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ORIGINAL ARTICLE

Two new species of *Ammothea* (Pycnogonida, Ammotheidae) from Antarctic waters

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Abstract Two new species of the genus *Ammothea* are described from Elephant Island and the South Shetlands Islands, Antarctica. The material was captured during the Polarstern cruise XXIII/8 to the Antarctic Peninsula area. The main features of *Ammothea pseudospinosa* n. sp. are a proboscis distinctly trilobulated distally with a constriction at 2/3 of its length and dimorphism between the propodi of the anterior (first and second) and posterior (third and fourth) legs, and a trunk: proboscis length ratio of about 1.5. The main features of *Ammothea childi* n. sp. are a cylindrical proboscis, longer than trunk length, and adults with functional chelifores. These species are compared with their closest congeners from the Southern Ocean: *A. pseudospinosa* n. sp. with *Ammothea spinosa* and *Ammothea allopodes*; *A. childi* n. sp. with *Ammothea gigantea*, *Ammothea bicorniculata* and *Ammothea hesperidensis*.

Keywords Pycnogonida · Southern Ocean · Antarctica · *Ammothea* · New species

Introduction

The family Ammotheidae is a common pycnogonid group in Antarctic and subantarctic waters. In this area, *Ammothea* Leach 1814 is the best represented genus, with 26 species (Munilla and Soler 2009).

The most recent reports on pycnogonids of this family, from the Antarctic and subantarctic waters, with special emphasis on the species genus *Ammothea*, are those of Child (1994; different Antarctic areas), Fry and Hedgpeth (1969; Ross Sea), Guzzo and Gravina (2001; Magellanic Strait and Ross Sea), Munilla (2000, 2001, 2002, 2005; Scotia Sea; Drake Passage; Antarctic Peninsula and surrounding island waters), Turpaeva (1974; Scotia Sea), Pushkin (1993; different Antarctic areas) and Cano and López-González (2007; Ross Sea). These authors, mainly Fry and Hedgpeth, and Child, summarized references, the historical background, and previous investigations from the Southern Ocean pycnogonid fauna. After recent Antarctic collections, we have had the opportunity to study a small set of specimens of *Ammothea*. Among these specimens, two morphospecies cannot be assigned to any of the previously described species. The goal of this work is the description of these two new species of *Ammothea* from the South Shetlands Islands.

Materials and methods

The specimens examined in this study were collected during the Polarstern cruise XXIII/8 (November 23, 2006–January 30, 2007) by bottom trawl and a small Agassiz trawl at the South Shetlands Islands, Antarctica (Fig. 1). Individuals were fixed in 10 % buffered formalin and then transferred to 70 % ethanol.

For comparative purposes, the following material of *Ammothea spinosa* (Hodgson 1907) has also been consulted: ZMH (A38/12), one adult female, Polarstern cruise

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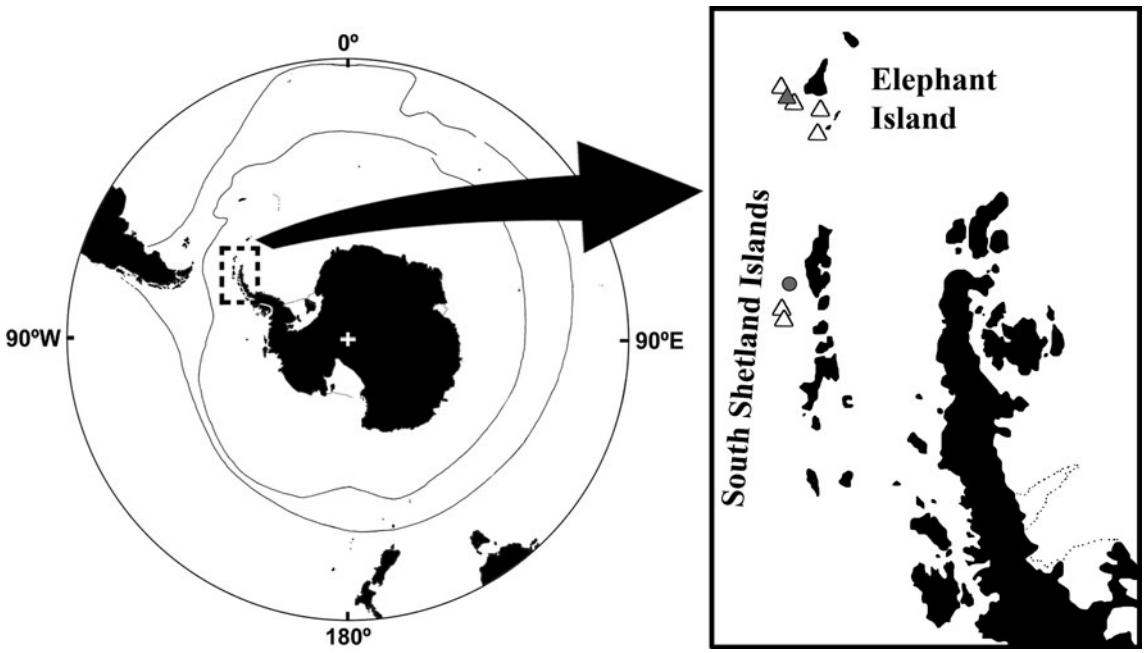

Fig. 1 Sampled area with indication of type and additional localities where the new species of *Ammothea* described in this study were collected: *A. pseudospinosa* n. sp. Holotype (*solid triangle*), paratype and additional material (*open triangle*); *A. childi* n. sp. Holotype (*solid circle*)

XXIII/8, stn. 608-1, Elephant Island, 61°11.34′S 54°43.17′W, 284–293 m depth, bottom trawl, December 20, 2006. ZMH (A38/12), one adult female, Polarstern cruise XXIII/8, stn. 647-1, Elephant Island, 61°00.35′S 55°58.18′W, 288–282 m depth, bottom trawl, December 27, 2006. ZMH (A38/12), one adult male, Polarstern cruise XXIII/8, stn. 654-6, Elephant Island, 61°22.80′S 56°03.84′W, 340–342 m depth, bottom trawl, December 29, 2006.

The material here studied has been deposited at the Zoologisches Institut und Zoologisches Museum, Hamburg, Germany (ZMH), the Museo de Zoología in Barcelona, Spain (MZB), and the collection of the research group Biodiversidad y Ecología de Invertebrados Marinos (BEIM) at the University of Seville, Spain.

The following material deposited in the Natural History Museum in London (BMNH) has been consulted for comparative purposes:

- *Ammothea spinosa* (Hodgson 1907) BMNH (1915.7.24.212), Terra Nova Expedition, stn. 338, Ross Sea, one female. BMNH (1915.7.24.211), Terra Nova Expedition, stn. 338, Ross Sea, one male. BMNH (1933.3.23.660), Discovery collection 1925–1931, stn. W.S. 215, one male. BMNH (1975.394.1), BANZARE collection, stn. 30, 66°48′S 71°42′E, 540 m, December 27, 1929, one female, det. I. Gordon. BMNH (1983.199.1), Discovery collection, stn. W.S. 245, det. I. Gordon, one ovigerous male.
- *Ammothea allopodes* (Fry and Hedgpeth, 1969) BMNH (1942.12.30.70), BANZARE collection, stn. 97, 65°10′S 108°12′E, 474 m, January 26, 1931, one male. According to the label, this specimen was first identified by I. Gordon as *A. spinosa* var. (see also Fry and Hedgpeth, 1969: 85), but no additional label was included in the jar by the latter authors with the indication of type of their new proposed *Ammothea* species, and this greatly hampered the location of this type material nowadays at the BMNH.

Results

Family Ammotheidae Dohrn, 1881
Genus *Ammothea* Leach, 1814
Ammothea pseudospinosa n. sp. (Figs. 2, 3)

Material examined

Type material ZMH (A39/12), Holotype, one adult male, Polarstern cruise XXIII/8, stn. 617-1, Elephant Island, 60°54.09′S 55°39.29′W, 151–176 m depth, bottom trawl, December 22, 2006.

ZMH (A40/12), Paratypes, five adult females, Polarstern cruise XXIII/8, stn. 616-1, Elephant Island, 60°49.81′S 55°36.76′W, 488–487 m depth, bottom trawl, December 22, 2006. MZB (2012-0482), one adult female, Polarstern cruise XXIII/8, stn. 673-1, South Shetland Islands, 62°01.47′S 59°36.19′W, 176–179 m depth, bottom trawl, January 1, 2007. MZB (2012-0483), one adult female, Polarstern cruise XXIII/8,

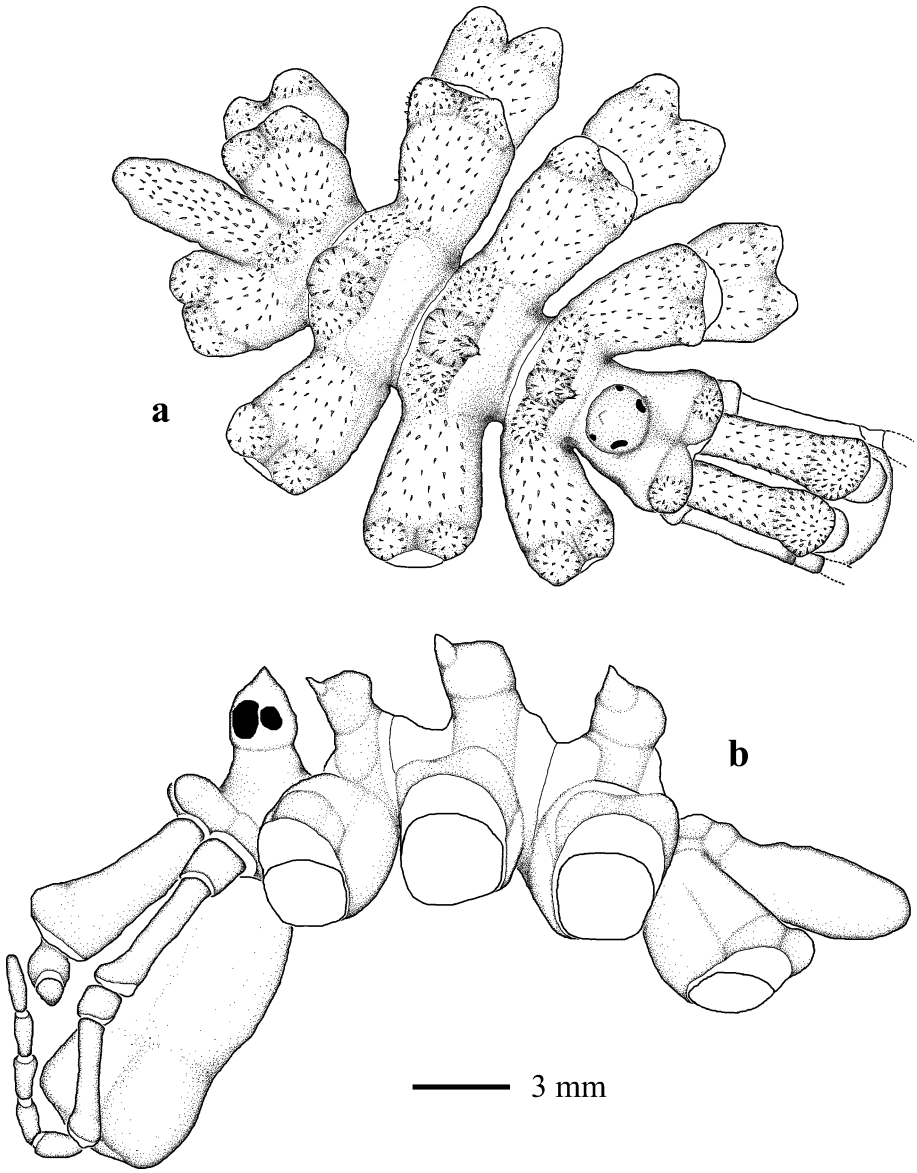

Fig. 2 *Ammothea pseudospinosa* sp. nov. Holotype, male. **a** *Dorsal view*, **b** *lateral view* (spinules not drawn)

stn. 654-6, Elephant Island, 61°22.80′S 56°03.84′W, 341–343 m depth, Agassiz trawl, December 29, 2006.

Additional material BEIM (CRP-79), one adult female, Polarstern cruise XXIII/8, stn. 629-1, Elephant Island, 61°00.39′S 55°43.30′W, 162–191 m depth, bottom trawl, December 24, 2006. BEIM (CRP-80), one adult female, Polarstern cruise XXIII/8, stn. 605-1, Elephant Island, 61°20.35′S 55°29.16′W, 146–152 m depth, bottom trawl, December 19, 2006. BEIM (CRP-81), one adult female, Polarstern cruise XXIII/8, stn. 674-1, South Shetland Islands, 61°59.10′S 59°55.57′W, 286–318 m depth, bottom trawl, January 1, 2007.

Description of the holotype (male)

Size moderate, leg span 129 mm. Proboscis more or less cylindrical, directed downward, with two-thirds of its proximal part slightly inflated; and after a distinct constriction, a wider and angular trilobulated distal part. Proboscis shorter than trunk length.

Trunk broad, oval, and fully segmented, with lateral processes only slightly separated, slightly less than half of process diameter. Lateral processes with two low dorsodistal bumps. Cephalic segment with two dorsofrontal spinose bumps. Dorsomedian trunk tubercles, on the three anterior trunk segments, steep-sided and flat topped. Trunk segments with a transversal dorsal band (including dorsal tubercle and paired lateral process) of spinules. Abdomen directed horizontally (Fig. 2b), with spines and a small proximodorsal spinulose tubercle (Fig. 2a). Ocular tubercle rounded, taller than wide, topped by a short cone, and taller than dorsomedial tubercles. Four eyes, anterior pair larger than posterior pair.

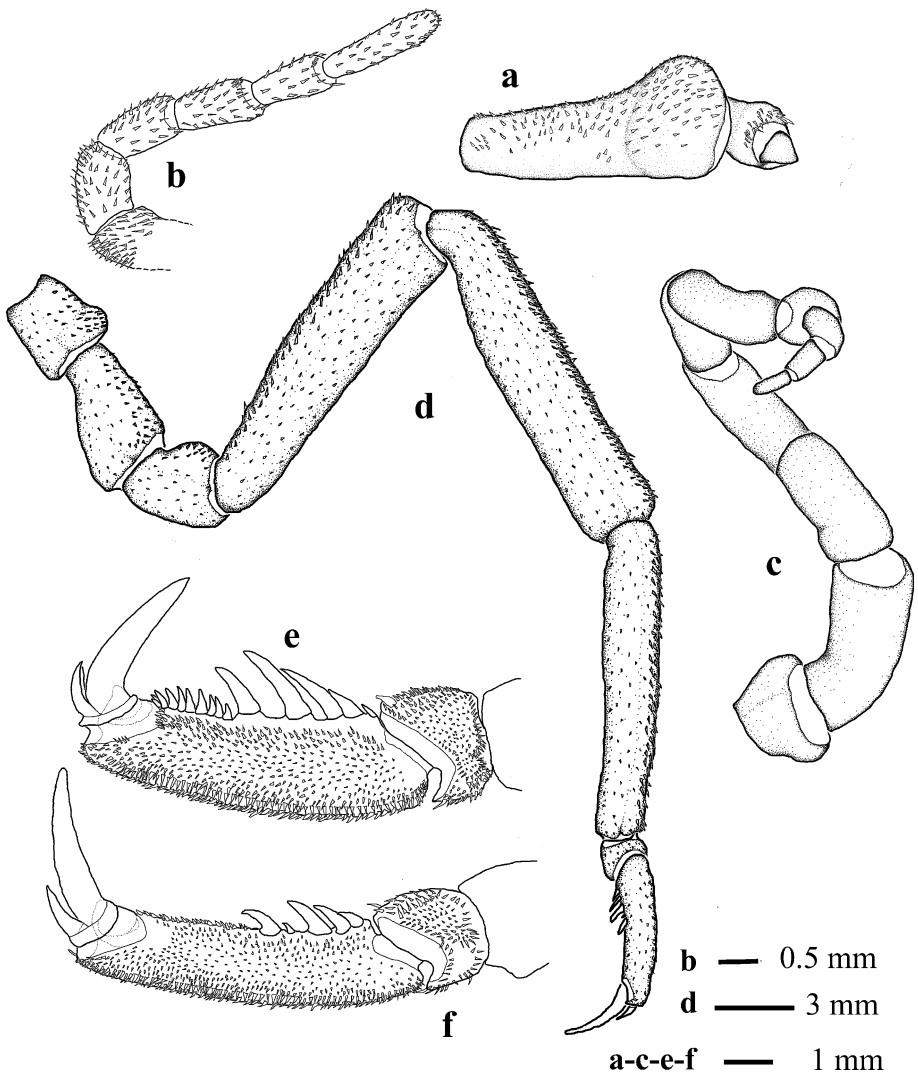

Fig. 3 *Ammothea pseudospinosa* sp. nov. Holotype, male. **a** Chelifore; **b** five distal articles of palp; **c** oviger (owing to fixed position of segments in this appendage, apparent proportions in the illustration could not reflect real relationships, see text for full measurements and ratios); **d** third leg, *right* distal; **e** distal second leg articles; **f** distal third leg articles

Chelifores (Figs. 2, 3a) not functional, with reduced fingers. Scape one-articled, swollen distally, more than half of proboscis length (Fig. 2b), with spinules on its dorsal and lateral surfaces. Chela antero-ventrally oriented; palm carried synaxially with a small field of tiny spines.

Palps nine-articled (Fig. 2b), slender, spinulose, longer than proboscis. Second article longer than fourth; without strong ectal mound surmounted by a pore; the ninth is the longest of the five distal articles; fifth, sixth, seventh, and eighth subequal in length (Fig. 3b).

Oviger 10-articled (Fig. 3c). Articles armed with spinules. Eighth article articulated anaxially with seventh (Fig. 4a).

Legs slender (Fig. 3d). First coxa with two dorsolateral bumps similar to those on lateral processes; first and third coxae of similar length, the second coxa being the longest. Femur length similar to first tibiae length. Cement gland as a very small pore on dorsodistal femur tip. Articles with short spines having no special arrangement, slightly longer dorsally. Sexual pores located ventrally on the second coxa

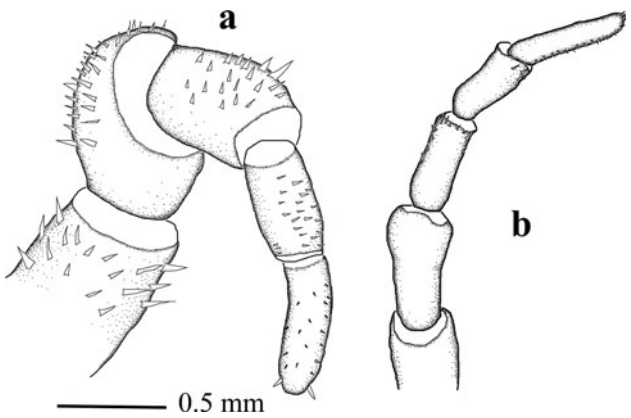

Fig. 4 *Ammothea pseudospinosa* sp. nov. **a** Holotype, male, detail of the four distal articles of oviger showing the articulation between seventh and eighth articles; **b** paratype, female, detail of the four distal articles of oviger showing the articulation between seventh and eighth articles

of third and fourth legs. The propodi of the two anterior pair legs are relatively short and stout (Fig. 3e); the proximal group of propodal spines has five spines increasing in size for the fourth proximal spines (the fifth being slightly shorter than the fourth) and covers more than the proximal half of the propodus; the distal group of propodal spines has 10 subequal short spines. The propodi of the two posterior pairs of legs are relatively slender (Fig. 3f); the proximal group of propodal spines has five spines (the fourth being clearly shorter), covering less than the proximal half of the propodus; the distal propodal part is covered by a narrow field of short spinules. Main claw shorter than 0.5 times length of propodus (0.43 for leg 3, but 0.31 for leg 2); auxiliary claws about 0.45 times length of main claw (0.42 for leg 3, but 0.47 for leg 2).

Measurements of holotype (mm)

Length of trunk (tip of the cephalic segment to the tip of fourth lateral processes): 11.8. Width of trunk across second lateral processes: 11.9. Length of proboscis: 7.5. Basal diameter of proboscis: 2.5. Greatest diameter of proboscis (distal end): 3.4. Length of abdomen: 5.5. Length of chelifore: 5.2. Length of scape: 4.2. Length of chelae and palm: 1. Length of palp: 11.9; length of palp articles (first to ninth): 0.8, 3, 0.7, 2.6, 0.9, 0.9, 0.9, 0.9, 1.2. Length of third leg: 58.4. Length of articles of leg 3: coxa 1 3.5, coxa 2 5.1, coxa 3 3.3, femur 12.7, tibia 1 13, tibia 2 11.7, tarsus 1.1, propodus 5.6, claw 2.4, auxiliary claws 1. Length of oviger: 15.9; length of oviger articles (first to 10th): 1.3, 2.3, 2.6, 2.5, 2.9, 1.5, 0.7, 0.9, 0.6, 0.6.

Etymology

This species is named after its close similarity to *A. spinosa* (Hodgson 1907).

Variability of the taxonomic characters in the examined specimens

The general morphology of the paratypes and the additional examined material (all female specimens) is quite similar to that of the holotype, except for the sexual dimorphism: genital pores are on the second coxa of the four pair legs, and oviger with the eighth article articulated synaxially with the seventh (Fig. 4b). There is some small variability in the number of proximal spines in the propodi of the third and fourth pairs of legs: in the holotype, there are 5 spines (3 larger increasing in size, a small one and an additional one of similar size to the third spine); in other specimens, the smaller fourth spine is lacking, or there are 2 or 4 proximal spines (instead of 3 as in the holotype) previous to the small spine, the total number of spines in these latter cases reaching 4 or 5, respectively (they also lack the smaller spine present in the holotype). In the propodi of the anterior pair of legs (first and second pairs), a reasonably constant presence of the proximal spines described in the holotype (in number and relative sizes) has been observed, while the distal group of smaller spines varies from 8 to 10.

Geographical and bathymetric distribution

At present, *A. pseudospinosa* n. sp. is known from Elephant Island and South Shetland Islands at a depth of 146–487 m.

Remarks

The new *Ammothea* species is only comparable with *A. spinosa* (Hodgson 1907) and *A. allopodes* Fry and Hedgpeth 1969 because they share the following set of characters: (1) adult chelifores with atrophied finger; (2) palp nine-articled longer than proboscis, (3) transverse body ridges prominent, with medial tubercles; and (4) propodus of the first and second legs markedly different from those of the third and fourth (see Hodgson 1907: 49, plate VII, 2; Fry and Hedgpeth 1969: 85, figs. 126B–129 for *A. allopodes*; and page 96, figs. 126A, 148, and 149 for *A. spinosa*, as *Ecleipsothremma*).

Although the general shape of the dorsal processes, the orientation of the abdomen, and presence of basal tubercle have been used as some of the distinguishing characters between *A. spinosa* and *A. allopodes* (see Child, 1994: 28), a consultation of all specimens of *A. spinosa* deposited in the BMNH leads to the consideration that a wider variability of these characters should be used for this purpose; other usable discriminating characters being the shape and length of the proboscis and its relative proportion compared with the trunk and the proximal four articles of palp. For these reasons, we will not use the shape of the dorsal tubercle and lateral process in the discussion of the proposed new species, *A. pseudospinosa* n. sp. However, with reference to the characters related to the proboscis, *A. pseudospinosa* n. sp. is clearly distinguishable from the previous two species.

Ammothea allopodes clearly differs from *A. spinosa* and *A. speudospinosa* n. sp. by the shape of the proboscis, being short, tapering proximally to constriction at 0.3 length, egg shaped distally from constriction to rounded oral surface (Fry and Hedgpeth 1969; pers. observation). In contrast, the proboscis of *A. spinosa* is cylindrical, slightly swollen in the middle, with flat lip and rounded distal part (Child 1994; pers. observation), while in *A. pseudospinosa* n. sp., the proboscis is more or less cylindrical, but with a 2/3 proximal part slightly inflated; and after a distinct constriction, a wider and angular trilobulated distal part (see Fig. 5 for a comparative view of the proboscis of the three

species). In addition, according to Child (1994: 28) and direct observation of the type (BMNH 1942.12.30.70), the proximal four palp articles are much longer than the proboscis in *A. allopodes*, but shorter in the case of *A. spinosa* and *A. pseudospinosa* n. sp.

The ratio length of trunk: Proboscis in the three species in this discussion is also different: 2.56 for *A. allopodes* (based on the holotype), 1.35–1.64 for *A. pseudospinosa* n. sp. (1.48 SD ± 0.088, based on eleven specimens), 1.96–2.57 for *A. spinosa* (see Fry and Hedgpeth, 1969: 96), and 1.85–2 for *A. spinosa* (1.93 SD ± 0.12, based on eight specimens: five from the BMNH and three from ZMH material).

The ocular tubercle is long in all three species, but is distally pointed in *A. spinosa* and *A. pseudospinosa* n. sp., but rounded in *A. allopodes*.

As for the propodal sole spines, a character used by Fry and Hedgpeth (1969) in the distinction of *A. spinosa* and *A. allopodes*, we can observe a grade of variability as well as some trends.

In the anterior leg pairs (first and second), the proximal spine group is composed of 3 increasingly large spines in *A. allopodes* (see Fry and Hedgpeth 1969: fig. 128, and pers. observation), 5–6 heterogeneous but increasingly large spines in *A. spinosa* (7 spines in figure 148B of Fry and Hedgpeth 1969; but 6–9 in the examined material for this study), and 5 increasingly large spines in *A. pseudospinosa* n. sp. The distal group of spines in the propodi of these anterior legs are 3 or 4 short spines in *A. allopodes*, 5–6 spines of heterogeneous sizes in *A. spinosa* (up to 8 in the examined material for this study), and 8–10 in *A. pseudospinosa* n. sp.

In the posterior leg pairs (third and fourth), the proximal group of spines is composed of 2 large spines in *A. allopodes* (see Fry and Hedgpeth 1969: fig. 128, and pers. observation), 3 or 4 spines of heterogeneous sizes in *A. spinosa* (see Fry and Hedgpeth 1969: Fig. 148A, but 4–5 in the examined material for this study), and 4 or 5 spines in *A. pseudospinosa* n. sp.

Finally, as pointed out by Fry and Hedgpeth (1969: 85) concerning the chelifore, the articulation of the scape and palm is antero-ventral (anaxial) in *A. allopodes*, but anterior (synaxial) in specimens of *A. spinosa*. In *A. pseudospinosa* n. sp., this articulation is also synaxial (see Fig. 6 for a comparative view of the three species).

In reference to the available type material of *A. allopodes*, Gordon (1944: 50) considered two specimens as *A. spinosa* var. (a female from the BANZARE station 30, and an ovigerous male from station 97), and Fry and Hedgpeth (1969: 85) used the male (stn. 97) as the holotype material for *A. allopodes*, clearly indicating the registration code in the collections of the British Museum (Natural History) (1942.12.30.70), and pointed out that the female specimen (stn. 30) was untraceable. In the present study, we have had the opportunity to consult the holotype of *A. allopodes*. This specimen was located thanks to the above registration code and perfectly agrees with Gordon's and Fry and Hedgpeth's description and illustrations. Unfortunately, no label with the indication of "type" or "*A. allopodes*" was present in the jar (Miranda Lowe, pers. comm.), there only being a label concerning the sampling data and an additional label with Gordon's identification "*A. spinosa* var."

The female specimen collected in the BANZARE stn. 30, studied by Gordon but untraceable by Fry and Hedgpeth, is currently deposited in the BMNH (1975.394.1) as *A. spinosa*. The comparative examination of this specimen with the holotype of *A. allopodes* and other material above listed as *A. spinosa* results in its assignation to *A. spinosa* by the morphology of the proboscis, relative length of the four proximal palp articles, and the articulation of scape and palm in the chelifore.

In short, the diagnostic features of *A. pseudospinosa* n. sp. are proboscis with a constriction at 2/3 length, wider and angular trilobulated distal part, proboscis 2/3 trunk length, no functional chelifores, without paired dorsodistal curved pointed tubercles on lateral processes, propodus of the first and second legs markedly different from those of the third and fourth.

***Ammothea childi* n. sp. (Figs. 7, 8)**

Material examined

Type material ZMH (A41/12), Holotype, one adult female, Polarstern cruise XXIII/8, stn. 670-1, South Shetlands Islands, 61°51.69′S 59°15.43′W, 263–270 m depth, bottom trawl, January 1, 2007.

Description of the holotype (female)

Size moderate, leg span 129 mm. Proboscis cylindrical, directed downward, slightly inflated at the middle, longer than trunk length. Trunk broad, oval, and fully segmented, with lateral processes widely separated, at least half of process diameter. Lateral processes with two low dorsodistal bumps. Broad cephalic segment with two low dorsofrontal spinose bumps. Dorsomedian trunk tubercles conical and slightly pointed. Trunk segments with a transversal dorsal spinulose band (including dorsal tubercle and paired lateral process). Abdomen slightly curved upward, with spines and a small dorsal spinulose tubercle at base. Ocular tubercle as tall as wide, topped by a pointed cone, shorter than the dorsomedial tubercles. Four distinct eyes, anterior pair larger than posterior pair.

Chelifores with functional chelae (Fig. 8a). Scape one-articled curved downward, less than half proboscis length (Fig. 7b), with very short spines on its dorsal and lateral surfaces. Chelae carried synaxially. Palm with external

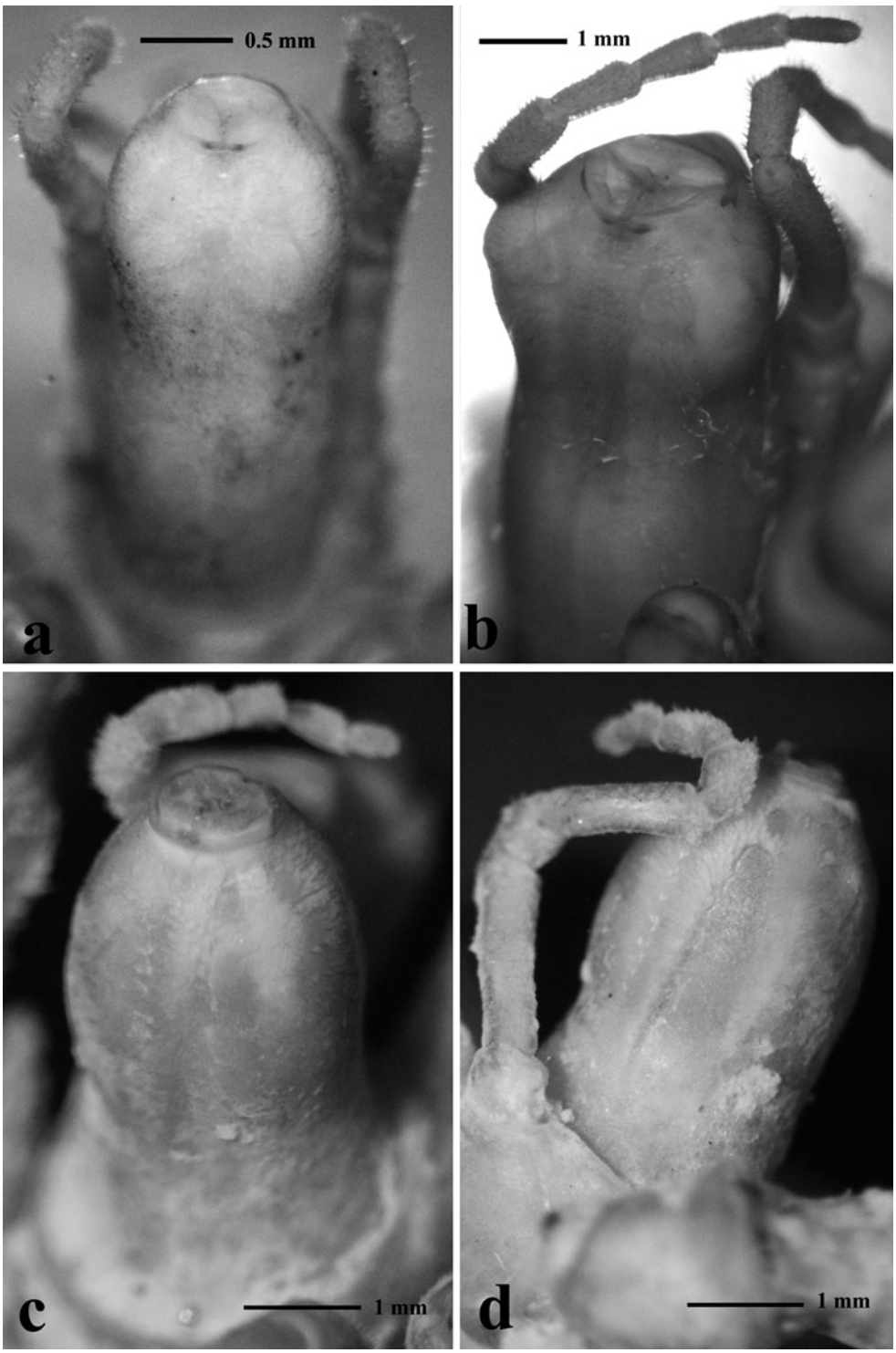

Fig. 5 Detail of distal part of proboscis, *oral view*. **a** *A. spinosa* (Hodgson 1907), specimen ZMH (A38/12); **b** *A. pseudospinosa* sp. nov., holotype, ZMH (A39/12); **c** *A. allopodes* Fry and Hedgpeth 1969, holotype, BMNH (1942.12.30.70). **d** *lateral view* of the proboscis and palp of *A. allopodes* (holotype)

latero-dorsal spinulose bump (Fig. 8a; arrowed), with a row of short spines on its dorsal surface. Fingers without teeth, tips overlapping.

Palps nine-articled (Fig. 7b), slender, spinulose, longer than proboscis. Second article shorter than fourth; without strong ectal mound surmounted by a pore; the ninth is the

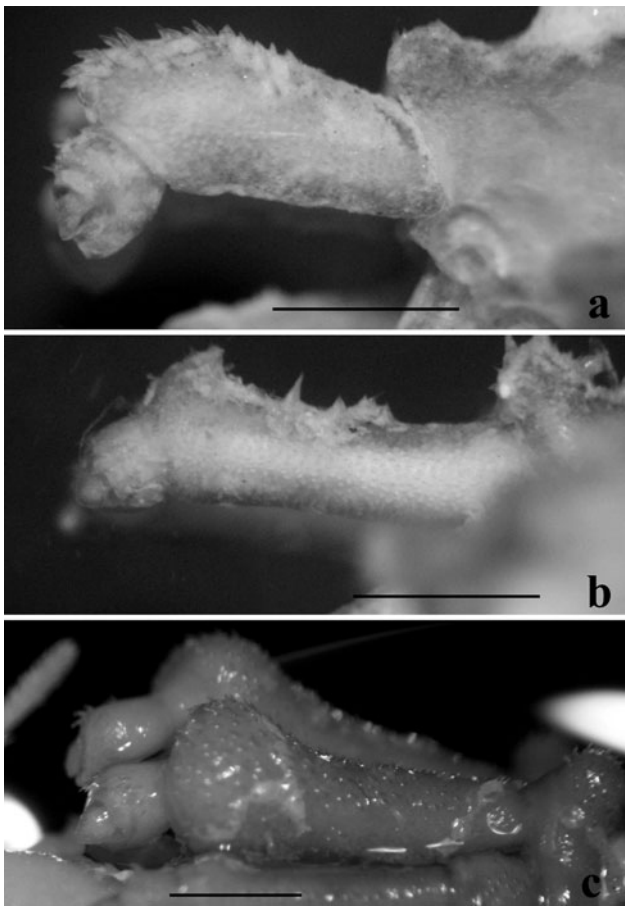

Fig. 6 Detail of chelifore and scape-palm articulation orientation, **a** *Ammothea spinosa* (Hodgson 1907), specimen ZMH (A38/12); **b** *Ammothea pseudospinosa* sp. nov., holotype, ZMH (A39/12). **c** *A. allopodes* Fry and Hedgpeth 1969, holotype, BMNH (1942.12.30.70). *Scale bar,* 1.5 mm

longest of the five distal articles; fifth and sixth subequal; eighth is the shortest (Fig. 8b).

Oviger ten-articled (Fig. 8c). Articles armed with setules. Fourth article is the longest. Distal ovigers articles synaxially connected. Last article with short spines on ventral and distal surface (Fig. 8d).

Legs slender (Fig. 8e). First coxa with two low dorsolateral bumps is similar to those on lateral processes. Second tibia is the longest article. Articles with short spines mainly grouped forming four wide bands, and these bands are not clearly defined on tarsus nor propodus. Oval sexual pores located ventrally on the second coxa in all legs. Propodus (Fig. 8f) similar in all legs; proximal group of propodal spines with five spines, first and fourth much smaller than the others, which increase in size distally; proximal group of spines covering less than proximal half of propodus; distal group of propodal spines with a single short stout spine. Propodus almost twice main claw length; auxiliary claws about 0.6 length of main claw.

Measurements of holotype (mm)

Length of trunk (tip of the cephalic segment to the tip of fourth lateral processes): 12.7. Width of trunk across second lateral processes: 10. Length of proboscis: 14.7. Basal diameter of proboscis: 3. Greatest diameter of proboscis: 4. Length of abdomen: 3.4. Length of chelifore: 6. Length of scape: 3.2. Length of chelae and palm: 2.7. Length of palp: 21.4; length of palp articles (first to ninth): 1.4, 4.1, 1.4, 7.8, 1.4, 1.4, 1.3, 1.1, 1.5. Length of third leg: 63.3. Length of articles of leg 3: coxa 1 2.7, coxa 2 4.5, coxa 3 3.8, femur 13.1, tibia 1 13.1, tibia 2 17.2, tarsus 1.1, propodus 5.5, claw 2.3, auxiliary claws 1.4. Length of oviger: 13.3; length of oviger articles (first to 10th): 0.4, 1.8, 1.6, 1.4, 2.1, 1.6, 1, 1.3, 1, 1.1.

Etymology

This species is named in homage to C. Allan Child, for his important contribution to our current knowledge of the pycnogonid fauna from the Southern Ocean.

Geographical and bathymetric distribution

At present, *Ammothea childi* n. sp. is only known from its type locality at South Shetland Islands at a depth of 263–270 m.

Remarks

Ammothea childi n. sp. is only comparable with *A. gigantea* Gordon 1932, *A. bicorniculata* Stiboy-Risch 1992, and *A. hesperidensis* Munilla 2000 as they share the following set of characters: (1) Adults with chelifores bearing chelae (with nonatrophied finger); (2) palp nine-articled, longer than proboscis; (3) propodus of all legs similar in proportion and sole armature; (4) propodus with proximal group of spines (heel spines) (see Gordon 1932; Stiboy-Risch 1992; Munilla 2000).

Ammothea childi n. sp. clearly differs from the above-listed species by its elongated cylindrical proboscis, while the proboscis in *A. gigantea* has its maximum width near the apex, and it is much shorter and globular in *A. bicorniculata* and downcurved and tapering over its entire length in *A. hesperidensis*. The ratio of trunk length to proboscis length in all four species here compared is 0.86, 3.06, 0.88, and 1.19–1.30 (*A. childi* n. sp., *A. bicorniculata*, *A. hesperidensis*, and *A. gigantea*, respectively).

The chelifores of *A. childi* n. sp. are relatively short, as in the case of *A. bicorniculata*, and *A. hesperidensis*, but quite different to that of *A. gigantea*, with theirs elongated scape. However, in *A. childi* n. sp. and *A. hesperidensis*, the palm is synaxially articulated, but anaxially in

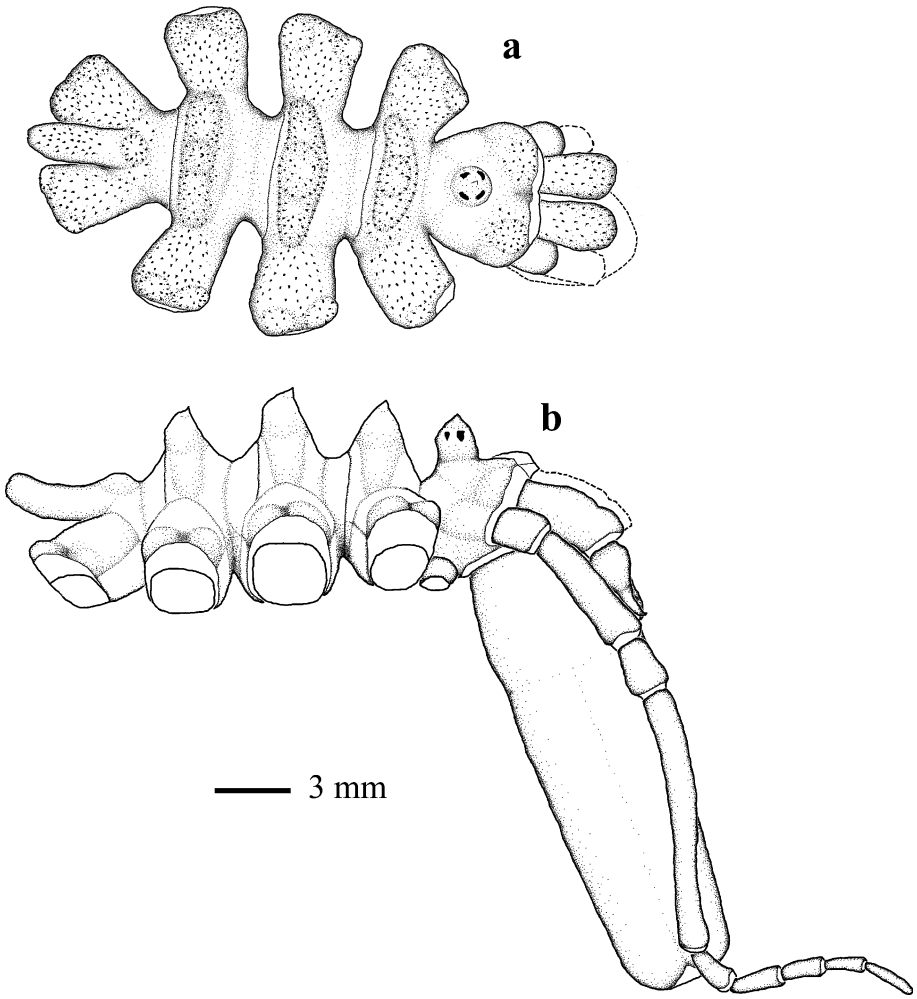

Fig. 7 *Ammothea childi* sp. nov. Holotype, female. **a** *Dorsal view*, **b** *lateral view* (spinules not drawn)

A. bicorniculata. Moreover, in the new species, the palm has an external latero-dorsal spinulose bump; this character has not been described or illustrated in any of the *Ammothea* species in this comparison. Furthermore, the ratio of scape length to proboscis length in all four species is: 0.22, 0.71, 0.11, and 0.82 (*A. childi* n. sp., *A. bicorniculata*, *A. hesperidensis*, and *A. gigantea*, respectively).

The longest leg article is tibia 2 in *A. childi* n. sp., *A. bicorniculata*, and *A. hesperidensis*, but femur in *A. gigantea*.

In reference to the propodal armature, *A. childi* n. sp. and *A. hesperidensis* have three heel spines increasing in size, while *A. gigantea* and *A. bicorniculata* have been described with only two heel spines. A similar relationship occurs if we compare the ratio of fourth article length to second article length in the palps of these species. In *A. childi* n. sp. and *A. hesperidensis,* this ratio is 1.9, while in *A. gigantea* it is 1.3 and 0.87 in *A. bicorniculata*. However, other additional differences between *A. childi* n. sp. and *A. hesperidensis* can be found in the general outline of the trunk (less compact with lateral processes more separated in *A. childi* n. sp.), and ocular and dorsomedial tubercles (shorter than dorsomedials in the new species, but longer in *A. hesperidensis*).

Although some resemblance could be observed between the proposed new species and *Ammothea magniceps* Thomson, 1884, several differences can be commented on the shape of the proboscis (massive and bulbous in *A. magniceps*, but cylindrical in *A. childi*), development of the chelae [atrophied in *A. magniceps* (except for an observation that should be corroborated, see Fry and Hedgpeth 1969: 81), but functional in *A. childi*], shape of the 5–8 distal palp articles (asymmetrically conical in *A. magniceps*, but cylindrical in *A. childi*), and relative length of chelifore and the two proximal palp articles (about half in length in *A. magniceps*, but subequal in *A. childi*) (see for additional descriptive details Fry and Hedgpeth 1969: 81, figs. 120, 122).

In short, the diagnostic features of *A. childi* n. sp. are as follows: proboscis cylindrical, directed downward, longer than trunk length, adults with functional chelifores, second palp article shorter than fourth palp article, and tibia 2 is the longest leg article.

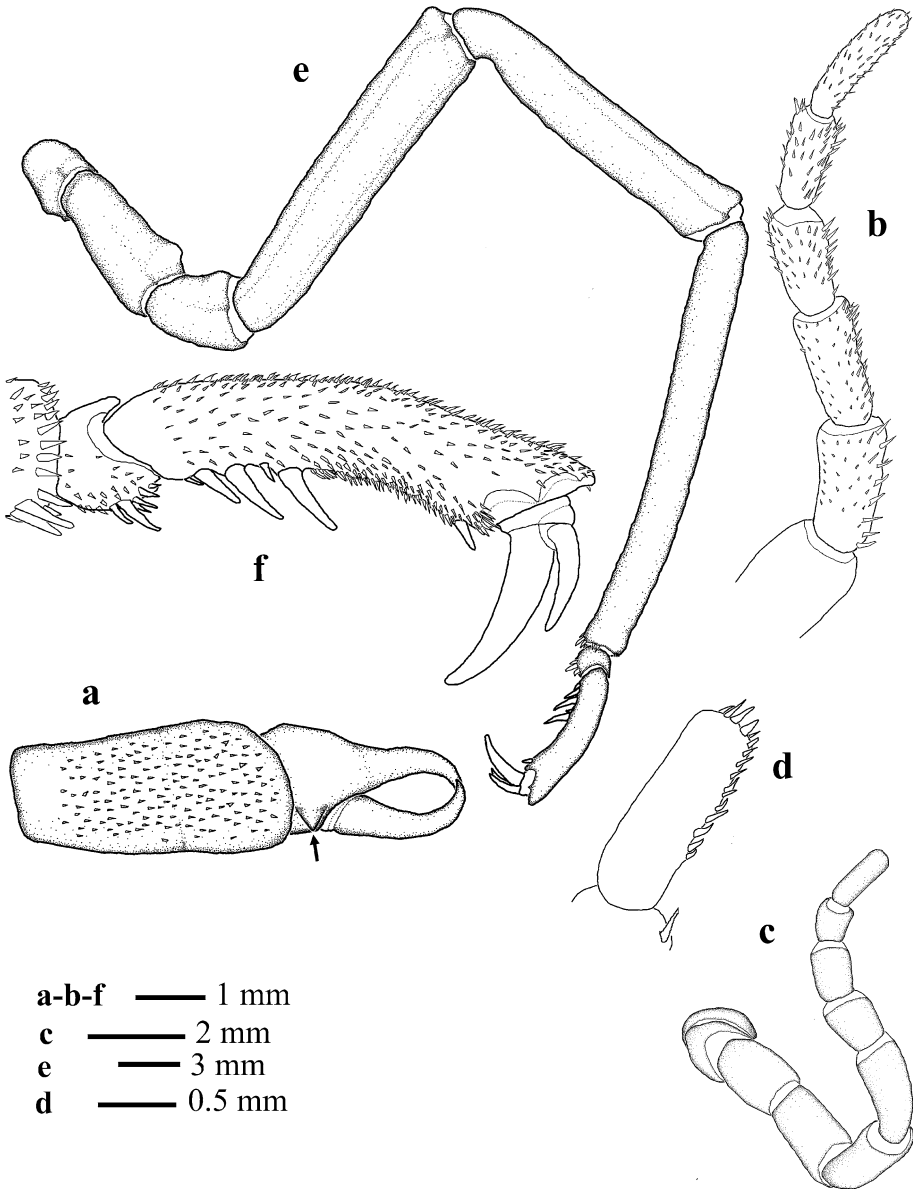

Fig. 8 *Ammothea childi* sp. nov. Holotype, female. **a** Chelifore; **b** five distal articles of palp; **c** oviger (owing to fixed position of segments in this appendage, apparent proportions in the illustration could not reflect real relationships, see text for full measurements and ratios); **d** detail of the distal article of oviger showing the relative size of spinules; **e** third leg, *right*; **f** distal third leg articles

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