

Palaemon vicinus spec. nov. (Crustacea: Decapoda: Palaemonidae), a new species of caridean shrimp from the tropical eastern Atlantic

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Ashelby, C.W. *Palaemon vicinus* spec. nov. (Crustacea: Decapoda: Palaemonidae), a new species of caridean shrimp from the tropical eastern Atlantic.

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Key words: Crustacea; Decapoda; Caridea; Palaemonidae; Palaemoninae; new species; West Africa.

A new species of *Palaemon*, *P. vicinus* spec. nov., is described from the tropical eastern Atlantic. The new species is very close to *P. elegans* Rathke, 1837, under which name it was previously recorded from West Africa. *Palaemon vicinus* spec. nov. is easily separated from *P. elegans* by possessing a small tooth on the fifth abdominal pleuron (quadrate in *P. elegans*) and by having 2-3 rows of setae in the grooming brush of the fifth pereopod (4-5 in *P. elegans*). The discovery of the new species amongst material identified as *P. elegans* further highlights the need to reassess species level characters in the genus *Palaemon*.

Introduction

Palaemon elegans Rathke, 1837 was described on the basis of specimens from Sudak Bay, Ukraine, Black Sea (Rathke, 1837). The species has since been attributed a large geographic range in the eastern Atlantic, being reported from south-west Norway (Grieg, 1927, as *Leander squilla* (L., 1758)) extending southwards to southern Namibia [Lüderitz] (Balss, 1916, as *L. squilla*); including the Canary Islands (Holthuis, 1949), Cape Verde Islands (Holthuis, 1951; Türkay, 1982) and the Azores (Barrois, 1888 as *Palaemon squilla*); in addition it is also known from the whole of the Mediterranean and Black Seas (d'Udekem d'Acoz, 1999). The species has been recorded from West Africa by Osorio (1888), Ortmann (1893), Balss (1913), Stebbing (1914), Balss (1916), Schmitt (1926), Monod (1933), Holthuis (1951), Monod (1964), Türkay (1982) and Powell (1983; 1985), mostly under the name *Palaemon* (or *Leander*) *squilla*. As with most *Palaemon* species, *P. elegans* shows a great degree of variation in some of the traditionally used taxonomic characters in the genus, throughout its reported range (de Man, 1915).

Specimens attributed to *Palaemon elegans* or *Palaemon* (or *Leander*) *squilla* from West Africa were examined and found to differ in a number of taxonomically important characters from specimens from close to the type locality, the Mediterranean and North-West European locations, and are herein described as a new species.

The following abbreviations are used in the text: pocl (post-orbital carapace length), RMNH (Rijksmuseum van Natuurlijke Historie = Nationaal Natuurhistorisch Museum, Naturalis), Leiden), AMNH (American Museum of Natural History, New York), NHM (Natural History Museum, London), NMSZ (National Museums of Scotland, Zoology, Edinburgh) OUMNH-ZC (Oxford University Museum of Natural History Zoological

Collection), USNM (United States National Museum of Natural History, Smithsonian Institution, Washington), ZMA (Zoological Museum, Amsterdam).

A restricted synonymy based on material examined in this study is provided below.

Systematic part

Family Palaemonidae Rafinesque, 1815
Subfamily Palaemoninae Rafinesque, 1815
Palaemon Weber, 1795

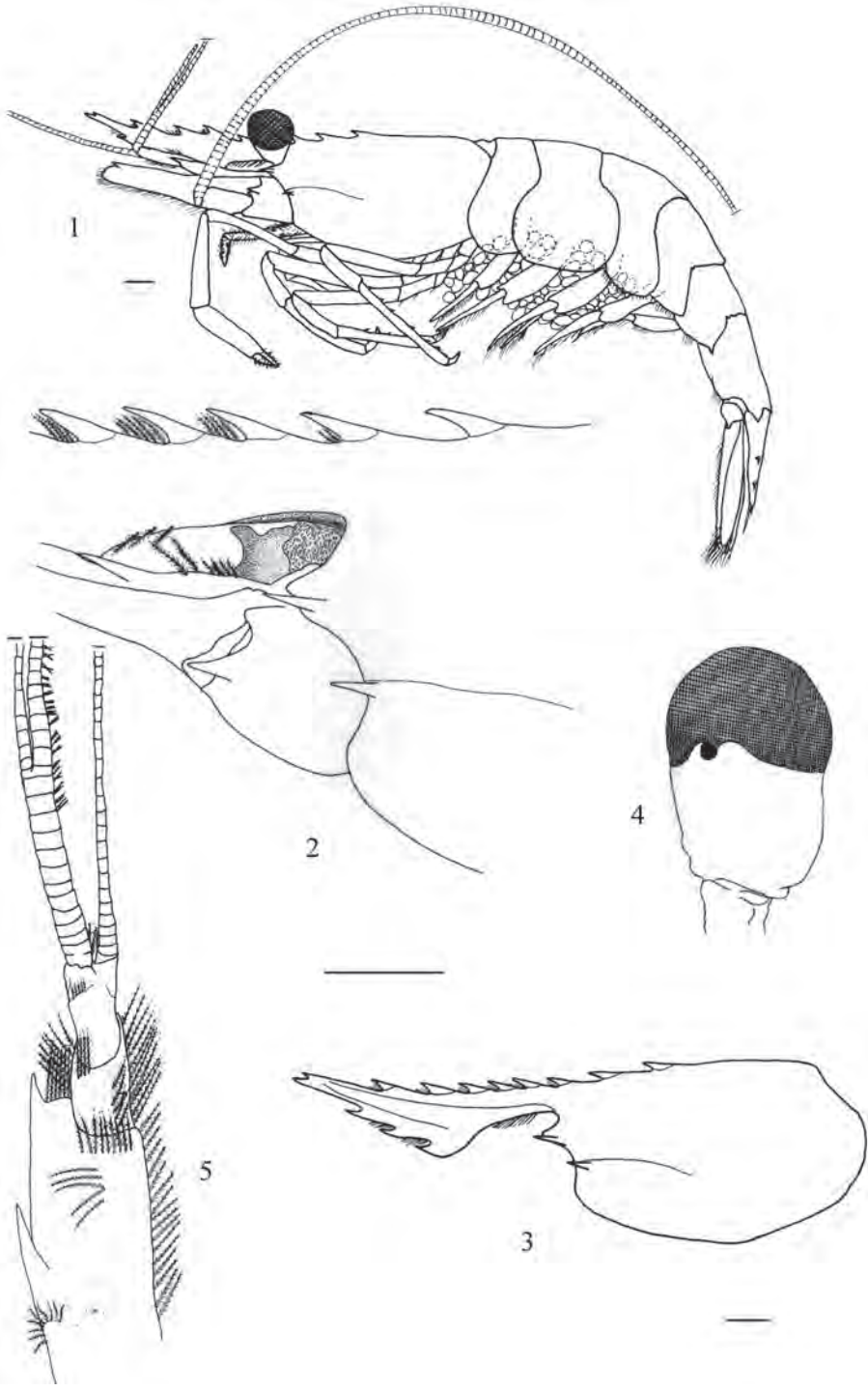
Palaemon vicinus spec. nov.
(figs 1-40)

Palaemon elegans — Holthuis, 1951: 140 (only four of fourteen reported specimens examined. The identity of the remaining specimens requires investigation); Powell, 1983: 272, fig. 14; Powell, 1985: 235.
Leander squilla — Stebbing, 1914: 286.

Type material. — **Cape Verde**. — Holotype: ovigerous ♀, pocl. 6.8 mm; RMNH D 53109; "Tydeman" Cancap-VII, Stn 7. K15, Boa Vista, W coast, NW coast of Ilhéu de Sal Rei; 16°10'N 22°58'E; intertidal (rockpool) and shallow sublittoral; protected area with sandy bottom, stones, boulders and corals; 27/28.viii.1986. Paratypes: 1 ovigerous ♀, pocl. 6.5 mm; fully dissected; RMNH D 53112; data as for holotype. — 1 ♂, pocl. 5.9 mm; RMNH D 53110; data as for holotype. — 1 ♂, pocl. 5.1 mm; RMNH D 53111; data as for holotype. — 11 ovigerous ♀♀, pocl. 5.9-7.5 mm, 9 ♀♀, pocl. 3.9-5.2 mm, 15 ♂♂, pocl. 3.4-5.6 mm; RMNH.D 51055; data as for holotype. — 7 ovigerous ♀♀, pocl. 6.4-7.7 mm, 2 ♀♀, pocl. 7.3-7.8 mm, 7 ♂♂, pocl. 5.5-6.9 mm; RMNH D 51003; "Tydeman" Cancap-VII, Stn D15, São Vicente, W. Coast, Baía da Ribeirinha; 16°50'N 25°05'E; 07.vii.1986. — 3 ovigerous ♀♀, pocl. 7.0-7.4 mm, 1 ♀, pocl. 7.3 mm, 1 ♂, pocl. 6.1 mm; OUMNH-ZC 2009-07-0001; data as RMNH D 51003.

Non-type material. — **Cape Verde**. — 1 ♀, pocl. 6.9 mm, 1 ♂, pocl. 6.0 mm; RMNH D 21010; Bahia do Norte, São Vicente; 14.iii.1954; leg. Panelius. — 3 ♀♀, pocl. 4.1-6.1 mm, 1 individual damaged; NHM 1961.8.1.120-122; Stn 42, Praia, São Thiago; 13.xii.1945; leg. Atlantide Expedition. — 2 ovigerous ♀♀, pocl. 6.1, 6.4 mm, 7 ♀♀, pocl. 4.9-6.2 mm, 4 ♂♂, pocl. 3.1-5.0 mm; NMSZ 1921.143.875; Porto Grande, St. Vincent; 01.xii.1902. leg. Scottish National Antarctic Expedition. — **Nigeria**. — 3 ovigerous ♀♀, pocl. 5.8-7.1 mm; RMNH D 49907; Niger Delta, creek mouth N of Isaka Seas School; 23.xii.1983; leg. C.B. Powell. — 1 ovigerous ♀, pocl. 7.4 mm, 1 ♀, pocl. 4.9 mm, 1 ♂, pocl. 5.3 mm; RMNH D 15564; Niger Delta; v.vii.1960; leg. H.J.G. Beets. — 9 ovigerous ♀♀, pocl. 5.1-6.8 mm, 1 ♀, pocl. 6.5 mm, 13 ♂♂, pocl. 4.2-5.3 mm; RMHN D 38519; Bonny River, 1 km N of Alochia, right bank N of entrance to creek, CBP stn. 141, 04°37'30"N 07°09'40"E, CBP stn. 140, 04°37'15"N 07°09'30"E; 13.v.1980; leg. C.B. Powell. — 8 ovigerous ♀♀, pocl. 5.2-6.2 mm, 1 ♀ pocl. 4.1 mm, 3 ♂♂, pocl. 3.6-4.0 mm; NHM 1980.327; Orobekiri Creek, 2.25 km from entrance to Bonny River, Niger Delta, 04°40'05"N 07°10'10"; 29.vii.1980; leg. C.B. Powell. — 16 ovigerous ♀♀, pocl. 5.9-8.0 mm, 7 ♀♀, pocl. 3.1-7.1 mm, 19 ♂♂, pocl. 3.4-5.7 mm; USNM 181905; Bonny River, Hughes Channel, left bank, 1.7 km N of mouth of Boler Creek; 31.v.1980; leg. C.B. Powell. — **Sierra Leone**. — 1 ovigerous ♀, pocl. 6.9 mm; RMNH D 10391; Kissy; by handnet; 11.viii.1955; leg. A.R. Longhurst. — **Gambia**. — 1 ovigerous ♀, pocl. 5.5 mm, 3 ♀♀, pocl. 3.4-3.8 mm, 34 individuals 1.7-2.4 mm; NHM 1951.4.3.2-11; Shallow rock pool, sandy bottom, Gunjur beach; 13.xi.1950; leg. M.H. Routh. — **Cameroon**. — 1 ovigerous ♀, pocl. 7.2 mm, 5 ♀♀, pocl. 3.4-5.5 mm, 15 ♂♂, pocl. 4.0-5.5 mm, 35 individuals, pocl. 2.1-3.3 mm; RMNH D 21732; Kribi; 10.iii.1964; leg. B de Wilde-Duyffes.

Figs 1-5. *Palaemon vicinus* spec. nov.: 1, holotype RMNH D 53109; 2-5, female paratype RMNH D 53112. 1, whole animal in lateral view; 2, frontal region, lateral view, eye removed; 3, carapace, lateral view; 4, eye, dorso-mesial view; 5, left antennular peduncle, dorsal view. Scale bars indicate 1 mm. ▶



Comparative Material. *Palaemon elegans* – **Ukraine**. 2 ♀♀, pocl. 5.4, 6.2, 2 ♂♂ pocl. 5.2, 5.4 mm; ZMA Crust.De. 240252; Ukraine, Bay of Sebastopol; 1915; leg. S.A. Zernov; det. J.G. De Man. **Bulgaria**. — 3 ovigerous ♀♀, pocl. 10.6–11.2 mm; 7 ♀♀, pocl. 9.6–12.1 mm; 3 ♂♂, pocl. 6.8–7.6 mm; OUMNHZC 2008-01-0001; Varna; 31/05/2005-01/06/2005; leg. C.D. Schubart, S. Reuschel & S. Uzumova.

Description.— A small sized *Palaemon* species (fig. 1). Carapace glabrous. Rostrum (figs 3, 32–40) deep, straight or slightly ascendant distally; slightly longer than carapace, overreaching scaphocerite by about $0.1 \times$ length; armed with 8–11 (usually 9, rarely 11) dorsal teeth and 3 (rarely 4) ventral teeth; all dorsal teeth with weakly constricted bases, posterior three (occasionally two) teeth situated behind the orbit, the proximal most situated just in front of half carapace length; spacing between teeth roughly equal, although the proximal one is occasionally slightly more distant; distal portion (approximately 0.2) is usually unarmed but with bifid tip; double row of setae present in unarmed ventral portion, single row of setae present between the teeth. Antennal and branchiostegal teeth present, marginal. Antennal tooth slightly larger than branchiostegal tooth. Branchiostegal groove originating dorsal to branchiostegal tooth, trending downwards and finishing just in front of the mid-point of the carapace, slightly lower than at its origin. Sub-orbital lobe (fig. 2) and pterygostomial angle rounded. Béc ocellaire (fig. 2) with strongly concave anterior margin, pronounced upwardly directed beak, dorsal surface with strong concavity.

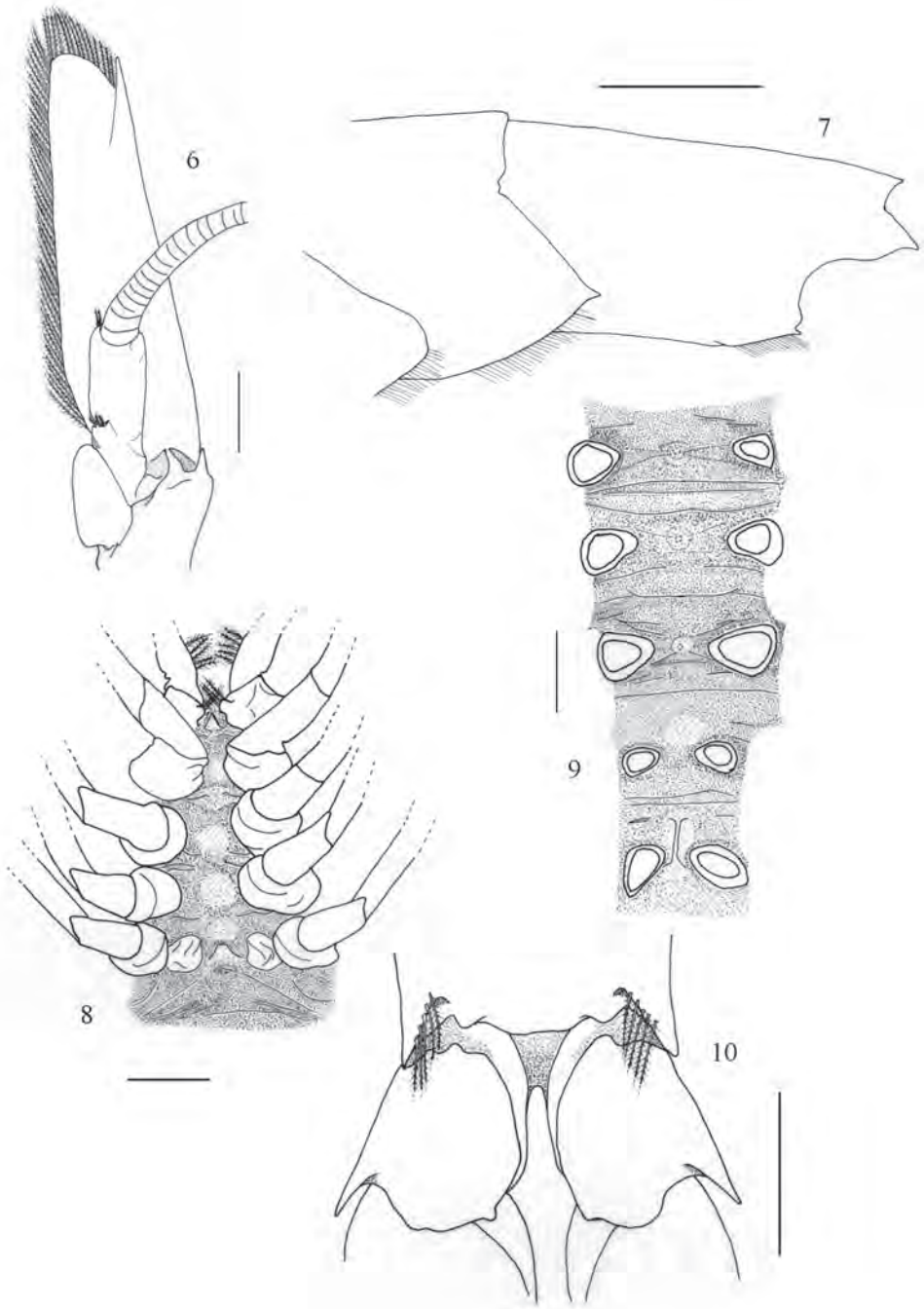
Eye (fig. 4) well developed with pigmented cornea; cornea slightly wider than stalk but approximately equal in length; ocellus present on dorsomesial side.

Antennular peduncle (fig. 5) extending to level of base of tooth of scaphocerite; basal segment $1.8 \times$ as long as wide, slightly convex outer margin, stylocerite acute; statocyst with statolith; distolateral tooth of basal segment far exceeding laminar portion, almost extending to level of the distal margin of the penultimate segment; inner ventromesial tooth present; ultimate segment $1.5 \times$ as long as penultimate, their combined length being slightly less than $0.85 \times$ that of the basal segment; dorsal flagellum of the antennula fused for just under half its length (approximately 11–12 segments fused, 12–14 free); free portion with two aesthetascs on each segment.

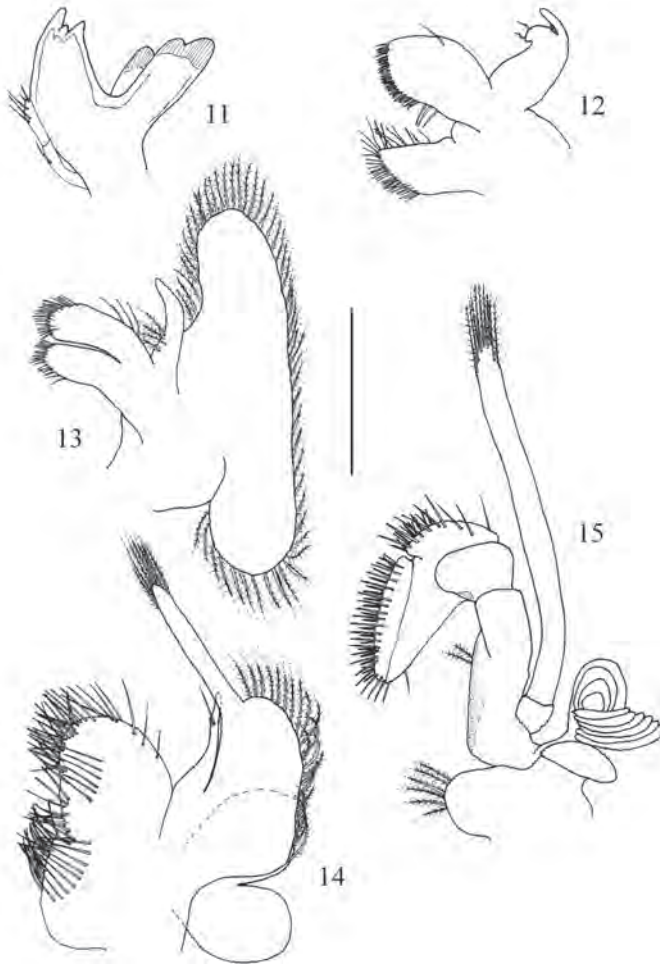
Scaphocerite (fig. 6) slender, laminar, $3.5 \times$ as long as broad; outer margin straight, terminating in a tooth, falling short of distal margin of lamina; basal segment of antenna with large lateral tooth. Flagellum of the antenna about twice the length of the body. Abdominal pleura furnished with plumose setae on ventral margin (fig. 7); fifth pleuron with distinct distoventral tooth; sixth segment is approximately $1.8 \times$ length of fifth; posterolateral margin with small tooth and notch disto-ventrally; median lobe acute, with rounded ventral submedian process.

Thoracic sternal armature sexually dimorphic. Fourth thoracic sternite of females armed with a sharp tooth with a strong, incomplete posterior ridge, remainder with low transverse ridge; in ovigerous and post-ovigerous females eighth sternite with a flattened setose plate. Fourth thoracic sternite of males (fig. 8) as in females, fifth to seventh thoracic sternites with low, rounded bosses and partial transverse ridges, eighth sternite with flattened tooth with an emarginated tip.

Abdominal sternal armature sexually dimorphic. First abdominal sternite of females with flattened tooth, second and third abdominal sternites armed with an acute tooth, fourth sternite unarmed, that of the fifth with a longitudinal ridge. In males (fig. 9), first to third abdominal sternites bearing acute conical tooth; fourth abdominal ster-



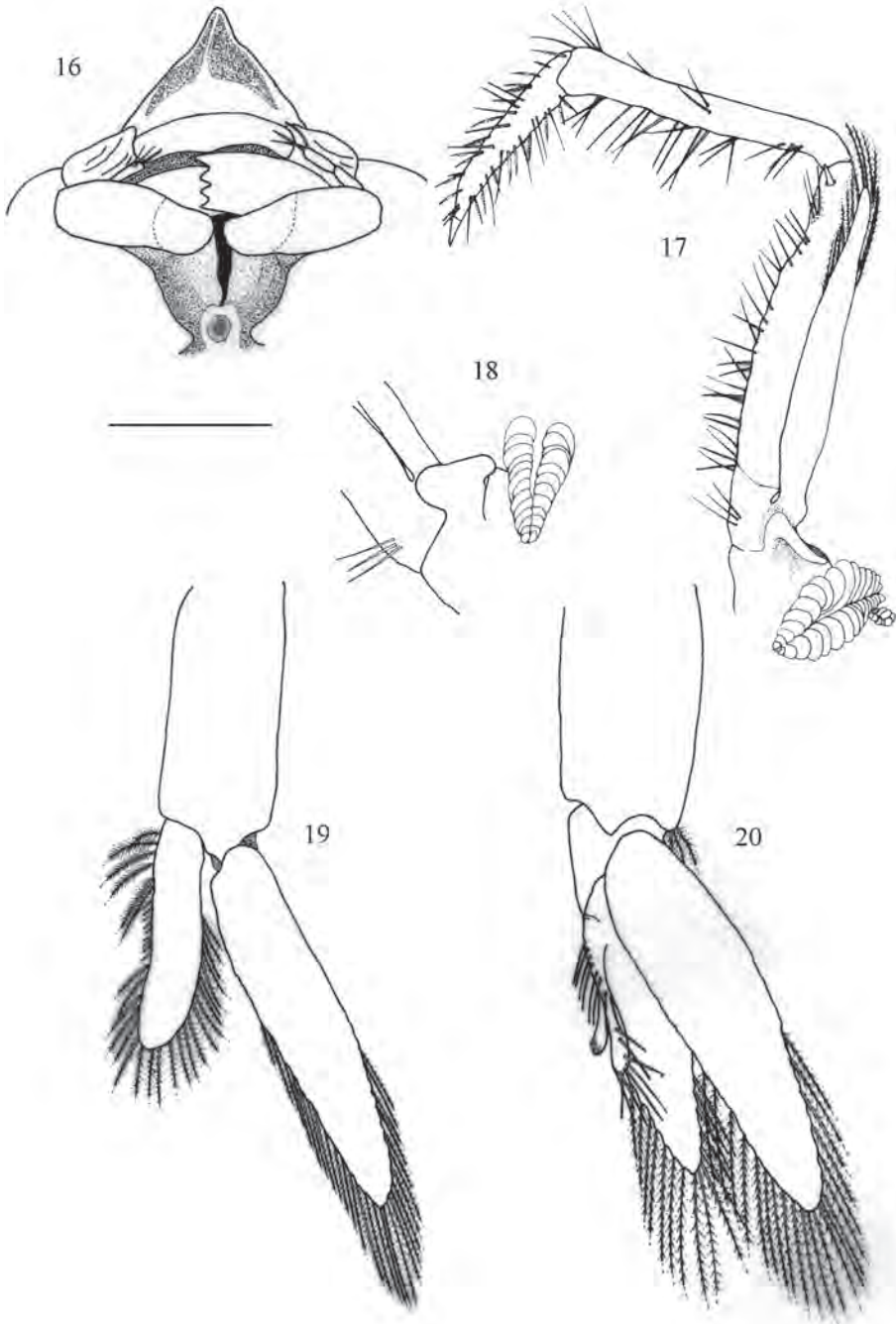
Figs 6-10. *Palaemon vicinus* spec. nov.: 6, female paratype RMNH D 53112; 7, holotype RMNH D 53109; 8-10, male paratype RMNH D 53111. 6, left antennal peduncle and scaphocerite, ventral view; 7, abdomen, lateral view; 8, thoracic sternum, ventral view; 9, abdominal sternum, ventral view; 10, pre-anal plate, ventral view. Scale bars indicate 1 mm.



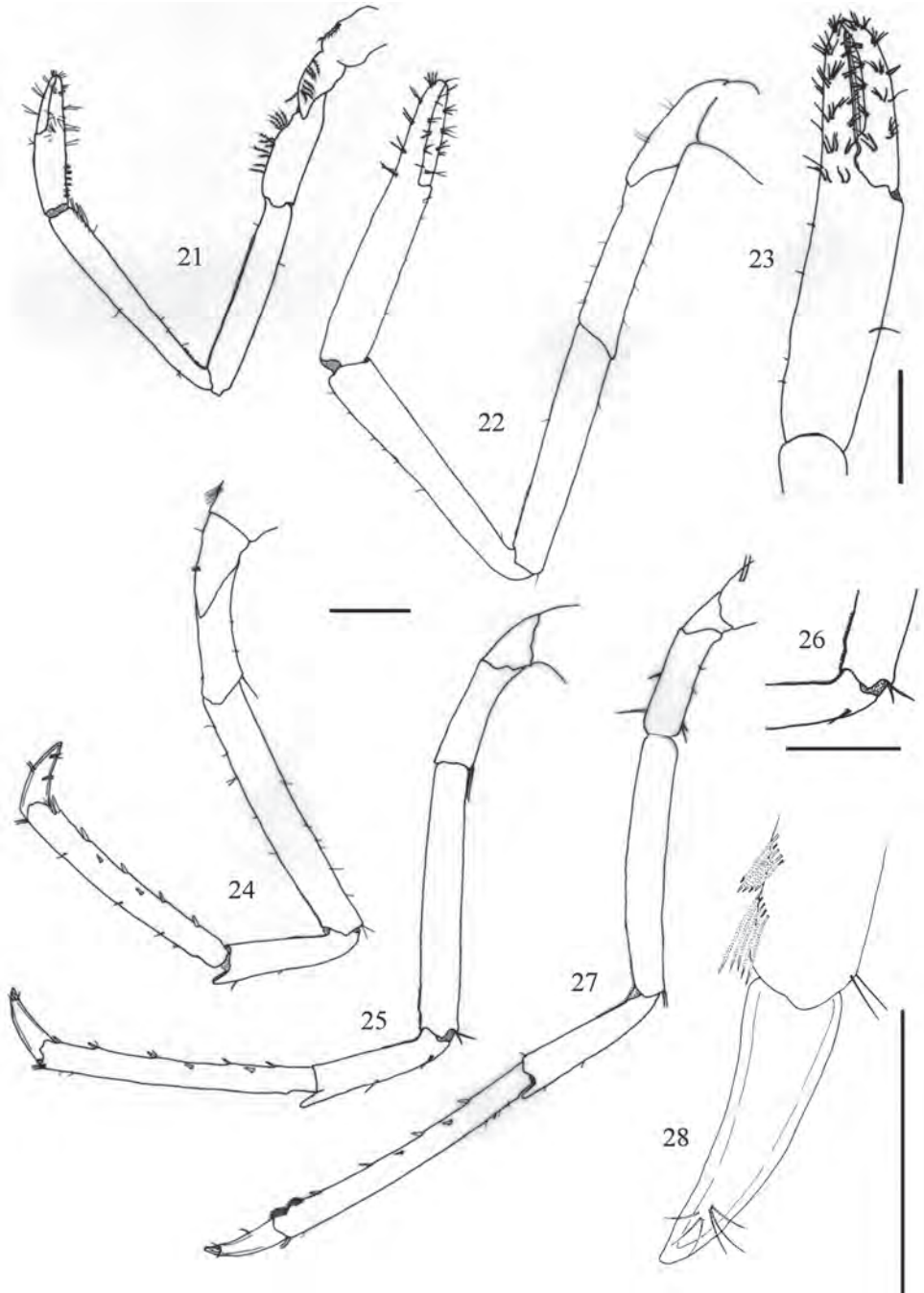
Figs 11-15. *Palaemon vicinus* spec. nov., female paratype RMNH D 53112. 11, mandible ; 12, maxillula; 13, maxilla; 14, first maxilliped; 15, second maxilliped. Scale bar indicates 1 mm.

nite is a rounded boss occasionally bearing a small blunt tooth; fifth abdominal sternite as in females. Pre-anal plate (fig. 10) unarmed in both sexes.

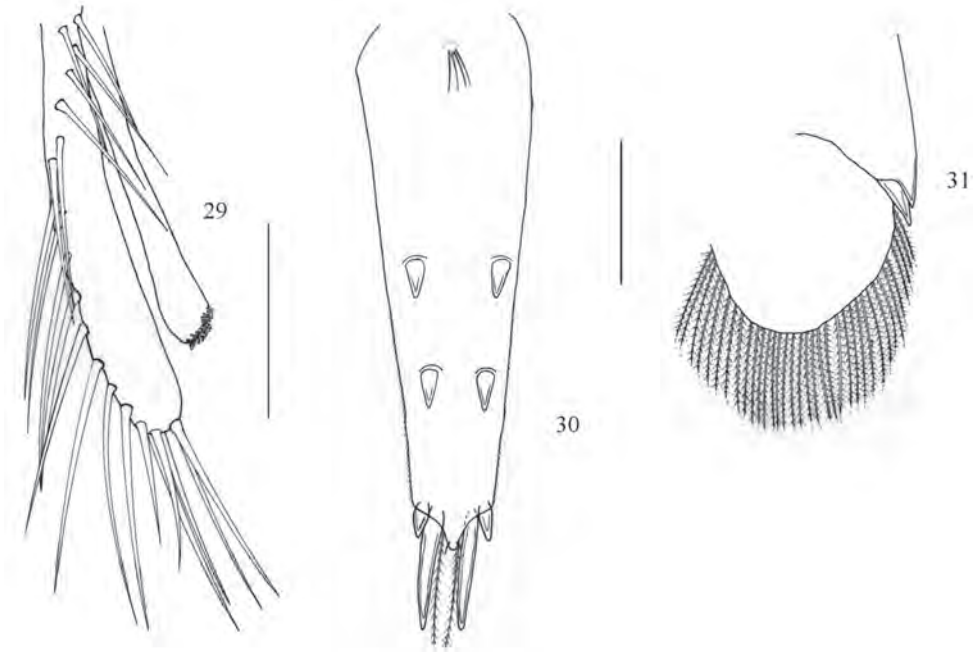
Epistome (fig. 16) triangular with a rounded anterior angle and strong anteromedial carina; labrum narrow, rectangular, flanked by triangular lobes on each side. Paragnaths (fig. 16) covering about half the mandibles; alae formed by broad, transverse more or less oval, distal lobes, ventromesial lobes triangular. Corpus short, narrowly separated; base with two carinae. Mandible (fig. 11) with two-segmented palp; terminal segment equal to or slightly shorter than proximal segment; terminal segment with 5 simple, apical setae and 2 lateral setae; basal segment bearing two distolateral setae. Incisor process of mandible with 3 teeth on the right mandible, the central of which is the smallest, and 4 teeth on the left mandible, the inner 2 teeth being smaller than the outer ones; molar process with 6 teeth of varying sizes. Maxillula (fig. 12) with lower lacinia near oval, smaller and narrower than upper lacinia, bearing stout, plumose setae distally; upper lacinia is provided with several distal cuspidate and stout setae; with a



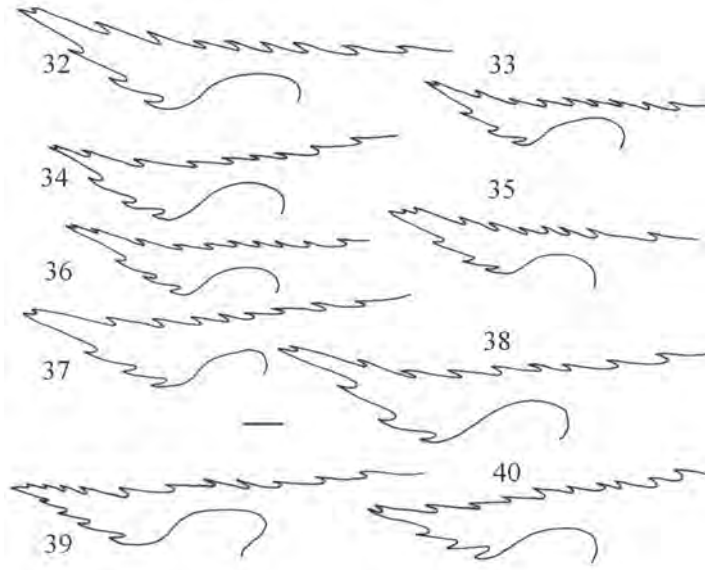
Figs 16-20. *Palaemon vicinus* spec. nov.: 16-18, female paratype RMNH D 53112; 19 and 20, male paratype RMNH D 53110. 16, epistome, labrum and paragnaths, ventral view; 17, third maxilliped, lateral view; 18, same, detail of epipodal plate; 19, male left first pleopod, anterior view; 20, male left second pleopod, anterior view. Scale bar indicates 1 mm.



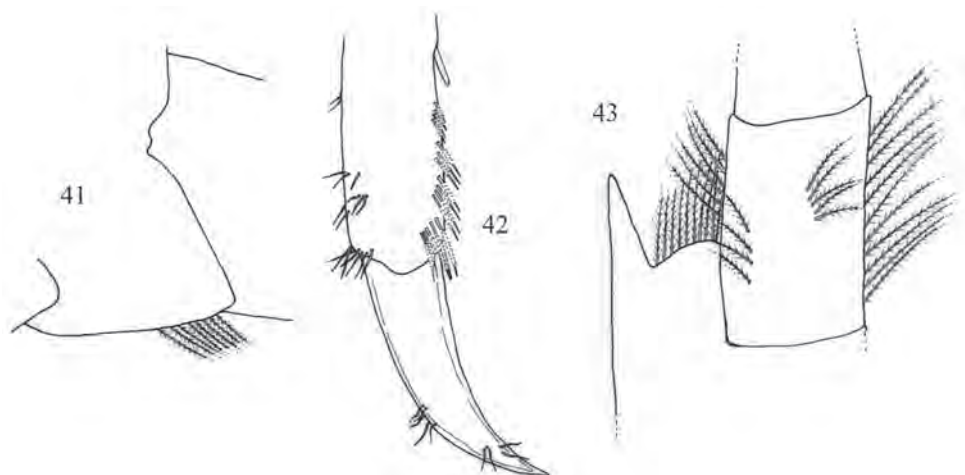
Figs 21-28. *Palaemon vicinus* spec. nov., female paratype RMNH D 53112. 21, first pereiopod, mesial view; 22, second pereiopod, mesial view; 23, same, chela; 24, third pereiopod, mesial view; 25, fourth pereiopod, mesial view; 26, same, detail of carpo-meral joint; 27, fifth pereiopod, mesial view; 28, same, distal. Scale bars indicate 1 mm.



Figs 29-31. *Palaemon vicinus* spec. nov. : 29, male paratype RMNH D 53110; 30 and 31, female paratype RMNH D 53112. 29, appendix interna and appendix masculina; 30, telson, dorsal view; 31, uropod, close up of lateral tooth and mobile spine. Scale bars indicate 0.25 mm (29) and 1 mm (30 and 31).



Figs 32-40. *Palaemon vicinus* spec. nov., rostral variation. 32-38, from RMNH D 51055; 39 and 40, from RMNH D 51003. Scale bar indicates 1 mm.



Figs 41-43. *Palaemon elegans* Rathke, 1837, female, pochl. 10.1 mm, from Varna, Bulgaria OUMNHZC 2008-01-0001. 41, fifth abdominal pleura; 42, distal portion of fifth pereopod; 43, antennal peduncle, dorsal view, close up of distal end of basal segment. Scale bars indicate 2 mm (41) and 1 mm (42 and 43).

few simple setae on its upper margin; palp with a bifid tip; upper process naked, lower process broad with one median setiform process and a further setiform process on the ventral tubercle. Maxilla (fig. 13) with upper lacinia deeply cleft, ending in a number of stout, plumose setae, a number of simple setae proximally on its upper margin; palp well developed, broad and naked, except for a few plumose setae proximally on its inner margin; scaphognathite large, fringed with plumose setae; the lower lobe is broader than the upper. First maxilliped (fig. 14) with endites separated by a distinct notch; palp slender and slightly twisted, with a single lateral simple seta; exopod well developed, slender and furnished with plumose setae distally; caridean lobe well developed and broad; epipod large and bilobed. Second maxilliped (fig. 15) with a broad rectangular ultimate segment; penultimate segment broadly triangular, with a convex, semicircular upper margin; exopod much longer than endopod; epipod and well developed podobranch present. Third maxilliped (fig. 17) pediform; ultimate segment $0.7 \times$ length of penultimate; ischiomerus with strongly curved dorsal margin; a single spine subdistally; exopod slightly shorter than antepenultimate segment; epipodal plate (fig. 18) ear shaped; well developed arthrobranch and a second, reduced arthrobranch present.

Well developed pleurobranchs present on all pereopods. First pereopod (fig. 21) reaching tip of distolateral tooth of scaphocerite; basis approximately 0.6 length of ischium; ischium distoventrally expanded; merus $1.7 \times$ length of ischium; carpus $1.3 \times$ longer than merus and slightly expanded distally; chela 0.6 length of carpus, fingers slightly shorter than palm, with tufts of setae; carpal-propodal brush well developed. Second pereopod (fig. 22) extending beyond scaphocerite by half the length of the palm of the chela; ischium $2.0 \times$ length of basis; merus $1.1 \times$ length of ischium; carpus elongate, $1.1 \times$ of merus, expanded distally; chela (fig. 23) about $1.2 \times$ length of carpus, fingers approximately $0.5 \times$ length of palm and covered by stout setae, well developed dentition on proximal cutting edge of fingers (occasionally reduced). Ambulatory pe-

reio-pods similar, robust, increasing in length from third to fifth. Third pereopod (fig. 24) reaching tip of distolateral tooth of scaphocerite; ischium $1.4 \times$ length of basis; merus twice length of ischium; carpus 0.45 length of merus; propodus $1.9 \times$ length of carpus, slightly shorter than merus, ventral margin armed with 5 cuspidate setae, the distal most of which is paired, inner-ventro-lateral margin bearing 2 cuspidate setae; dactylus simple, stout, feebly curved, slightly more than one third length of the propodus. Fourth pereopod (fig. 25) falling short of the distolateral tooth of the scaphocerite by at least half the length of the dactylus; ischium $1.5 \times$ length of basis; merus $2.3 \times$ length of ischium; carpus 0.5 length of merus; propodus slightly more than $2 \times$ length of carpus and approximately equal to merus, ventral margin provided with 5 cuspidate setae, the distal most of which is paired, inner-ventro-lateral margin bearing 2 cuspidate setae; dactylus simple, stout, feebly curved, about one third length of propodus. Fifth pereopod (fig. 27) extending to about half length of scaphocerite, to the level of the distolateral tooth of the antennular peduncle; ischium $1.4 \times$ length of basis; merus $2.3 \times$ length of ischium; carpus 0.6 length of merus; propodus $2 \times$ length of carpus, ventral margin armed with 5 cuspidate setae, the distal most of which is paired, inner-ventro-lateral margin bearing 2 cuspidate setae, grooming brush (fig. 28) comprises 2 (rarely 3 in larger individuals) rows of serrulate setae and extends for about $0.15-0.2 \times$ length of propodus; dactylus simple, stout, feebly curved, slightly less than one third length of propodus. All pereopods have a fine pubescence at the carpo-meral joint (fig. 26).

First pleopod sexually dimorphic in proportions, lacking appendix interna in both sexes; in males (fig. 19) endopod is 0.6 length of exopod, both exo- and endopods fringed with plumose setae but mesial portion of the inner margin of endopod devoid of plumose setae, with 10 spiniform setae; in females, endopod approximately 0.3 length of the exopod. Second to fifth pleopods broadly similar with the endopod being slightly shorter than the exopod, bearing an appendix interna. Second pleopod of males (fig. 20) with appendix masculina; about $1.25 \times$ length of appendix interna (fig. 29), furnished with 13-15 lateral and 5-10 apical setae; apical setae with minute setules.

Telson (fig. 30) subequal in length to sixth pleonite; length:width ratio 3.3:1 proximally narrowing to 7.2:1 distally; dorsal surface with two pairs of cuspidate setae and 1 pair of simple setae subdistally on median process; proximal dorsal tuft of setae present, consisting of about 5 simple setae; proximal pair of cuspidate setae situated at about $0.4-0.5$ of telson length, distal pair at about 0.7 of telson length; marginal setae present in distal portion only beginning at about the level of the anterior pair of cuspidate setae; posterior margin prolonged into acute median process, with 1 pair of plumose setae and 2 pairs of stout setae, inner pair about $4 \times$ longer than outer pair; median process exceeding outer pair of stout setae.

Uropods broadly ovate, overreaching telson by $0.25 \times$ length of endopod; exopod slightly longer than endopod, weak diaeresis present; mobile distolateral seta of exopod overreaching fixed tooth by length of tip (fig. 31).

Eggs with eye spots numerous; 0.8×0.6 mm.

Colour pattern.— The following colour pattern description is based on Powell's (1983; 272) description of the colour pattern of *P. elegans*. His material is here referred to *P. vicinus* spec. nov. "Transparent shrimp with colour pattern of thin dark lines, several equally-intense transverse ones across the abdomen, and longitudinal and oblique ones on carapace; number of lines increasing with body size. Legs (including chelipeds) with

reddish pigment at joints. Eggs green or brownish green. Pleura of ovigerous females bearing extensions of 4 dark vertical lines from the abdomen and some white patches".

Distribution.— Currently known with certainty from Cape Verde, Gambia, Sierra Leone, Cameroon and Nigeria.

Derivation of name.— *Vicinus*, -a, -um is a Latin adjective meaning near or neighbouring, alluding to the affinity between the new species and *P. elegans*.

Remarks.— *Palaemon vicinus* spec. nov. is undoubtedly closely related to *P. elegans*, under which name it has previously been recorded from West Africa. It primarily differs from *P. elegans* by the form of the postero-distal angle of the fifth abdominal pleura (prolonged into a small tooth in *P. vicinus* spec. nov., vs. quadrate in *P. elegans* compare fig. 7 with fig. 41), the number of rows of setae in the grooming brush of the fifth pereopod (2-3 in *P. vicinus* spec. nov., vs. 4-5 in *P. elegans*, compare fig. 28 with fig. 42) and subtle differences in the shape of the distal margin of the basal segment of the antennular peduncle (distolateral spine far exceeding anterior margin of laminar portion, extending almost to the distal end of the antepenultimate segment, distal margin of laminar portion very slightly concave in *P. vicinus* spec. nov., vs. distolateral spine exceeding laminar portion, extending to about mid-level of the antepenultimate segment, distal margin of laminar portion with stronger concavity in *P. elegans*, compare fig. 5 with fig. 43). *Palaemon vicinus* spec. nov. has a greater number of stout lateral setae on the appendix masculina of males (13 in *P. vicinus* spec. nov., vs. 10 in *P. elegans*) and slightly larger eggs of females (0.8x0.6 mm for *P. vicinus* spec. nov., vs 0.6x0.5 mm for *P. elegans* based on eyed embryos) than does *P. elegans*. In addition it is a very much smaller species than *P. elegans* with a maximum pochl. amongst the specimens examined here of 6.9 mm for males and 8.0 mm for females vs. 11.2 mm for males and 19.1 mm for females of *P. elegans* (pers. obs.).

The new species is the tenth (including one non-native) species of *Palaemon* known from the eastern Atlantic. The other species are *P. adspersus* Rathke, 1837, *P. elegans* Rathke, 1837, *P. longirostris* H. Milne-Edwards, 1837, *P. macrodactylus* Rathbun, 1902, *P. maculatus* Thallwitz, 1892, *P. peringueyi* (Stebbing, 1915), *P. powelli* Ashelby & De Grave, 2009, *P. serratus* Pennant, 1777 and *P. xiphias* Risso, 1816. Of these, *P. maculatus* and *P. powelli* are found in the same geographic range as *P. vicinus* spec. nov. Powell (1983) specifically mentions *P. elegans* (his records are here attributed to *P. vicinus* spec. nov.) occurring with *P. maculatus* in the Niger Delta. The two species can be separated by the form of the rostrum (slender, with 7-8 dorsal teeth in *P. maculatus*, vs. broad, with 8-11 dorsal teeth in *P. vicinus* spec. nov.), the proportion of the carpus of the second pereopod (longer than chela in *P. maculatus*, vs. shorter than chela in *P. vicinus* spec. nov.) and the number of setal rows in the grooming brush of the fifth pereopod (11 rows in *P. maculatus*, vs. 2-3 rows in *P. vicinus* spec. nov.). From *P. powelli*, the new species can be separated by the form of the rostrum (typically more slender with fewer dorsal teeth and a longer unarmed distal portion in *P. powelli*) and the proportions of the fingers and palm of the chela of the second pereopod (fingers equal to or longer than palm in *P. powelli*, vs. about half the length of the palm in *P. vicinus* spec. nov.).

The fine pubescence at the carpo-meral joints of the pereopods noted here is not unique to *P. vicinus* spec. nov. (pers. obs.) but has not been previously described in any species of the genus.

Interestingly, one lot of specimens examined in this study (NHM1951.4.3.2-11) bears an internal label stating '? *Palaemon* (*Palaeander*) n. sp' indicating that the collector

and initial identifier, M.H. Routh, realised that they may represent a new species. An additional label provides the subsequent identification of *Palaemon* (*Palaeander*) *elegans*. Most of the individuals in this lot are very small and now in a poor state of preservation, however the larger individuals are unquestionably assignable to the present new species.

The possibility that the Banc d'Arguin may represent a biogeographical boundary has been suggested by Fransen (1991) and Spalding *et al.* (2007). The abiotic and ecological factors that may cause such a boundary are poorly understood (van Soest, 1993) but the area coincides with the meeting point of the southwards, cooling Canary Current and the northwards, warming Guinea Current and these currents may play a role in determining the faunal distributions in the region. The matter still remains unresolved but, within *Palaemon*, it does seem to mark the southernmost limit of *P. serratus* (Pennant, 1777) and the approximate northern limit of *P. maculatus*. Although the colour pattern described by Powell (1983) for Nigerian shrimps identified as *P. elegans* shows some discrepancy with European specimens, photographs of *Palaemon* from Cape Verde Islands, kindly provided by Dr. Peter Wirtz, show individuals with a colour pattern similar to European specimens. As no photo-matched specimens of *P. vicinus* spec. nov. are currently known it seems premature to rule out the occurrence of *P. elegans* in West Africa and further records of the species from tropical West Africa require confirmation before it is possible to speculate whether it occurs farther south than the Banc d'Arguin. Three of the four specimens of *Leander squilla* reported by Schmitt (1926) from St. Paul de Loanda, Angola (AMNH 4742) were re-examined and found to belong to *P. peringueyi*.

The fauna of tropical West Africa is clearly understudied and *P. vicinus* spec. nov. is the fourth caridean, and second species of *Palaemon*, to be described from tropical West Africa since 2008 (see also Anker *et al.*, 2008; De Grave & Anker, 2008; Ashelby & De Grave, 2009). It is likely that other new species may be found through re-examination of museum material or fresh collections, particularly in cryptic habitats.

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References

- Anker, A., C. Hurt & N. Knowlton, 2008. Revision of the *Alpheus cristulifrons* species complex (Crustacea: Decapoda: Alpheidae), with description of a new species from the tropical eastern Atlantic.— *Journal of the Marine Biological Association of the United Kingdom* 88: 543-562.
- Ashelby, C.W. & S. De Grave, 2009. A new species of *Palaemon* (Crustacea, Decapoda, Palaemonidae) from West Africa, with a re-description of *Palaemon maculatus* (Thalwitz, 1892).— *Zootaxa* 2085: 27-44.

- Balss, H., 1913. Decapode Crustaceen. In: Schultze, L., Zoologische und Anthropologische Ergebnisse einer Forschungsreise in Südafrika, vol. 5 pt. 2.— Denkschriften der medizinisch-naturwissenschaftlichen Gesellschaft zu Jena 17: 103-110.
- Balss, H., 1916. Crustacea II: Decapoda Macrura und Anomura (ausser Fam. Paguridae).— In: Michaelsen, W. (ed.), Beiträge zur Kenntnis der Meeresfauna West Africas 2: 13–46.
- Barrois, Th., 1888. Catalogue des crustacés marins recueillis aux Açores.— Le Bigot, Lille: 1-110.
- De Grave, S. & A. Anker, 2008. *Leptathanas powelli* gen. nov., sp. nov, a new infaunal alpheid shrimp associated with upogebiid mudshrimps in Nigeria (Crustacea, Decapoda).— Zootaxa 1750: 43-52.
- Fransen, C.H.J.M., 1991. Preliminary report on Crustacea collected in the eastern part of the North Atlantic during the CANCAP and MAURITANIA Expeditions of the former Rijksmuseum van Natuurlijke Historie, Leiden: i-vi, 1-200.— NNM-Leiden.
- Grieg, J.A., 1927. Decapoda Crustacea from the west coast of Norway and the North Atlantic.— Bergens Museums Aarbok, for 1926 (7): 1-53.
- Holthuis, L.B., 1949. The caridean Crustacea of the Canary Islands.— Zoologische Mededelingen, Leiden 30: 227-255.
- Holthuis, L.B., 1951. The caridean Crustacea of tropical West Africa.— Atlantide Report 2: 1–187.
- Man, J.G. De, 1915. On some European species of the genus *Leander* Desm., also a contribution to the fauna of Dutch waters.— Tijdschrift der Nederlandsche Dierkundige Vereeniging ser 2: 115-179.
- Monod, T., 1933. Sur quelques Crustacés de l’Afrique Occidentale. (Liste des Décapodes mauritaniens et des Xanthidés ouest-africains).— Bulletin du Comité d’Études Historiques et Scientifiques de l’Afrique Occidentale Française 15: 456-548.
- Monod, T., 1964. Crevettes et crabes de la côte occidentale d’Afrique. C.S.A. Specialist meeting on Crustaceans, Zanzibar, 1964.— OAU/STRC 96: 103-243 (reprinted as : Mémoires de l’Institut Français de l’Afrique Noire 77: 103-234).
- Ortmann, A.E., 1893. Decapoden und Schizopoden der Plankton Expedition.— Ergebnisse der Plankton-Expedition der Humboldt-Stiftung 2Gb, 1-120.
- Osorio, B., 1888. Liste des Crustacés des possessions Portugaises d’Afrique occidentale dans les collections du Muséum d’Histoire Naturelle de Lisbonne.— Jornal de Ciencias mathematicas, physicas e naturaes Lisboa 12: 186-191.
- Powell C.B., 1983. Fresh and brackish water shrimps of economic importance in the Niger Delta.— In: Fisheries Society of Nigeria (FISON), Proceedings of Second Annual Conference of the Fisheries Society of Nigeria, Calabar: 254–285.
- Powell, C.B., 1985. The decapod crustaceans of the Niger Delta: 226–238.— In: B.H.R. Wilcox & C.B. Powell (eds), The mangrove ecosystem of the Niger Delta: proceedings of a workshop. University of Port Harcourt Press, Port Harcourt: i-v + 1–357.
- Rafinesque, C.S., 1815. Analyse de la nature ou tableau de l’univers et des corps organisés: 1–224.— Palermo.
- Rathke, H., 1837. Zur Fauna der Krym. Ein Beitrag.— Mémoires présentés à l’Académie Impériale des Sciences de St. Pétersbourg par divers Savants et lus dans ses Assemblées, series 6 B(3): 291-454.
- Schmitt, W.L., 1926. The Macruran, Anomuran and Stomatopod crustaceans collected by the American Museum Congo Expedition, 1909: 15. With field notes by Herbert Lang and James P. Chaplin.— Bulletin of the American Museum of Natural History 53: 1–67.
- Soest, R.W.M. van, 1993. Distribution of sponges on the Mauritanian continental shelf.— Hydrobiologia 258: 95-106.
- Spalding, M.D., H.E. Fox, G.R. Allen, N. Davidson, Z.A. Ferdaña, M. Finlayson, B.S. Halpern, M.A. Jorge, A. Lombana, S.A. Lourie, K.D. Martin, E. Mcmanus, J. Molnar, C.A. Recchia, C.A. & J. Robertson, 2007. Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas.— Bioscience 57(7): 573-583.
- Stebbing, T.R.R., 1914. Stalk-eyed Crustacea Malacostraca of the Scottish National Antarctic Expedition.— Transactions of the Royal Society of Edinburgh 50: 253-307.
- Türkay, M., 1982. Marine Crustacea Decapoda von den Kapverdischen Inseln mit Bemerkungen zur Zoogeographie des Gebietes. In: W. Lobin (Ed.), Ergebnisse des 1.Symposiums «Fauna und Flora der Kapverdischen Inseln».— Courier Forschungsinstitut Senckenberg 52: 91-129.

- d'Udekem d'Acoz, C., 1999. Inventaire et distribution des crustacés décapodes de l'Atlantique nord-oriental, de la Méditerranée et des eaux continentales adjacentes au nord de 25°N.— Patrimoines naturels (M.N.H.N.S.P.N.), Paris, 40: 1-383. Muséum National d'Histoire Naturelle, Paris.
- Weber, F., 1795. Nomenclator entomologicus secundum entomologiam systematicam ill. Fabricii adjectis specibus recens detectis et varietatibus : i-viii, 1-171. Chilonii et Hamburgi.

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