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The amphipod genus *Alexandrella* (Amphipoda, Stilipedidae): taxonomic status, allometric growth and description of two new species

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The amphipod genus *Alexandrella* (Amphipoda, Stilipedidae): taxonomic status, allometric growth and description of two new species

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(Accepted 29 September 2004)

Abstract

Two new species of the genus *Alexandrella* are described: *A. mandibulata* and *A. martae*. One species, *A. mixta*, is considered a junior synonym of the type species *A. dentata*. The genus now comprises six species, all of which are restricted to either the Antarctic or sub-Antarctic region or the South Pacific. Oostegites are observed to be present on pereopod 1 in two *Alexandrella* species. This is a novel morphological trait among the Amphipoda. Developmental information is presented for two other *Alexandrella* species, in which the mandibular incisor is seen to be modified from strongly toothed in marsupial young to totally smooth in mature specimens. Also the armature dorsally on their body and the morphology of the telson undergo conspicuous allometric changes. A key to all known *Alexandrella* species is provided.

Keywords: *Alexandrella*, *allometry*, *Amphipoda*, *Stilipedidae*, *taxonomy*

Introduction

The genus *Alexandrella* Chevreux, 1912 was erected to encompass the Antarctic species *A. dentata*. Later, five nominal species, two of which have been put into synonymy (see Remarks under *A. dentata*), have been described, all restricted to the southern hemisphere. With the inclusion of the two new species described below, the genus now comprises six valid species.

As defined by Coleman and Barnard (1991, p 264), the Stilipedidae consist of four genera: *Alexandrella* Chevreux, 1912, *Astyroides* Birstein and Vinogradova, 1960, *Bathypanoploea* Schellenberg, 1939, and *Stilipes* Holmes, 1908, whereas the two genera *Astyra* Boeck, 1871 and *Eclysis* K. H. Barnard, 1932 were treated as belonging to the family Astyridae. These two families were mainly separated on the narrow incisors and setose molar of the mandibles and the relatively unexpanded palp of the first maxilla in Astyridae. This arrangement of genera slightly contradicted the classification of Holman and Watling (1983), who treated all the above-mentioned genera, except *Eclysis*, as belonging to the family Stilipedidae, but divided into three different subfamilies. This paper is part of a

series of papers that will eventually end up in a revision and phylogenetic analysis of the two families Astyridae and Stilipedidae. Hence no discussion on the phylogenetic relationships of this genus is presented herein. However, it seems already evident that the characters used to separate the Stilipedidae from the Astyridae (above) no longer exist. As will be presented and discussed below, a setose molar does in fact exist in several species of both *Bathypanoploea* (see Berge and Vader in press) and *Alexandrella* (below), and the ontogenetic development of the mandibular incisors in *Alexandrella* (below) also seems to suggest a closer relationship between these two families.

Material and methods

This study is mainly based upon material from the collections of the National Museum of Natural History in Washington, DC (USA) and the IRSNB in Brussels (Belgium). Additional material was also collected during the ANDEEP cruises to the Weddell Sea in 2002 or borrowed from the Zoological Museum in Copenhagen (Denmark), South Australian Museum in Adelaide (Australia) and the South African Museum (SAM) in Cape Town (South Africa).

The following abbreviations are used: Ep3, epimeral plate 3; i.p, inner plate; L, labium; Lbr, labrum; Lmnd, left mandible; Mnd, mandible; Mx1, maxilla 1; Mx2, maxilla 2; Mxp, maxilliped; P1–7, pereopods 1–7; Rmnd, right mandible; ST, setal teeth on the first maxilla; T, telson; U1–3, uropods 1–3.

Taxonomy

Family STILIPEDIDAE Holmes, 1908, *sensu* Coleman and Barnard 1991

Genus *Alexandrella* Chevreux, 1912

Alexandrella Chevreux 1912, p 213; Chevreux 1913, p 134.

Alexandrella: Holman and Watling 1983, p 32.

Alexandrella: Barnard and Karaman 1991, p 703.

Parandaniexis Nicholls 1938, p 42 [homonym of *Parandaniexis* Schellenberg, 1929].

Pseudandaniexis Nicholls 1938, corrigendum [replacement name for *Parandaniexis* Nicholls, 1938].

[Note. The generic names *Iphimediopsis* Schellenberg, 1931, *Bathypanoploea* Schellenberg, 1939 and *Pseudiphimediopsis* Ruffo, 1949, all technically with type species *Alexandrella australis* (Chilton, 1912), were in reality based on a different species altogether, now known as *Bathypanoploea schellenbergi* Holman and Watling, 1983. They are therefore not subjective junior synonyms of *Alexandrella* (cf. Holman and Watling 1983).]

Type species. Alexandrella dentata Chevreux, 1912.

Species. Alexandrella australis (Chilton, 1912); *A. dentata* Chevreux, 1912 (new syn: *A. mixta* (Nicholls, 1938)); *A. inermis* Bellan-Santini and Ledoyer, 1987; *A. mandibulata* n. sp.; *A. martae* n. sp., *A. subchelata* Holman and Watling, 1983.

Key to the species of *Alexandrella*

1. Pereonite 7 dorsally with a strong tooth, mandibular incisors smooth
 Alexandrella australis
- Pereonite 7 dorsally smooth, mandibular incisors fully or partly toothed 2

2. Pleonites 1–3 strongly toothed, pereopod 1 with oostegite 3
- Pleonites 1–3 weakly toothed, pereopod 1 without oostegite. 4
3. Right mandible with lacinia mobilis reduced to a simple tooth
. *Alexandrella mandibulata* n. sp.
- Right mandible with lacinia mobilis smaller than left, but broad and
toothed *Alexandrella martae* n. sp.
4. Pereopods 1 and 2 subchelate, body dorsally strongly carinate
. *Alexandrella subchelata*
- Pereopods 1 and 2 simple, body dorsally weakly or not carinate 5
5. Mandibular incisors not toothed along the entire margin, antennae
subequal. *Alexandrella dentata* (syn. *A. mixta*, see below)
- Mandibular incisors toothed along the entire margin, antenna 1 shorter than
antenna 2 *Alexandrella inermis*

Remarks

The genus *Alexandrella* was revised by Holman and Watling (1983), and was at that time considered as encompassing four different species, two of which were considered as a possible set of synonyms. Until their revision, *Alexandrella* was considered a monotypic genus for the type species *A. dentata*. *Alexandrella australis* had been described as a *Acanthonotozoma* species, whereas *A. mixta* originally was described as a stegocephalid (first as *Parandaniexis mixtus* n. gen. n. sp., later renamed *Pseudandaniexis*). Holman and Watling (1983, p 44) described one further species, *A. subchelata*, and another species was added by Bellan-Santini and Ledoyer (1987), *A. inermis*. Finally, *A. pulchra* was described by Ren and Huang (1991), but this species was recently put into synonymy with *Bathypanoploea schellenbergi* by Berge and Vader (in press). As a consequence, after synonymizing *A. mixta* with *A. dentata*, the genus, as treated here, now comprises six species, two of which are new to science.

As this paper is part of a series that will eventually lead to a revision and phylogenetic analysis of the two families Astyridae and Stilipididae (both *sensu* Coleman and Barnard 1991), the relationships within the Stilipididae generally fall outside the scope of this paper. However, the generic differences between the three genera *Bathypanoploea* Schellenberg, 1939, *Astyroides* Birstein and Vinogradova, 1960 and *Alexandrella* Chevreux, 1912 need to be examined more closely. As pointed out by Holman and Watling (1983, p 46), the only characters that can be used to separate *Astyroides* from *Alexandrella* are the absence of an articulation on the palp of the first maxilla in the former and the morphology of the labium. The latter of these two characters is probably not suitable as a diagnostic character at all, as it appears to be highly variable within the two genera *Alexandrella* (see figures herein) and *Bathypanoploea* (see Berge and Vader in press). Thus, except for the absence of an articulation of the palp of the first maxilla in *Astyroides*, an autapomorphic character within the family, no clear distinctions can be made between *Astyroides* and *Alexandrella*. Furthermore, the only character that seemed to separate *Bathypanoploea* from *Astyroides* and *Alexandrella* (see Berge and Vader in press), was the presence of a rudimentary molar in the former. However, as also the type species of *Alexandrella* (*A. dentata*, see below) possesses a rudimentary molar, no real distinction between the two genera *Alexandrella* and *Bathypanoploea* remains. Otherwise, all species

within the three genera possess characters such as a cuspidate dactylus of the maxilliped palp and pereopods 1 and 2, asymmetrical labrum with right lobe larger than left, elongate antenna 2, and morphologically a very similar telson and maxilliped, all characters that suggest a close relationship between the three genera. The close relationship between these three genera may also be illustrated by the fact that one *Alexandrella* species, *A. pulchra* Ren and Huang, 1991, was recently put into synonymy with the type species of *Bathypanoploea* (see Berge and Vader in press).

Alexandrella australis (Chilton, 1912)

(Figure 1)

Acanthonotozoma australis Chilton 1912, p 487.

Alexandrella australis: Holman and Watling 1983a, p 33–37.

Alexandrella australis: Barnard and Karaman 1991, p 703.

Bathypanoploea australis (in part): Lowry and Bullock 1976, p 11.

Material examined

Two females (35 and 40 mm), 62°52–55'S, 59°27–15'W, 884–935 m, collected on the RV *Eltanin*, 7 January 1963, cruise 6, station 432, Blake Trawl, USNM account no. 1011851.

Distribution

Known from the Weddell Sea (type locality Cape Norvegia), Scotia Sea and Drake Passage, 884–2609 m.

Remarks

This species was thoroughly figured and described by Holman and Watling (1983), and the two examined specimens agree very well with their description. Hence no redescription is deemed necessary. However, the juveniles taken from the brood pouch of one of the females (40 mm, see details above) were examined, and their morphology needs to be further described and figured. First of all, the body was totally smooth, except for the small tooth on urosomite 1. In contrast (see Holman and Watling 1983, p 34, Figure 1), the adult female has large dorsal projections on pereonite 7 and pleonites 1–3. Furthermore, the telson was relatively shorter, compared to the breadth, with a deeper cleft. The mouthparts, especially the maxilliped and the two maxillae, were in general far less setose than for the adults, as is usually found for immature/juvenile amphipod specimens, and the maxilliped palp was relatively longer than in adults. The labrum of the unhatched juveniles was strongly asymmetrical with a large right lobe, hence very similar to the character state found for all its adult congeners, while the adults of *A. australis*, compared to all other *Alexandrella* spp., are characterized by a short and only weakly asymmetrical labrum. The mandibles of the juvenile specimens showed some character states of even greater interest: at the present developmental stage of the hatchlings, the mandibles are short and compact, with a weakly toothed incisor. The lacinia mobilis was present on both mandibles; the left lacinia mobilis smaller than that of the adult, and the right conspicuously broader and more powerful than in adults (see Figure 1). Through the cuticula of the mandibles, the next moult could clearly be seen (see Figure 1), in which the incisor was strongly toothed and narrow. Thus it is evident that the mandible of *A. australis* goes through several developmental stages before

Figure 1. *Alexandrella australis*. T ad. and Lbr ad. from female 40 mm RV *Eltanin*, station 432. All other appendages from a juvenile specimen taken out of the brood pouch of the female.

the specimens are hatched. The incisor seen through the cuticula closely resembles that of *Astyra*, being strongly toothed and narrow (versus broad).

Alexandrella dentata Chevreux, 1912

(Figures 2, 3)

Alexandrella dentata Chevreux 1912, p 213.

Alexandrella dentata: Chevreux 1913, p 134.

Figure 2. *Alexandrella dentata*. Female 24 mm, RV *Eltanin*, station 264. Figure of incisor and lacinia mobilis (Mnd next moult) as seen through the current moult.

Figure 3. *Alexandrella dentata*. Juvenile taken from the brood pouch of female 24 mm (RV *Eltanin*, station 264).

Alexandrella dentata: Lowry and Bullock 1976, p 145 (in part).

Alexandrella dentata: Holman and Watling 1983, p 37–39.

Alexandrella dentata: Barnard and Karaman 1991, p 703.

Alexandrella mixta: Barnard 1958, p 127.

Alexandrella mixta: Holman and Watling 1983, 39–41.

Alexandrella mixta: Barnard and Karaman 1991, p 703.

Parandaniexis mixtus: Nicholls 1938, p 42, Figure 22.

Pseudandaniexis mixtus: Lowry and Bullock 1976, p 136.

Parandaniexis mixtus: Lowry 1982, p 320.

Material examined

Three females, 72°49'54"S, 19°26'30"W, 470–473 m, collected on the RV *Polarstern*, 25 February 1998, station 264, Agassiz Trawl (IRSNB); two females, 71°12'00"S, 13°14'00"W, 402–412 m, collected on the RV *Polarstern*, 18 February 1989, station 284, Agassiz Trawl (IRSNB); one female, 36°31'S, 178°38'W, 4520 m depth, collected on the RV *Galathea*, 24 February 1952, station 663 (Zoological Museum of Copenhagen, Denmark); five females, 71°09'42"S, 12°28'42"W, 341–360 m, collected on the RV *Polarstern*, 2 February 1998, station 77, Agassiz Trawl (IRSNB); two males, 73°22'00"S, 21°10'00"W, 338–333 m, collected on the RV *Polarstern*, 13 February 1996, station 11, Bottom Trawl (IRSNB); two immatures, 73°18'00"S, 21°10'00"W, 457–459 m, collected on the RV *Polarstern*, 13 February 1996, station 12, Bottom Trawl (IRSNB); two immatures, 71°17'00"S, 12°36'18"W, 415–416 m, collected on the RV *Polarstern*, 1 February 1998, station 197, Agassiz Trawl (IRSNB).

Distribution

Bellingshausen Sea (type locality close to Alexander Isl.), Weddell Sea, Commonwealth Bay and Kermadec Trench (South Pacific), 90–4520 m.

Remarks

In their revision of the Stilipedidae, Holman and Watling (1983, p 41) retained *A. mixta* as a valid species although they speculated that, when additional material had been examined, *A. mixta* might later well be considered a junior synonym of *A. dentata*. Based upon their examined specimens (they only had a total of three specimens available of the two nominal taxa combined), two morphological traits were considered as diagnostic for the two species: the number of ST on the outer plate of the first maxilla and the length, relative to the outer plate, of the maxilliped palp. The former of these two characters appears to be highly variable within the two genera *Alexandrella* and *Bathypanoploea* (see Berge and Vader in press and below), and it is also found to vary among the examined specimens. One specimen (female 24 mm, RV *Polarstern*, 25 February 1998, station 264, see details above), was observed to have ST in a 9/3 arrangement, whereas it had a 10/4 arrangement in the next moult. The other character, the length of the maxilliped palp, is also variable to some extent, although not as much as the number of ST, but the palp is considerably longer in immature than in mature specimens. There are, however, no clear patterns of co-variation between these two characters, and it was hence not possible to retain the two taxa based on the available material (but see also Berge and Vader in press for a further discussion on the morphology of this species).

The examined specimens of this species all possessed a rudimentary molar and molar tuft (i.e. the small group of short setae located next to the reduced molar), very similar to that of the closely related genus *Bathypanoploea* (see Berge and Vader in press). The presence of a rudimentary molar also in this species, therefore removes the last distinguishing character between *Alexandrella* and *Bathypanoploea*. However, as the phylogeny of the group will be examined in a later paper, and because this relationship must be considered also in relation to *Astyroides*, no further nomenclatory changes are proposed herein.

As for *A. australis* (above), one of the examined females (female 24 mm, RV *Polarstern*, 25 February 1998, station 264, see details above) carried nearly fully developed young in the brood pouch. These juvenile specimens were removed from the brood pouch and

examined. In general, the morphological differences between the juvenile and the adult female were similar to those found for *A. australis* (above). Both these two species are characterized by having either a smooth or only partly toothed incisor on the mandibles, but a fully toothed incisor was detected for both species in juveniles taken directly from the brood pouch. Furthermore, the dorsal armature on the immatures was conspicuously different and far less dominant, and the telson was shorter and more cleft in the immatures than in adults (see figures 1–3).

Alexandrella inermis Bellan-Santini and Ledoyer, 1987

Alexandrella inermis Bellan-Santini and Ledoyer 1987.

Alexandrella inermis: Barnard and Karaman 1991, p 703.

Material examined

Holotype: 46°56–57'S, 37°55–57'E, 120 m, 25 March 1976, Bottom Trawl (SAM); immature, 46°40'32"S, 37°51'E, 460–560 m, 1 September 1988, Bottom Dredge (SAM); immature 12 mm, 67°30'S, 77°14–13'E, 341–333 m, collected on the RV *Aurora australis*, 18 February 1991, Bottom Trawl, "in sponge" (South Australian Museum).

Distribution

Prince Edward Isl. (type locality) and Prydz Bay, 120–341 m.

Remarks

Comparison of the holotype with the two additional specimens revealed no major discrepancies from the original description of the species. The only additional note on its morphology is that all three specimens examined possess very small projections dorsally on pleonites 1–3 (versus only on pleonite 3 as originally described).

The only specimen not reported in the original description of Bellan-Santini and Ledoyer (1987), an immature 12 mm (see above), was collected in a sponge. No information is available as to which sponge species was involved.

Alexandrella mandibulata n. sp.

(Figures 4–6)

Holotype: female 50 mm, 55°04–00'S, 33°57–59'W, 3138–3239 m, collected on the RV *Eltanin*, 8 September 1963, cruise 9, station 722. Unique.

Distribution

Known only from the type locality in the Scotia Sea.

Diagnosis

Labrum strongly asymmetrically lobed. Mandibular incisors broad, irregularly toothed, right lacinia mobilis very small. Pereopod 1 with oostegite, pereopod 4 coxa rounded and only weakly excavate posteriorly. Pleonites 1–3 and urosomite 1 dorsally produced.

Figure 4. *Alexandrella mandibulata* n. sp. Holotype.

Figure 5. *Alexandrella mandibulata* n. sp. Holotype.

Figure 6. *Alexandrella mandibulata* n. sp. Holotype.

Description

Body. Rostrum weakly developed, eyes absent. Epistome unproduced. Body dorsally with a moderate projection posteriorly on pleonites 1–3. Urosomite 1 dorsally with a strong carina posteriorly and a deep excavation anteriorly. Coxae 1 anteriorly weakly expanded, not covering the head. Pereopods 5–7 and antenna 2 elongate.

Antennae. Antenna 1 shorter than antenna 2, peduncle article 1 longer than articles 2 and 3 combined, flagellum with more than 15 segments. Accessory flagellum small, inconspicuous, uniarticulate. Callynophore absent. Antenna 2 peduncle article 4 shorter than 5, flagellum elongate with 36 segments.

Mouthparts. Labrum longer than broad, strongly asymmetrically lobed, right lobe much larger than left, medially separated, right lobe distomedially concave. Labium distally broad and rounded, inner lobes absent. Mandibles powerful, hinge line lateral. Incisors irregularly toothed and broad. Lacinia mobilis present on both mandibles, right lacinia mobilis strongly reduced. Accessory setae-row weak, with four simple setae. Molar absent. Palp short, three-articulate, article 2 longer than 3. Article 2 distally with long and short setae, article 3 laterally with one row of setae and distally with long simple setae. Maxilla 1 palp two-articulate, powerful, distally broad but not transverse, distal and distolateral margin with short robust setae. Outer plate broad, setal teeth in a 6/2 arrangement, ST not cuspidate. Inner plate large, with two distal rows of setae; one row with long pappopectinate setae, second row with short simple setae, medially with two groups of simple setae. Maxilla 2 outer plate not as broad as inner, both plates distally with three distinct rows of setae. Maxilliped inner plate distally with one short nodular seta, distal and medial setae-rows parallel, setae short and simple. Outer plate broad, inner margin without

setae, mediodistally weakly serrate, distally with one row of short robust setae. Palp four-articulate, weakly setose, article 2 as long as articles 3 and 4 combined, article 4 pointed and powerful, distal margin cuspidate.

Pereopods and coxal plates. Coxa 1 large, weakly produced anteriorly, posterodistally with robust slender setae, coxae 2 and 3 long and broad, weakly longer than coxa 1, coxa 4 posterior lobe rounded, posterodistal margin weakly concave, distally rounded, coxae 5 and 6 subequal, distally with posterior lobe large, anterior lobe absent, coxa 7 distally convex and rounded. Pereopod 1 simple, basis with short simple setae on both anterior and posterior distal margins, ischium short, carpus broader than propodus, posterodistally not produced, propodus subrectangular, dactylus powerful and serrate. Pereopod 2 simple, basis with short simple setae on anterior margin, ischium short, carpus broader than propodus, posterodistally not produced, propodus subrectangular, dactylus powerful and serrate. Pereopod 3 shorter than 4, weakly setose, dactylus long and slender. Pereopods 5–7 not differentiated, elongate, progressively longer posteriorly, basis pereopod 7 concave posteriorly, posterodistally acute, dactyli long and slender.

Oostegites on pereopods 1–5, gills on pereopods 2–7.

Epimeral plate 1 small and rounded, epimeral plate 2 as large as 3, posterodistally weakly produced and acute, epimeral plate 3 posterodistally weakly produced, acute. Urosomite 1 dorsally with a deep excavation medially and distally with a large acute projection, urosomites 2–3, uropods and telson missing.

Etymology

This species is named based on the morphology of the mandibles which separates it from all other known stilipedid species.

Remarks

The present species is separated from all other stilipedid species mainly on the morphology of the mandibles and the labrum. The former has a relatively broad incisor, as do both *A. australis* and *A. dentata*, but it also has (irregular) teeth all along the margin of the incisor. As in *A. australis*, the right lacinia mobilis is reduced to a simple tooth in *A. mandibulata*. Furthermore, the left lobe of the labrum is distally concave, a character state not otherwise observed in this family.

Although many characters, such as the reduced right lacinia mobilis, the setation of the palp and inner plate of the first maxilla and the absence of inner lobes on the labium suggest a close relationship between *A. australis* and *A. mandibulata*, there is one character that distinctly suggests a sister group relationship between *A. mandibulata* and *A. martaie* n. sp. (below); both possess oostegites on pereopod 1, a character state not previously recorded within the Amphipoda. In addition, both these species possess a smooth pereonite 7 (versus a dorsal projection as in *A. australis*) and the projections on pleonites 1–3 are not so large as in *A. australis* and *A. dentata*.

The holotype of *A. mandibulata*, which so far is the only specimen known of this species, lacks both the telson and urosomites 2 and 3, including the uropods. However, the morphological characteristics of especially the mouthparts and the first pereopod are considered as being unique enough to validate naming this species.

Alexandrella martae n. sp.

(Figures 7–9)

Holotype: female 55 mm, South Georgia Isl., collected on the RV *Eltanin*, cruise 22, station 1585 (USNM).

Additional material. Female, 58°53–54'S, 37°15–19'W, 2901 m, collected on the RV *Eltanin*, 31 August 1963, cruise 9, station 704, Blake Trawl (USNM); female 38 mm, 68°05–06'S, 173°38–44'E, 2608–3175 m, collected on the RV *Eltanin*, 12 January 1967, cruise 27, station 1867, USNM; female, 61°43.08'S, 60°41.8'W, 2830–2862 m, collected on the RV *Polarstern*, 19 February 2002, ANDEEP station 114-10, Agassiz Trawl.

Distribution

South Georgia Isl. (type locality), Weddell Sea and Ross Sea, 2830–3175 m.

Diagnosis

Labrum strongly asymmetrically lobed. Mandibular incisors broad, irregularly toothed, right lacinia mobilis reduced but toothed. Pereopod 1 with oostegite, pereopod 4 coxa rounded and not excavate posteriorly. Pleonites 1–3 and urosomite 1 dorsally produced.

Description

Body. Rostrum weakly developed, eyes absent. Epistome unproduced. Body dorsally with a moderate projection posteriorly on pleonites 1–3. Urosomite 1 dorsally with a strong carina posteriorly and a deep excavation anteriorly. Coxae 1 anteriorly weakly expanded, not covering the head. Pereopods 5–7 and antenna 2 elongate.

Antennae. Antenna 1 shorter than antenna 2, peduncle article 1 longer than articles 2 and 3 combined, flagellum with more than 15 segments. Accessory flagellum small, inconspicuous, uniarticulate. Callynophore absent. Antenna 2 peduncle article 4 shorter than 5, flagellum elongate with more than 30 segments.

Mouthparts. Labrum longer than broad, strongly asymmetrically lobed, right lobe much larger than left. Labium distally broad and rounded, inner lobes absent. Mandibles powerful, hinge line lateral. Incisors irregularly toothed and broad. Lacinia mobilis present on both mandibles, right lacinia mobilis smaller than left, toothed. Accessory setae-row weak, five simple setae. Molar absent. Palp short, three-articulate, article 2 longer than 3. Article 2 distally with long and short setae, article 3 laterally with one row of short setae. Maxilla 1 palp two-articulate, powerful, distally broad but not transverse, distal and distolateral margin with short robust setae. Outer plate broad, setal teeth in a 6/2 arrangement, ST not cuspidate. Inner plate large, with two distal rows of pectinate setae and one row of slender setae, medially with two groups of simple setae. Maxilla 2 outer plate not as broad as inner, both plates distally with three distinct rows of setae. Maxilliped inner plate distally with one short nodular seta, distal and medial setae-rows parallel, setae short and simple. Outer plate broad, inner margin without setae, mediolaterally weakly serrate, distally with one row of short robust setae. Palp four-articulate, weakly setose,

Figure 7. *Alexandrella martae* n. sp. Holotype.

Figure 8. *Alexandrella martae* n. sp. Holotype.

Figure 9. *Alexandrella martae* n. sp. Holotype.

article 2 as long as articles 3 and 4 combined, article 4 pointed and powerful, distal margin cuspidate.

Pereopods and coxal plates. Coxa 1 large, weakly produced anteriorly, posterodistally with simple setae, coxae 2 and 3 long and broad, weakly longer than coxa 1, posterodistally with simple setae, coxa 4 posterior lobe rounded, posterodistal margin convex, distally rounded, coxae 5 and 6 subequal, distally with posterior lobe large, anterior lobe absent, coxa 7 distally convex and rounded. Pereopod 1 simple, basis with short simple setae on both anterior and posterior distal margins, ischium short, carpus broader than propodus, posterodistally not produced, propodus subrectangular, dactylus powerful and serrate. Pereopod 2 simple, basis with short simple setae on anterior margin, ischium short, carpus broader than propodus, posterodistally not produced, propodus subrectangular, dactylus powerful and serrate. Pereopod 3 shorter than 4, weakly setose, dactylus long and slender. Pereopods 5–7 not differentiated, elongate, progressively longer posteriorly, basis pereopod 7 concave posteriorly, posterodistally acute, dactyli long and slender.

Oostegites on pereopods 1–5, gills on pereopods 2–7.

Epimeral plate 1 small and rounded, epimeral plate 2 as large as 3, posterodistally weakly produced and acute, epimeral plate 3 posterodistally weakly produced, acute. Urosomites 1–3 free, urosomite 1 dorsally with a deep excavation medially and distally with a large acute projection, urosomites 2–3 dorsally smooth. Uropod 1 reaching beyond uropod 2, biramous, rami subequal. Uropod 3 peduncle short, biramous, rami broad, subequal. Telson longer than broad, distally weakly cleft.

Etymology

The species is named after Marte Vader Weiland, the second author's first grandchild.

Remarks

Alexandrella martae is characterized first of all by the presence of oostegites on pereopod (or gnathopod) 1, a character unique for the two species *A. martae* and *A. mandibulata*. These two species are easily separated on the morphology of the mandibles (right lacinia mobilis and incisors) and labrum (not medially separated and with the left lobe distally convex in *A. martae*).

***Alexandrella subchelata* Holman and Watling, 1983**

(Figure 10)

Alexandrella subchelata Holman and Watling 1983, p 42.

Alexandrella subchelata: Barnard and Karaman 1991, p 703.

Figure 10. *Alexandrella subchelata*. Upper: immature 8 mm, RV *Eltanin*, cruise 26, station 4. Lower: immature 6 mm, RV *Polarstern*, ANDEEP station 133-3.

Material examined

Immature 11 mm, 49°40'S, 178°53'W, 103 m, collected on the RV *Eltanin*, 3 January 1967, cruise 27, station 1880 (USNM); immature 8 mm, 41°56'S, 160°07'E, 4846–4929 m, collected on the RV *Eltanin*, 8 December 1966, cruise 26, station 4 (USNM); immature 6 mm, 65°20'40"S, 54°14'11"W, 1123 m, collected on the RV *Polarstern*, 7 March 2002, cruise 61 (ANDEEP II), station 133-3, epibenthic sledge.

Distribution

All material of this species has been collected from the South Pacific, except for one specimen from the Weddell Sea (see below).

Remarks

All three examined specimens were immature, and generally fit the original description by Holman and Watling (1983, p 44, Figures 6–8). The dorsal projections on pleonites 1–3, a character which seems to vary considerably within the genus, do, however, vary among the three specimens. The largest specimen (11 mm) closely resembles the figures of the holotype, whereas the second largest (immature 8 mm, from New Zealand) specimen possesses larger and more conspicuous acute projections dorsally on pleonites 1–3 (see Figure 10). The third examined specimen, collected in the Weddell Sea, does not possess any dorsal ridge on either pleonites 1 or 2 (as described from the type material and from the above-mentioned material), and the gnathopods are only weakly subchelate. However, due to the fact that all specimens are immature and that only scattered material from the Weddell Sea and the South Pacific is available, they are herein treated as all belonging to the same species.

Discussion

The presence of oostegites on the first pair of pereopods is a novel character state for the Amphipoda, but known from other peracarids such as isopods and tanaids. Although present in several closely related groups, it seems plausible to assume that this is a matter of convergent evolution, and not a retained plesiomorphic character state. The Stilipedidae s.l. are not usually considered to be a particularly primitive taxon (e.g. Barnard 1969; Bousfield and Shih 1994; Berge et al. 2000) within the Amphipoda, and hence it seems logical to assume that the possession of oostegites constitutes a synapomorphy for these two stiliped taxa rather than the condition having been lost in all other groups.

The presence of a toothed and narrow incisor on the mandibles in immature specimens of *A. australis* and *A. dentata* strongly suggests a closer relationship between the Astyridae and Stilipedidae than previously assumed. This, together with the fact that also the telson in the immature specimens of the two *Alexandrella* spp. closely resembles that of *Astyra* and *Eclysis*, seems to indicate a possible common ancestry of these two groups, so that they should be treated, as was done in Holman and Watling 1983, as one monophyletic group.

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