Redescription of *Griffithsius latipes* (Griffiths, 1976) (Crustacea, Amphipoda, Phoxocephalidae) from the coast of Namibia

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Abstract

A full redescription of *Griffithsius latipes* (Griffiths, 1976) is given. This is necessary because the original description is incomplete and contains inaccuracies.

**Key words:** Crustacea, Amphipoda, Phoxocephalidae, *Griffithsius latipes*, Namibia, taxonomy

Introduction

Phoxocephalids are abundant amphipods burrowing in soft bottoms. They play an important role in soft-bottom communities (Enequist, 1949, Oakden 1984). However, they are taxonomically rather difficult, and many classificatorial changes have been proposed in recent publications (Jarrett & Bousfield 1994).

The present author was asked by the ecologist Jürgen Laudien to determine an abundant species from the coast of Namibia. The specimens appeared similar to Griffiths’ (1976) original description of *Mandibulophoxus latipes*, but some differences were noted. However, when Laudien’s specimens and the types of *M. latipes* were compared directly it became clear that all represent the same species. Because the description by Griffiths lacks some details, the present author decided to redescribe the species and illustrate it in detail. The generic placement of the species in *Griffithsius* follows Jarrett & Bousfield (1994).

Material and methods

The amphipods were fixed in 70% ethanol, transferred into glycerol for study, and drawn with a camera lucida under a Leica Wild M8 dissecting microscope. After dissection, appendages and mouthparts were transferred onto slides in glycerol and drawn under a Leica DMLB light microscope using a camera lucida. Permanent slides were made using Euparal.

The new material is deposited in the Museum für Naturkunde in Berlin (ZMB No. 27458).

Systematics

*Griffithsius latipes* (Griffiths, 1976)

*Mandibulophoxus latipes* Griffiths, 1976: 27, figs 9-10

*Basuto latipes* (Griffiths) – Bamard & Karaman (1991: 598)

*Griffithsius latipes* (Griffiths) – Jarrett & Bousfield (1994: 76, fig. 2)

**Material examined.** Holotype female 7 mm; Namibia, Lüderitz, Shearwater Bay, intertidal sand (26°38´S 15°07´E), 25.II.1963. 4 paratypes; Cape Peninsula, intertidal from Noordhoek Beach (34°05´S 18°21´E), VII.1974, leg. John Boland; South African Museum (SAM A45137).

New material: 13 females 4.7-8.3 mm, 10 males 4.9-5.3 mm, 6 juveniles and indet. sex 4.1-4.6 mm; Namibia, Langstrand, intertidal/sublitoral, 30.V.1999, leg. J. Laudien.
**Description.** Head with an elongate, straight rostrum, apex curved ventrally as a small hook. Rostrum subequal in length to distal margin of antenna 2 peduncle (Fig. 1). Eyes present, irregular in shape, ommatidia not forming complex cluster, but some rather separate; eye colour in alcohol material yellowish to colourless. Ventral head margin straight to weakly concave. Head equals length of dorsal plates 1-4 combined. Tergites 4-6 longest, pereonite 7 shortest. Pleonites 1-2 subequal in length, pleonite 3 1.5 times as long as pleonite 1. Epimera 1-2 with groups of long ventral setae, posteroventral angle rounded; epimera 3 with lobate, produced posteroventral region, ridge on lateral face with long, dorsally directed setae. First urosomite 4 times longer than urosomite 2; urosomite 3 approximately half as long as urosomite 1.

Antenna 1 (Fig. 2): peduncle article 1 longest, tapering distally, basoventrally expanded; peduncle article 2 48% of article 1, slightly expanded ventrodistantly, lateral face with oval, ring-shaped insertions of very long, slender setae, dorsal setae on ring much shorter than ventral setae; third article 36% of article 2; flagellum consisting of 14, accessory flagellum of 12 articles.

Antenna 2 (Fig. 3): peduncular article 1 fused with 2, rounded lobe ventrally; article 3 subquadrilateral; article 4 143% of article 3 length, similar oval setal field as on antenna 1 article 2, but longer; article 5 45% of article 4 width and 78% of its length; 15 flagellar articles.

Labrum (upper lip) (Fig. 4d): with wide epistome, tapering distally, rounded apex.

Mandible (Fig. 4b, c): body small, incisor weakly dentate; right lacinia mobilis small and slender; setal row consisting of 12 stout setae; pars molaris reduced, not triturative (Fig. 4c), with 3 stout setae; palpus 3-articulate, attachment to mandibular body constricted; palp article 1 shortest, articles 2 and 3 subequal in length, apical article slender, with one basoventral seta and a group of long apical setae that are situated in a ventral rostrum groove, almost reaching its apex.

Lower lip (hypopharynx) (Fig. 4a): with inner lobes; outer lobes with small distomedial pointed process, mandibular processes wide, hypopharyngeal gap wide; inner and outer lobe densely covered with hair-like setae.

Maxilla 1 (Fig. 5b): inner plate somewhat shorter than outer plate (Fig. 5a), with 4 apical plumose setae, inner and outer margins with hair-like setae; outer plate drawn out laterally into subacute process, distal endite subrectangular, with 10 stout apical setae; palp 2-articulate, surpassing outer plate, proximal article about 1/3 of distal article; second article oblique, with row of setae on medial margin.

Maxilla 2 (Fig. 5c): both endites subequal, two rows of setae, inner plate with one row subapically.

Maxillipeds (Fig. 6): posterior basal surface with long setae (Fig. 6a); inner plate slightly shorter than outer plate, with long apical and medial setae; palp 4-articulate, proximal article oblique; article 2 longest, with groups of setae on medial margin; article 3 ovoid, with rows of setae on medial and lateral margins; article 4 slender and weakly curved, with distal nail and 2 subapical short setae.

Pereopod (gnathopod) 1 (Fig. 7a): coxa subrectangular, anterodistal angle rounded, apical setae of variable length; basis subequal in length to coxa, long slender setae on posterior margin and a regular row of shorter setae anteriorly; ischium longer than wide, with anteromarginal notch; merus with anteromarginal notch and oblique distal margin, row of setae posteromarginally; carpus weakly expanded halfway, posterior margin strongly setose; propodus 88% of carpus length, expanded distally, with oblique, weakly sinuous palm, long setae on anterolateral face, shorter setae posteromarginally, dense group of distal setae; dactylus slender, moderately curved.

Pereopod (gnathopod) 2 (Fig. 7b): coxa wider than on pereopod 1, subrectangular, notched anterodistally, distal setation similar to pereopod 1; basis with straight anterior margin, convex posterior margin with row of elongate, slender setae, much shorter setae on anterior margin; ischium with anterior notch, group of long setae posterodistally; merus slightly shorter than carpus, anterior notch and long posterior setation; carpus much shorter than that of gnathopod 1, with long posterior setation; propodus wider than that of gnathopod 1, palm sinuous, groups of setae on lateral face, palm and posterior margin; dactylus slender and weakly curved.

Pereopod 3 (Fig. 8): coxa parallelogram-shaped, weakly excavate posteriorly, anteriorly rounded, distal setation shorter than those of gnathopods; gill slender, as long as distal margin of ischium, oostegite very slender, with long setae in apical half; basis subrectangular and relatively shorter than those of gnathopods, posterior margin with irregular depressions at the insertion of long setae, posterodistal seta plumose, accompanied by much shorter seta; ischium almost as wide as basis; merus expanded anterodistally, groups of elongate setae posteromarginally; carpus tapering distally, groups of elongate setae posteromarginally, 3 thickened setae posterodistally, propodus with groove...
posteriorly bordered with stout setae; dactylus shortened and straight.

Pereopod 4 (Fig. 9): coxa basoposteriorly widened, distal margin with short setae; gill and oostegite similar in shape and setation to those of pereopod 3, distal margin surpasses basis and parts of ischium; basis with elongate postermarginal row of setae, very short setae on anterior margin; ischium normal; merus massive, about as long as basis, drawn out anterodistally and with group of setae, row of long posterior marginal setae; carpus tapering distally, half as long as merus; elongate rows of setae postermarginally, increasing in length distally; propodus very slender and with groove posteriorly bordered by stout setae; dactylus short and straight, with inconspicuous posterodistal serration.

Pereopod 5 (Fig. 10): coxa bilobate, anterior lobe very short, posterior lobe shaped like an elephant’s ear, with ventral setation, oostegite half as long as gill, with terminal setae only, gill surpassing basis, tapering distally; basis pyriform, row of setae anteromarginally, increasing in length distally; ischium wider than long; merus wider than long, posteriorly lobate, with short, stout distal setae and long posterior and anterodistal setae; carpus subcircular, densely lined with marginal setae of variable shape and size; propodus half as wide as carpus, with rows of stout and elongate setae; dactylus straight and short, with inconspicuous anterodistal serration.

Pereopod 6 (Fig. 11a): coxa bilobate, anterior lobe deeply excavate anteriorly and extended ventrally; gill about half the length of basis; basis ovoid, with row of setae on anterior margin, increasing in length distally; ischium wider than long; merus widened posteriorly, with two deep excavations with a row of stout setae each; distal row of stout setae, 6 groups of setae anteromarginally; carpus tapering distally, half the maximal width of merus, with groups of stout setae on anterior and posterior margins, distal margin produced; propodus about half the maximal width of carpus; groups of short, stout setae on both margins; dactylus as long as propodus, straight, slender, and tapering distally with serrate anterior margin.

Pereopod 7 (Fig. 11b): shortened; coxa smallest; basis excessively lobate posteriorly and ventrally, with short and medium-sized setae on posterior margin; ischium subquadrate, merus subrectangular, with few setae anteromarginally; carpus 67% of merus, with long, plumose seta on posterodistal angle, accompanied by 2 shorter setae; propodus about half as wide as carpus, with elongate setae on posterodistal angle; dactylus straight, slender, about as long as propodus.

Pleopod 1 (Fig. 12a): peduncle slightly longer than wide, 2 coupling hooks (Fig. 12d) distomedially; outer ramus slightly longer.

Uropods 1 and 2 (Fig. 12b, c): peduncle longer than rami, with stout, spiniform seta between rami; distal margins of rami oblique, with spiniform setae distally and dorsally; outer ramus shortened.

Uropod 3 (Fig. 13b): peduncle expanded distally, with spiniform setae distally; outer ramus 2-articulate, with groups of setae on outer margin half way of first article and on distal border, inner ramus 70% of outer, with plumose setae on both margins.

Telson (Fig. 13a): deeply incised, longer than wide; 2 laterodorsal, plumose setae on both sides, apex with 2 stout setae and 1 short plumose seta laterally.

Discussion

Griffiths (1976) gave a detailed description of *Mandibulophoxus latipes*, illustrated with two plates. From this publication the present author was initially convinced that her new material belonged to a new species. However, when the type material of *M. latipes* was examined in order to furnish a good differential diagnosis, it became clear that all specimens belong to a single species, but that Griffiths’ drawings do not match his types in all details. The fuller description and complete illustrations given herein now enable the accurate determination of the species.

The key features for recognition of *Griffithsius latipes* (Griffiths) are pereopods 5 and 6. In Griffiths’ drawing of pereopod 5 the carpus has an almost circular shape, whereas in the studied specimens this article is rather ellipsoid (Fig. 10). Pereopod 6 in Griffiths (1976: fig. 10C) has the merus much longer than wide, with the posterior margin weakly convex. In the types and the new material this article looks completely different: it is wider than long, as the posterior margin is strongly lobate. The dactylus is much shorter than the propodus in Griffiths’ drawing, in the redescribed material these articles are subequal in length. Similar inconsistencies can be observed on antenna 2; the 4th article of the peduncle is ovoid, whereas in Griffiths’ drawing it appears subrectangular; on uropod 3 the second article of the outer ramus of the redescribed material is relatively longer (1:3) compared to the basal article in Griffiths’ illustration (1:4).
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References


Fig. 1. Griffithsius latipes, female 8.3 mm. Habitus. Scale bar: 1 mm.
Fig. 2. Griffithsius latipes, female 8.3 mm. Antenna 1. Scale bar: 200 µm.
Fig. 3. Griffithsius latipes, female 8.3 mm. Antenna 2. Scale bar: 200 µm.
Fig. 4. Griffithsius latipes, female 8.3 mm. a: lower lip (hypopharynx); b: mandible; c: molar; d: labrum. Scale bars: a, d: 100 µm; b: 200 µm.
Fig. 5. *Griffithsius latipes*, female 8.3 mm. a: detail of inner lobe of maxilla 1; b: maxilla 1; c: maxilla 2. Scale bar: 100 µm.
Fig. 6. Griffithsius latipes, female 8.3 mm. a: detail of maxilliped basal lobes. b: maxilliped. Scale bar: 100 µm.
Fig. 7. *Griffithsius latipes*, female 8.3 mm. a: pereopod (gnathopod) 1; b: pereopod (gnathopod) 2. Scalebar: 500 µm.
Fig. 8. *Griffithsius latipes*, female 8.3 mm. Pereopod 3. Scale bar: 500 µm.
Fig. 9. *Griffithsius latipes*, female 8.3 mm. Pereopod 4. Scale bar: 200 µm.
Fig. 10. *Griffithsius latipes*, female 8.3 mm. Pereopod 5. Scale bar: 200 µm.
Fig. 11. *Griffithsius latipes*, female 8.3 mm. a: pereopod 6; b: pereopod 7. Scale bar: 500 µm.
Fig. 12. *Griffithsius latipes*, female 8.3 mm. a: pleopod 1; b: uropod 1; c: uropod 2; d: coupling hooks of pleopod. Scalebars: a: 200 µm; b,c: 500 µm. d: 100 µm.
Fig. 13. *Griffithsius latipes*, female 8.3 mm. a: telson; b: uropod 3, long setae of rami all plumose. Scale bars: a: 100 µm; b: 200 µm.