth a deep sinus. In all peraeopods the inner margin of the dactylus with teeth.

U3 basal article with 5–6 short robust setae, 2 rami equal to length of outer margin of basal article (= peduncle).

Telson with 2 pairs of lateral spines. Length up to 12mm.

Geographical distribution: amphiboreal, known from western and eastern Groenland, Spitzbergen, bay of St. Lawrence, lives in hydroid colonies. Tschukots Sea, Bering, Ochotks, Japanese Sea. Data of Jsrzhinskij (1870) from the White Sea until now not confirmed."

This species is not very commonly found, and at sites far apart: Tandberg & Vader 2009: Greenland (type locality), Bering Sea, Point Barrow, Alaska, Gulf of St. Lawrence in depths from 20 to 300m; older reports from Bohuslän (Sweden), Banff (Scotland), Christiansund (W-Norway) and Tromsø (N-Norway). Now also from the Pacific Ocean?.

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