On two rare species of caridean shrimp from the hydrothermal fields Lucky Strike and Menez Gwen on the Mid-Atlantic Ridge

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Introduction

During the DIVA-2 cruise (May 31 - July 4, 1994, see Desbruyères et al., 1994) and the PICO cruise (June 25 – July 11, 1998, N/O Nadir, PI: D. Desbruyères) to the Azores Triple Junction Area, two rare species of caridean shrimp were collected. Seven specimens of the pandalid Plesionika alexandri (A. Milne Edwards, 1883) were collected at the Lucky Strike hydrothermal vent field (37°20'N), and one specimen of the pontoniine Periclimenes kornii (Lo Bianco, 1903), at the Menez Gwen hydrothermal vent field (37°50'N). These hydrothermal vent fields are located on the Mid-Atlantic Ridge SW of the Azores. Both species of shrimp are only known from a few specimens. The original description of Plesionika alexandri was based on an incomplete specimen. It is now re-described on the bases of the present material.

Abbreviations used: MMF = Museu Municipal do Funchal (História Natural); RMNH Rijksmuseum van Natuurlijke Historie; pocl. = postorbital carapace length.

Systematic account

Plesionika alexandri (A. Milne Edwards, 1883) comb. nov. (figs 1-3)

Heterocarpus Alexandri A. Milne Edwards, 1883 [unnumbered plate] [type locality: Blake dredging no. 2, north of Havana, Cuba, 23°14'00"N 82°25'00"W, 1472 m]; De Man, 1920: 108, 153, 154.  
Heterocarpus alexandri - Faxon, 1896: 161; Chace, 1985: 19, 20, fig. 13b; Burukovsky, 1986: 64, 67, 69; Chace, 1989: 84-88, fig. 1; Chan & Crosnier, 1997: 202-204; Forest & Holthuis, 1997: 59, plate 28


Material examined.— Atlantic Ocean, near Azores, Lucky Strike (37°17'N, 32°17'W): 1 ovigerous female pocl. 12.3 mm, MMF no. 26877; 12.vi.1994; 1730 m; bottom trap; DIVA-2.— 1 ovigerous female pocl. 13.9 mm, 1 moult pocl. 13.9 mm, MMF no. 26878; 9.vi.1994; 1670 m; bottom trap; DIVA-2.— 1 non-ovigerous female pocl. 8.6, 1 male pocl. 9.7, MMF 36409; 1 non-ovigerous female pocl. 11.9 mm, 1 male pocl. 9.9 mm, RMNH D 51732; 9.vii.1998; 1700 m; bottom trap; PICO.
Fig. 1. *Plesionika alexandri* (A. Milne Edwards, 1883). A, C-H, moult pocl. 13.9 mm; B, ovigerous female pocl. 13.9 mm, MMF no. 26878. A, carapace and anterior appendages, lateral aspect; B, carapace, lateral aspect; C, abdomen, lateral aspect; D, telson and uropods, dorsal aspect; E, right mandible, setae on palp omitted; F, right maxillula; G, right maxilla, setae omitted; H, right first maxilliped, setae omitted. Scale: A, B, D = 4 mm; C = 8 mm; E-F = 2 mm.
Description.— Rostrum about as long as scaphocerite, sabre-like, with sharp lateral carina arising from orbital margin, immovably connected to carapace; dorsal lamina not elevated proximally; 8-10 dorsal, regularly spaced, fixed, large teeth present of which proximalmost just anterior to midlength of carapace; proximal 4-6 teeth postorbital; distal third of rostrum devoid of teeth. Ventral lamina with 4-7 acute teeth. Antennal spine strong, acute. Pterygostomian tooth stout buttressed by submarginal carina in distal fourth of carapace; anterior margin of carapace almost straight. Carapace with shallow, indistinct, sinuous, lateral carina in posterior half; anterior half with indistinct groove from anterior end of lateral carina to orbit. Tegumental scales present.

Abdomen with third somite dorsally smooth, not with middorsal boss; sixth somite twice as long as fifth, armed posteroventrally with small but discrete tooth; pleura of 4 anterior somites with irregularly convex margins, pleura of fifth somite with sharp posteroventral tooth. Telson slightly longer than sixth abdominal somite; deeply sulcate middorsally on anterior half of length, armed with five pairs of dorsolateral spines, including pair lateral to long, intermediate posterior spines; distal margin with distinct acute medial tooth.

Eye with subspherical cornea slightly broader than stalk; ocellus absent.

Basal segment of antennular peduncle with small ventromesial tooth; stylocerite narrowly tapering to sharp point, just overreaching basal segment of antennular peduncle, lateral margin straight; intermediate segment 0.6 times as long as basal segment; ultimate segment short, 0.3 times as long as basal segment.

Scaphocerite slightly longer than antennular peduncle; distolateral tooth not reaching distal margin of lamina. Basicerite with strong lateral tooth.

Incisor process of right mandible with 5 teeth; ventralmost tooth largest; molar process ending in area with series of short setae. Mandibular palp three-segmented; basal segment short, widening distally, penultimate segment slightly shorter than basal segment, ultimate segment about twice length of basal segment, distally flattened.

First maxilla with lower and upper endites well developed; upper endite broad, with two rows of strong spines; lower endite distally acute, with many simple setae; palp bilobed, with each lobe ending in one large seta and several slender setae.

Second maxilla with lower endite somewhat reduced; upper endite bilobed, upper lobe largest; palp well developed, tapering distally; scaphognathite with posterior lobe rounded.

First maxilliped with endites of basis and coxa separated; palp slender, three-segmented; exopod with faint caridean lobe; epipod bilobed.

Second maxilliped with ultimate segment broad, with many bristle-like setae and one robust proximal spine; penultimate segment oblong, with row of median, robust spines; carpal segment as long as wide; meral segment nearly twice as long as its distal width; basis and ischium partly fused, distinctly excavate medially; exopod well developed; epipod with podobranch.

Third maxilliped long and slender, reaching beyond scaphocerite with ultimate and distal fourth of penultimate segment; ultimate segment 1.22-1.32 times as long as penultimate segment, with many rows of short serrate setae and strong spines; penultimate segment with several rows of serrate setae and strong spines; antepenultimate segment twice as long as penultimate segment, with movable ventrolateral distal and sometimes subdistal spine; exopod short, less than 3rd of length of antepenultimate
segment; lamellar and strap-like epipod well developed; 2 arthrobranches present.

Branchial formula as in table 1. Epipod on third pereiopod slightly reduced, that on fourth somewhat more reduced.

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<th>Maxillipeds</th>
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First pereiopod minutely subchelate, reaching beyond scaphocerite with dactylus, fixed finger a spine like extension of propodus, reaching halfway dactylus; propodus and distal fifth of carpus; dactylus short, simple; propodus half as long as carpus, proximally broadening, with many rows of serrate setae; carpus unarmed; merus
slightly longer than carpus; ischium third of merus length, with row of medioventral spines distally.

Second pereiopods different in form and length. Left pereiopod short and stout; che-
la simple, palm 1.5 times as long as fingers; carpus 1.5 times as long as merus, 5-seg-
mented, proximal segment longer than 4 distal segments, distal segment as long as 2
subdistal segments; merus straight, unarmed; ischium as long as merus, with row of 7
slender ventromedial spines forming basked to receive chela. Right second pereiopod
more slender than left, reaching beyond scaphocerite with chela and distal half of car-
pus; carpus 1.6 times longer than merus, with 14-18 segments; merus slightly longer
than ischium; ischium with row of slender curved ventromedial spines to receive chela.

Third, fourth and fifth pereiopods similar, third pereiopod largest, fifth relatively
short. Third pereiopod reaching beyond scaphocerite with dactylus, propodus and dis-
tal 4/5th of carpus. Dactyli short, with 3-4 spines on slightly concave flexor margin of
corpus; subdistal spine half length of simple unguis; propodus about 7 times dactylus
length, armed with row of spines along ventral margin; carpus 0.8 times propodus
length, with few ventral spinules; merus almost twice as long as carpus in third and
fourth pereiopod, 1.5 times in fifth; merus of third with row of 8-10 movable, lateral,
and 5-10 movable, ventral spines; fourth with row of 7-9 movable, lateral and 3-6 mov-
able, ventral spines; fifth with 3-6 movable, lateral spines only; ischium of third with 2,
of fourth with 1 and of fifth without movable, ventromedial spines.
Type.— Ovigerous female holotype (pocl. 12.8 mm), collection of the Museum of Comparative Zoology, Harvard University, U.S.A.

Remarks.— The features of the present material match those described by Chace (1989) from the incomplete holotype. The only difference with the holotype is the absence of a middorsal boss on the tergum of the third abdominal somite. The dorsal surface of the sixth abdominal somite is rounded in the present material while described as "...dorsal surface shallowly convex and bluntly distinct from lateral surface.." by Chace (1989: 85, fig. 1e). García Raso (1996:741, fig. 1, as Plesionika sp.) found a damaged specimen similar to the present material in the East Atlantic (34°23.5’N 7°40.3’W, 1,255 m depth). He wrote: “Probably, the single captured specimen (1 female, St. DW-96) belongs to a new species (Fig. 1); but, because this one is not well preserved and a relative variability exists in this Plesionika group, no specific name can be given”. Although the presence or absence of a middorsal boss could be a specific character, we hesitate to describe the present material as belonging to a new species. The variability in this character is not well known. Apart from the holotype, Chace (1989) also studied a male specimen of P. alexandri from the Bahamas. This specimen possesses a middorsal boss on the third abdominal segment but it is somewhat different in form from that of the holotype. More material should become available to be more definite about the status of this feature in distinguishing species.

Crosnier, 1986 transferred Heterocarpus laevis A. Milne Edwards, 1883, and similar species without or with indistinct lateral carinae on the carapace, to the genus Plesionika. This is followed here for Heterocarpus alexandri. Chace (1989) suggested that the Heterocarpus laevis species group might be sufficiently distinct to form a separate genus. As some of the pandalid genera are so obscurely differentiated, he did not erect a new genus for this group, neither did he transfer the species involved to Plesionika. A phylogenetic analysis of the genera Plesionika and Heterocarpus could reveal apomorphic characters on which a separate genus for this group could be based.

Periclimenes kornii (Lo Bianco, 1903) (fig. 4)

Anchistia Kornii Lo Bianco, 1903: 250, plate 7 figure 13.
Periclimenes sp. Coutière, 1905a: 1113; 1905b: 34; 1907: 59, fig. 22; 1938a: 189; 1938b, 211; 1938c: 257, pl. 8 fig. 11.
Anchistia kornii - Parenzan, 1940: 137, 139, 141, fig. 3 no. 3.
Periclimenes (Harpilius) korni - Holthuis, 1952: 11.

Material examined.— 1 ovigerous female pocl. 3.3 mm, MMF no. 26879: Atlantic Ocean, near Azores, Menez Gwen; 13.vi.1994; ca. 800 m; bottom trap; DIVA-2.

Remarks.— The specimen is in agreement with the descriptions by de Saint Laurent & García Raso (1993) and d’Udekem d’Acoz (1999b). The species has been recorded
from various localities in the Mediterranean Sea, the Ibero-moroccan Gulf and the northern part of the Bay of Biscay. According to d’Udekem d’Acoz (1999b) the specimens referred to by Coutière as Periclimenes sp., and collected at the Azores, most likely belong to this species. The present finding at least confirms the presence of the species near the Azores.

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