

RECTIFICATION OF *HALIRAGES REGIS* AND
H. HUXLEYANUS (CRUSTACEA: AMPHIPODA),
FROM MARINE ANTARTICA, WITH
DESCRIPTION OF A NEW GENUS,
AUSTROREGIA

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Abstract.—*Halirages huxleyanus* and *H. regis* are removed to the new ant-arctic genus, *Austroregia*. This leaves *Halirages* with 6 species entirely confined to arctic waters. *Austroregia* is a perplexing genus because it is furnished with calceoli of the same kind found in *Chosroes* and *Gammarellus*; a family Gammarellidae is available for these two genera which would be removed from such families as Eusiridae, Pontogeneiidae and Calliopiidae, in which the genera would have been classified previously. Problems remain on speciation within *Austroregia*.

Halirages huxleyanus (Bate) and *H. regis* (Stebbing) are improperly placed in *Halirages* and are removed to a new genus *Austroregia*. *Austroregia huxleyana* possesses distinctive calceoli of a kind also present in *Gammarellus*, *Chosroes* and *Gondogeneia*, adequate to justify the resurrection of the family Gammarellidae within the superfamily Eusiroidea. This reinforces the discovery by Lincoln & Hurley (1981:111) that both the high arctic and high antarctic contain taxa with common ancestry in the gammarellid group, a family first raised by Bousfield (1977), but soon after merged within the family Calliopiidae.

Gammarellidae, revived

Diagnosis.—Characterized by a type 6 calceolus of Lincoln & Hurley (1981) in which the proximal element forms a discrete cup separated from the small 2 to 3-plate distal element by a second smaller cup-shaped element (Fig. 1). Also unique is the arrangement of the calceoli in transverse rows that extend all around the distal margin of the flagellar articles.

Remarks.—The family Gammarellidae was established by Bousfield (1977) to contain two carinate genera, *Gammarellus* Herbst and *Weyprechtia* Stuxberg, separated from other kinds of pontogeneiids by a combination of characters that included a well developed accessory flagellum, lanceolate weakly setose third uropods, and laminar, apically emarginate telson. However, the distinction from other eusiroids was far from clear-cut and in a later updated and revised version of his classification, Bousfield (1983) synonymized the Gammarellidae with the Calliopiidae.

The present use of calceolus morphology and arrangement as a shared apomorphy to resurrect the Gammarellidae produces a family of quite a different complexion. Brought together are four eusiroid genera, *Gammarellus*, *Gondogeneia*, *Chosroes*, and *Austroregia*, that would not have been recognized as belonging to a natural and independent group on the basis of traditional morphological characterizations. Thus, *Gammarellus* possesses a well developed multiarticulate accessory flagellum which is at best small to vestigial in *Gondogeneia* and

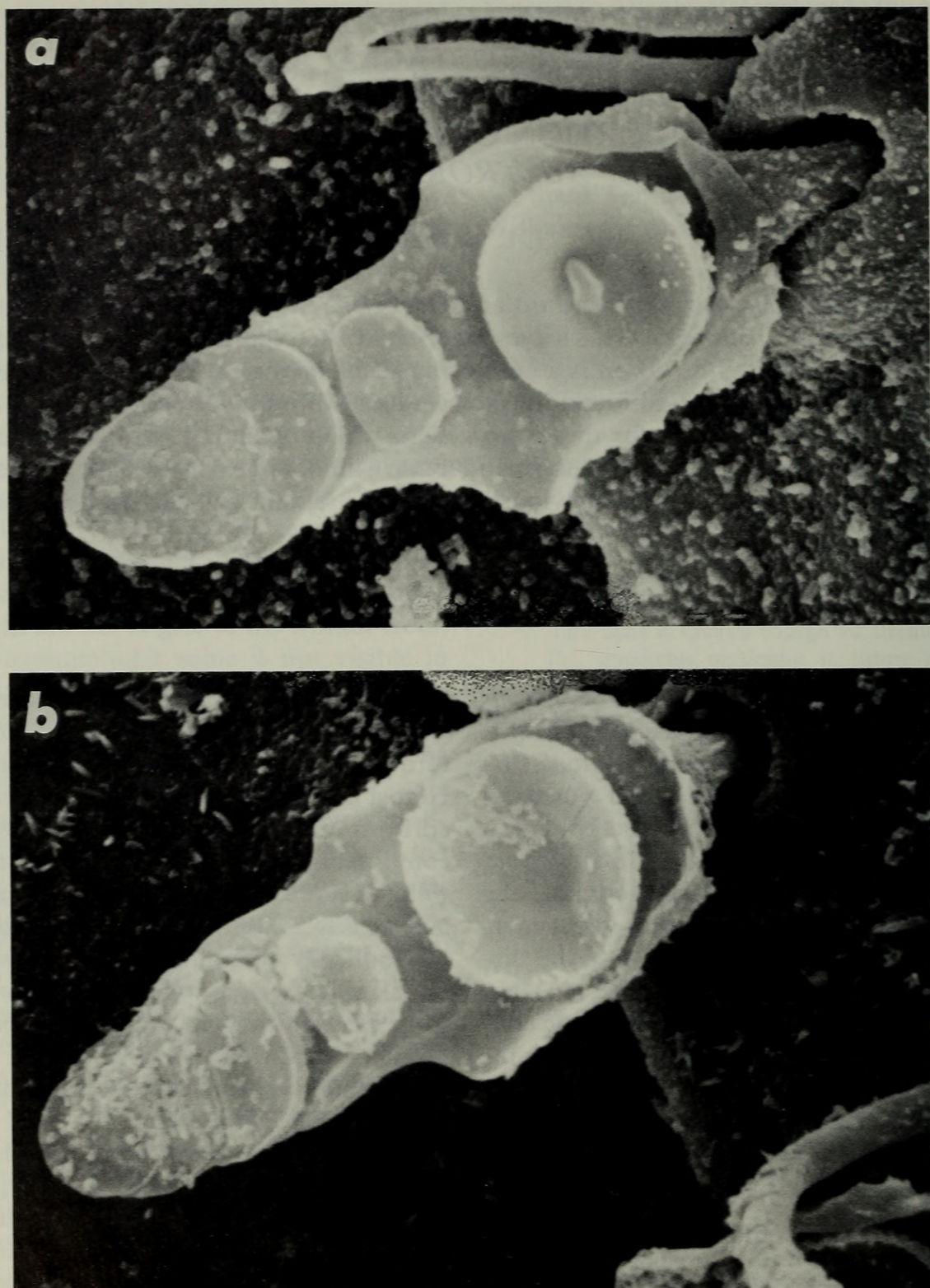


Fig. 1. Calceoli: a, *Austroregia huxleyana*, holotype "a"; b, *Chosroes decoratus*. Magnifications unknown; courtesy of Dr. Roger J. Lincoln.

Austroregia and absent in *Chosroes*. Further, *Gammarellus* is the only member having a coxal gill on pereonite 7, a lobate carpus on gnathopods 1–2, and facial setae on the inner plate of maxilla 2. The telson of

Chosroes and *Gammarellus* is weakly emarginate, but has a short to moderate cleft in *Gondogeneia* and *Austroregia*. A lanceolate setose uropod 3 is shared by all four genera but is also widespread outside the group.

The single feature uniting the family is the type 6 calceolus. This could be treated as yet another instance of convergence, as has to be argued for many eusiroid characters, but in view of the marked complexity of the calceolus sensory receptor and its novel distribution on the antennal articles, there is adequate justification for recognizing the group as a separate unit within the Eusiroidea.

There is a superficial resemblance of the gammarellid group to the Pleustidae, but the latter family has distinctive labia bearing outer lobes tilted across fused inner lobes; pleustids lack calceoli and further relationships cannot be struck. The lower lip of *Mesopleustes* and *Chosroes* bridges the gap between the two groups.

Families based entirely on calceolar structure are very difficult to handle by taxonomists because many species and genera that obviously are analogous to the calceoliferous members of various families have lost their calceoli. This has been a major problem with Crangonyctidae and will be a problem with Gammarellidae. Only 18 out of 91 families of Gammaridea have one or more species with calceoli. Fortunately, 16 out of the 18 families can be recognized by characters other than calceoli. At best the two families here mentioned are "ghost families" for the identificatory taxonomist because not all of their species and genera are recognizable by ordinary morphological characters. Just as with the Crangonyctidae, there may be species lacking calceoli which are descendants of an ancestor common to the known members of Gammarellidae. For the moment, those species, plus all other members of Eusiridae, Calliopiidae and Pontogeneiidae have to remain in a pool that is identifiable through laborious keys that contain little relationship to the phylogenetic positions of their genera. This is another case of the difference between practical classification involving the identification of species and genera versus phylogenetic classification where species and genera

may be arranged on the basis of characters not readily available from preserved museum specimens.

Austroregia, new genus

Type species.—*Atylus huxleyanus* Bate, 1862, here selected.

Etymology.—From "austro," southern, and "regia," kingly.

Diagnosis.—Eusiroid-like amphipods with type 6 calceolus; body carinate; rostrum small; eyes circular; basal article of flagellum on antenna 1 not elongate; antenna 2 as long as antenna 1; upper lip entire; inner lobes of lower lip absent; inner plate of maxilla 1 with only six or fewer setae, mostly terminal; palps disymmetrical or not (type); inner plate of maxilla 2 with only medial setae, none facial; outer plate of maxilliped of basic form and size; gnathopods small, carpus shorter than propodus, nonlobate, gnathopod 1 slightly larger than 2; pereopods 3–4 with nonlobate basis; coxa 4 excavate or not posteriorly; gills unpleated, gill 7 lacking; at least pereopod 7 elongate; outer rami of uropods 1–2 shortened; peduncle of uropod 3 slightly elongate, rami extending equally, poorly setose; telson elongate, cleft about 10–20 percent of its length.

Composition.—*Austroregia huxleyana* (Bate, 1862) and *A. regis* (Stebbing, 1914).

Relationship.—Differs from the congeneric genera, *Gondogeneia* in the presence of large dorsal carinae on pereonite 7 and pleonites 1–3; *Chosroes* in the enlarged gnathopod 1, broader outer plate of the maxilliped and the lack of an anterior lobe on the basis of pereopods 3–4; *Gammarellus* in the nonlobate carpal articles of gnathopods 1–2, lack of coxal gill 7, vestigial accessory flagellum, nonpleated gills, absence of facial setae on the inner plate of maxilla 2, poorly setose inner plate of maxilla 1, and cleft telson.

In addition to the type 6 calceolus, *Austroregia* differs from the eusiroid genera,

Halirages in the fewer setae on the inner plate of maxilla 1, the lack of facial setae on maxilla 2, and the enlarged gnathopod 1; *Cleippides* in the short carpus of the gnathopods; *Haliragoides* in the lack of inner lobes on the lower lip, the fewer and nonfacial setae of maxillae 1–2 and the regular sized uropod 3; *Whangarusa* Barnard & Karaman (1987), in the carinate body, poorly setose maxillae, and lack of inner lobes on the lower lip; *Paracalliopiella* in the elongate telson, and nonreniform eyes; *Cleonardopsis* in the lack of inner lobes on the lower lip, and lack of carpal lobes on the gnathopods; *Harcledo* in the carinate body, longer anterior coxae and weakly cleft telson; *Amathillopsis* in the vestigial accessory flagellum, nonlobed carpus of the gnathopods, slightly enlarged gnathopod 1, fewer setae on the inner plate of maxilla 1 and the smaller dactyl of the maxilliped; *Meteusiroides* in the carinate body, nonreniform eyes, nonelongate article 1 on the flagellum of antenna 1, nonlobate carpus of the gnathopods, and poorly cleft telson; from *Paramphithoe* in the broader articles 5–6 of the gnathopods, especially the more inflated article 6, the nonbifid coxa 4, the enlarged gnathopod 1, the confinement of body teeth to the dorsal midline and the fewer setae on the inner plate of maxilla 1; from *Pontogeneia* in distinctive calceoli, poorly cleft telson, absence of inner lobes on the labium, enlarged setae on inner plate of maxilla 2 which are fully marginal (versus facial) and the bluntly rounded anteroventral margins of the anterior coxae; and finally, *Calliopius*, in the nonlobate carpus of the gnathopods, nonreniform eyes, absence of inner lobes on the lower lip, and the distinctive calceoli.

Coxa 4 takes different forms. In juveniles it is usually excavate weakly and because in some adults it curls outward it seemingly is deeply excavate when illustrated without flattening. In some large adults this coxa assumes a diamond-shape (Fig. 6*d*).

Presence of calceoli is vagarious. Generally, adults of *A. huxleyana* bear calceoli but

most of *A. regis* do not. We have in hand several adults of *A. huxleyana* without calceoli and Stebbing (1888: pl. 73) shows an adult of *A. regis* with calceoli. This fits the vagarious occurrence of calceoli classically known in many species of amphipods where presence or absence occurs at a demal level.

Note on other species. — *Atylus? batei* Cunningham, 1871, from Magellan Strait, apparently is neither of the species studied herein as it has five dorsal body teeth, whereas the two discussed herein have four or fewer.

Austroregia huxleyana (Bate)

Figs. 2–4

Atylus Huxleyanus Bate, 1862:135, pl. 25, fig. 4. — Cunningham, 1871:498.

Acanthozone Huxleyana. — Della Valle, 1893:612, pl. 59, fig. 23.

Halirages Huxleyanus. — Stebbing, 1906:291; 1914:362. — Schellenberg, 1931:176, pl. 1, fig. k. — K. H. Barnard, 1932:159, fig. 93.

Halirages stebbingi. — Alonso, 1980:10, fig. 7 (not Schellenberg, 1931).

Diagnosis. — Calceoli abundantly present; posterior pereonites not formed into posterolateral sharp wings in adults; outer rami or uropods 1–2 with several marginal spines in two rows; dorsal tooth of pleonite 3 usually as large as tooth on pleonite 2.

Material. — BMNH Holotype Hermit Island, Magellan Strait, Chile, Antarctic Expedition, female “a” 19.8 mm, lacking antenna 2 (illustrated). BMNH 1928.12.1: 2122–27, Syntype Falklands, R. Vallentin Expedition, formerly identified as *regis*, one specimen. BMNH 1936.11.2: 1381–84, st. 53, 12.5.1926, Discovery 0–2 m, female “b” 14.80 mm, identified as *huxleyanus* by K. H. Barnard. BMNH 1936.11.2: 1381–84 (Part), st. 56, 16.5.1926, Discovery BtS 10.5–16 m, identified as *huxleyanus* by K. H. Barnard, five specimens partly fragmented.

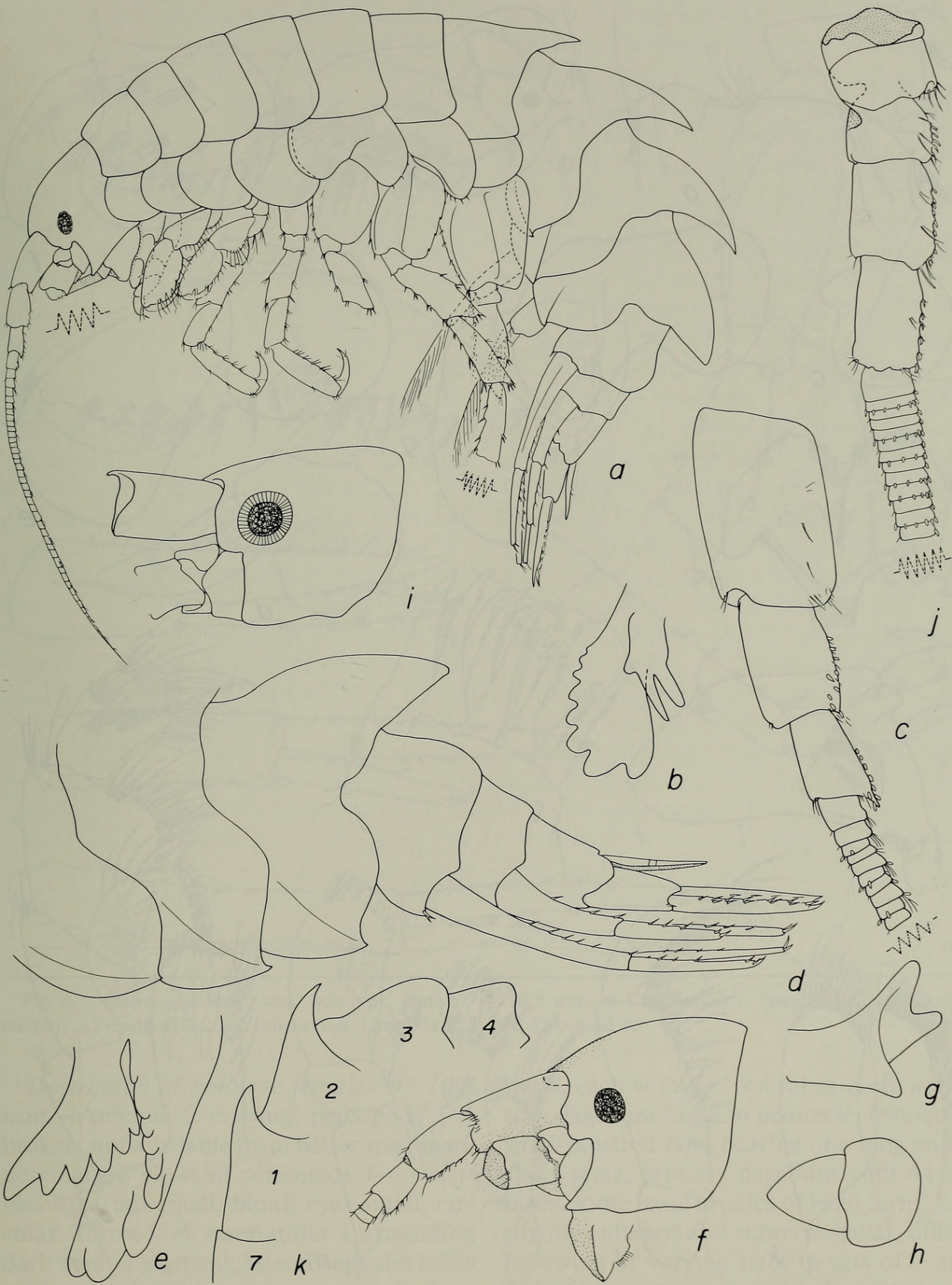


Fig. 2. *Austroregia huxleyana*: holotype, female "a" 19.8 mm, a, Body; b, Apex of right mandible; c, Antenna 1 lateral; d, Pleon; e, Apex of left mandible; f, Head; g, Right lacinia mobilis; h, Prebuccal, anterior view, dorsal to right. Female "b" 14.8 mm: i, Head; j, Antenna 2, medial; k, Pleonite 7 (left) to pleonite 4 (right).



Fig. 3. *Austroregia huxleyana*: holotype, female "a" 19.8 mm, a, Region of accessory flagellum; b, Gill 6; c, Coxa 1; d, Coxa 2 and oostegite; e, Coxa 3 and gill; f, Coxa 4 and oostegite; g, Coxa 5 and oostegite (small) and gill (large); h, Lower lip; i, Right mandible; j, Outer plate of maxilla 1; k, Maxilla 2; l, Palp of right mandible; m, Maxilla 1; n, Maxilliped.

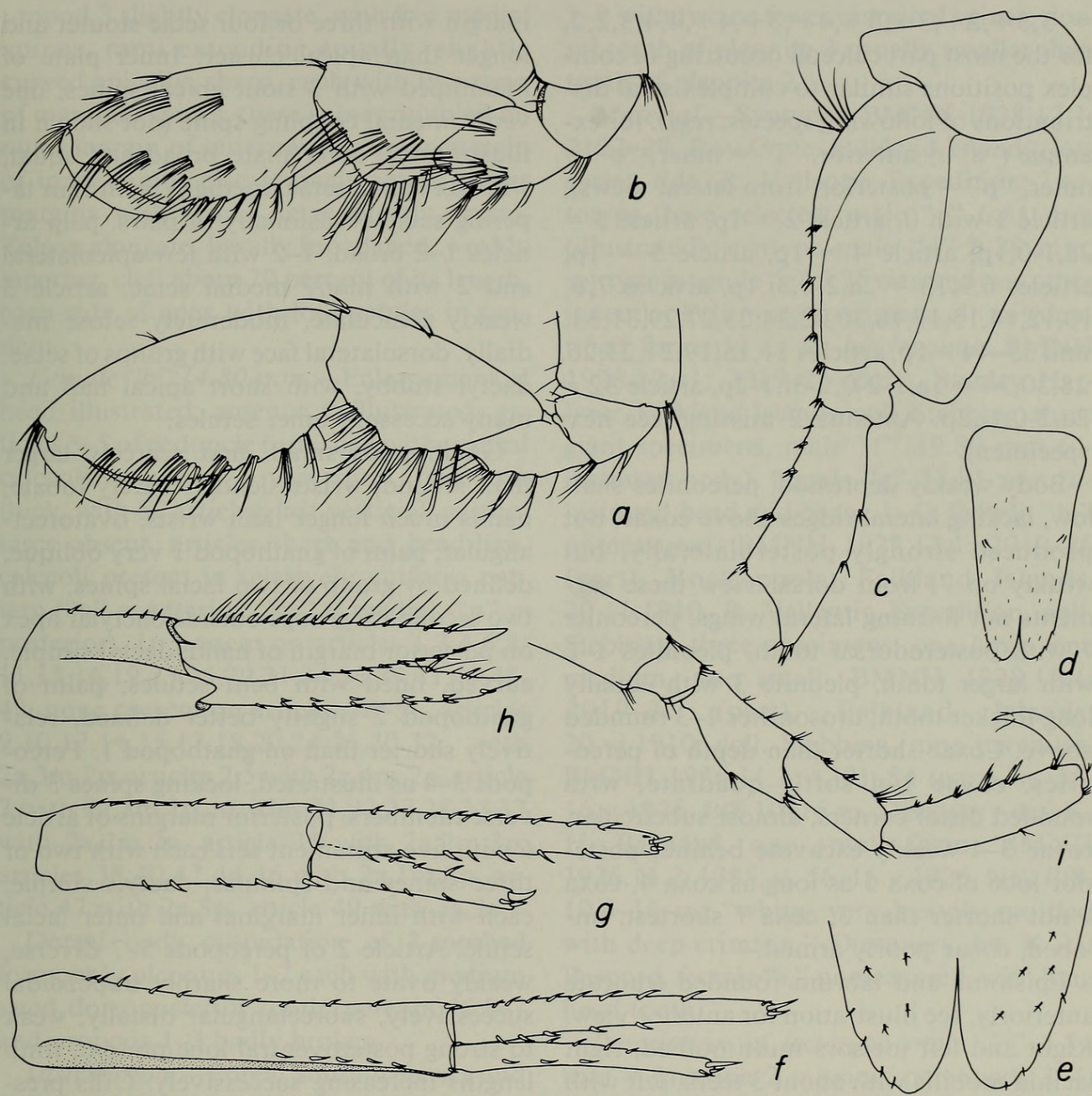


Fig. 4. *Austroregia huxleyana*: holotype, female “a” 19.8 mm, a, Gnathopod 1, lateral; b, Gnathopod 2, medial; c, Pereopod 7; d, e, Telson; f–h, Uropods 1, 2, 3; i, Pereopod 4.

Description of holotype female “a” 19.8 mm.—Antenna 2 missing, pereopods 5–7 broken, not available from better specimen, no enlarged views of pereopods 4–6 possible. Rostrum small, blunt; eyes small, circular, formed of ommatidia surrounding dark core of pigment, lateral cephalic lobes not protruding, truncate, antennal sinus weak, concave, bounded by tooth below. Antenna 1 about 50 percent as long as body, peduncle short, articles successively shorter, articles 2 and 3 with weak apicoventral

tooth, each with 8+ ventral calceoli, accessory flagellum fused to peduncle, formed of small squared boss bearing one long and 3 short setae, primary flagellum with 44 articles, some basal articles of bead form, first slightly enlarged and subrectangular, others following of varying sizes in sets of 2 and 3, narrower to broader, calceoli present, terminal member of each set with groups of aesthetascs, broad articles with aesthetascs = 1,2,4,5,8,12,15,18,22,25,29,33,26, aesthetascs on these articles posterior, numbers

= 3,5+,2+,3+,5+,4+,3+,4+,4,4,3,2,2, for the most part calceoli occurring in complex positions similar to complex setal distributions of following species, *regis*, for example ("a" = anterior, "i" = inner, "o" = outer, "p" = posterior, from lateral views), article 1 with 0, article 2 = 1p, article 3 = 2a,1-0,1p, article 4 = 1p, article 5 = 1p, articles 6,9,13 = 2a,2-0,3i,1p, articles 7,8,10,12,14,15,17,18,20,22,24,25,27,29,31,33, and 35-44 = 1p, articles 11,16,19,21,23,26,28,30,34 = 1a,1-2-0,2-3i,1-2p, article 32 = 2a,2-0,1i,2p. Antenna 2 missing (see next specimen).

Body weakly depressed, pereonites shallow, lacking lateral ridges above coxae, not produced strongly posterolaterally, but weakly on 7, from dorsal view these segments not forming lateral wings, pereonite 7 with posterodorsal tooth, pleonites 1-2 with larger tooth, pleonite 3 with equally long thicker tooth, urosomites 1-3 rounded above. Coxae shorter than depth of pereonites, coxae 1-4 softly quadrate, with rounded distal corners, almost subcircular, coxae 3-4 weakly excavate behind, posterior lobe of coxa 5 as long as coxa 4, coxa 6 not shorter than 5, coxa 7 shortest, unlobed; coxae poorly armed.

Epistome and labrum rounded truncate anteriorly, see illustration for anterior view. Right and left incisors multitoothed, right lacinia mobilis with about 3 teeth, left with 6 teeth, about 8 right and 9 left rakers, each with extra interrakers, molar strongly tritritative, palp article 2 densely setose medially, article 3 weakly bent, with no outer basal setae (=A-setae), inner margin with several C-setae and many D-setae, apex with 8+ E-setae. Lower lip lacking inner lobes. Inner plate of maxilla 1 subrectangular, with 6 apicomedial setae, outer plate with 11 mostly denticulate spines, palp article 2 symmetrical on both sides, with 7 thick apical spines, 2 thinner apicolateral spines, no facial subdistal setae. Inner plate of maxilla 2 as long as and scarcely narrower than outer plate, lacking facial row of setae, medial

margin with three or four setae stouter and longer than apical cluster. Inner plate of maxilliped with 3 stout apical spines, one ventromedial coupling spine (not shown in illustration), outer plate broad and squat, with six apical setae, medially with thin tapering setae occasionally in pairs, palp articles 1-2 broad, 1-2 with few apicolateral and 2 with many medial setae, article 3 weakly geniculate, moderately setose medially, dorsolateral face with groups of setae, dactyl stubby, with short apical nail and many accessory inner setules.

Gnathopods small, first scarcely larger than second, wrists slender, barely lobate, hands much longer than wrists, ovatorectangular, palm of gnathopod 1 very oblique, defined by group of two facial spines, with two secondary groups outside dactylar apex on posterior margin of hand, dactyl simple, curved, lined with bent setules; palm of gnathopod 2 slightly better defined, relatively shorter than on gnathopod 1. Pereopods 3-4 as illustrated, locking spines 3 diverse members, posterior margins of article 6 with five armament sets each with two or three spines and spinules, dactyls simple, each with inner marginal and outer facial setule. Article 2 of pereopods 5-7 diverse, weakly ovate to more sharply trapezoidal successively, subrectangular distally, weak to strong posteroventral lobe present, limb lengths increasing successively. Gills present on coxae 2-6; oostegites poorly developed but of slightly expanded form on coxae 2-5, slightly pointed on coxa 2, paddle shaped on coxae 3-4, small and paddle shaped on coxa 5, setae absent but marked by humps or sockets.

Epimera 1-3 alike, each with convex posterior margin, sharp and weakly turned posteroventral tooth connected to lateral ridge, otherwise naked. Outer rami of uropods 1-2 shortened, all rami bearing apical spines and two marginal rows of spines, both upper margins of peduncle on uropods 1-2 with row of spines, those on uropod 1 lateral margin confined to distal half. Peduncle of

uropod 3 slightly elongate, with five medial spines, rami extending equally, slightly curved apically, sharp, each with two rows of marginal spines, these spines doubled on outer margin of outer ramus, inner margin of inner ramus also strongly setose, other margins with sparse setae mostly apical. Telson elongate, basally broadened, weakly tapering, cleft about 20 percent of its length, each side of apex with four setules in tandem.

Female "b" 14.80 mm.—Enlargement of head illustrated; antenna 2 illustrated, articles 3–5 of peduncle furnished with ventral calceoli, articles 4–5 very short, flagellum thick, with 52 articles, last vestigial, aesthetascs absent, articles short and bead-like, calceoli present in relatively uniform pattern ("a" = anterior, "m" = medial, "p" = posterior), 1p present on articles 1, 3, 4, 6, 8, 11, 13, 16, 19, 23, 25, 29, 31, 34, 36, 39, 41, 43, 45, 48, none present on articles 50–51, articles 9, 10, 12, 14, 15, 17, 18, 20, 24, 26, 30, 32, with 2a, 3m, 2p, articles 2, 5 with 2a, 4m, 2p, article 7 with 2a, 3m, 1p, articles 21, 22, 27, 28, 33, 37 with 2a, 2m, 2p, article 35 with 2a, 2m, 3p, articles 38, 40, 42, 44, 46 with 2a, 1m, 3p, article 47 with 2a, 3p, article 49 with 2a, 2p.

Dorsal body cuspidation of 2-toothed form, only pleonites 1–2 each with medium sized dorsoposterior tooth; pereopods 5–7 and uropods 1–3 badly broken.

Distribution.—Boreal South America and Falkland Islands, 0–55 m.

Austroregia regis (Stebbing)

Figs. 5–7

Halirages huxleyanus.—Stebbing, 1888: 902, pl. 73 (not Bate, 1862).

Bovallia regis Stebbing, 1914:362, pl. 8.

Halirages regis.—K. H. Barnard, 1932:161, fig. 94.

Halirages stebbingi Schellenberg, 1931:176, pl. 1, fig. 1.

Diagnosis.—Calceoli usually absent; posterior pereonites formed into posterolateral sharp wings in adults; outer rami of uropods

1–2 with two or fewer marginal spines; dorsal tooth of pleonite 3 usually smaller than tooth of pleonite 2.

Material.—Syntypes, BMNH 1928.12.1: 2122–27, Roy Cove, Falkland Islands, low spring tide, R. Vallentin Expedition: Lectotype, here selected, male "c" 6.81 mm (illustrated); syntype male "d" 6.28 mm; syntype juvenile "e" 5.75 mm and one other juvenile. Following specimens all misidentified formerly as *H. huxleyanus*: BMNH 1928.12.11: 2019–26 (part), Stanley Harbour, Falkland Islands, coll. Stebbing, three giant specimens, male "f" 19.80 mm (illustrated body), female "g" 23.81 mm (illustrated head and coxae 1–4), female "h," unmeasured. BMNH 1928.12.1: 2019–26 (part), Rock pools, Falkland Islands, 20.11.1910, R. Vallentin Expedition, coll. Stebbing, three specimens, one large, one medium, one small. BMNH 1928.12.1: 2019–26 (part), Falkland Islands, 20.vi.1910, coll. Stebbing, nine juveniles. BMNH 1936.11.2: 1381–84 (part), st. 55, 16.v.1926. BtS 10–16 m, Discovery det. K. H. Barnard, one small form. BMNH 1936.11.2: 1385, st. 56, 16.v.1926, Net: BtS, 10.5–16 m, "white, very heavily mottled with deep crimson," Discovery det. K. H. Barnard, female "i," unmeasured, with long head tooth.

Description of lectotype male "c" 6.81 mm.—Antenna 2 missing, pereopods 3–4, 6–7 broken, pereopods 5–7 illustrated from better specimen, left mandible only described, no enlarged views of head, epistome, labium, pereopods 3–7, dactyls. Rostrum small, blunt; eyes circular, with dark core of pigment, lateral cephalic lobes not protruding, truncate, antennal sinus weak, straight, oblique. Antenna 1 almost 55 percent as long as body, peduncle short, articles successively shorter, accessory flagellum fused to peduncle, formed of small squared boss bearing 1 long and 3 short setae, primary flagellum with 30 articles, some basal articles of bead form, first slightly enlarged and rectangular, others following of

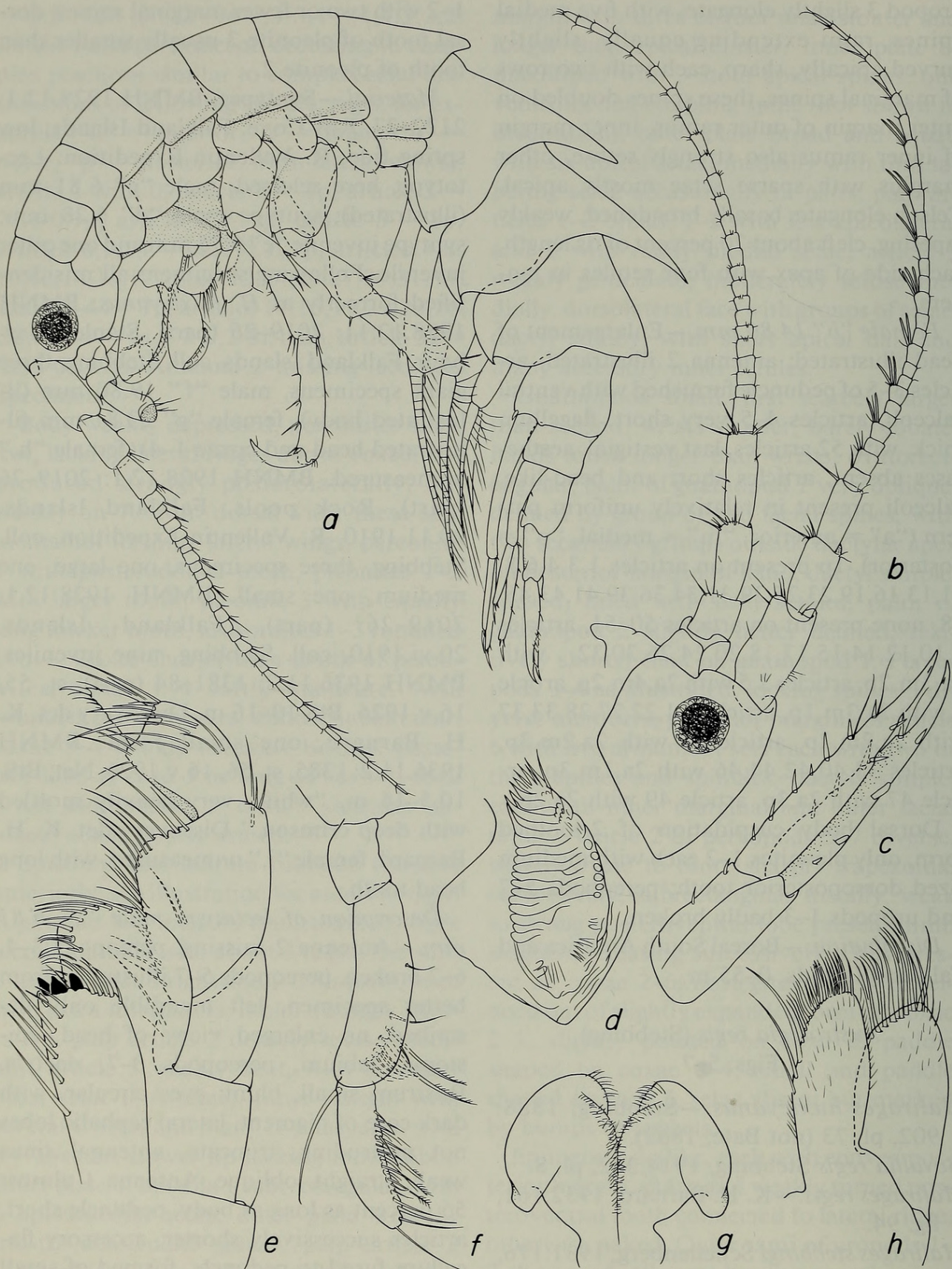


Fig. 5. *Austroregia regis*: lectotype male "c" 6.81 mm, a, Body; c, Left uropod 3; d, Right molar; e, Maxilliped; g, Lower lip; h, Maxilla 2. Male "d" 6.28 mm, b, Head. Male "c" 6.81 mm, f, Right mandibular palp.

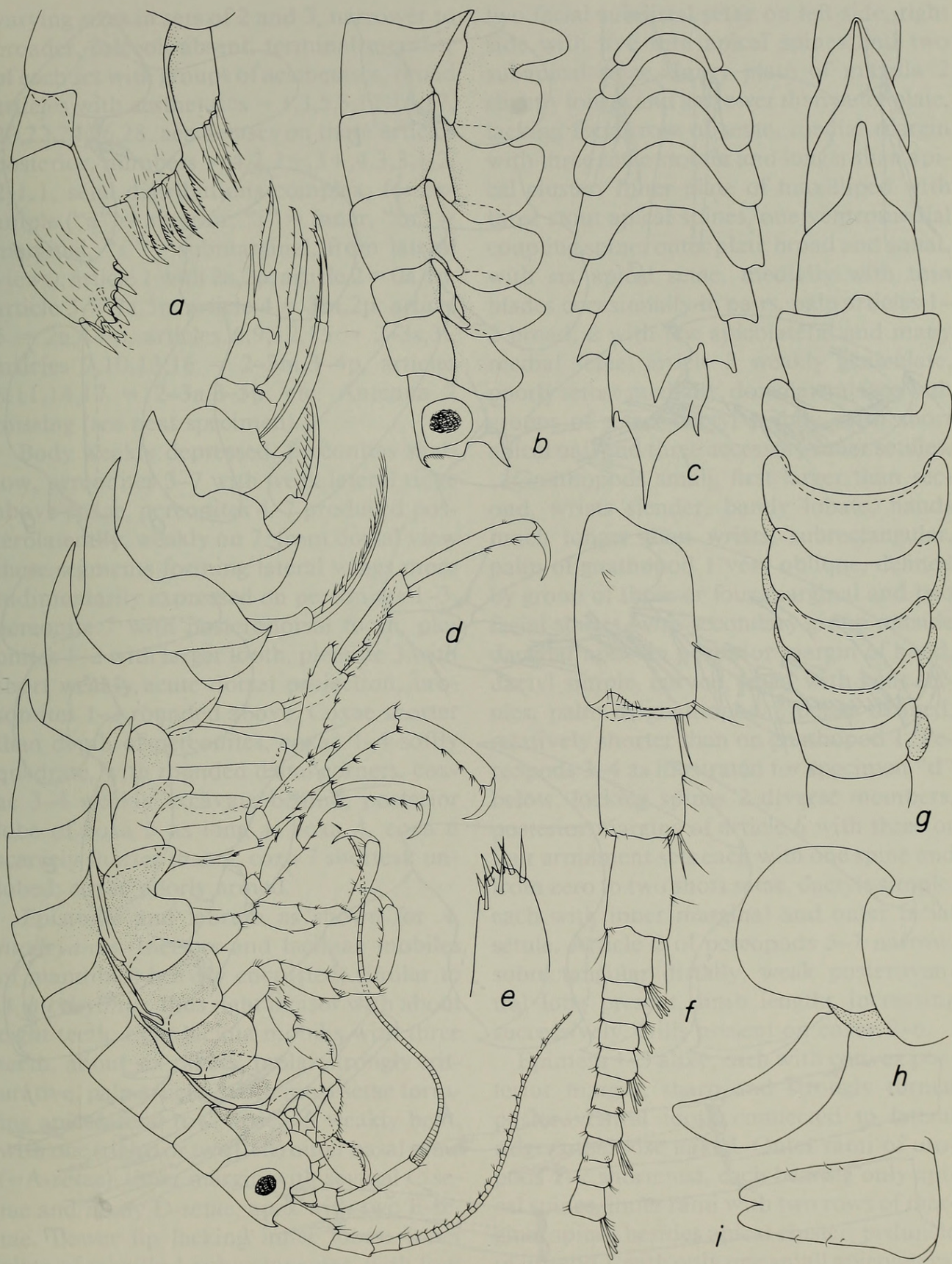


Fig. 6. *Austroregia regis*: lectotype male "c" 6.81 mm, a, Maxilla 1; e, Other palp of opposite maxilla 1; f, Medial antenna 1; g, Dorsal body, head at bottom; h, Coxa 4 with gill; i, Telson. Female "g" 23.81 mm, b, Head and pereonites 1-5. Male "f" 19.8 mm, c, Dorsal body from pereonite 1 (top) to pleonite 1 (bottom); d, Body.

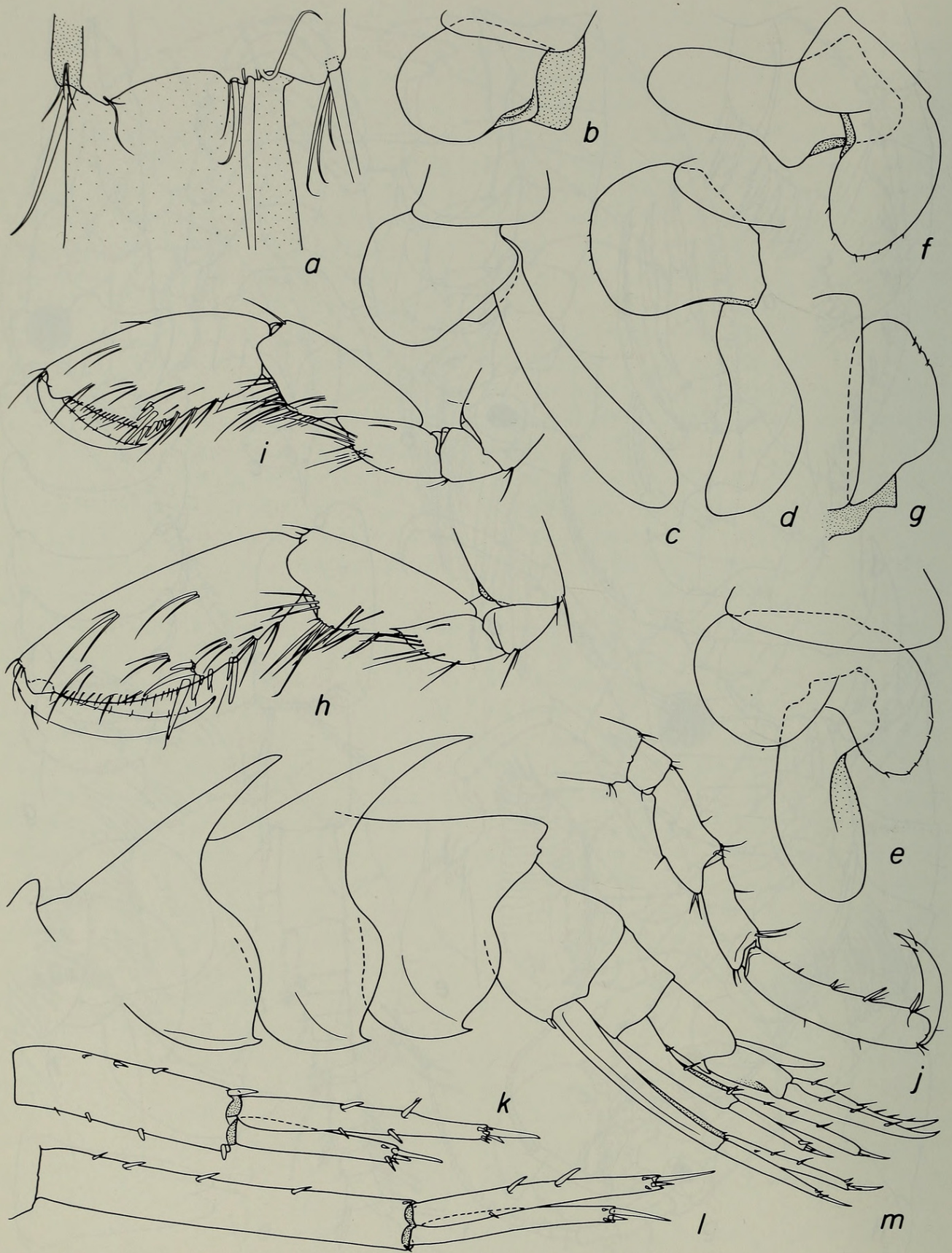


Fig. 7. *Austroregia regis*: lectotype male "c" 6.81 mm, a, Region of accessory flagellum; b, Coxa 1; c, Coxa 2 with gill; d, Coxa 3 with gill; e, Coxa 5 with gill; f, Coxa 6 with gill; g, Coxa 7; h, Gnathopod 1, medial; i, Gnathopod 2, medial; k, l, Uropods 2 and 1; m, Pleon. Male "d" 6.28 mm, j, Pereopod 3.

varying sizes in sets of 2 and 3, narrower to broader, calceoli absent, terminal member of each set with groups of aesthetascs, broad articles with aesthetascs = 1,3,5,8,11,14,17,20,22,24,26,28, aesthetascs on these articles posterior, numbers = 4,2,2+,3+,4,3,3,1,2,2,1,1, setal distributions complex, for example ("a" = anterior, "i" = inner, "m" = marginal, "s" = submarginal, from lateral views), article 1 with 2a,2p, article 2 = 0a,1p, article 3 = 2a,5p, article 4 = 3m,2p, article 5 = 2a,4+p, articles 6,9,12,15 = 2-3s,3i, articles 7,10,13,16 = 2-3m,3-4p, articles 8,11,14,17 = 2-3a,3-5p, etc. Antenna 2 missing (see next specimen).

Body weakly depressed, pereonites shallow, pereonites 3-7 with weak lateral ridge above coxae, pereonites 4-7 produced posterolaterally, weakly on 7, from dorsal view these segments forming lateral wings more rudimentarily expressed on pereonites 1-3, pereonite 7 with posterodorsal tooth, pleonites 1-2 with larger tooth, pleonite 3 with short weakly acute dorsal projection, urosomites 1-3 rounded above. Coxae shorter than depth of pereonites, coxae 1-4 softly quadrate, with rounded distal corners, coxae 3-4 weakly excavate behind, posterior lobe of coxa 5 as long as coxa 4, coxa 6 scarcely shorter than 5, coxa 7 shortest, unlobed; coxae poorly armed.

Epistome and labrum as shown for *A. huxleyanus*. Incisors and laciniae mobiles of mandibles heavily encrusted, similar to *A. huxleyanus*, thus right incisor with about eight teeth, right lacinia mobilis with three teeth, about six rakers, molar strongly triturative, palp article 2 with most setae forming apicolateral row, article 3 weakly bent, with one (right) or two (left) outer basal setae (=A-setae), inner margin with several C-setae and many D-setae, apex with two E-setae. Lower lip lacking inner lobes. Inner plate of maxilla 1 subrectangular, with four apicomedial setae, outer plate with nine mostly denticulate spines, palp article 2 asymmetrical on both sides, with five thick apical spines, one thinner apicolateral spine,

two facial subdistal setae on left side, right side with five thin apical spines and two subapical setae. Inner plate of maxilla 2 slightly longer and narrower than outer plate, lacking facial row of setae, medial margin with three setae stouter and longer than apical cluster. Inner plate of maxilliped with three stout apical spines, one ventromedial coupling spine, outer plate broad and squat, with six apical setae, medially with thin blades occasionally in pairs, palp articles 1-2 broad, 2 with few apicolateral and many medial setae, article 3 weakly geniculate, poorly setose medially, dorsolateral face with groups of setae, dactyl stubby, with short apical nail and three accessory inner setules.

Gnathopods small, first larger than second, wrists slender, barely lobate, hands much longer than wrists, subrectangular, palm of gnathopod 1 very oblique, defined by group of three or four marginal and two facial spines, with secondary group outside dactylar apex on posterior margin of hand, dactyl simple, curved, lined with bent setules; palm of gnathopod 2 better defined, relatively shorter than on gnathopod 1. Pereopods 3-4 as illustrated for specimen "d" below, locking spines 2 diverse members, posterior margins of article 6 with three or four armament sets each with one spine and from zero to two short setae, dactyls simple, each with inner marginal and outer facial setule. Article 2 of pereopods 5-7 narrow, subrectangular distally, weak posteroventral lobe present, limb lengths increasing successively. Gills present on coxae 2-6.

Epimera 1-3 alike, each with convex posterior margin, sharp and strongly turned posteroventral tooth connected to lateral ridge, otherwise naked. Outer rami of uropods 1-2 shortened, each bearing only apical spines, inner rami with two rows of marginal spines besides apical cluster, peduncle of uropod 1 with only one small apicolateral spine, medial margin with five spines, peduncle of uropod 2 with three dorsolateral spines and one basal setule, medial margin with five spines. Peduncle of uropod 3

slightly elongate, with two medial spines and one basal seta, rami extending equally, curved apically, sharp, each with two rows of marginal spines, inner also with seta in last two apical spine sets, outer also with seta in last spine set medially, each ramus with subapical setule. Telson elongate, basally broadened, weakly tapering, cleft about 10 percent of its length, each side with three setules in tandem.

Male "d" 6.28 mm.—Pereopod 3 enlarged to show details.

Male "f" 19.80 mm.—Supposed terminal adult form, body illustrated: pereonites more alate posterolaterally, pereonites 2–7 with shelf above coxae, pointed on pereonite 7; coxae more diverse, coxa 2 bluntly pointed below, coxae 3–4 relatively larger than in juvenile form; antenna 2 as illustrated, articles 4–5 of equal length, flagellum "proliferate," basal article with new articles forming inside; dorsal tooth of pereonite 3 enlarged; apices of pereopods 6–7 illustrated on body.

Female "g" 23.81 mm.—Head with large anteroventral tooth below antennal sinus (illustrated). Coxae 3–4 sinuous posteroventrally. Outer ramus of uropod 2 with two marginal spines.

Female "h" large, unmeasured.—Outer ramus of uropod 1 with one marginal spine, of uropod 2 with one or two marginal spines (right and left); coxae acuminate as in female "g" but head lacking tooth.

Female "i" unmeasured.—Like female "g" but smaller, coxae more strongly acuminate; each outer ramus of uropods 1–2 with one marginal spine.

Discussion.—The lectotype is unfortunately a small male less than one-third as long as the largest adults known (as measured by parabolic method). It clearly has the flared-out posterolateral margins of the pereonites but not to the exaggerated degree of larger specimens. In large specimens the pereonal margins flare out laterally until they form horizontally projecting teeth. In some specimens the posterior margins of the flared

teeth are incised posteriorly and have very extended lateral wings which look like separate processes from lateral view but which are simply more knife-like. Large adults occur in two forms: (1) head with large posteroventral tooth coupled with strongly acuminate anterior coxae and (2) head without strong posteroventral tooth coupled with poorly acuminate anterior coxae. Small specimens lack dorsally marginal spines on the outer rami of uropods 1–2 whereas larger adults have as many as three and two spines on the outer rami of uropods 1 and 2 respectively. No calceoli have been discovered in our specimens of this species, although Stebbing shows calceoli in his original description.

Relationship.—Differing from *A. huxleyanus* in the presence of flared margins on the pereonites, the poorly spinose outer rami of uropods 1–2 and the usual absence of calceoli. The specimen figured by Stebbing (1888: pl. 73) has calceoli. The condition of coxae in adult *huxleyana* resembles that of juvenile *regis* so that coxal forms are not necessarily definitive in comparing the two species.

There remains the question of whether *A. regis* is congeneric with *A. huxleyana* because the two species differ in the setal formulas on article 3 of the mandibular palp, in the spine numbers on the outer plate of maxilla 1, the difference in setal presence on the palps of maxilla 1, and the symmetry of those palps. Article 3 of the mandibular palp lacks A-setae in *huxleyanus*; the latter has 11 spines on the outer plate of maxilla 1 whereas *A. regis* has 9; and the palps are symmetrical and lack subdistal setae in *A. huxleyana*. There also remains the problem of speciation in this group and because of the extensive demal variations already noted, very large and widespread collections of antarctic materials should be assembled to study the life history and variations in the group.

Distribution.—Tierra del Fuego and Falkland Islands, 0–55 m.

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