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Sophrosynidae, a new family in the Lysianassoidea (Crustacea: Amphipoda) with a revision of the genus *Sophrosyne*

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Abstract

The new lysianassoid amphipod family Sophrosynidae is described and the genus *Sophrosyne* is reviewed. Fourteen species are recognised including 10 new species and the documented distribution of the genus is expanded into the south-western Pacific.

Key words: Crustacea, Amphipoda, Lysianassoidea, Sophrosynidae, taxonomy, new family, new species, *Sophrosyne*

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Introduction

The genus *Sophrosyne* is a rare, mainly deep water amphipod genus, seldom reported in the amphipod literature. To date there have been less than 20 papers documenting actual specimens. Only four species are currently known from widely disparate areas in the Southern Ocean, in the eastern North Atlantic Ocean and in the eastern North Pacific Ocean. Between 1887 and 1891 three species of *Sophrosyne* were described: *S. hispana* (Chevreux, 1887) from off Cape Finisterre in the eastern North Atlantic Ocean, *S. murrayi* Stebbing, 1888 from Kerguelen Island in the Southern Ocean and *S. robertsoni* Stebbing & Robertson, 1891 from the Clyde Sea area, eastern North Atlantic Ocean. Each species was described from a single specimen. There have been several subsequent records of *S. hispana* and *S. robertsoni* and in 1991 Ren (in Ren & Huang) described a fourth species, *S. antarctica*, from the South Shetland Islands and the Palmer Archipelago.

Based on new collections, new information from the literature and the recognition of new characters, we describe 10 new species and extend the distribution of the genus into the south-western Pacific Ocean off south-eastern Australia.

Although species of *Sophrosyne* superficially resemble other lysianassoids they are distinguished from other family level groups by the severe reduction in mouthpart morphology — reduced to such an extent that we cannot see a relationship between *Sophrosyne* and any of the lysianassoid families and consequently we establish the new family Sophrosynidae.

In assessing our material we have reviewed the previous literature and re-examined some of the material. We describe five new species from our material and recognise a further five new species from material in the literature. Two of these new species, *S. inverarae* and *S. moorei*, are from material that has been recorded as *S. robertsoni* and comes from the same general locality (Clyde Sea area) on the west coast of Scotland. It may seem that we have split the genus too finely, but each of the species we recognise has different characters, or a different set of characters, that vary as much as do characters in other clearly distinct species.

Material and methods

The descriptions were generated from a DELTA database (Dallwitz 2005) to the sophrosynid species of the world. The diagnostic descriptions were generated with the aid of Intkey (Dallwitz *et al.* 1993 onwards; Dallwitz *et al.* 1998). The **bold** parts are diagnostic characters which distinguish each taxon in at least two respects from every other taxon.

Material is lodged in the Australian Museum, Sydney (AM); The Natural History Museum, London (BMNH); Los Angeles County Museum, Los Angeles (LACM); Museo Civico di Storia Naturale, Verona (MVRCr); Musée Océanographique, Monaco (MOM); Museum Victoria, Melbourne (MV).

Standard abbreviations are as follows: **A**, antenna; **C**, coxa; **E**, epistome; **EP**, epimeron; **G**, gnathopod; **H**, head; **MD**, mandible; **MP**, maxilliped; **MX**, maxilla; **P**, pereopod; **T**, telson; **U**, uropod; **UR**, urosomite; **l**, left; **r**, right.

Sophrosynidae fam. nov.

Diagnostic description. *Head* exposed, slightly longer than deep, without cheek notch. *Antennae* calceoli absent in male and female. *Antenna 2* peduncular article 3 without distal hook. *Epistome and upper lip* fused. *Mouthpart bundle* subquadrate. *Mandible* incisors present, well developed, symmetrical, straight, smooth; left lacinia mobilis rod-like, right lacinia mobilis absent; accessory setal row absent, without distal setal tuft; molar absent; palp present, inserted distally to extremely distally. *Maxilla 1* inner plate with 2 or less apical pappose setae; outer plate with 2 apical primary setal-teeth and vestigial setal-teeth down medial face; palp large, with apical robust setae. *Maxilla 2* inner plate subequal to or slightly shorter than outer plate, or inner plate significantly shorter than outer plate; inner plate without oblique row of facial setae. *Maxilliped* coxa and basis normal; outer plate present, medial setae absent, apical slender setae present; palp 4-articulate, article 4 well developed.

Gnathopod 1 slightly chelate; coxa large, about as long as coxa 2; merus and carpus not rotated; ischium short; carpus compressed; propodus large; dactylus slightly curved. *Gnathopod 2* coxa large, subequal in size to coxa 3; propodus subquadrate to rectangular (less than 4 x as long as broad), with complex setae; dactylus minute. *Pereopods* all simple; distal spurs absent. *Pereopod 4* coxa with well developed or weak posteroventral lobe. *Pereopod 5* coxa anterior and posterior lobes subequal. *Pereopod 6* coxa posterior lobe subequal to, slightly longer than or much deeper than anterior lobe.

Uropod 2 inner ramus without constriction. *Uropod 3* rami biramous; outer ramus 2-articulate. *Telson* present, cleft or entire.

Additional characters. *Antenna 2* subequal in length to antenna 1; peduncular article 3 short. *Mandible* incisors small; palp article 3 slender, blade-like, long. *Maxilla 1* outer plate narrow; palp 2-articulate. *Maxilliped* inner plate small; outer plate very small, subrectangular; palp large, article 3 long. *Gnathopod 1* coxa anterior margin slightly convex, anteroventral corner rounded; basis broad; carpus subtriangular; propodus subrectangular, posterior margin smooth; palm slightly obtuse, smooth. *Gnathopod 2* ischium long; propodus posterodistal corner without robust setae. *Pereopod 4* coxa deeper than wide. *Pereopod 7* basis expanded posteriorly. *Uropod 3* peduncle short; rami lanceolate.

Generic composition. *Sophrosyne* Stebbing, 1888.

Remarks. Unlike the highly modified *Euonyx* which is clearly related to *Stephonyx*, it is difficult to know how *Sophrosyne* is related to other lysianassoid taxa. The mouthpart morphology is very reduced, particularly the reduced setal-tooth arrangement on the outer plate of maxilla 1, but also the absence of a molar, the reduction of setae on the inner and outer plates of maxilla 2 and the reduction of the inner and outer plates of the maxilliped. The setal-tooth arrangement is so modified that we cannot relate it to any of the standard lysianassoid arrangements and the molar has been independently lost at the family level as many as 15 times. At least eight other family level taxa within the lysianassoids have the inner plate of maxilla 2 reduced to half the length of the outer plate.

Sophrosyne Stebbing, 1888

Sophrosyne Stebbing, 1888: 652. —Della Valle, 1893: 795. —Stebbing, 1906: 21. —J.L. Barnard, 1969: 363. —Lincoln, 1979: 52. —Moore, 1983: 108. —Diviacco & Ruffo, 1989: 549. —Barnard & Karaman, 1991: 533. —Ren & Huang, 1991: 248.

Paropisa Stebbing, 1899: 206. [type species: *Opis hispana* Chevreux, 1887, by original designation].

Type species. *Sophrosyne murrayi* Stebbing, 1888, by monotypy.

Species composition. *Sophrosyne* includes 14 species: *Sophrosyne abyssi* **sp. nov.**; *S. antarctica* Ren in Ren & Huang, 1991; *S. californica* **sp. nov.**; *S. cantractia* **sp. nov.**; *S. hispana* (Chevreux, 1887); *S. integricauda* **sp. nov.**; *S. inverarae* **sp. nov.**; *S. ledoyeri* **sp. nov.**; *S. moorei* **sp. nov.**; *S. murrayi* Stebbing, 1888; *S. peartae* **sp. nov.**; *S. robertsoni* Stebbing & Robertson, 1891; *S. rodondo* **sp. nov.**; *S. ruffoi* **sp. nov.**

Comments on some literature records. There are only two literature records of *Sophrosyne* having a 2-articulate outer ramus on uropod 3 – J.L. Barnard's 1966 illustration of *S. californica* (as *S. robertsoni*) and Kilgallen *et al.*'s 2007 illustrations of *S. hispana* and *S. inverarae* (as *S. robertsoni*). All other figures show a 1-articulate outer ramus, and only Ren (1991) and Kilgallen *et al.* (2007) have described it in the text (Ren as 1-articulate, Kilgallen as 2-articulate). In all the material we have examined (including the type material of *S. hispana, S. murrayi, S. moorei* and *S. inverarae*) the outer ramus of uropod 3 has 2 articles; the articulation is close to the peduncle, making the second article unusually long, quite faint and easily overlooked. We feel sure that all species of *Sophrosyne*, if examined carefully, will be found to have a 2-articulate outer ramus on uropod 3.

Sophrosyne hispana

In his second description of *S. hispana* Chevreux (1900: 14) described the mandibular incisor as "armé de deux petites dents obtuses et d'une épine". Barnard & Karaman (1991) allowed for this in their diagnosis of

the genus, describing the incisor as “ordinary or very minutely toothed”. We have examined the slides of the *S. hipana* holotype and although Chevreux’s illustration (plate 3, figure 1d) does represent what is on the slide it is clear that he has mis-interpreted the parts. The mandible and maxilla 1 have been mounted together; the structure Chevreux interpreted as a toothed incisor is the apex of maxilla 1 palp, the “lame secondaire” is the true incisor and the “molar” (described as “une dent aigue”) is the outer plate of maxilla 1.

Ledoyer (1977) recorded material from the north-western Mediterranean Sea as *S. hispana* because it had an angular posteroventral corner on epimeron 3 (in contrast to the rounded epimeron 3 of *S. robertsoni*), and a small gnathopod 2 palm (in contrast to the very broad palm of *S. murrayi*). However, Ledoyer’s illustrated specimen differs from *S. hispana* in three points: pereopods 5 and 6 merus length is about 1.5 times breadth (in *S. hispana* it is about 1.0 times); the posteroventral lobe of pereopod 7 basis does not extend beyond the ischium (in *S. hispana* this lobe is produced halfway along the merus); the telson is cleft about 65% (in *S. hispana* about 45%). It is established here as the type of a new species, *S. ledoyeri*.

Sophrosyne robertsoni

Norman (1900) recorded additional material of *S. robertsoni* from Loch Fyne (near the type locality) and from deep water off the English Channel, collected by the *Porcupine*. The material was not illustrated or described. The type material of *S. robertsoni* is lost. In an effort to check some characters of *S. robertsoni* we borrowed material identified as this species from The Natural History Museum, London. We have examined three lots of Norman’s material. The single specimen [BMNH 1911:11:8 (652)] from the *Porcupine* collection is dissected and entirely mounted on two slides; it is in too poor condition to allow any assessment of species. A single slide [BMNH 1911:11:8 (653)] of one specimen from Inverary (Loch Fyne) is also in too poor condition to identify. Two specimens [BMNH 1911:11:8:12544-12551], also from Inverary, are in good condition. One is intact; the other has had the maxilliped and gnathopods 1 and 2 removed, and seems to be the material illustrated as *S. robertsoni* by Lincoln (1979). There is, however, a discrepancy between this material and the illustration of *S. robertsoni* given in Stebbing & Robertson (1891). The original illustration shows a smoothly curved posteroventral corner on epimeron 3, below the upturned tooth. The material from Inverary has a definite angle on this corner, as in some other species of *Sophrosyne*. This, together with differences in the length to breadth ratio and the degree of cleft of the telson, convinced us that this was an unrecognised species. We describe it here as *Sophrosyne inverarae* **sp. nov.**

The single male specimen from the Clyde Sea area reported by Moore (1983) as *S. robertsoni* also has differences in the epimeron 3 and the telson which distinguish it from Stebbing & Robertson’s material, and other differences in the pereopods and telson which distinguish it from *S. inverarae*. It is established here as the type of a new species, *S. moorei*.

J.L. Barnard’s 1966 record of *S. robertsoni* from southern California is also clearly not this species. It is established here as the type of a new species, *S. californica*.

Sophrosyne antarctica

We have not examined the type material of this species, but make some comments on Ren’s (1991) illustrations.

The material is recorded as a mature male, but antenna 1 has no trace of a callynophore. Two males of *Sophrosyne* are known in the literature: *S. ledoyeri* (illustrated by Ledoyer, 1977 as *S. hispana*) and *S. moorei* (illustrated by Moore, 1983 as *S. robertsoni*) and we report a male of *S. integricauda*. Each of these males has a very well-developed callynophore on antenna 1. Ren’s material is probably a female or an immature male.

The illustration of maxilla 1 shows three large robust setae on the outer plate - two apical and one subapical - and the text says “apex of outer plate with 3-4 blunt teeth”. This could be accepted as an outstanding species character, as all other *Sophrosyne* species have only two large robust setae on the apex of maxilla 1 outer plate. However, the illustration also shows a double row of small teeth on the maxilla 1 palp – one apical and one subapical. It is possible that this animal was about to moult and the subapical teeth of the palp and outer plate are those of the new moult.

Key to species of *Sophrosyne*

1. Epimeron 3, posteroventral corner rounded 2
- Epimeron 3, posteroventral corner angled 7
2. Telson entire ..... *S. integricauda*
- Telson cleft 3
3. Gnathopod 2 palm large ..... *S. peartae*
- Gnathopod 2 palm small 4
4. Mandibular palp article 2 with D2-setae 5
- Mandibular palp article 2 without D2-setae 6
5. Mandibular palp article 3 with D3-setae; uropod 2 without robust setae on rami ..... *S. californica*
- Mandibular palp article 3 without D3-setae; uropod 2 with robust setae on at least one ramus ..... *S. cantractia*
6. Gnathopod 2 palm convex; pereopod 6 coxa slightly lobate posteriorly ..... *S. robertsoni*
- Gnathopod 2 palm concave; pereopod 6 coxa not lobate posteriorly ..... *S. antarctica*
7. Gnathopod 2 palm large ..... *S. murrayi*
- Gnathopod 2 palm small 8
8. Pereopod 7, basis posteroventral lobe extending beyond ischium 9
- Pereopod 7, basis posteroventral lobe not extending beyond ischium 10
9. Maxilliped palp article 2 broad; pereopod 6 coxa strongly lobate posteriorly ..... *S. hispana*
- Maxilliped palp article 2 slender; pereopod 6 coxa slightly lobate posteriorly ..... *S. rodondo*
10. Pereopod 6 coxa strongly lobate posteriorly 11
- Pereopod 6 coxa slightly lobate posteriorly 13
11. Mandible palp article 2 broadened distally ..... *S. ledoyeri*
- Mandible palp article 2 slender 12
12. Mandible palp articles 2 and 3 with D-setae; telson longer than broad ..... *S. inverarae*
- Mandible palp articles 2 and 3 without D-setae; telson about as long as broad ..... *S. ruffoi*
13. Maxilliped palp article 2 slender (length about 2.4 x breadth); telson moderately cleft (about 38%) ..... *S. moorei*
- Maxilliped palp article 2 broad (length about 1.8 x breadth); telson deeply cleft (about 67%) ..... *S. abyssi*

***Sophrosyne abyssi* sp. nov.**
(Figs 1–3)

Type material. HOLOTYPE, female, 5.0 mm, with long non-setose oostegites, AM P.48883, east of Cape Naturaliste, Tasmania, Australia (40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E), 2400–2500 m, light grey clay and mud, epibenthic sled, R.T. Springthorpe, 10 December 1986, RV *Franklin* (stn FR 1086-04).
Type locality. East of Cape Naturaliste, Tasmania, Australia (40°45.94'S 149°01.62'E to 40°46.54'S 149°00.27'E), 2400–2500 m.

Etymology. The specific name refers to the great depth from which the type specimen was obtained.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.4 x breadth; accessory flagellum medium length, 0.52 x primary flagellum, article 1 short, 0.8 x article 2; flagellum 7-articulate, without callynophore. *Antenna 2* peduncular article 3 0.6 x article 4; flagellum 7-articulate. ***Mandible*** incisors with slightly convex margins; **palp article 2 slender**, 1.2 x article 3, **with 1 submarginal posterodistal A2-seta, without D2-setae**, article 3 length 3.8 x breadth, without D3-setae, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/3 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.6 x outer plate. *Maxilliped* inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae long, simple; **palp article 2 broad**, length 1.8 x breadth, 1 x article 3, article 3 slender, length 2.5 x breadth, dactylus with unguis vestigial. *Gnathopod 1* basis length 1.5 x breadth, **anterior margin without setae**; ischium length 1.3 x breadth; **merus, posterior margin with a few slender setae**; carpus length 0.5 x propodus; propodus length 1.6 x breadth, posterior margin slightly concave, with robust setae and simple, slender setae, **palm margin sinusoidal**, posterodistal corner with produced subacute spine bearing vestigial seta. *Gnathopod 2* minutely subchelate; ischium length 2.5 x breadth; carpus long, length 3.3 x breadth, posterior margin straight; propodus subrectangular, short, length 1.8 x breadth; palm acute, with convex,

smooth margin. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus moderately expanded posteriorly. *Pereopod 6* coxa small, slightly lobate posteriorly; merus slightly expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus slightly expanded posteriorly; propodus with setae along anterior margin. *Epimeron 3* posterior margin with strong upturned spine above subquadrate posteroventral corner. ***Urosomite 1* with anterodorsal notch and rounded boss**, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 2 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2* rami subequal in length; outer ramus with robust setae. *Uropod 3* peduncle length 1.3 x breadth; rami subequal in length. ***Telson*** longer than broad, length 1.3 x breadth, **deeply cleft** (67%), distal margins incised, with 1 apical slender seta on each lobe.

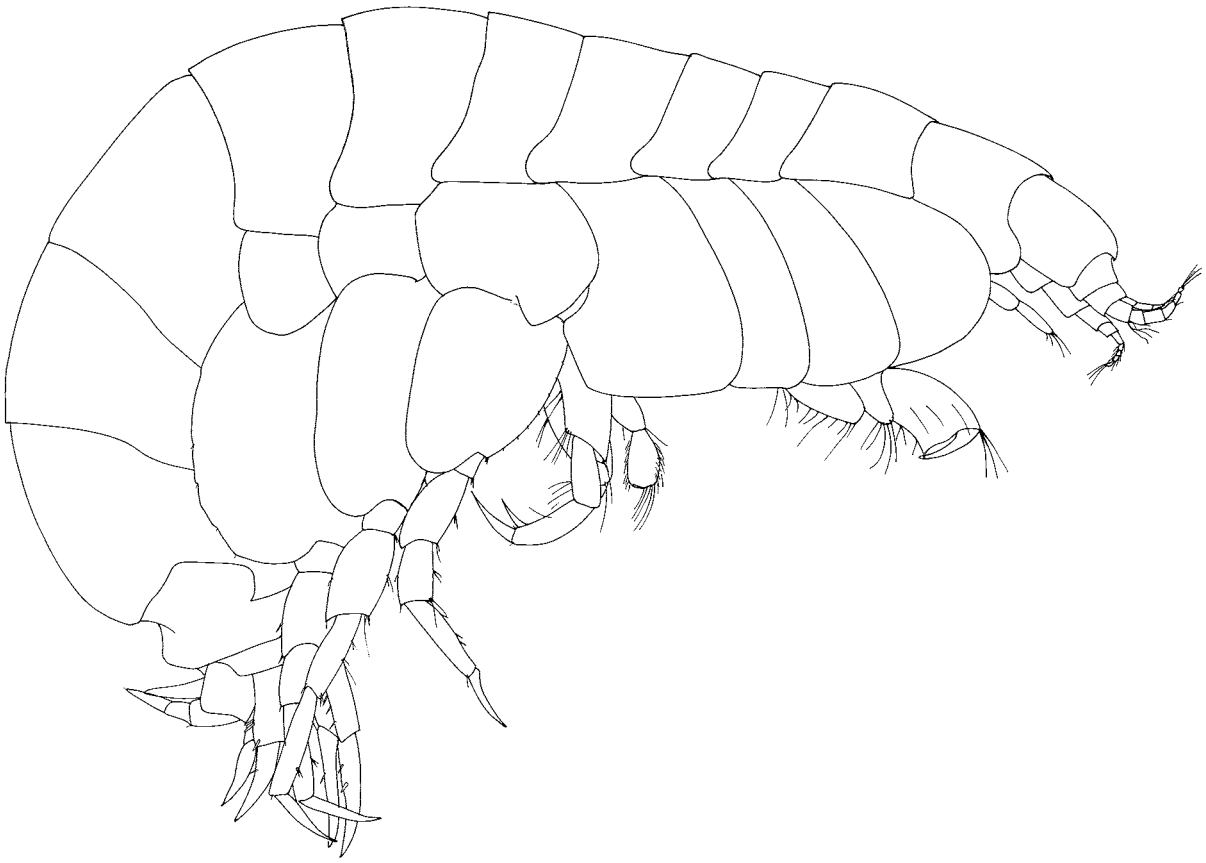

FIGURE 1. *Sophrosyne abyssi* **sp. nov.**, holotype female, 5.0 mm, AM P.48883, off Cape Naturaliste, Tasmania, Australia.

Remarks. *Sophrosyne abyssi* has an angled posteroventral corner on epimeron 3 and a deeply cleft telson similar to *S. ledoyeri*. These taxa differ in the length of mandibular palp article 2, the presence of D3-setae on article 3 in *S. abyssi*, the setal-tooth arrangement on the outer plate of maxilla 1, the shape of maxillipedal palp article 2, the setation of the posterodistal corner of gnathopod 1 and the length of the telson.

Sophrosyne abyssi shares an angled posteroventral corner on epimeron 3 and a shallow posteroventral lobe on pereopod 7 with *S. inverarae* and *S. murrayi*, but differs from both of these species in the maxilla 1 setal-tooth arrangement and in the shape of the gnathopod 2 palm.

Distribution. East of Tasmania, Australia, in 2400–2500 m depth.

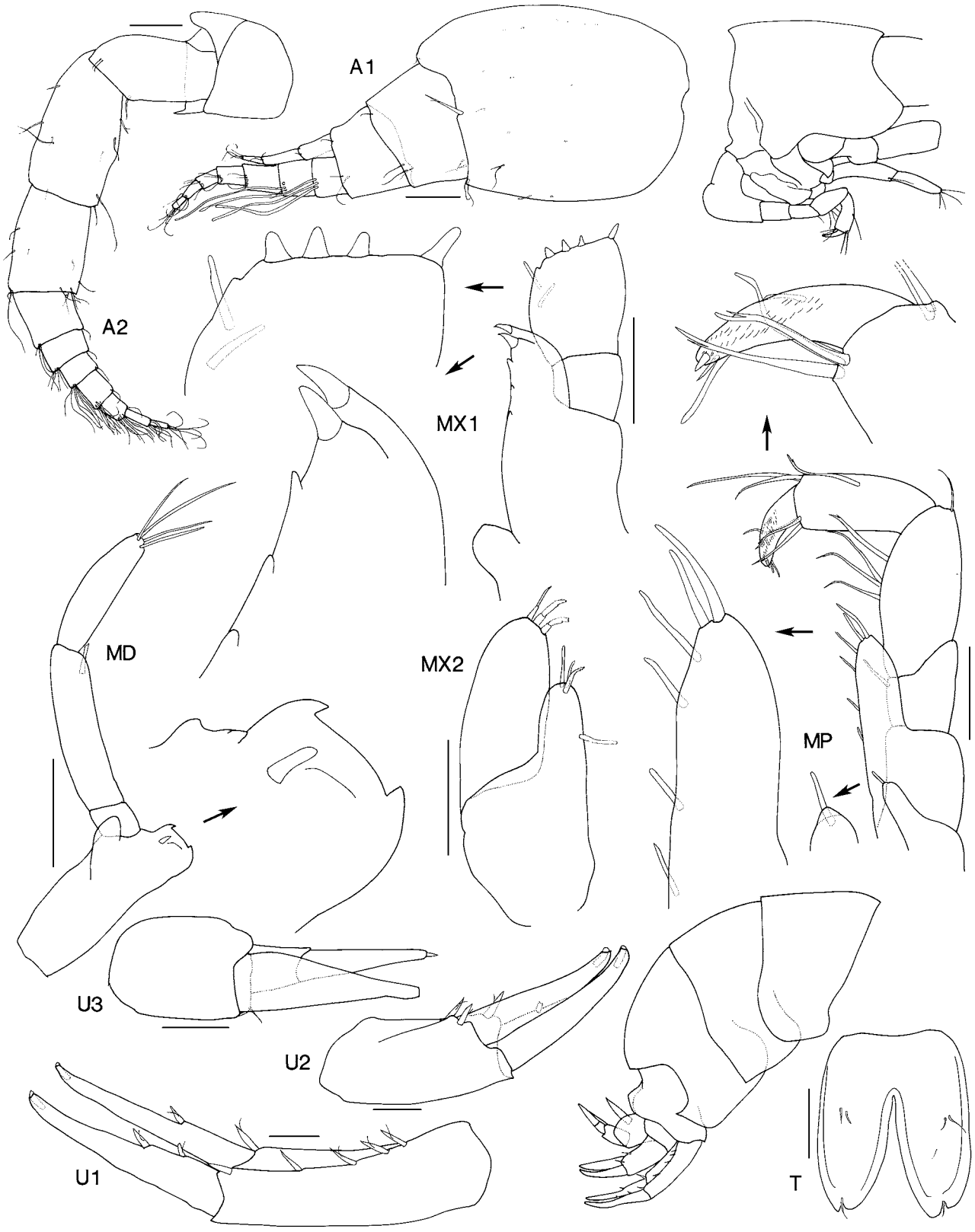

FIGURE 2. *Sophrosyne abyssi* **sp. nov.**, holotype female, 5.0 mm, AM P.48883, off Cape Naturaliste, Tasmania. Scales represent 0.1 mm.

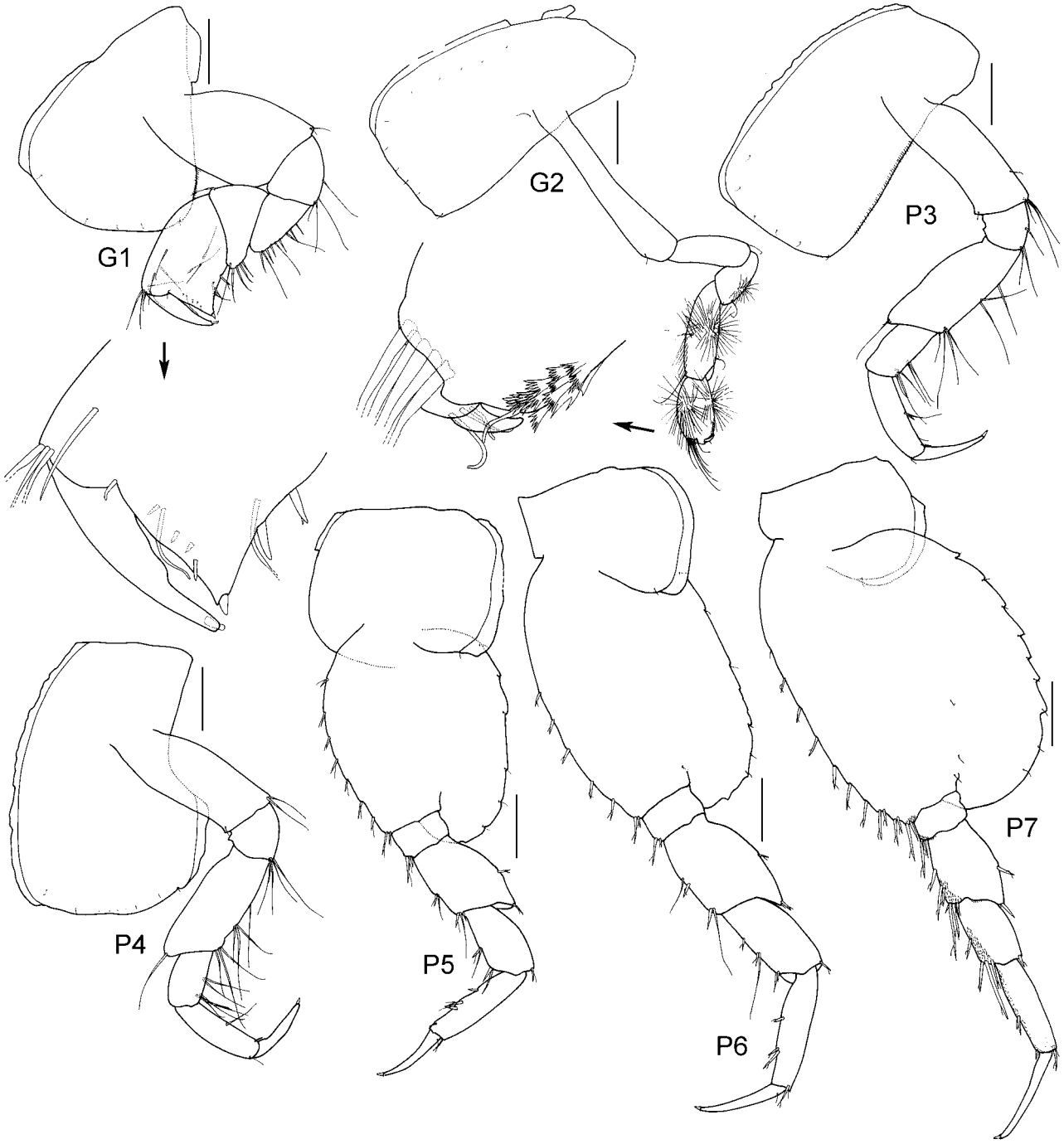

FIGURE 3. *Sophrosyne abyssi* **sp. nov.**, holotype female, 5.0 mm, AM P.48883, off Cape Naturaliste, Tasmania. Scales represent 0.2 mm.

Sophrosyne antarctica Ren, 1991

Sophrosyne antarctica Ren in Ren & Huang, 1991: 249, 308, fig. 39. —De Broyer & Jazdzewski, 1993: 15, 75. —De Broyer *et al*., 2007: 159.

Type locality. South Shetland Islands, Southern Ocean (62°50.6'S 60°20.5'W), 860 m.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.3 x breadth; accessory flagellum long, 0.5 x primary flagellum,

article 1 long, 2.6 x article 2; flagellum 7-articulate, without callynophore. *Antenna 2* peduncular article 3 0.5 x article 4; flagellum 6-articulate. ***Mandible*** incisors with straight margins; **palp article 2** slender, 1.1 x article 3, **without A2-setae**, without D2-setae, article 3 length 4.8 x breadth, without D3-setae, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/1 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.56 x outer plate. *Maxilliped* inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae absent; palp article 2 slender, length 2.4 x breadth, 1.1 x article 3, article 3 slender, length 2.4 x breadth, dactylus with unguis absent. ***Gnathopod 1*** basis length x breadth unknown, anterior margin with slender setae; ischium length 1 x breadth; **merus, posterior margin with a few slender setae**; carpus length 0.5 x propodus; **propodus** length 1.7 x breadth, **posterior margin subtly sinusoidal**, with simple, slender setae, palm margin straight, posterodistal corner with produced subacute spine bearing vestigial seta. *Gnathopod 2* minutely subchelate; ischium length 3 x breadth; carpus long, length 3.5 x breadth, posterior margin straight; propodus subrectangular, long, length 2.5 x breadth; palm slightly acute, with concave, smooth margin. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus not expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus slightly expanded posteriorly. *Pereopod 6* coxa small, not lobate posteriorly; merus expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus slightly expanded posteriorly; propodus with setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above rounded posteroventral corner.** Urosomite 1 with anterodorsal notch and rounded boss, without lateral flange. *Uropod 1* outer ramus slightly longer than inner ramus. *Uropod 2* rami subequal in length; rami without robust setae. *Uropod 3* peduncle length 1.4 x breadth; rami subequal in length. *Telson* longer than broad, length 1.2 x breadth, moderately cleft (62%), distal margins rounded, with 1 apical slender seta on each lobe.

Remarks. *Sophrosyne antarctica* shares with *S. californica* and *S. cantractia* a vestigial seta on the posterodistal corner of the gnathopod 2 propodus and a curved posteroventral corner with strong upturned tooth on epimeron 3. *Sophrosyne antarctica* differs from *S. californica* in the lack of A- and D-setae on the mandibular palp, in the arrangement of setal-teeth on the outer plate of maxilla 1 and in the presence of slender setae along the posterior margin of the propodus of gnathopod 1. It differs from the other Antarctic species, *S. cantractia*, in the lack of A- and D-setae on the mandibular palp, in the arrangement of setal-teeth on the outer plate of maxilla 1, in the slender maxillipedal palp article 2 and in the scarcity of slender setae along the posterior margin of the merus of gnathopod 1.

Distribution. South Shetland Islands and Palmer Archipelago, Antarctica in 180–860 m depth.

Sophrosyne californica **sp. nov.**

Sophrosyne robertsoni. —J.L. Barnard, 1966: 72, figs 21, 22.

Type material. (not examined, material of J.L. Barnard, 1966, as *S. robertsoni*) HOLOTYPE, female, 8.0 mm, LACM , 28.9 miles from China Point Light, Tanner Basin, southern California, east Pacific Ocean (32°33'36"N 118°55'40"W), green mud, Campbell grab, 1298 m, 29 January 1960, stn 6832. PARATYPE, LACM , same data.

Type locality. 28.9 miles from China Point Light, Tanner Basin, southern California, east Pacific Ocean (32°33'36"N 118°55'40"W), 1298 m.

Etymology. The specific name refers to the type locality.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes round. *Antenna 1* peduncular article 1 medium length, length 1.5 x breadth; accessory flagellum medium length, 0.36 x primary flagellum, article 1 short, 1.7 x article 2; flagellum 9-articulate, without callynophore. *Antenna 2* [peduncular article 3 unknown]; flagellum 8-articulate. ***Mandible*** incisors with straight margins; ***palp article 2*** slender, 1.3 x article 3, **with 2 distal A2-setae**, **D2-setae present**, **article 3** length 5.8 x breadth, **with 2 distal D3-setae**, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/3 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.64 x outer plate. ***Maxilliped*** **inner plate** subrectangular,

without apical nodular robust setae; outer plate submarginal setae long, simple; ***palp article 2 slender***, length 2.7 x breadth, 1.2 x article 3, article 3 slender, length 3.1 x breadth, dactylus with unguis absent. ***Gnathopod 1*** basis length 2.2 x breadth, anterior margin with slender setae; ischium length 1 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.6 x propodus; propodus length 1.9 x breadth, posterior margin slightly concave, with robust setae, **palm margin straight**, **posterodistal corner with produced subacute spine bearing vestigial seta**. ***Gnathopod 2*** minutely subchelate; ischium length 3.25 x breadth; carpus long, length 3.8 x breadth, posterior margin straight; propodus subrectangular, long, length 2.7 x breadth; ***palm*** transverse, ***with concave***, smooth margin. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus slightly expanded posteriorly. ***Pereopod 6*** **coxa small, slightly lobate posteriorly**; merus slightly expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus not expanded posteriorly; propodus with setae along anterior margin. ***Epimeron*** **3 posterior margin with strong upturned spine above rounded posteroventral corner**. *Urosomite 1* with anterodorsal notch and rounded boss, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2* rami subequal in length; rami without robust setae. *Uropod 3* peduncle length 1.5 x breadth; rami subequal in length. *Telson* longer than broad, length 1.2 x breadth, moderately cleft (62%), distal margins incised, with1 apical slender seta on each lobe.

Remarks. *Sophrosyne californica* shares with *S. cantractia* the same setal-tooth arrangement on the outer plate of maxilla 1, a vestigial seta on the posterodistal corner of the gnathopod 2 propodus and a curved posteroventral corner with a strong upturned tooth on epimeron 3. *Sophrosyne californica* differs from *S. cantractia* in the presence of D-setae on the mandibular palp, in the absence of apical nodular setae on the inner plate of the maxilliped and in the slender second article of the maxillipedal palp.

Distribution. Tanner Basin, eastern North Pacific Ocean in 1298 m depth.

Sophrosyne cantractia **sp. nov.**
(Figs 4, 5)

Type material. HOLOTYPE, female, ovigerous (2 eggs), 5.8 mm, MV J38218, western part of MacRobertson Shelf, Antarctica (66°55.51'S 62°32.72'E to 66°55.33'S 62°32.16'E), 113 m, epibenthic sled, M. O'Loughlin on RSV *Aurora Australis*, 11 February 1993 (stn AA93-124). PARATYPES: 1 specimen, 4.2 mm, MV J38219, western part of MacRobertson Shelf, Antarctica (66°53.69'S 63°06.34'E to 66°53.67'S 63°05.51'E), 367–439 m, epibenthic sled, M. O'Loughlin on RSV *Aurora Australis*, 11 February 1993 (stn AA93-125); 2 juveniles, MV J60736 and MV J60737, off Enderby Land, Antarctica, Southern Ocean (65°56.40'S 50°52.10'E), 386–400 m, shelly mud, silt and bryozoan shell, epibenthic sled, M. Norman on MS *Nella Dan*, 15 November 1985 (stn HRD 010).

Type locality. Western part of MacRobertson Shelf, Antarctica (66°55.51'S 62°32.72'E to 66°55.33'S 62°32.16'E), 113 m.

Etymology. The specific name is contrived as an anagram of the specific name of the neighbouring species, *Sophrosyne antarctica*.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.3 x breadth; accessory flagellum medium length, 0.5 x primary flagellum, article 1 short, 1.3 x article 2; flagellum 7-articulate, without callynophore. *Antenna 2* peduncular article 3 0.6 x article 4; flagellum 7-articulate. ***Mandible*** incisors with straight margins; **palp article 2 slender**, 1 x article 3, with 2 submarginal posterodistal A2-setae, **D2-setae present**, **article 3** length 7 x breadth, **without D3-setae**, with 3 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/3 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.66 x outer plate. ***Maxilliped*** inner plate subrectangular, with 1 apical, nodular robust setae; outer plate submarginal setae long,

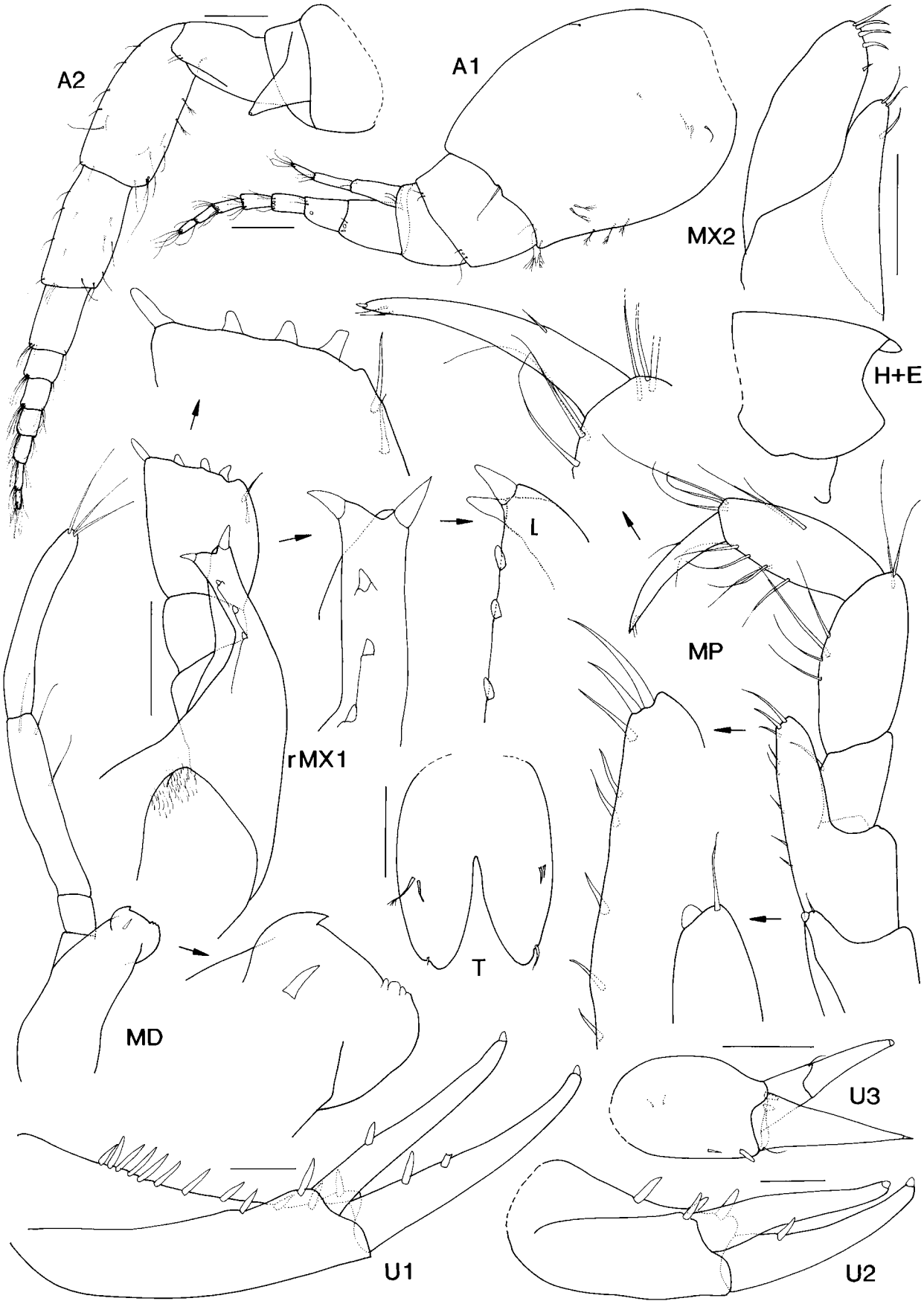

FIGURE 4. *Sophrosyne cantractia* **sp. nov.**, holotype female, 5.8 mm, MV J38218, western part of MacRobertson Shelf, Antarctica. Scales represent 0.1 mm.

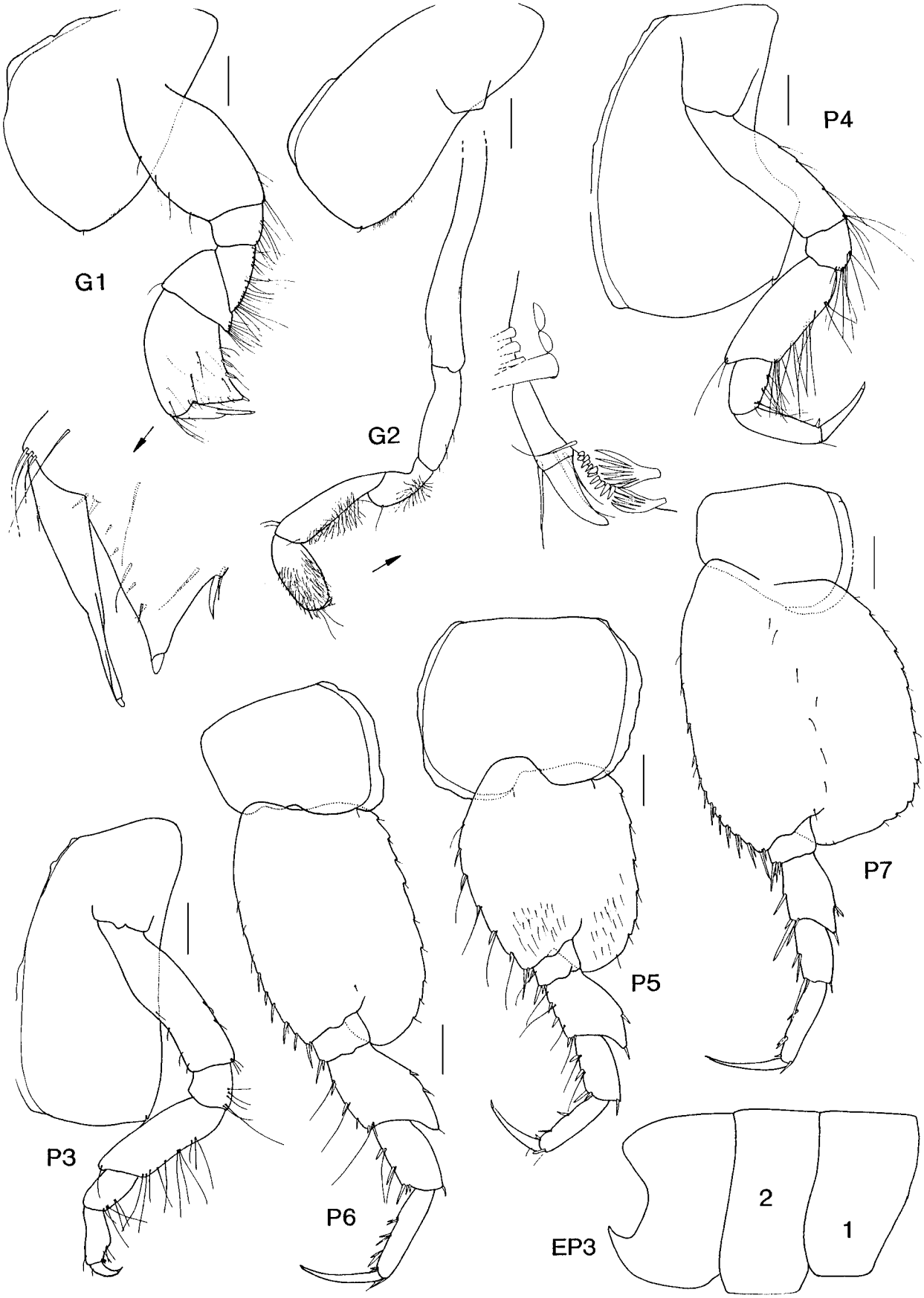

FIGURE 5. *Sophrosyne cantractia* **sp. nov.**, holotype female, 5.8 mm, MV J38218, western part of MacRobertson Shelf, Antarctica. Scales represent 0.2 mm.

simple; **palp article 2 broad**, length 1.8 x breadth, 1.1 x article 3, article 3 slender, length 2.6 x breadth, dactylus with unguis vestigial. ***Gnathopod 1*** **basis** length 1.8 x breadth, **anterior margin with slender setae**; ischium length 1.1 x breadth; **merus, posterior margin lined with long slender setae**; carpus length 0.5 x propodus; propodus length 1.8 x breadth, posterior margin slightly concave, with robust setae and simple, slender setae, palm margin straight, posterodistal corner with produced subacute spine bearing vestigial seta. ***Gnathopod 2*** minutely subchelate; ischium length 3 x breadth; carpus long, length 3.8 x breadth, posterior margin straight; **propodus** subrectangular, long, length 2.3 x breadth; **palm** transverse, **with convex**, serrate margin. *Pereopod 3* merus not expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus moderately expanded posteriorly. *Pereopod 6* coxa small, slightly lobate posteriorly; merus expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin straight, posteroventral lobe not extending beyond ischium; merus slightly expanded posteriorly; propodus with setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above rounded posteroventral corner**. *Urosomite 1* with anterodorsal notch and rounded boss, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 2 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2* rami subequal in length; outer ramus with robust setae. *Uropod 3* peduncle length 1.4 x breadth; rami subequal in length. *Telson* longer than broad, length 1.3 x breadth, moderately cleft (53%), distal margins rounded, with 1 apical slender seta on each lobe.

Remarks. See remarks under *S. californica*.

Distribution. Off MacRobertson Shelf and Enderby Land, east Antarctica, in 113–439 m depth.

Sophrosyne hispana **(Chevreux, 1887)**
(Figs 6, 7)

Opis hispana Chevreux, 1887: 567.
Opisa hispana. —Stebbing, 1888: 1641. —Della Valle, 1893: 807.
Paropisa hispana. —Stebbing, 1899: 206.
Sophrosyne hispana. —Chevreux, 1900: 13, pl. 3 fig. 1. —Stebbing, 1906: 22, 717. —J.L. Barnard, 1958: 99. —Belloc, 1960: 2. —Barnard & Karaman, 1991: 533. —Kilgallen *et al*., 2007: 1245, fig. 2 (at least in part).

not *Sophrosyne hispana*. —Ruffo, 1975: 446 (= *S. ruffoi*).
not *Sophrosyne hispana*. —Ledoyer, 1977: 389, fig. 23 (= *S. ledoyeri*).

Citations which cannot be confidently placed and might represent more than one species:
Sophrosyne hispana. —Diviacco & Ruffo, 1989: 550, figs 376, 377 (in part, part = *S. ledoyeri* and *S. ruffoi*). —Dauvin & Sorbe, 1995: 456 (Appendix). —Bellan-Santini, 1998: 875 (table 3). —Bellan-Santini & Ruffo, 1998: 900 (table 7). —Dauvin & Bellan-Santini, 2002: 317 (table 1). —Cartes *et al*., 2003: 748 (table 1). —Kilgallen *et al.*, 2007: 1245, fig. 2 (in part).

Material examined. HOLOTYPE, sex not known, 2 mm, MOM (as 6 microscope slides), off Cape Finisterre, Spain, north-eastern Atlantic Ocean (43°12'50"N 11°53'30"W to 43°12'15"N 11°52'W), mud, trawl, 363–510 m, 24 August 1886 (*Hirondelle* stn 66).

Type locality. Off Cape Finisterre, Spain, north-eastern Atlantic Ocean (43°12'50"N 11°53'30"W to 4312'15"N 11°52'W), 363–510 m.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.2 x breadth; accessory flagellum medium length, 0.4 x primary flagellum, article 1 short, 1.5 x article 2; flagellum 4-articulate, without callynophore. *Antenna 2* peduncular article 3 0.4 x article 4; flagellum 5-articulate. ***Mandible*** incisors with straight margins; **palp article 2** slender, 1.4 x article 3, **without A2-setae**, without D2-setae, article 3 length 4.7 x breadth, without D3-setae, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/2 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 1 x outer plate. ***Maxilliped*** inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae long, simple; **palp article 2 broad**, length 1.4 x breadth, 1.1 x article 3, article 3 broad, length 2 x breadth, dactylus with unguis present. *Gnathopod 1* basis length 2.1

x breadth, anterior margin without setae; ischium length 1 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.5 x propodus; propodus length 1.5 x breadth, posterior margin slightly concave, without setae, palm margin straight, posterodistal corner with produced subacute spine bearing vestigial seta. *Gnathopod 2* minutely subchelate; ischium length 2.5 x breadth; carpus long, length 3 x breadth, posterior margin straight; propodus subrectangular, long, length 2.7 x breadth; palm acute, with convex margin. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus slightly expanded posteriorly. *Pereopod 6* coxa small, strongly lobate posteriorly; merus slightly expanded posteriorly. ***Pereopod 7*** **basis posterior margin almost straight, smooth**, posteroventral margin rounded, **posteroventral lobe extending beyond ischium**; merus not expanded posteriorly; propodus without setae along anterior margin. *Epimeron 3* posterior margin with strong upturned spine above subquadrate posteroventral corner. ***Urosomite 1*** **dorsally smooth**, without lateral flange. *Uropod 1* outer ramus slightly longer than inner ramus; rami without robust setae. *Uropod 2* rami subequal in length; rami without robust setae. *Uropod 3* [peduncle unknown]; rami subequal in length. *Telson* longer than broad, length 1.2 x breadth, moderately cleft (45%), distal margins rounded, with 2 apical slender setae on each lobe.

Remarks. *Sophrosyne hispana* shares with *S. rodondo* a vestigial seta on the posterodistal corner of the propodus of gnathopod 1, the posteroventral lobe on the basis of pereopod 7 extending beyond the ischium, a curved posteroventral corner with strong upturned tooth on epimeron 3, and a moderately cleft telson. *Sophrosyne hispana* differs from *S. rodondo* most noticeably in the shape of the basis of pereopods 5 and 6.

Distribution. Off Cape Finesterre, Spain, eastern North Atlantic Ocean in 363–510 m depth [possibly Bay of Biscay in 346–687 m; possibly Mediterranean Sea]

Sophrosyne integricauda **sp. nov.**
(Figs 8, 9)

Type material. HOLOTYPE, female, 3.2 mm, MV J60739, 44 km north-east of Cape Wickham, King Island, central Bass Strait, Australia (39°22.0'S 144°18.3'E), 60 m, coarse sand, grab, R. Wilson on RV *Tangaroa*, 23 November 1981, cruise 81-T-1 (stn BSS-203). PARATYPES: female, 3.4 mm, AM P.46682, same data; ?female, 2.4 mm, male, 2.7 mm, MV J7447, 25 km west-south-west of Cape Otway, western Bass Strait, Australia (38°55'S 143°25'E), 67 m, coarse sand, G.C.B. Poore on HMAS *Kimbla*, 8 October 1980, cruise 80-K-1 (stn BSS-53).

Type locality. 44 km north-east of Cape Wickham, King Island, central Bass Strait, Australia (39°22.0'S 144°18.3'E), 60 m.

Etymology. The specific name refers to the entire telson of this species, an unusual character in the genus *Sophrosyne*.

Diagnostic description. *Head* lateral cephalic lobe small, broadly rounded; eyes oval. *Antenna 1* peduncular article 1 short, length 1.4 x breadth; accessory flagellum short, 0.3 x primary flagellum, article 1 long, 3 x article 2; flagellum 6-articulate, without callynophore. *Antenna 2* peduncular article 3 0.6 x article 4; flagellum 5-articulate. ***Mandible*** incisors with slightly convex margins; **palp article 2** slender, 1.4 x article 3, **with 1 submarginal posterodistal A2-seta**, without D2-setae, article 3 length 4.6 x breadth, without D3-setae, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/0 arrangement**. *Maxilla 2* inner and outer plates broad. *Maxilliped* inner plate subovate, without apical nodular robust setae; outer plate submarginal setae long, simple; palp article 2 slender, length 2.5 x breadth, 1.1 x article 3, article 3 slender, length 2.8 x breadth, dactylus with unguis present. ***Gnathopod 1*** basis length 1.7 x breadth, anterior margin without setae; ischium length 1.1 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.5 x propodus; **propodus** length 1.7 x breadth, **posterior margin** slightly concave, **without setae**, palm margin straight, **posterodistal corner with produced subacute spine bearing vestigial seta**. *Gnathopod 2* minutely subchelate; ischium length 3 x breadth; carpus long, length 3.3 x breadth, posterior margin straight; propodus subrectangular, short, length 1.8 x breadth; palm transverse, with straight margin, with minute robust setae. *Pereopod 3* merus not expanded anteriorly. *Pereopod 4* merus weakly expanded

anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus broadly expanded posteriorly. *Pereopod 6* coxa small, slightly lobate posteriorly; merus expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin straight, posteroventral lobe not extending beyond ischium; merus not expanded posteriorly; propodus without setae along anterior margin. ***Epimeron 3*** **posterior margin with weak spine above rounded posteroventral corner**. *Urosomite 1* with rounded boss, without lateral flange. *Uropod 1* outer ramus slightly longer than inner ramus; outer ramus with 1 dorsal robust seta; inner ramus without dorsal robust setae. *Uropod 2* rami subequal in length; rami without robust setae. *Uropod 3* peduncle length 0.9 x breadth; rami inner ramus shorter than. ***Telson*** **shorter than broad**, length 0.9 x breadth, **entire**, distal margin rounded, with 2 apical slender setae.

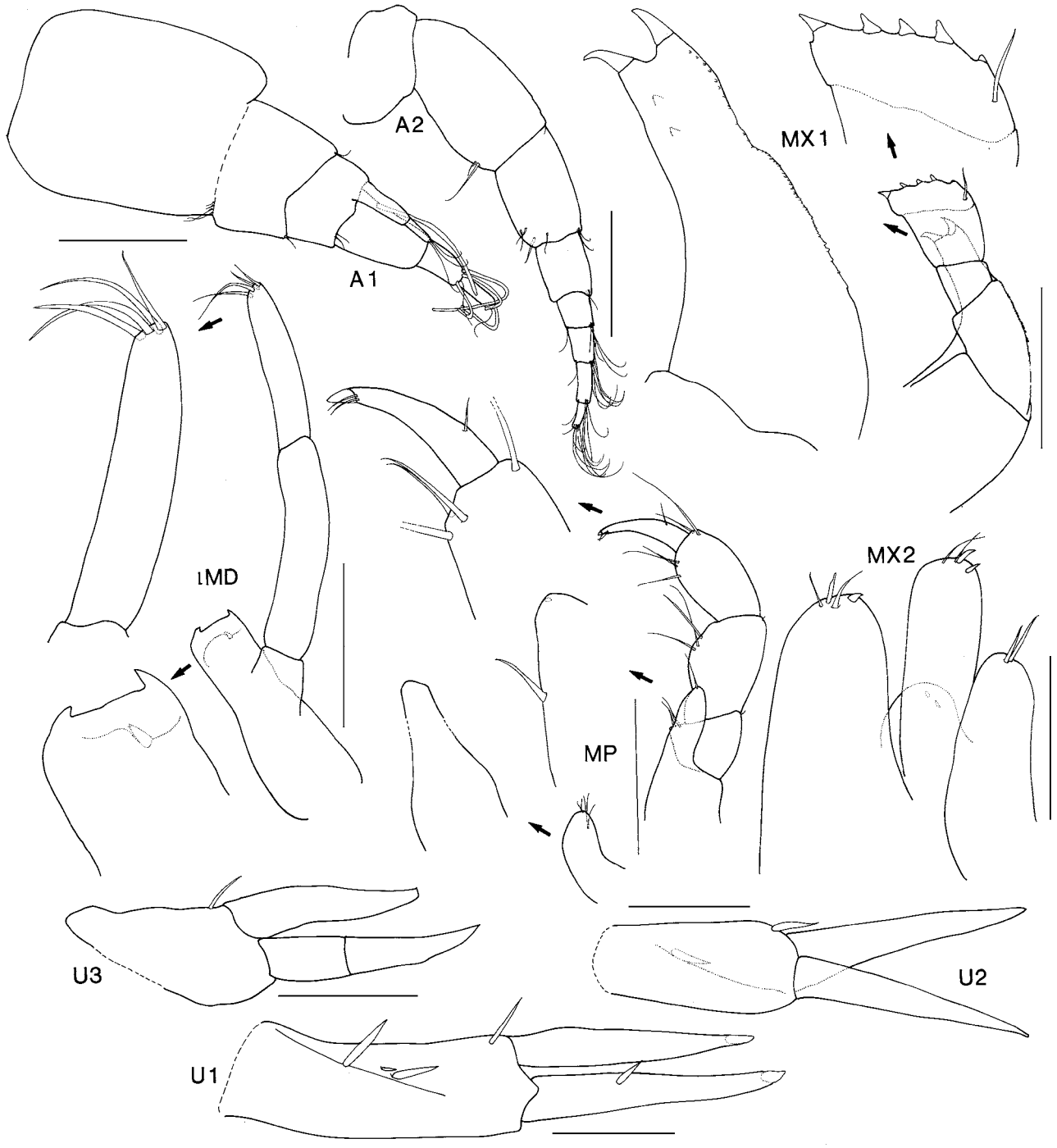

FIGURE 6. *Sophrosyne hispana* Chevreux, holotype, 2 mm, MOM, off Cape Finisterre, Spain. Scale for MX2 represents 0.05 mm, remainder represent 0.1 mm.

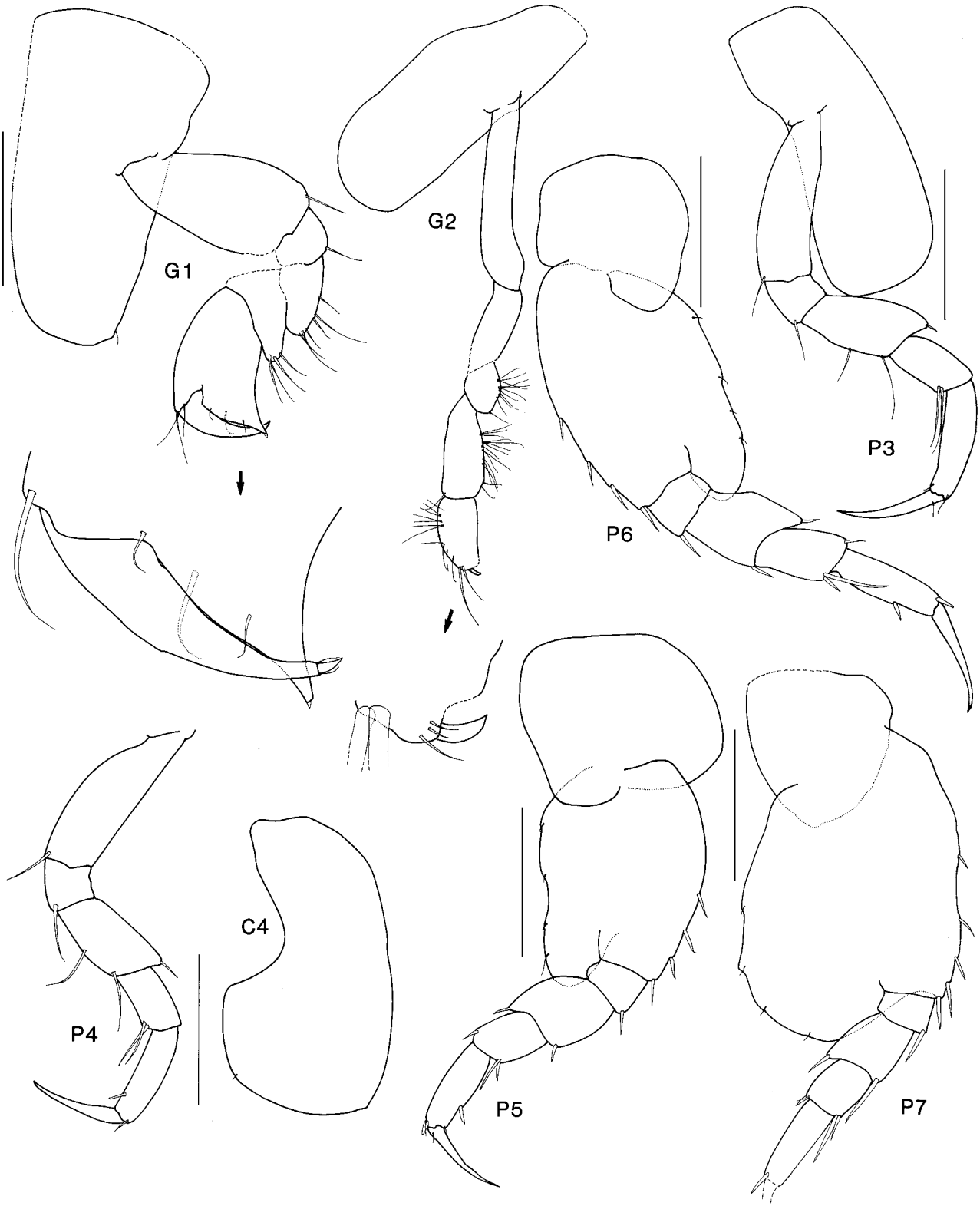

FIGURE 7. *Sophrosyne hispana* Chevreux, holotype, 2 mm, MOM, off Cape Finisterre, Spain. Scales represent 0.2 mm.

Male (sexually dimorphic characters). *Antenna 1* with strong 1-field callynophore.

Remarks. *Sophrosyne integricauda* differs from all other species of *Sophrosyne* in the very reduced tooth on the posterodistal corner of epimeron 3 and in the entire telson.

Distribution. Bass Strait, south-eastern Australia, in 60–67 m depth.

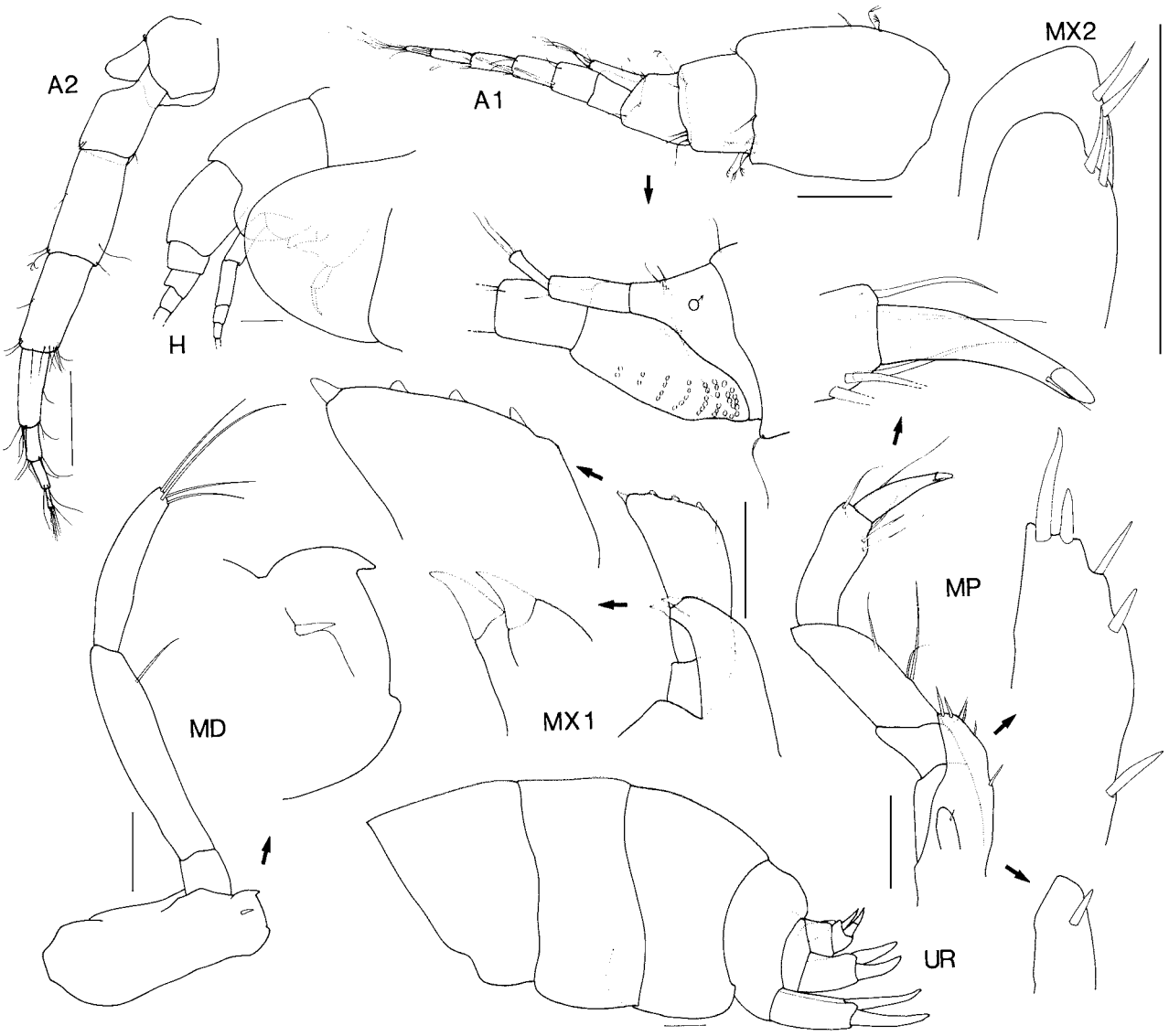

FIGURE 8. *Sophrosyne integricauda* **sp. nov.**, holotype female, 3.2 mm, MV J60739, Cape Wickham, King Island, Bass Strait, Australia. Scales for mouthparts represent 0.05 mm, remainder represent 0.1 mm.

***Sophrosyne inverarae* sp. nov.**
(Figs10–12)

Sophrosyne robertsoni. —Norman, 1900: 196 (in part). —Moore, 1984: 37 (in part, part = *S. moorei*). —Lincoln, 1979: 52, fig. 17. —Kilgallen *et al.*, 2007: 1243, fig. 1.

Type material. HOLOTYPE, female, ovigerous (at least 5 eggs), 6.5 mm, BMNH 1911:11:8:12449-12551, Inveraray, Loch Fyne, Scotland (approx. 56°13'N 5°4'W), 1874. PARATYPE, female, same locality [material recorded by Norman (1900) as *S. robertsoni*].

Type locality. Inveraray, Loch Fyne, Scotland (approx. 56°13'N 5°4'W).

Etymology. The specific name is a reference to the type locality.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.3 x breadth; accessory flagellum medium length, 0.5 x primary flagellum, article 1 short, 1.2 x article 2; flagellum 7-articulate, without callynophore. *Antenna 2* peduncular

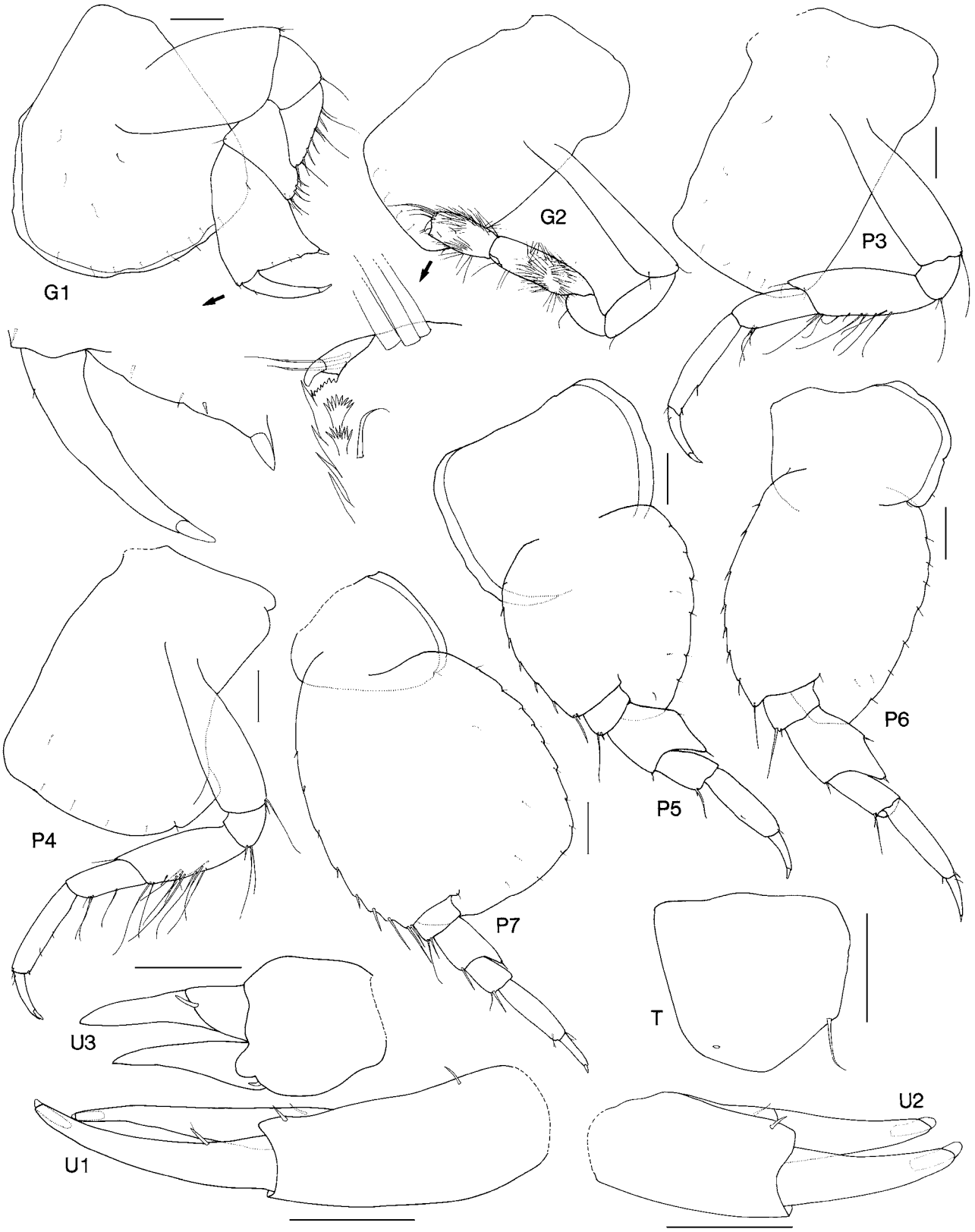

FIGURE 9. *Sophrosyne integricauda* **sp. nov.**, holotype female, 3.2 mm, MV J60739, Cape Wickham, King Island, Bass Strait, Australia. Scales for U1–3 and T represent 0.01 mm, remainder represent 0.2 mm.

article 3 0.5 x article 4; flagellum 7-articulate. ***Mandible*** incisors with slightly convex margins; **palp article 2 slender**, 1 x article 3, with 1 submarginal posterodistal A2-seta, **D2-setae present**, **article 3** length 5.6 x breadth, **with 1 distal D3-seta** and 3 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/5**

arrangement. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.6 x outer plate. *Maxilliped* inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae short, simple; palp article 2 slender, length 2.2 x breadth, 1.1 x article 3, article 3 slender, length 2.4 x breadth, dactylus with unguis absent. ***Gnathopod 1*** **basis** length 1.5 x breadth, **anterior margin with slender setae**; ischium length 1.2 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.5 x propodus; propodus length 1.7 x breadth, posterior margin slightly concave, with robust setae, **palm margin sinusoidal**, **posterodistal corner with produced subacute spine bearing vestigial seta**. ***Gnathopod 2*** minutely subchelate; ischium length 3.1 x breadth; carpus long, length 3.3 x breadth, posterior margin straight; propodus subrectangular, long, length 2.1 x breadth; **palm** transverse, **with straight margin**, with minute robust setae. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus moderately expanded posteriorly. ***Pereopod 6*** **coxa small, strongly lobate posteriorly**; merus slightly expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus not expanded posteriorly; propodus without setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above subquadrate posteroventral corner**. *Urosomite 1* with anterodorsal notch and rounded boss, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2* rami subequal in length; outer ramus with robust setae. *Uropod 3* peduncle length 1.4 x breadth; rami subequal in length. *Telson* longer than broad, length 1.1 x breadth, moderately cleft (48%), distal margins incised, with 1 apical slender setae on each lobe.

Remarks. *Sophrosyne inverarae* shares with *S. murrayi* and *S. rodondo* the same setal-tooth arrangement on the outer plate of maxilla 1, a vestigial seta on the posterodistal corner of the gnathopod 2 propodus, the shape of the basis of pereopods 5 and 6, a curved posteroventral corner with strong upturned tooth on epimeron 3 and a moderately cleft telson. *Sophrosyne inverarae* differs from both species in having D2- and D3-setae on the mandibular palp. It differs from *S. murrayi* most noticeably in having a minutely subchelate second gnathopod.

Distribution. Loch Fyne, Inveraray, Scotland.

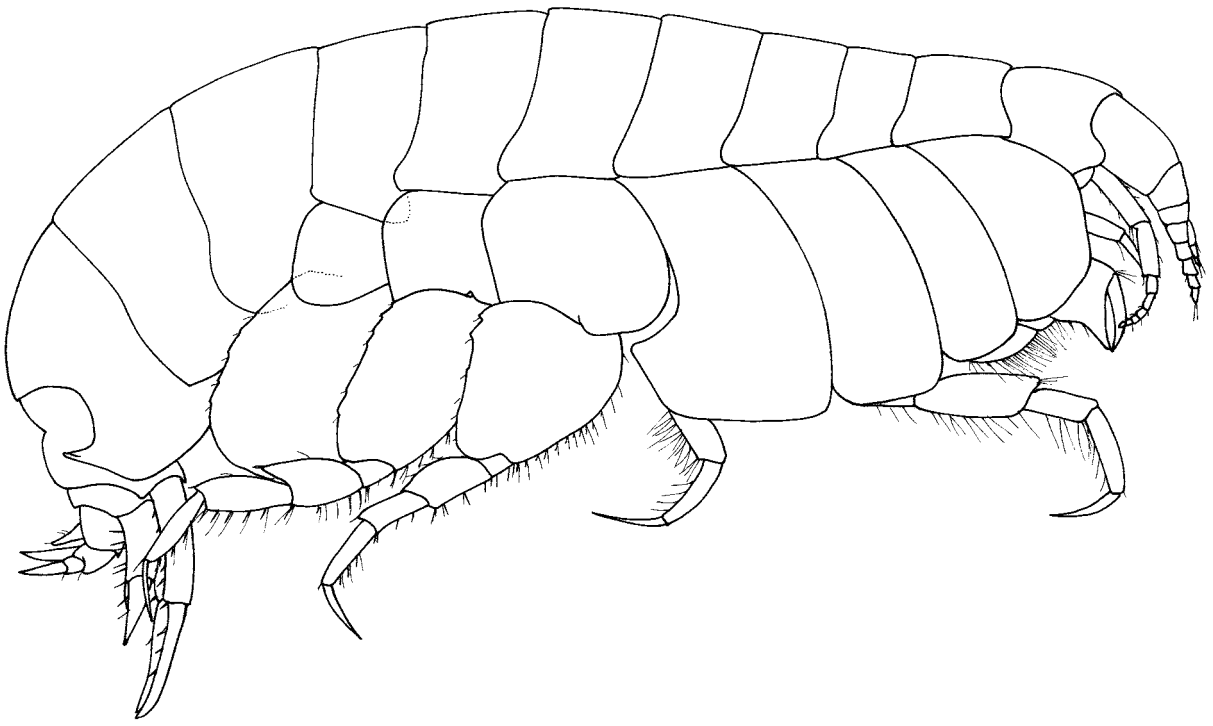

FIGURE 10. *Sophrosyne inverarae* **sp. nov.**, holotype female, 6.5 mm, BMNH 1911:11:8:12449-12551, Inverary, Scotland.

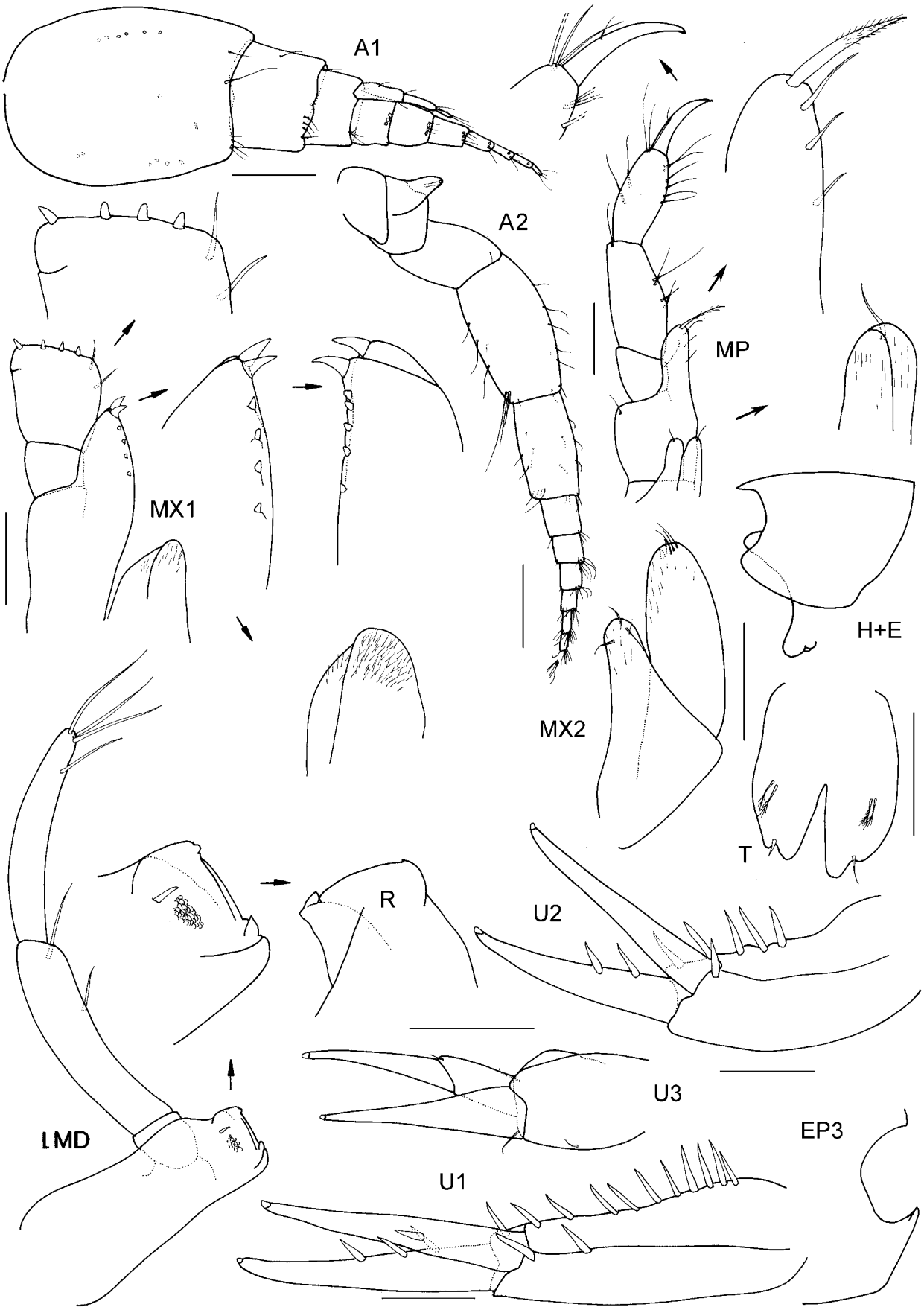

FIGURE 11. *Sophrosyne inverarae* **sp. nov.**, holotype female, 6.5 mm, BMNH 1911:11:8:12449-12551, Inverary, Scotland. Scales represent 0.2 mm.

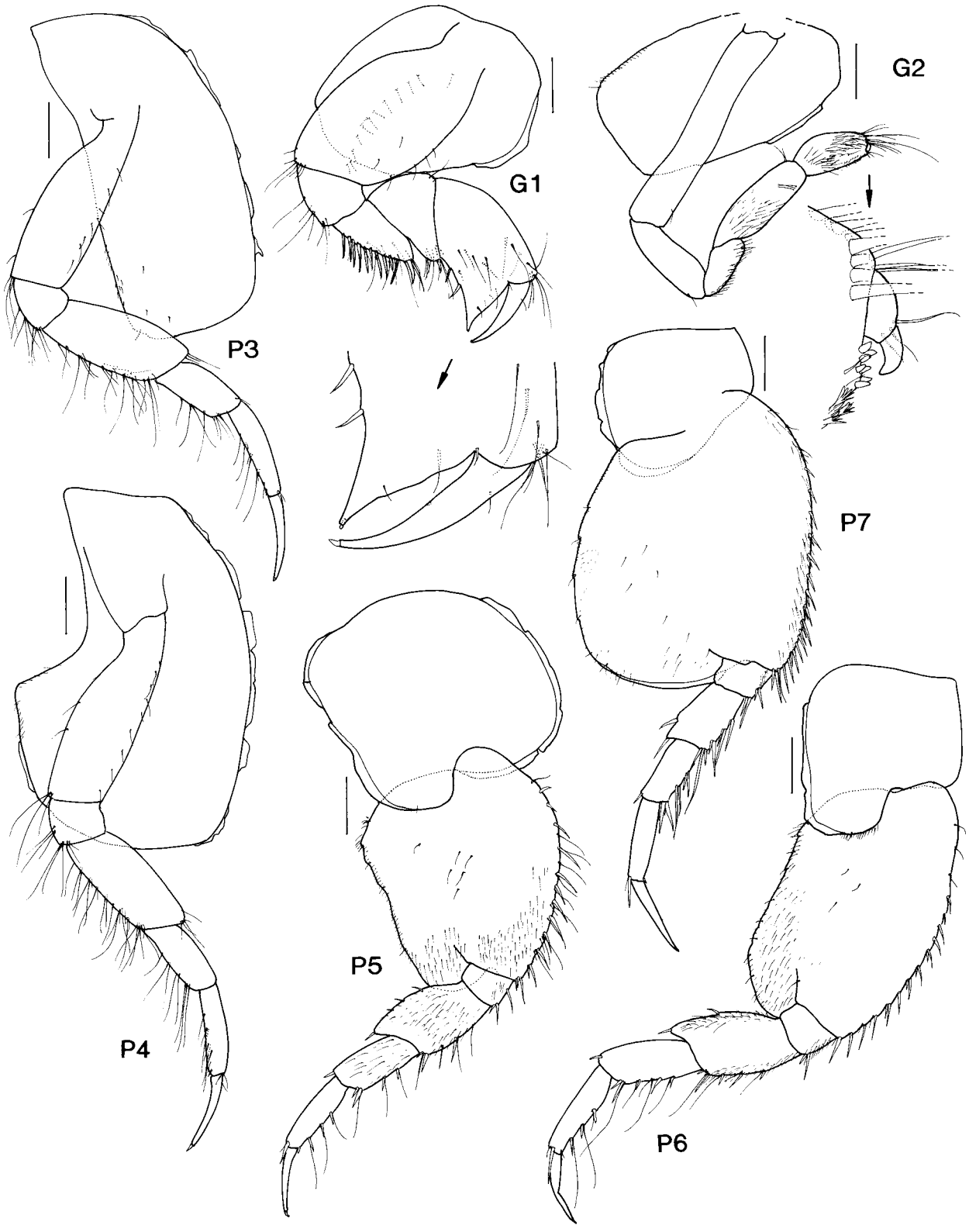

FIGURE 12. *Sophrosyne inverarae* **sp. nov.**, holotype female, 6.5 mm, BMNH 1911:11:8:12449-12551, Inverary, Scotland. Scales represent 0.1 mm.

***Sophrosyne ledoyeri* sp. nov.**

Sophrosyne hispana. —Ledoyer, 1977: 389, fig. 23.

Type material. Holotype, male, 4 mm, MVRCr, south of Île des Embiez, north-west Mediterranean Sea (approx. 43°10'N 5°50'E), 100–120 m, night time, 26 June 1975 (stn FVP 39) (not examined, material of Ledoyer (1977) as *S. hispana*).

Type locality. South of Île des Embiez, Mediterranean Sea, 100–120 m.

Etymology. This species is named for Michel Ledoyer, who first made this material known.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.4 x breadth; accessory flagellum medium length, 0.5 x primary flagellum, article 1 long, 2.4 x article 2; flagellum 6-articulate, with strong 1-field callynophore. *Antenna 2* peduncular article 3 0.36 x article 4; flagellum 6-articulate. ***Mandible*** incisors with straight margins; **palp article 2 broadened distally**, 1 x article 3, **with 4 submarginal posterodistal A2-setae,** without D2-setae, **article 3** length 5.8 x breadth, with 6 D3-setae along most of posterior margin, and 2 apical E3-setae. ***Maxilla 1* outer plate with setal-teeth in a 2/0 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.64 x outer plate. *Maxilliped* [inner plate unknown]; outer plate submarginal setae long, simple; palp article 2 slender, length 2.3 x breadth, 1 x article 3, article 3 slender, length 2.4 x breadth, dactylus with unguis absent. ***Gnathopod 1* basis** length 2 x breadth, **anterior margin without setae**; ischium length 1.2 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.5 x propodus; propodus length 1.7 x breadth, posterior margin slightly concave, with robust setae, palm margin sinusoidal, posterodistal corner with produced subacute spine without seta. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus moderately expanded posteriorly. ***Pereopod 6* coxa small, strongly lobate posteriorly**; merus slightly expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus slightly expanded posteriorly; propodus without setae along anterior margin. *Epimeron 3* posterior margin with strong upturned spine above subquadrate posteroventral corner. *Urosomite 1* with rounded boss, with lateral flange. *Uropod 1* outer ramus slightly longer than inner ramus; outer ramus with 2 dorsal robust setae; inner ramus without dorsal robust setae. *Uropod 2* rami subequal in length; outer ramus with robust setae. *Uropod 3* peduncle length 1.7 x breadth; rami inner ramus shorter than. ***Telson* as long as broad**, length 2 x breadth, **deeply cleft** (68%), distal margins rounded, with 1 apical slender setae on each lobe.

Remarks. *Sophrosyne ledoyeri* shares with *S. abyssi* an angled posteroventral corner with strong upturned tooth on epimeron 3 and a deeply cleft telson. In *S. ledoyeri* the small seta on the corner of the palm of gnathopod 1 is apparently absent. The shape of the dorsal margin of urosomite 1 is distinctly different between these species.

Distribution. North-western Mediterranean Sea in 100–120 m depth.

***Sophrosyne moorei* sp. nov.**

Sophrosyne robertsoni. —Moore, 1983: 103, figs 1-3. —Kilgallen *et al*., 2007:1243 (in part).

Type material. HOLOTYPE, male, 4 mm, BMNH 1982.249:1, Camas Nathais, Lynne of Lome, Scotland (56°28.5'N 5°27'W), from stomach of whiting, *Merlangius merlangus* Linnaeus, 22–31 m over a soft mud bottom between rocky headlands, R. Gibson, August 1976 [material of Moore (1983)].

Type locality. Camas Nathais, Lynne of Lome, Scotland (56°28.5'N 5°27'W).

Etymology. Named for Dr P.G. Moore, who first made known this material.

Diagnostic description. *Head* lateral cephalic lobe small, broadly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 medium length, length 1.6 x breadth; accessory flagellum medium length, 0.45 x primary flagellum, article 1 long, 2.3 x article 2; flagellum 6-articulate, with strong 1-field callynophore.

Antenna 2 peduncular article 3 0.3 x article 4; flagellum 7-articulate. ***Mandible*** incisors with straight margins; **palp article 2** slender, 1 x article 3, **with 4 submarginal posterodistal A2-setae**, without D2-setae, **article 3** length 8 x breadth, **with 5 D3-setae along most of posterior margin**, and 3 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/0 arrangement**. *Maxilla 2* inner and outer plates broad; inner plate length 0.6 x outer plate. *Maxilliped* inner plate subovate, without apical nodular robust setae; outer plate submarginal setae short, simple; palp article 2 slender, length 2.4 x breadth, 1 x article 3, article 3 slender, length 2.8 x breadth, dactylus with unguis absent. ***Gnathopod 1*** **basis** length 1.8 x breadth, **anterior margin with slender setae**; ischium length 1.4 x breadth; **merus, posterior margin with a few slender setae**; carpus length 0.5 x propodus; **propodus** length 1.7 x breadth, **posterior margin** slightly concave, **with simple, slender setae**, **palm margin straight**, **posterodistal corner with produced subacute spine without seta**. *Gnathopod 2* minutely subchelate; ischium length 2.9 x breadth; carpus long, length 3.6 x breadth, posterior margin straight; propodus subrectangular, long, length 2.3 x breadth; palm acute, with convex, smooth margin. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus broadly expanded posteriorly. ***Pereopod 6*** **coxa small, slightly lobate posteriorly**; merus slightly expanded posteriorly. ***Pereopod 7*** **basis** posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, **posteroventral lobe not extending beyond ischium**; merus not expanded posteriorly. ***Epimeron 3*** **posterior margin with strong upturned spine above subquadrate posteroventral corner**. *Urosomite 1* with rounded boss, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2* rami subequal in length; rami without robust setae. Uropod 3 peduncle length 1.4 x breadth, rami subequal in length. *Telson* longer than broad, length 1.3 x breadth, moderately cleft (38%), distal margins incised, with 1 apical slender setae on each lobe.

Remarks. Although this material comes from the same area as the type material of *S. inverarae* and *S. robertsoni*, it has characters which do not allow it to sit easily with either of these species. It differs from *S. robertsoni* in having an angular posteroventral corner on epimeron 3 and only a few setae on the anterior margin of gnathopod 1 basis It differs from *S. inverarae* in having a broadly rounded head lobe and the telson cleft about 40%. It differs from both of these species in not having a proximal shoulder on the posterior margin of pereopod 5 basis.

Sophrosyne moorei shares with *S. ruffoi* the absence of a robust seta on the corner of the gnathopod 1 palm, an angular posteroventral corner on epimeron 3 and a moderately cleft telson. They differ in the convex palm of gnathopod 2 (concave in *S. ruffoi*) and the more strongly lobate coxa 6 in *S. ruffoi*.

Distribution. Lynn of Lorne, Scotland.

Sophrosyne murrayi **Stebbing, 1888**
(Fig. 13)

Sophrosyne murrayi Stebbing, 1888: 652, pl. 15. —Della Valle, 1893: 795, pl. 60, fig. 38. —Stebbing, 1906: 21. —J.L. Barnard, 1958: 99. —Thurston & Allen, 1969: 368. —Lowry & Bullock, 1976: 105. —De Broyer, 1977: 331. —Barnard & Karaman, 1991: 533. —De Broyer & Jazdzewski, 1993: 75. —De Broyer *et al*., 2007: 159.

Material examined. HOLOTYPE, female, approx. 13 mm, BMNH 1889:5:15:16, off Christmas Harbour, Kerguelen Islands, Southern Ocean (approx. 48°40'S 69°03'E), unknown depth but less than 274 m, *Challenger* Collection. 1 female, ovigerous, 12.5 mm; 1 female with non-setose oostegites, 12.0 mm; MV J38221, Amery Depression, close to Amery Ice Shelf, Antarctica (68°56.69'S 73°36.78'E to 68°54.82'S 73°37.53'E), 786–791 m, epibenthic sled, M. O'Loughlin on RSV *Aurora Australis*, 17 February 1993 (stn AA93-157). 1 female with setose oostegites, 12.2 mm, MV J38222, eastern Prydz Bay, off Larsemann Hills, Antarctica (68°54.88'S 76°37.03'E to 68°54.82'S 76°37.71'E), 667–716 m, epibenthic sled, M. O'Loughlin on RSV *Aurora Australis*, 18 February 1993 (stn AA93-158).

Type locality. Off Christmas Harbour, Kerguelen Islands, Southern Ocean (approx. 48°40'S 69°03'E).

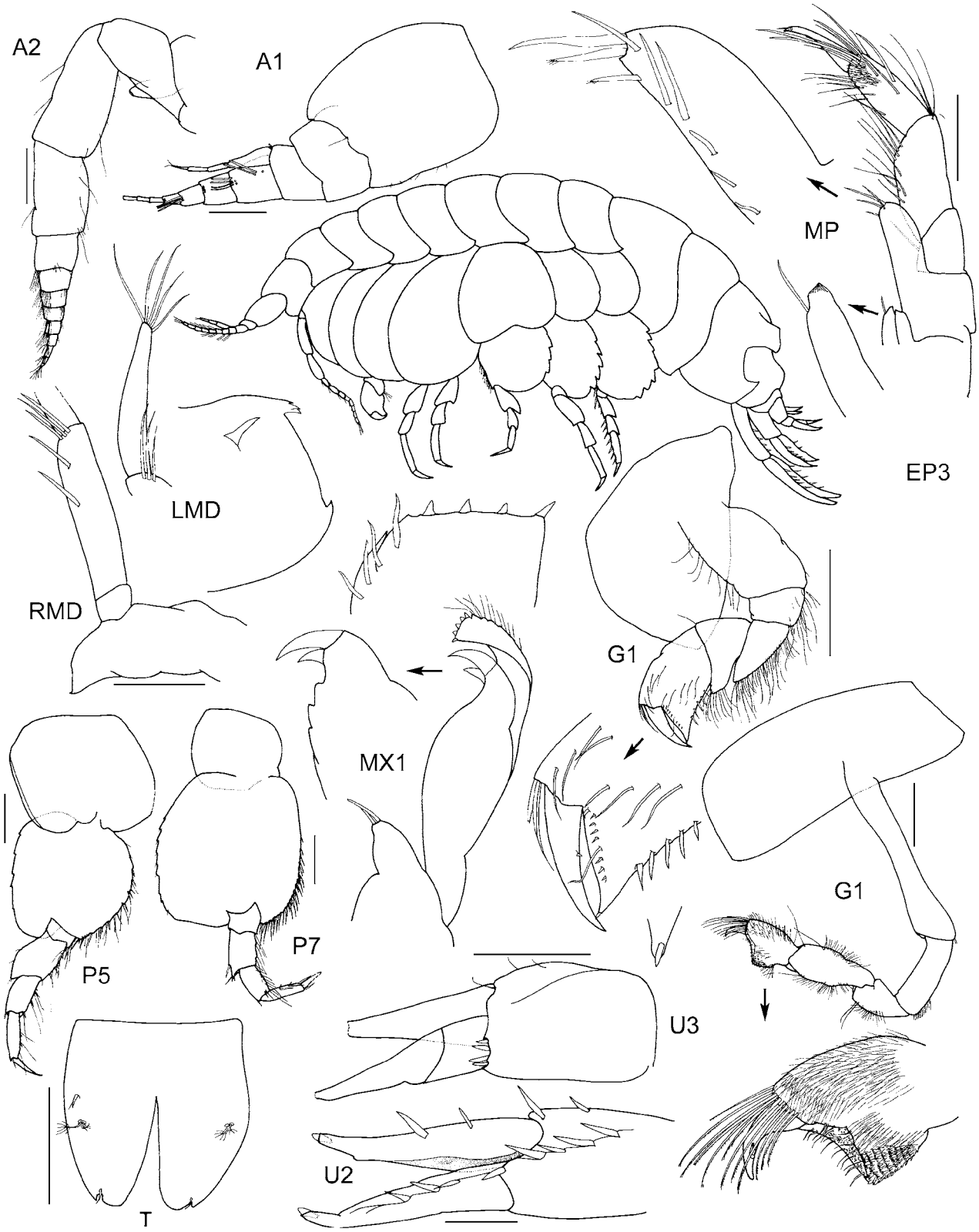

FIGURE 13. *Sophrosyne murrayi* Stebbing, holotype female, approx. 13 mm, BMNH 1889:5:15:16, off Christmas Harbour, Kerguelen Islands, Southern Ocean. Whole animal and MX1 after Stebbing, 1888. Scales for G1, G2, P5, P7 represent 0.5 mm, remainder represent 0.2 mm.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.3 x breadth; accessory flagellum long, 0.6 x primary flagellum,

article 1 long, 2.3 x article 2; flagellum 7+-articulate (broken), with weak 1-field callynophore. *Antenna 2* peduncular article 3 0.53 x article 4; flagellum 9-articulate. ***Mandible*** incisors with slightly convex margins; **palp article 2 slender**, 1.1 x article 3, with 3 distal A2-setae and 2 submarginal posterodistal A2-setae, without D2-setae, **article 3** length 5.3 x breadth, with or without D3-setae [Stebbing (1888, pl.15) drew 4 D3-setae but none were visible on the slide we examined] and 5 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/4 arrangement**. *Maxilliped* inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae absent; palp article 2 slender, length 2.2 x breadth, 1.2 x article 3, article 3 slender, length 2.3 x breadth, dactylus with unguis absent. ***Gnathopod 1*** **basis** length 1.6 x breadth, **anterior margin with slender setae**; ischium length 0.8 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.6 x propodus; propodus length 1.7 x breadth, posterior margin slightly concave, with robust setae and simple, slender setae, **palm margin sinusoidal**, **posterodistal corner with produced subacute spine bearing vestigial seta**. ***Gnathopod 2*** **grossly subchelate in female,** [not known for male]; ischium length 2.8 x breadth; carpus long, length 2.1 x breadth, posterior margin broadly lobate; **propodus subquadrate**, short, length 1.3 x breadth; **palm** slightly acute, **with large, concave**, rugose **margin**. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus expanded anterodistally along carpus. *Pereopod 5* basis greatly expanded posteriorly; merus moderately expanded posteriorly. *Pereopod 6* coxa small, slightly lobate posteriorly; merus expanded posteriorly. ***Pereopod 7*** **basis posterior margin slightly rounded, minutely crenate**, posteroventral margin straight, posteroventral lobe not extending beyond ischium; merus slightly expanded posteriorly; propodus with setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above subquadrate posteroventral corner**. *Urosomite 1* with anterodorsal notch and rounded boss, with lateral flange. *Uropod 1* outer ramus slightly longer than inner ramus; outer ramus with 5 dorsal robust setae; inner ramus with 3 dorsal robust setae. *Uropod 2* rami subequal in length; outer ramus with robust setae. *Uropod 3* peduncle length 1.5 x breadth; inner ramus shorter than outer ramus. *Telson* longer than broad, length 1.1 x breadth, moderately cleft (60%), distal margins rounded, with1apical slender setae on each lobe.

Remarks. *Sophrosyne murrayi* shares with *S. rodondo* a lack of D2- and D3-setae on the mandibular palp, a slender maxillipedal palp article 2, an angled posteroventral corner with strong upturned tooth on epimeron 3 and a moderately cleft telson. *Sophrosyne murrayi* differs from *S. rodondo* in the setal-tooth arrangement on the outer plate of maxilla 1 (2/4 in *S. murrayi* and 2/5 in *S. rodondo*), but most noticeably in gnathopod 2 which is grossly subchelate in *S. murrayi* and minutely subchelate in *S. rodondo*.

Distribution. Kerguelen Island, Southern Ocean; Amery Depression and Prydz Bay, Antarctica; 667–791 m depth.

Sophrosyne peartae **sp. nov.**
(Figs 14–16)

Type material. HOLOTYPE, female, 4.6 mm, ovigerous (3 eggs), MV J60733, south of Point Hicks, Victoria, Australia (38°19.10'S 149°14.30'E), 600 m, coarse sand, epibenthic sled, M.F. Gomon on RV *Franklin*, 24 July 1986 (stn SLOPE 39).

Type locality. South of Point Hicks, Victoria, Australia (38°19.10'S 149°14.30'E), 600 m.

Etymology. This species is named for Rachael Peart, who illustrated many of our amphipods and found morphological characters we had not noticed.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes oval. *Antenna 1* peduncular article 1 short, length 1.4 x breadth; accessory flagellum long, 0.5 x primary flagellum, article 1 short, 0.9 x article 2; flagellum 7-articulate, without callynophore. *Antenna 2* peduncular article 3 0.5 x article 4; flagellum 7-articulate. ***Mandible*** incisors with straight margins; **palp article 2 slender**, 1 x article 3, with 1 submarginal posterodistal A2-seta, without D2-setae, **article 3** length 6.2 x breadth, **without D3-setae**, and/ with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/4 arrangement**. *Maxilliped* inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae long, simple; palp article 2 slender, length 2.2 x breadth, 1.1 x article 3, article 3 slender, length 2.5 x breadth, dactylus with unguis

absent. ***Gnathopod 1*** basis length 1.7 x breadth, anterior margin with slender setae; ischium length 1.4 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.5 x propodus; propodus length 1.8 x breadth, posterior margin slightly concave, with robust setae, **palm margin sinusoidal**, posterodistal corner with produced subacute spine bearing vestigial seta. ***Gnathopod 2*** **grossly subchelate in female,** [not known for male]; ischium length 2.9 x breadth; carpus long, length 2.4 x breadth, posterior margin broadly lobate; **propodus subrectangular**, short, length 1.8 x breadth; **palm** acute, **with large, concave**, smooth **margin**. *Pereopod 3* merus not expanded anteriorly. *Pereopod 4* merus not expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus slightly expanded posteriorly. *Pereopod 6* coxa small, slightly lobate posteriorly; merus slightly expanded posteriorly. ***Pereopod 7*** **basis posterior margin almost straight, scalloped**, posteroventral margin straight, posteroventral lobe not extending beyond ischium; merus not expanded posteriorly; propodus with setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above rounded posteroventral corner**. *Urosomite 1* with anterodorsal notch and rounded boss, with lateral flange. *Uropod 1* outer ramus slightly longer than inner ramus; outer ramus with 2 dorsal robust setae; inner ramus without dorsal robust setae. *Uropod 2* rami subequal in length; rami without robust setae. *Uropod 3* peduncle length 1.5 x breadth. *Telson* longer than broad, length 1.2 x breadth, moderately cleft (50%), distal margins rounded, with1 apical slender seta on each lobe.

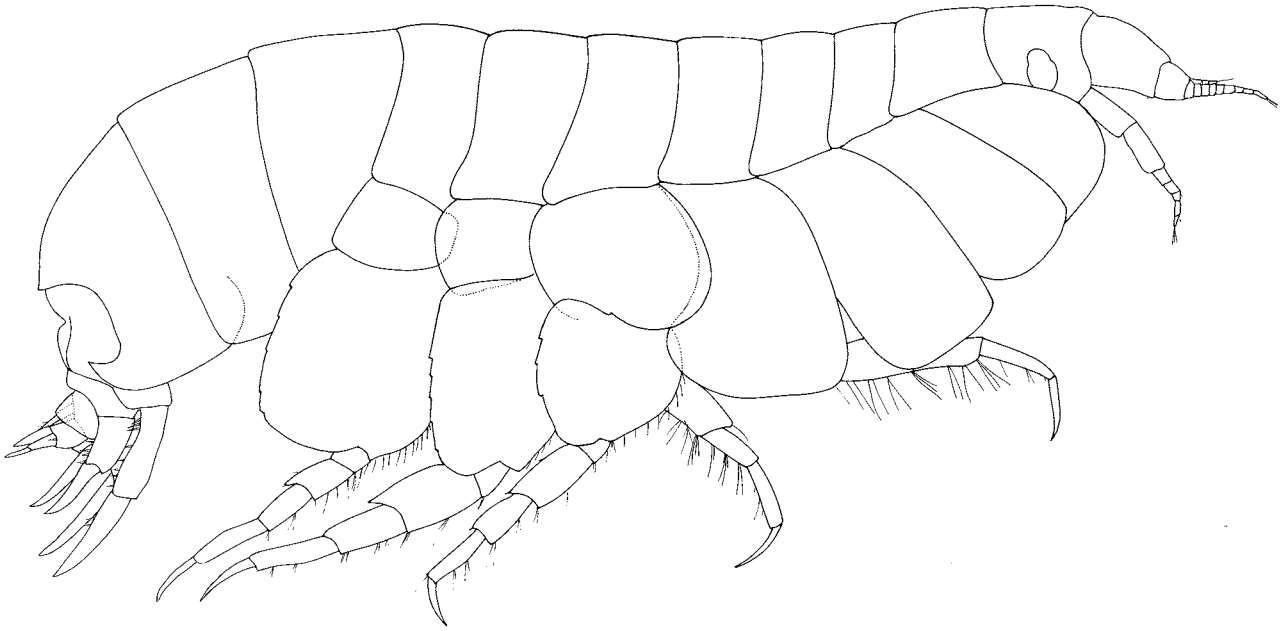

FIGURE 14. *Sophrosyne peartae* **sp. nov.**, holotype female, 4.6 mm, MV J60733, south of Point Hicks, Australia.

Remarks. Only two species of *Sophrosyne*, *S. peartae* and *S. murrayi*, have a grossly expanded palm on gnathopod 2. They differ most noticeably in the shape of the propodus of gnathopod 2, (subquadrate in *S. murrayi* and subrectangular in *S. peartae*) and in the posteroventral corner of epimeron 3 (subquadrate in *S. murrayi* and rounded in *S. peartae*).

Distribution. Slope off Bass Strait, Australia in 600 m depth.

Sophrosyne robertsoni Stebbing & Robertson, 1891

Sophrosyne robertsoni Stebbing & Robertson, 1891: 31, pl. 5A. —Robertson, 1892: 203. —Della Valle, 1893: 795. — Stebbing, 1906: 21. —J.L. Barnard, 1958: 99. —Moore, 1984: 37 (in part, part = *S. inverarae*, part = *S. moorei*). — Barnard & Karaman, 1991: 533.

? *Sophrosyne robertsoni*. —Norman, 1900: 196 (maybe in part, part = *S. inverarae*). —Palerud & Vader, 1991: 43 (maybe in part). — Kilgallen et al., 2007: 1243 (maybe in part, part = *S. inverarae*).

not *Sophrosyne robertsoni*. —J.L. Barnard, 1966: 72, figs 21, 22 (= *Sophrosyne californica*).
not *Sophrosyne robertsoni*. —Lincoln, 1979: 52, fig. 17 (= *S. inverarae*). —Moore, 1983: 103, figs 1–3 (= *S. moorei*).

Material. No material available. Description based on text and figures of Stebbing & Robertson (1891), an ovigerous female specimen, approximately 6 mm.

Type locality. Clyde Sea, western Scotland (approx. 55°42'N 5°W).

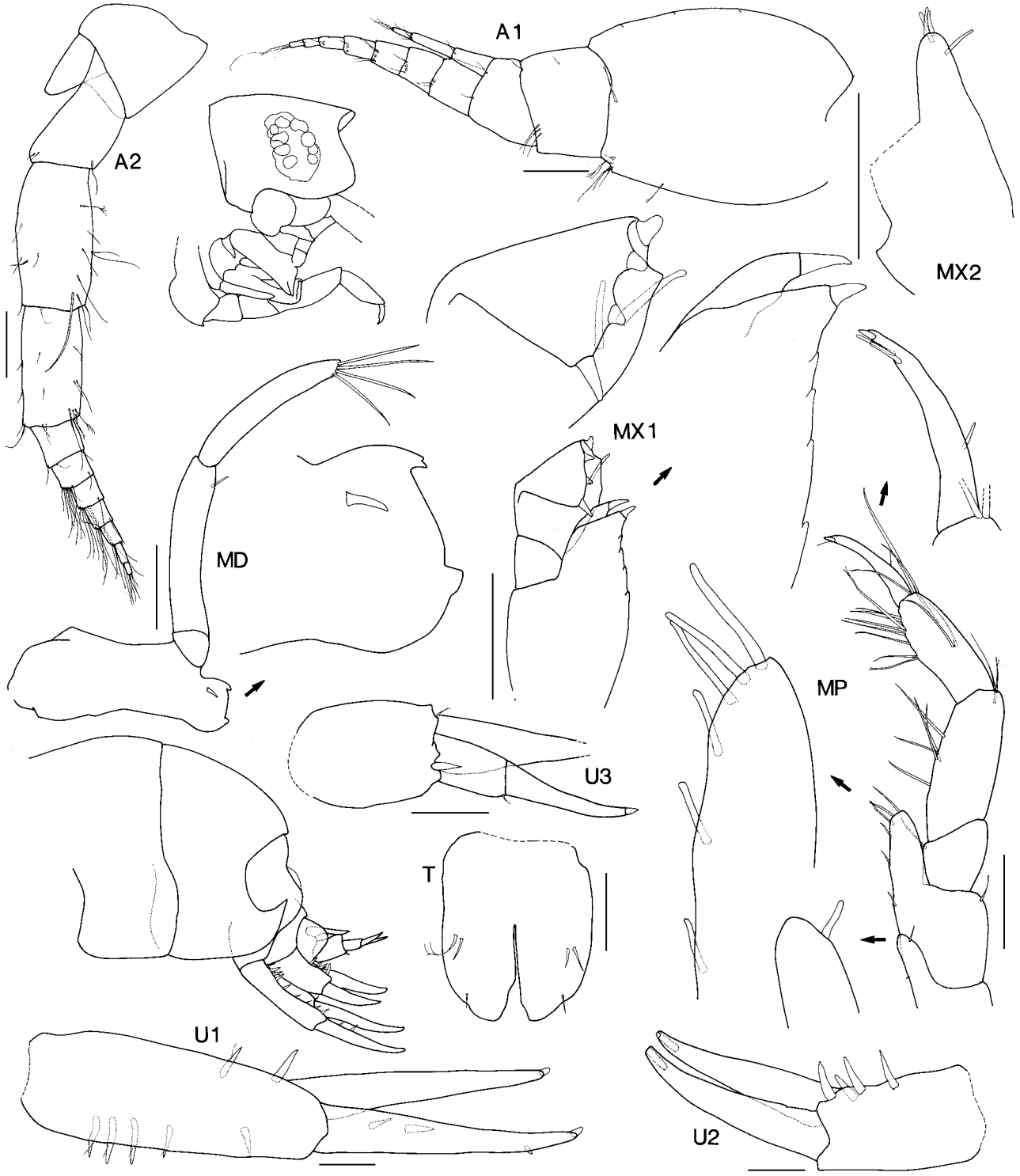

FIGURE 15. *Sophrosyne peartae* **sp. nov.**, holotype female, 4.6 mm, MV J60733, south of Point Hicks, Australia. Scales represent 0.1 mm.

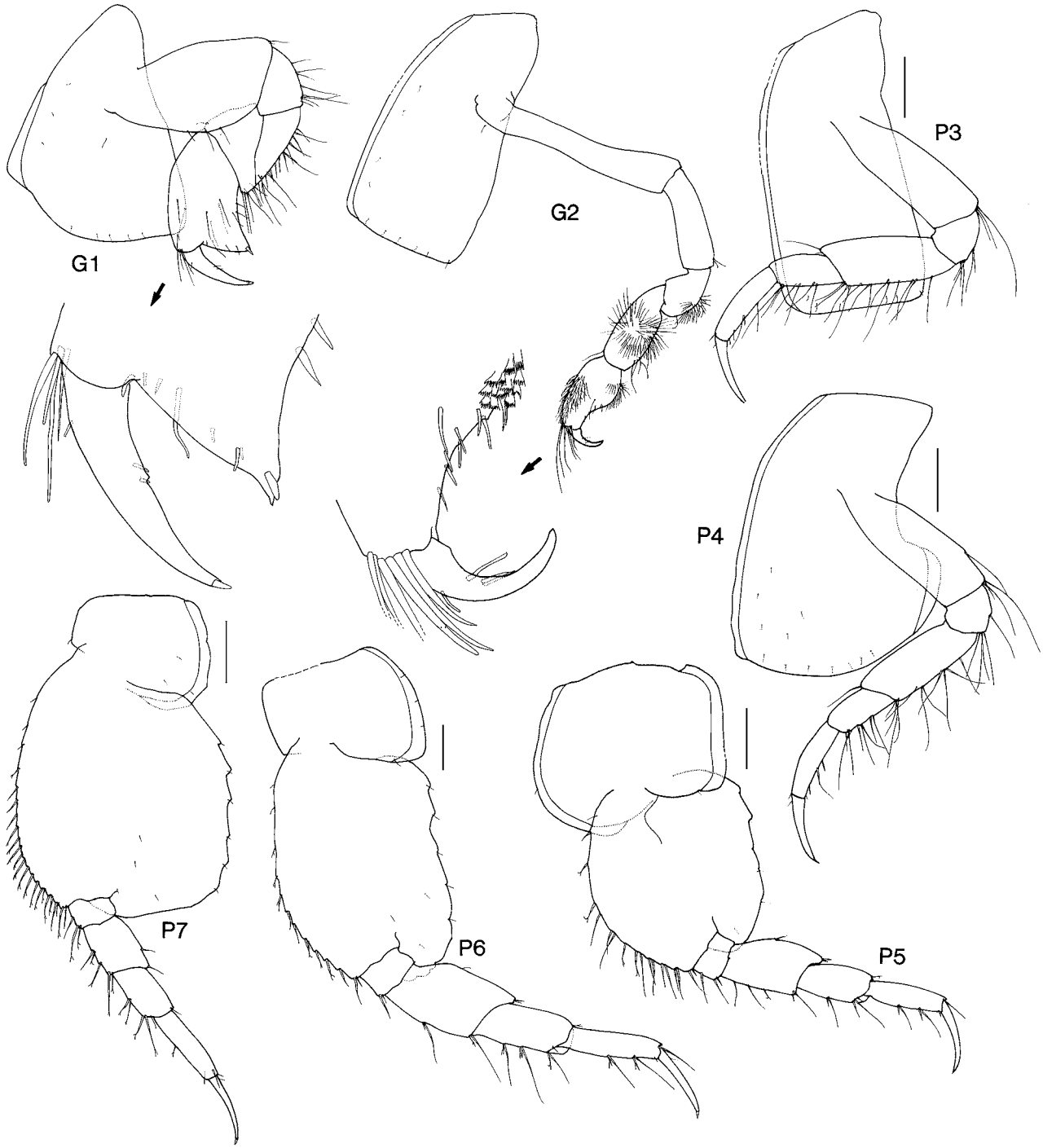

FIGURE 16. *Sophrosyne peartae* **sp. nov.**, holotype female, 4.6 mm, MV J60733, south of Point Hicks, Australia. Scales represent 0.2 mm.

Diagnostic description. *Head* [lateral cephalic lobe not known]; eyes apparently absent. *Antenna 1* peduncular article 1 medium length, length 1.6 x breadth; accessory flagellum medium length, 0.5 x primary flagellum, article 1 short, 1 x article 2; flagellum 6-articulate, without callynophore. *Antenna 2* peduncular article 3 0.5 x article 4; flagellum 8-articulate. ***Mandible*** incisors with straight margins; **palp article 2 slender**, 1 x article 3, with 1 submarginal posterodistal A2-setae, **without D2-setae**, **article 3** length 8 x breadth, **with 2 D3-setae along most of posterior margin** and 3 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/0 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.64 x

outer plate. *Maxilliped* inner plate subovate, without apical nodular robust setae; outer plate submarginal setae short, simple; palp article 2 slender, length 2.4 x breadth, 1 x article 3, article 3 slender, length 2.8 x breadth, dactylus with unguis absent. ***Gnathopod 1*** **basis** length 1.9 x breadth, **anterior margin with slender setae**; ischium length 1.25 x breadth; **merus, posterior margin lined with long slender setae**; carpus length 0.6 x propodus; **propodus** length 1.7 x breadth, **posterior margin** slightly concave, **with robust setae**, **palm margin convex**, **posterodistal corner with produced subacute spine without seta**. ***Gnathopod 2*** minutely subchelate; ischium length 2.9 x breadth; carpus long, length 3.6 x breadth, posterior margin straight; propodus subrectangular, long, length 2.3 x breadth; **palm** acute, ***with convex***, serrate **margin**. *Pereopod 4* merus expanded anterodistally along carpus. *Pereopod 5* basis moderately expanded posteriorly; merus slightly expanded posteriorly. ***Pereopod 6*** **coxa small, slightly lobate posteriorly**; merus slightly expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus slightly expanded posteriorly; propodus without setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above rounded posteroventral corner**. *Urosomite 1* with rounded boss, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2* rami subequal in length; outer ramus with robust setae. *Uropod 3* [peduncle not known]; rami subequal in length. *Telson* longer than broad, length 1.3 x breadth, moderately cleft (38%), distal margins incised, with 1 apical slender setae on each lobe.

Remarks. *Sophrosyne robertsoni* belongs to the group of species with a curved posteroventral corner on epimeron 3. It is the only species in the group without a seta on the posterodistal corner of the palm of gnathopod 1. Its telson is also much less cleft (38%) than other members of the group.

Distribution. Clyde Sea, western Scotland.

Sophrosyne rodondo **sp. nov.**
(Figs 17, 18)

Type material. HOLOTYPE, female, 4.6 mm, MV J60734, 66 km south of Rodondo Island, central Bass Strait, Australia (39°48.6'S 146°18.8'E), 82 m, sand, silt and mud, epibenthic sled, R. Wilson, 13 November 1981, RV *Tangaroa*, cruise 81-T-1 (stn BSS-158S). PARATYPES: female, AM P.46681, same data; female, MV J60735, 100 km south-south-east of Cape Liptrap, central Bass Strait, Australia (39°45.9'S 145°33.5'E), 74 m, muddy fine sand, epibenthic sled, R. Wilson on RV *Tangaroa*, 13 November 1981, cruise 81-T-1 (stn BSS-156).

Type locality. 66 km south of Rodondo Island, central Bass Strait, Australia (39°48.6'S 146°18.8'E), 82 m.

Etymology. The specific name refers to the type locality.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes round. *Antenna 1* peduncular article 1 short, length 1.2 x breadth; accessory flagellum medium length, 0.46 x primary flagellum, article 1 long, 3 x article 2; flagellum 6-articulate, without callynophore. *Antenna 2* peduncular article 3 0.6 x article 4; flagellum 6-articulate. ***Mandible*** incisors with slightly convex margins; **palp article 2** slender, 1 x article 3, **with 1 submarginal posterodistal A2-seta**, **without D2-setae**, **article 3 length** 5.5 x breadth, **without D3-setae**, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/5 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.65 x outer plate. ***Maxilliped*** inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae long, simple; **palp article 2 slender**, length 2.3 x breadth, 1.1 x article 3, article 3 slender, length 2.4 x breadth, dactylus with unguis present. ***Gnathopod 1*** **basis** length 1.8 x breadth, **anterior margin with slender setae**; ischium length 1 x breadth; merus, posterior margin lined with long slender setae; carpus length 0.45 x propodus; propodus length 1.9 x breadth, posterior margin slightly concave, with robust setae and simple, slender setae, **palm margin straight**, **posterodistal corner with produced subacute spine bearing vestigial seta**. ***Gnathopod 2*** **minutely subchelate**; ischium length 3.4 x breadth; carpus long, length 3.7 x breadth, posterior margin

straight; propodus subrectangular, long, length 2.2 x breadth; **palm** slightly acute, **with convex margin**, with minute robust setae. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis greatly expanded posteriorly; merus moderately expanded posteriorly. *Pereopod 6* coxa small, slightly lobate posteriorly; merus expanded posteriorly. ***Pereopod 7*** **basis** posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, **posteroventral lobe extending beyond ischium**; merus not expanded posteriorly; propodus with setae along anterior margin. ***Epimeron 3*** **posterior margin with strong upturned spine above subquadrate posteroventral corner**. ***Urosomite 1*** **with anterodorsal notch and rounded boss**, with lateral flange. *Uropod 1* rami subequal in length; outer ramus with 1 dorsal robust seta; inner ramus without dorsal robust setae. *Uropod 2* rami subequal in length; rami without robust setae. *Uropod 3* peduncle length 1.1 x breadth; rami subequal in length. *Telson* longer than broad, length 1.1 x breadth, moderately cleft (38%), distal margins rounded, with 1 apical slender setae on each lobe.

Remarks. *Sophrosyne rodondo* appears to be most similar to *S. hispana*. Both have the posteroventral lobe on the basis of pereopod 7 extending beyond the ischium and a curved posteroventral corner with strong upturned tooth on epimeron 3. They differ most noticeably in the shape of the basis of pereopods 5 and 6.

Distribution. Bass Strait, Australia in 74–82 m depth.

Sophrosyne ruffoi **sp. nov.**

Sophrosyne hispana. —Ruffo, 1975: 446. —Diviacco & Ruffo, 1989: 550 (in part), figs. 376, 377.

Type material. HOLOTYPE, female, 4 mm, MVRCr 1353-1357, Secca Lo Bianco, Gulf of Naples, Mediterranean Sea (approx. 40°45'N 14°15'E), 180–190 m, brown algae and fine sand, 1 August 1970, U. Schiecke (not examined, material of Ruffo (1975) as *S. hispana*).

Type locality. Secca Lo Bianco, Gulf of Naples, Mediterranean Sea (approx. 40°45'N 14°15'E), 180–190 m.

Etymology. The species is named for Professor Sandro Ruffo, who first made known this Mediterranean material and has contributed so much to our knowledge of Mediterranean amphipods.

Diagnostic description. *Head* lateral cephalic lobe small, narrowly rounded; eyes apparently absent. *Antenna 1* peduncular article 1 short, length 1.3 x breadth; accessory flagellum medium length, 0.47 x primary flagellum, article 1 short, 1.8 x article 2; flagellum 7-articulate, without callynophore. *Antenna 2* peduncular article 3 0.5 x article 4; flagellum 7-articulate. ***Mandible*** incisors with straight margins; **palp article 2 slender**, 1 x article 3, **without A2-setae**, without D2-setae, **article 3** length 5.8 x breadth, **without D3-setae**, with 4 apical E3-setae. ***Maxilla 1*** **outer plate with setal-teeth in a 2/0 arrangement**. *Maxilla 2* inner plate narrow, outer plate broader; inner plate length 0.6 x outer plate. *Maxilliped* inner plate subrectangular, without apical nodular robust setae; outer plate submarginal setae short, simple; palp article 2 slender, length 2.4 x breadth, 1.2 x article 3, article 3 slender, length 2.3 x breadth, dactylus with unguis absent. ***Gnathopod 1*** basis length 1.7 x breadth, **anterior margin with slender setae**; ischium length 0.9 x breadth; **merus, posterior margin lined with long slender setae**; carpus length 0.5 x propodus; **propodus** length 1.7 x breadth, **posterior margin slightly concave**, with robust setae, ***palm margin straight***, posterodistal corner with produced subacute spine without setae. ***Gnathopod 2*** minutely subchelate; ischium length 3.4 x breadth; **carpus very long**, length 4.2 x breadth, posterior margin straight; propodus subrectangular, long, length 2.8 x breadth; **palm** transverse, **with concave**, smooth **margin**. *Pereopod 3* merus weakly expanded anteriorly. *Pereopod 4* merus weakly expanded anteriorly. *Pereopod 5* basis moderately expanded posteriorly; merus moderately expanded posteriorly. *Pereopod 6* coxa small, strongly lobate posteriorly; merus slightly expanded posteriorly. *Pereopod 7* basis posterior margin slightly rounded, minutely crenate, posteroventral margin rounded, posteroventral lobe not extending beyond ischium; merus not expanded posteriorly; propodus without setae along anterior margin. *Epimeron 3* posterior margin with strong upturned spine above subquadrate posteroventral corner. *Urosomite 1* with rounded boss, without lateral flange. *Uropod 1* rami subequal in length; outer ramus with 3 dorsal robust setae; inner ramus with 1 dorsal robust seta. *Uropod 2*

rami subequal in length; outer ramus with robust setae. *Uropod 3* peduncle length 1.1 x breadth; rami subequal in length. ***Telson* as long as broad**, length 1 x breadth, moderately cleft (50%), distal margins incised, with 1 apical slender setae on each lobe.

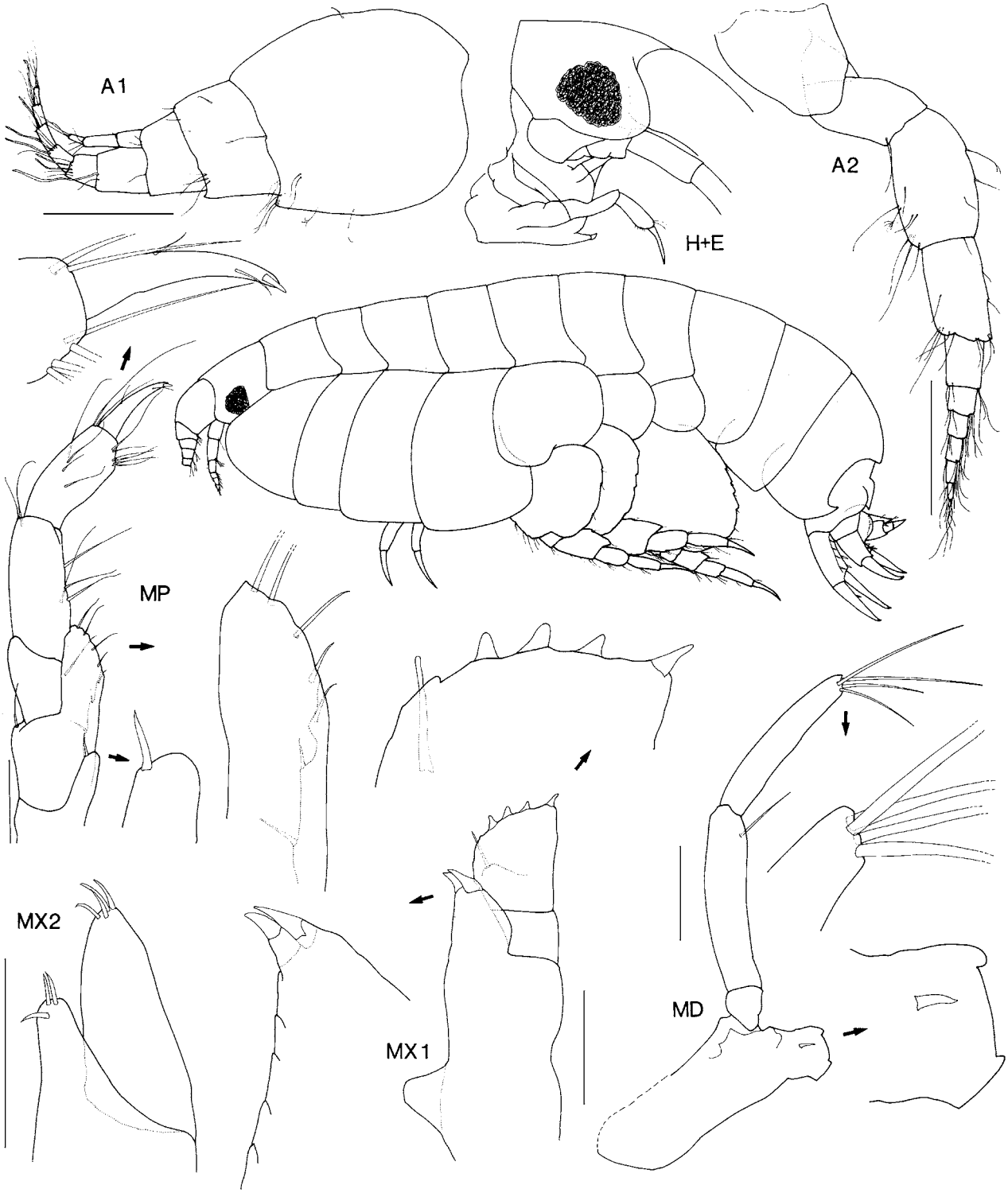

FIGURE 17. *Sophrosyne rodondo* **sp. nov.**, holotype female, 5.0 mm, MV J60734, off Cape Naturaliste, Tasmania, Australia. Scales represent 0.1 mm.

Remarks. *Sophrosyne ruffoi* shares with *S. moorei* the absence of a small seta on the posterodistal corner of the propodus of gnathopod 1, an angled posteroventral corner with strong upturned tooth on epimeron 3

and a moderately cleft telson. *Sophrosyne ruffoi* differs from *S. moorei* in having the posterior margin of the merus of gnathopod 1 lined with long slender setae and robust setae along the posterior margin of the propodus and in having the posterior lobe of coxa 6 strongly lobate.

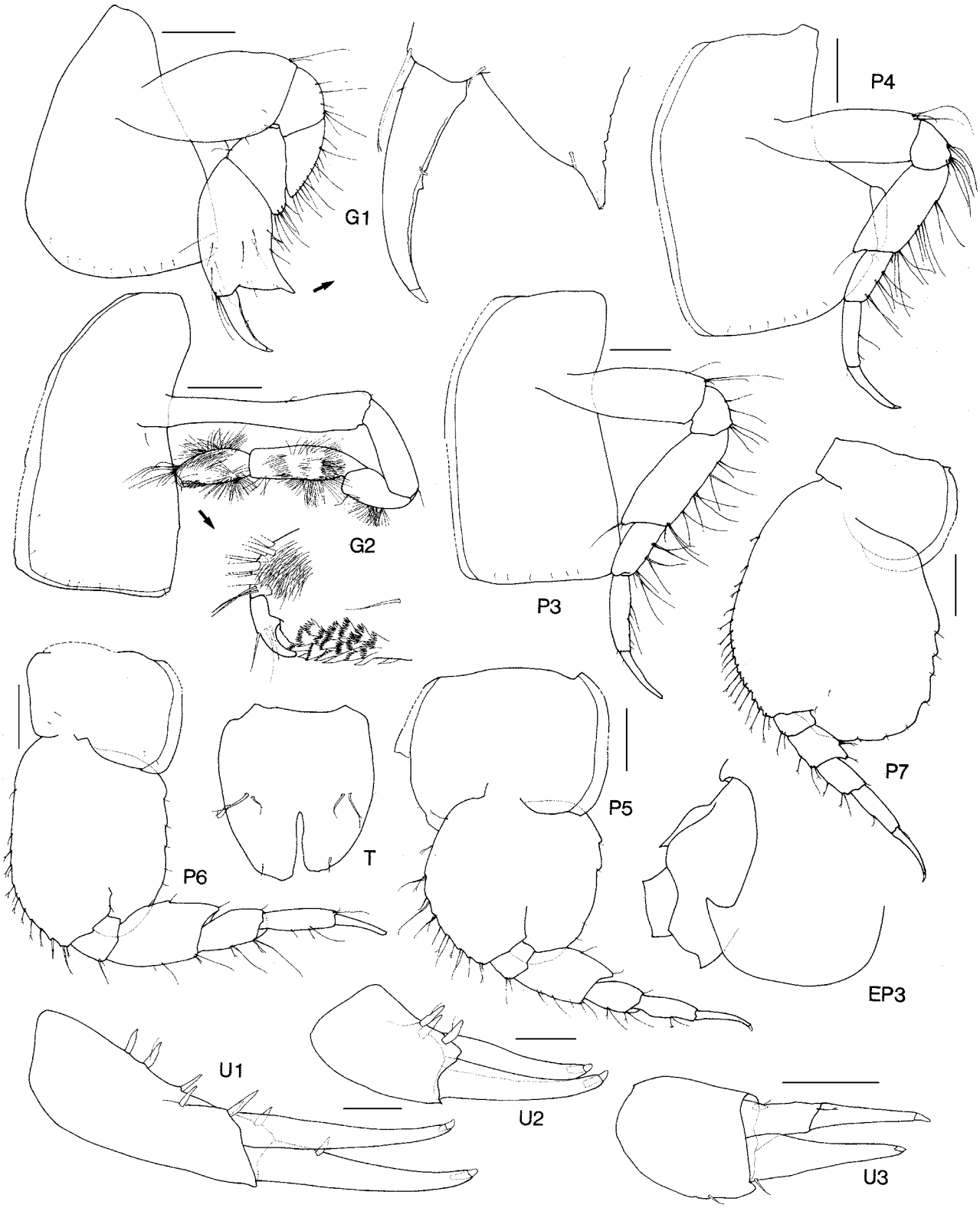

FIGURE 18. *Sophrosyne rodondo* **sp. nov.**, holotype female, 5.0 mm, MV J60734, off Cape Naturaliste, Tasmania, Australia. Scales for U1–3 and T represent 0.1 mm, remainder represent 0.2 mm.

Sophrosyne ruffoi shares with *S. inverarae* robust setae along the posterior margin of the propodus of gnathopod 1, gnathopod 2 minutely subchelate, the posterior lobe of coxa 6 strongly lobate, an angled posteroventral corner with strong upturned tooth on epimeron 3 and a moderately cleft telson. *Sophrosyne ruffoi* differs from *S. inverarae* in the absence of A2-, D2- and D3-setae on the mandibular palp and in the absence of a small seta on the posterodistal corner of the propodus of gnathopod 1.

Distribution. Gulf of Naples, Mediterranean Sea, in 180-190 m depth.

Other material of *Sophrosyne*

There are in the literature records of *Sophrosyne* for which the material has not been illustrated or described. We have now recognised more than one species under the names to which these records were originally assigned. It is not possible to assign these records to a particular species.

Material recorded by Norman (1900) as *S. robertsoni*.

One specimen, slide mount, BMNH 1911.11.8. (653), Inveraray [Loch Fyne, Scotland, approx. 56°13'N 5°5'W], Norman Collection. This slide is in very poor condition and the specimen could not be identified to species. From its geographic source it could be *S. inverarae*, *S. moorei* or *S. robertsoni*.

One specimen, as 2 slide mounts, BMNH 1911.11.8 (652), outside the entrance to the English Channel, [North Atlantic Ocean], 48°50'N 11°9'W, 1326 m, 1896, *Porcupine* stn 36. Norman collection. These slides are also in very poor condition and the specimen could not be identified to species. It is possibly not *S. robertsoni* because of the depth from which it was collected. The collection point is very close to the type locality of *S. hispana*.

Material recorded by Diviacco & Ruffo (1989) as *S. hispana.*

Banyuls-sur-Mer, France, Mediterranean Sea [approx. 42°29'N 3°08'E].

Portofino, Italy, Gulf of Genoa, Ligurian Sea, Mediterranean Sea (approx. 44°18’N 9°12’E).

Zlarin, Yugoslavia, Adriatic Sea, Mediterranean Sea (approx. 43°30'N 16°E).

Material recorded by Dauvin & Sorbe (1995) as *S. hispana*

At least 4 specimens, Arcachon Plateau, southern margin of Cap-Ferret Canyon, Bay of Biscay, eastern North Atlantic Ocean (approx. 44°40’N 1°30’W), 346, 431, 523 and 687 m, above muddy sand and mud.

Material recorded by Cartes *et al.* (2003) as *S. hispana*

1 specimen, South-west Balearic Islands, Catalan Sea, Algerian Basin, Mediterranean Sea, (approx. 39°N 2°E), 802-804 m.

Material recorded by Kilgallen *et al.* (2007) as *S. robertsoni*.

3 females, 4.5, 5 and 6 mm, County Mayo, Ireland (54°34’N 11°06’W), 347.9 m, Aquafact International Services, June 2000.

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