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ЧЕРНОГОРСКАЯ АКАДЕМИЯ НАУК И ИСКУССТВ  
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G. S. Karaman\*

TWO NEW SPECIES OF THE GENUS *NIPHARGUS*  
SCHIÖDTE, 1849 (CRUSTACEA AMPHIPODA,  
NIPHARGIDAE) FROM THE CAVES OF SERBIA  
(*Contribution to the Knowledge of the Amphipoda* 248)

ABSTRACT

Two new species of the genus *Niphargus* Schiödte, 1849 (Crustacea, Amphipoda, fam. Niphargidae) are described and figured from the caves of Serbia: *Niphargus bogdani*, n. sp., from Grlić Cave in Murtenica (Zlatibor Mt.) and *Niphargus bozanae*, n. sp, from the Jama Jamina Cave near Rakovica (Zlatibor Mt.). Their taxonomic status within the genus *Niphargus* is discussed.

**Key words:** caves, Serbia, Amphipoda, *Niphargus*, taxonomy, new species.

DVIJE NOVE VRSTE RODA *NIPHARGUS* SCHIÖDTE,  
1849 (CRUSTACEA AMPHIPODA, FAM. NIPHARGIDAE)  
IZ PEĆINA SRBIJE  
(248. Prilog poznavanju amphipoda)

SAŽETAK

Iz pećina u Srbiji su opisane dvije nove vrste iz roda *Niphargus* Schiödte, 1849 (Crustacea, Amphipoda, fam. Niphargidae): *Niphargus bogdani*,

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\* The Montenegrin Academy of Sciences and Arts

n.sp. iz pećine Grlić kod Murtenice (masiv Zlatibora), i *Niphargus bozanae*, n.sp. iz pećine Jama Jamina kod Rakovice (masiv Zlatibora). Njihov taksonomski status unutar roda *Niphargus* je analiziran.

**Ključne riječi:** pećina, Srbija, Amphipoda, *Niphargus*, taksonomija, nove vrste.

## INTRODUCTION

Based on its very specific geological and geomorphological history and by presence of large karstic regions, in Serbia appear numerous caves containing one very interesting and highly endemic terrestrial and aquatic subterranean fauna, among them the Amphipoda also.

The fauna of the surfaced and subterranean Amphipoda in Serbia has been studied by several scientists (Stanko L. Karaman, Milika Pljakić, Gordan S. Karaman, etc.).

Regarding the subterranean species, the first species of amphipods from the caves in Serbia has been described by Stanko Karaman in 1943, *Niphargus stygius ravanicanus*, n. ssp. from Ravanica Cave near Monastery Ravanica. Later, several other species from the caves in Serbia have been discovered or described: *Niphargus pecarensis* S. Karaman & G. Karaman 1959, *Niphargus deelemanae* G. Karaman 1973 a, *Niphargus adbiptus* G. Karaman 1973 b, *Niphargus kragujevensis remus* G. Karaman 1992, etc.

Many subterranean species known from the caves, have been found later also in the springs [*Niphargus kragujevensis remus* G. Karaman 1992]. This seems to be quite normal, and most of the cave species we can expect to find in the springs also, because the strong subterranean water streams in the caves arrived on the surface in the shape of the springs of various type, bringing the animals with the waters together (but not all of them, because of their different ecological life conditions, for example *Niphargus trullipes*, Sket 1958 from Vjetrenica Cave in Bosnia & Herzegovina).

On the other hand, some species of amphipods known from the springs or hyporheic waters in Serbia, have been never found in the caves (*Niphargus ivokaramani* G. Karaman 1994, *N. jugoslavicus* G. Karaman 1982, etc.).

Occasionally we can find the surfaced species in the subterranean waters of the caves, usually in the cases when the surfaced torrent submerged into the subterranean habitat and then reappear downstream again

on the surface as torrents. For example the presence of *Gammarus balcanicus* Schäf. 1922 in the Omanska pećina Cave near village Gornjani (Bor region, Serbia).

Recently I obtained the samples of amphipods collected by the speleologist S i n i š a O g n j e n o v i ć from Beograd, in some caves of Serbia and Crna Gora, and part of study of this material is presented in this paper. Probably, the subterranean fauna of Amphipoda in Serbia is still only partially known, and other taxa of amphipods can be discovered in the future also.

ACKNOWLEDGMENTS: I am thankful to the speleologist Ing. **Siniša Ognjenović** from Beograd who collected material of Amphipoda presented in this study.

TAXONOMIC PART  
NIPHARGUS BOGDANI, N. SP.

*Figs. 1-5*

MATERIAL EXAMINED: Serbia: Grlić Cave (= Vreška pećina Cave), Murtenica, Negbina, Zlatibor Mt., 900 a. s. l., 12. 04. 2003 (leg. Siniša Ognjenović), one ovig. female (holotype).

Holotype is deposited in KARAMAN's Collection in Podgorica, Crna Gora (No. S-6668).

DIAGNOSIS: Outer plate of maxilla 1 with 7 spines bearing one lateral tooth each, inner plate with 3 setae. Gnathopods 1-2 trapezoid and of poorly unequal size, their dactylus along outer margin with row of strong setae; epimeral plates 1-3 broadly subrounded. Pleopods with 2 retinacula each. Uropods 1-2 with inner ramus distinctly longer than outer one. Uropod 3 elongated in females, second segment of outer ramus reaching half of first segment. Telson gaping, with distal and marginal spines, facial spines absent.

DESCRIPTION: Female 12, 6 mm long, with marginally haired large oostegites. Body moderately stout, head with short rostrum; lateral cephalic lobes narrowly subrounded, with shallow ventroanterior margin, eyes absent (fig. 1 A). Mesosomal and metasomal segments naked or with 3-4 short dorsoposterior marginal setae each (fig. 4 e). Urosome low, urosomite 1 on each dorsolateral side with one seta; urosomite 2 with one spine and 1 seta on each dorsolateral side; urosomite 3 naked (fig. 1 I).

Antenna 1: peduncle not elongated, peduncular articles 1-3 progressively shorter, poorly setose, peduncular article 3 only poorly exceeding half of segment 2 (fig. 1 B); main flagellum long, but distal part of flagellum missing; flagellar articles with one short aesthetasc each; accessory flagellum short, 2-segmented (fig. 1 B).

Antenna 2: peduncular segment 5 hardly shorter than segment 4, both with several bunches of setae as long as or longer than diameter of articles themselves; flagellum slender, 12-segmented, only slightly longer than peduncular segment 5; antennal gland cone short (fig. 1 C).

Coxae 1-4 relatively short, bearing row of shorter marginal setae each. Coxae 1 and 4 hardly broader than long, coxa 1 with non produced ventroanterior subrounded corner (figs. 3 A, 4 C). Coxae 2-3 nearly as long as broad (figs. 3 D, 4 A); coxae 5-7 short (figs. 5 A, 5 C, 5 E).

Mouthparts: Labrum broader than long (fig. 2 A). Labium with inner lobes (fig. 2 B).

Maxilla 1: inner lobe with 3 setae; outer lobe with 7 spines bearing one lateral tooth each; palp 2-segmented, distal segment with 9 setae (fig. 2 C).

Maxilla 2: both lobes with numerous distal setae each (fig. 2 D).

Maxilliped: inner plate short, bearing 4-5 distal spines (fig. 2 E, 2 F, 2 G); outer plate short, not reaching outer tip of palp segment 2 (fig. 2 E); palp 4-segmented; palp segment 3 at outer margin with 2 groups of median marginal setae (fig. 2 E); segment 4 along outer margin with 3 median setae (fig. 2 E), nail slender, shorter than pedestal (fig. 2 L).

Mandible: molar triturative; left incisor with 5 teeth (fig. 1 E), left lacinia mobilis with 4 teeth (fig. 1 F); right incisor with 4 teeth (fig. 2 D), right lacinia mobilis bifurcate, inner part pluritoothed (fig. 2 D). Mandibular palp 3-segmented, strong, palp segment 1 naked; palp segment 2 with 16 setae along entire inner margin (fig. 1 G). Palp segment 3 slightly falciform, longer than segment 2, at outer face with one group of A-setae; on inner face with 4 groups of single or paired B-setae (fig. 1 G), along inner margin with up to 28 D-setae, at the tip with nearly 10 E-setae; C-setae absent (fig. 1 G).

Gnathopods 1-2 of moderate size, with segment 6 nearly as large as the corresponding coxa (figs. 3 A, 3 D). Gnathopod 1: segment 4 with one group of posterior median setae (fig. 3 A); segment 5 distinctly shorter than 6 (fig. 3 A, C); segment 6 poorly trapezoid, only slightly longer than broad, with 6 groups of setae along posterior margin (fig. 3 C), palm inclined almost to the half of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied by 3 slender serrated

spines and 4-5 facial setae (fig. 3 C); on inner face by one short subcorner spine (fig. 3 B); dactyl reaching posterior tip of segment 6, along outer margin with 9-10 single or paired setae (fig. 3 C).

Gnathopod 2: segment 4 with one group of posterior median setae (fig. 3 D); segment 5 short; segment 6 only slightly larger than that of gnathopod 1, nearly as long as broad, trapezoid, with 8 groups of posterior marginal setae (fig. 3 F); palm inclined almost to the half of posterior margin of segment 6, defined on outer face by 1 strong spine accompanied by 3 slender serrated spines and 5 facial setae (fig. 3 F), at inner face by 1 short subcorner spine (fig. 3 E).

Pereopods 3-4 moderately slender, segments 4-5 along posterior margin with bunches of setae, intermixed on segment 5 with single short or long spines (figs. 4 A, 4 C); posterior margin of segment 6 with 5 groups of short setae intermixed with short spines; dactyls short and stout, along inner margin with 1 strong spine, along outer margin with one median seta; nail slightly shorter than pedestal, strong (figs. 4 B, 4 D).

Pereopods 5-7 strong, segments 4-6 along both margins with short spines intermixed with short setae (figs. 5 A, 5 C, 5 E) and slightly narrowed segment 2 bearing a row of short posterior marginal setae and without distinct ventroposterior lobe (figs. 5 A, 5 C, 5 E).

Pereopod 5: segment 2 with straight or slightly concave posterior margin; segments 5-6 of subequal length, dactyl short and strong, with one spine at inner margin, nail slightly shorter than pedestal (fig. 5 A, 5 B).

Pereopod 6 is similar to pereopod 5 but longer and with longer segment 2 (fig. 5 C); segments 4-6 like these in pereopod 5; dactyl short and strong, with one spine at inner margin, like that on pereopod 5. (fig. 5 D).

Pereopod 7: segment 2 almost twice as long as broad, segment 6 is distinctly longer than segment 5; dactyl short and strong, with one strong spine at inner margin and with one median seta at outer margin; nail strong, shorter than pedestal (fig. 5 F).

Coxal gills appear on pereonites 2-6, long, ovoid (figs. 3 D, 4 A, 4 C, 5 A, 5 C). Oostegites broad, with long marginal setae (fig. 3 D).

Epimeral plates 1-3 with distinctly subrounded ventroposterior corner (fig. 4 E), plates 2-3 with 4 subventral facial spines each.

Pleopods 1-3 with 2 retinacula each (fig. 2 H-J). Pleopod 1: peduncle with a row of setae along anterior and posterior margins (in lateral view) (fig. 2 H). Pleopod 2: peduncle with one pair of 2 longer setae at posterior margin (fig. 2 I). Pleopod 3 with 2 setae at posterior margin only (fig. 2 J).

Uropods 1-2 with inner ramus distinctly longer than outer ramus (fig. 1 I). Uropod 1: peduncle with dorsointernal row of 3 marginal setae only (fig. 1 I); outer ramus reaching  $\frac{3}{4}$  of inner one, with several short spines at margins and tip; inner ramus with spines and 2 bunches of setae at outer face.

Uropod 2: peduncle and both rami with lateral and distal short spines, outer ramus reaching  $\frac{3}{4}$  of inner ramus (fig. 1 I).

Uropod 3 elongated, inner ramus scale-like, short, with lateral and distal spines (fig. 4 F). Outer ramus 2-segmented; first segment along both margins with bunches of short spines, and with single plumose setae along inner margin (fig. 4 F); second segment reaching half of first one, along both margins and tip with setae only.

Telson short, slightly broader than long, lobes gaping; each lobe with 4-5 distal strong spines; along inner and outer margin on each lobe appears 1-2 spines; facial spines absent (fig. 2 K). A pair of short plumose setae appears near the middle of outer margin of each lobe.

MALES: unknown.

VARIABILITY: unknown.

DERIVATIO NOMINIS: This species is dedicated to Bogdan Ognjenović who visited often the caves with his father **Siniša**, collecting the biological material.

REMARKS. *Niphargus ravanicanus* S. Kar. 1943 known from Ravanica Cave in Serbia, differs from *N. bogdani* by strongly acute epimeral plates 1-3, by remarkably unequal size of gnathopods 1-2, etc.

*Niphargus bozanae* differs also from *N. bogdani* by more angular epimeral plates 1-3 (epimera 3 not produced), by more stout pereopods and their dactyls, by shape of gnathopods 1-2, by absence of facial spines on telson, by different pilosity of maxilliped, etc.

S. Karaman described (1943) *Niphargus bosniacus*, n. sp. from Mračna pećina Cave in Bosnia. Although very poorly described, this species differs from *N. bogdani* by presence of facial spines and absence of lateral spines on telson, and rami of uropod 1 in females are nearly of subequal length.

*Niphargus remyi* S. Karaman 1934, known from the springs near Sjenica (Serbia) differs remarkably by different shape of maxilla 1, shape of gnathopods 1-2, etc.

*Niphargus pecarensis* S. Karaman & G. Karaman 1959, known from Bulgaria and Serbia (G. K a r a m a n, 1994, 1998, 1999, 2000) is provided with similar completely subrounded epimeral plates 1-3, but *N. pecarensis* differs from *N. bogdani* by more setiferous pleopods, telson without strong marginal and lateral spines, short uropods 1-2, different maxilla 1, etc.

#### NIPHARGUS BOZANAE, N. SP.

*Figs. 6-10*

MATERIAL EXAMINED: S-6672, Serbia: Rakovica village, Jama Jamina Cave, 990 m. a. s. l., Zlatibor Mt., 8.04.2003 (leg. S. Ognjenović), 2 exp.

Holotype (No. S-6672) and paratype are deposited in KARAMAN's Collection in Podgorica, Crna Gora.

DIAGNOSIS: Outer plate of maxilla 1 with spines bearing one lateral tooth each. Dactyl of gnathopods 1-2 with row of several setae along outer margin. Epimeral plates 1-3 broadly angular; peduncles of pleopods 1-3 poorly setose and with 2 retacula each. Rami of uropods 1-2 distinctly unequal. Uropod 3 with elongated second article of outer ramus in females. Segment 2 of pereopods 5-7 with poorly lobed ventroposterior corner, dactyls of pereopods slender, with one spine at inner margin. Telson with lateral and facial spines.

DESCRIPTIONS: Female 8 mm, with marginally haired oostegites (holotype): Metasomal segments with 3-4 short dorsoposterior marginal setae each (fig. 8 H). Urosomite 1 with one dorsolateral seta on each side; urosomite 2 with 2 dorsolateral spines on each side, urosomite 3 smooth (fig. 6 G).

Head with short rostrum; lateral cephalic lobes narrowly subrounded, with shallow ventroanterior excavation, eyes absent (fig. 6 A).

Antenna 1 exceeding half of body (ratio 5.2: 8.0). Its peduncular segments 1-3 progressively shorter, segment 3 reaching nearly half of segment 2 (fig. 6 A); main flagellum with 24 articles (most of them bearing one short aesthetasc each); accessory flagellum short, 2-segmented (fig. 6 A).

Antenna 2: peduncular articles 4-5 of nearly subequal length, bearing groups of setae longer than diameter of the articles themselves; flagellum

11-articulated, longer than last peduncular segment; antennal gland cone short (fig. 6 A).

Labrum broader than long, concave distally. Labium with inner lobes (fig. 8 E). Maxilla 1: inner lobe with 3 setae (fig. 10 A); outer lobe with 7 spines (6 of them with one lateral tooth each, one spine with 3 lateral teeth) (fig. 10 B); palp 2-segmented, with 8 distal setae (fig. 10 A).

Maxilla 2: both lobes with groups of distal setae only (fig. 6 F).

Maxilliped: inner plate with 4 distal spines (fig. 8 G); outer plate reaching half of palp segment 2; palp segment 3 at outer margin with one median group of setae (fig. 8 F), segment 4 with one median seta at outer margin (fig. 8 F).

Mandibles with triturative molar (fig. 6 B), palp 3-segmented; segment 1 naked; segment 2 with 11 marginal setae and 1 facial seta (fig. 6 D); segment 3 subfalciform, slightly longer than segment 2 (fig. 6 D). Left mandible: incisor with 5 teeth (fig. 6 B); lacinia mobilis with 4 teeth (fig. 6 B). Right mandible: incisor with 4 teeth (fig. 6 C), lacinia mobilis bifurcate, pluritoothed (fig. 6 C).

Coxae relatively short, coxa 1 nearly as long as broad, with subrounded ventroanterior corner (fig. 7 A); coxae 2-4 hardly longer than broad, with several setae each (figs. 7 D, 8 A, 8 C); coxae 5-7 short (figs. 9 A, 9 C, 9 E).

Gnathopods 1-2 of moderate size, nearly as large as corresponding coxae, gnathopod 2 slightly larger than gnathopod 1 (figs. 7 A, 7 D). Gnathopod 1: segments 3-4 along posterior margin with distal group of marginal setae only (fig. 7 A); segment 5 shorter than 6, along outer (anterior) margin with distal setae only (fig. 7 A); segment 6 trapezoid, hardly longer than broad, with 7 groups of setae along posterior margin (fig. 7 C); palm inclined slightly less than half of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied by 2 slender toothed spines (fig. 7 B, 7 C) and a row of 5 facial setae; on inner face by 1 short subcorner spine (fig. 7 B); dactyl reaching posterior margin of segment 6, along outer margin with row of long single or paired setae (fig. 7 C).

Gnathopod 2: segments 3-4 along posterior margin with distal setae only (fig. 7 D); segment 5 poorly shorter than 6, with one median seta at anterior margin (fig. 7 D); segment 6 trapezoid, hardly broader than long, with 10 groups of setae along posterior margin (fig. 7 F); palm inclined nearly half of posterior margin of segment 6, defined on outer face by one strong corner spine accompanied with 3 slender serrate spines (fig. 7 E)



and with row of 5 facial setae (fig. 7 F), on inner face by one short sub-corner spine (fig. 7 E); dactyl like that in gnathopod 1 (fig. 7 F).

Pereopods 3-4 moderately slender, along posterior margin with setae as long as (pereopod 4) (fig. 8 A) or longer (fig. 8 C) than diameter of articles themselves; dactyl short and slender, with one median spine at inner margin; nails shorter than pedestal (figs. 8 B, 8 D).

Pereopods 5-7: segment 2 slightly less than twice as long as broad, with poorly marked ventroposterior lobe (figs. 9 A, 9 C, 9 E), and along posterior margin with 8-11 short posterior marginal setae; segments 3-6 along both margins with spines and single setae (figs. 9 A, (C, 9 E); dactyls short and relatively slender, progressively longer towards pereopod 7, bearing one median spine at inner margin, nail remarkably shorter than pedestal (figs. 9 B, 9 D, 9 F).

Pleopods 1-3 with 2 retinacula each. Peduncles of pleopods 1-3 poorly setose: peduncle of pleopod 1 with 2 distoanterior strong setae (fig. 10 C), that of pleopod 2 with one seta (fig. 10 D); peduncle of pleopod 3 along posterior margin with 2 setae only (fig. 10 E).

Epimeral plates 1-3 broadly angular with obtuse, almost subrounded ventroposterior corner marked by one stronger spine-like seta (fig. 8 H); plates 1-2 with convex posterior margin, plate 3 with slightly concave posterior margin; plates 2-3 with 2-3 subventral spines each (fig. 8 H).

Uropods 1-2 elongated. Uropod 1: peduncle with dorsointernal row of setae and dorsoexternal row of spines (fig. 6 G); outer ramus distinctly shorter than inner ramus, both rami with 5 distal and single marginal short spines accompanied by single setae as long as or longer than spines themselves (fig. 6 G).

Uropod 2: outer ramus distinctly shorter than inner one, both rami with 5 distal and 1-2 lateral short spines (fig. 6 G).

Uropod 3 elongated; inner ramus short, scale-like, with one distal spine (fig. 10 F); outer ramus 2-segmented (fig. 10 F), along both margins with groups of short spines, and along inner margin accompanied with single plumose setae; second segment reaching half of first one, provided at both margins and on top with short simple setae only (fig. 10 F).

Telson short, only slightly longer than broad, moderately gaping; each lobe with 3 distal and 2-3 facial spines, as well as with 0-1 spine at both margins (fig. 10 G); a pair of short plumose setae appears near the middle of each lobe.

Coxal gills long (figs. 7 D, 8 A, 8 C, 9 A, 9 C). Oostegites long and broad, with marginal setae (fig. 7 D).

MALES: unknown.

VARIABILITY: The second specimen, female 7 mm, bearing setose oostegites, is similar to the holotype, and its telson is with distal, facial and lateral marginal spines also (fig. 10 H).

DERIVATIO NOMINIS. This species is dedicated to my wife Božana Karaman, who helped me always in my scientific work as well as in the field investigations and the research in the caves.

REMARKS: *Niphargus bozanae* differs from *N. bogdani* by produced and less subrounded epimeral plates, by more slender dactyls of pereopods 3-7, by less setose peduncle of pleopods 1-3, by presence of facial spines on telson, by broader segment 6 of gnathopods 1-2, by less number of distal spines on inner plate of maxilliped, by slightly more narrow segment 2 of pereopods 5-7, by absence of 2 outer marginal groups of setae on palp segment 3 of maxilliped and on segment 4 (dactyl) of maxilliped.

*Niphargus remyi* S. Kar. 1934 differs by strongly acute epimeral plates 1-3, gnathopod 2 much larger than 1, by absence of facial spines on telson, by maxilla 1 with 8-9 spines in outer plate of maxilla 1, etc.

*Niphargus ravanicanus* S. Kar. 1943 differs by absence of facial spines on telson, less inclined palm of gnathopod 2, more stouter dactyl of pereopods 5-7.

*Niphargus bosniacus* S. Kar. 1943 differs by absence of lateral spines on telson, by nearly subequally long rami of uropod 1 in ovig. females.

*Niphargus boskovici alatus* G. Kar. 1973, known from Veruša in Prokletije Mt. (Crna Gora) is provided also with slightly elongated distal article of outer ramus in uropod 3 of female, but differs from *N. bozanae* by absence of lateral and facial spines on telson, more angular epimeral plates, subequal rami of uropod 1, etc.

As many known *Niphargus* species are described very poorly, for the moment is very difficult to resolve the problem of the evolutionary connections between various species or group of species, It is clear that the origin of the genus *Niphargus* we must search in the coastal sea waters from where they have been penetrated by the subterranean ways into the subterranean continental freshwaters.

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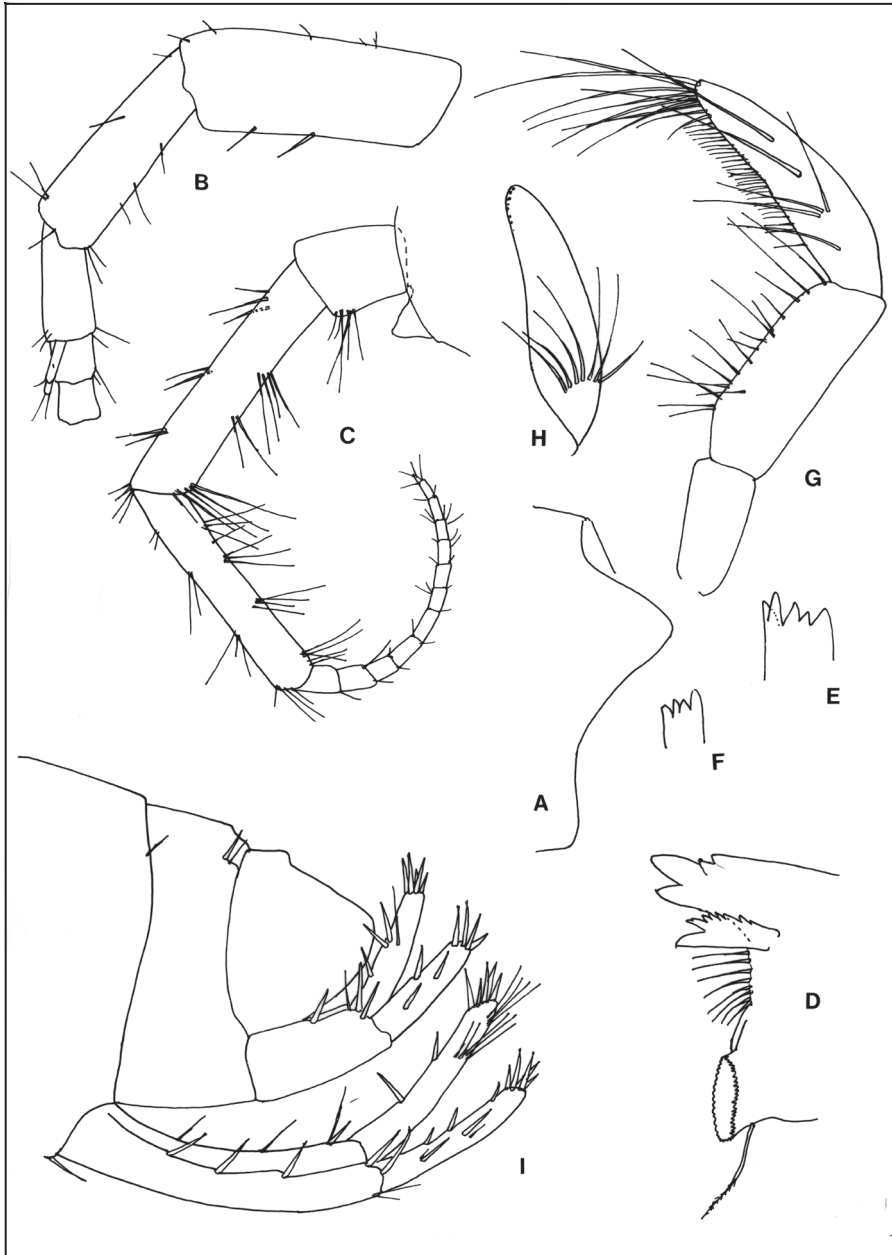


Fig. 1. *Niphargus bogdani*, n. sp., female 12.6 mm (holotype), Grlić Cave:  
 A= lateral cephalic lobe; B= antenna 1; C= antenna 2; D= right mandible;  
 E= left incisor; F= left lacinia mobilis; G= mandibular palp, inner face;  
 H= mandibular palp, outer face; I= urosome with uropods 1-2.

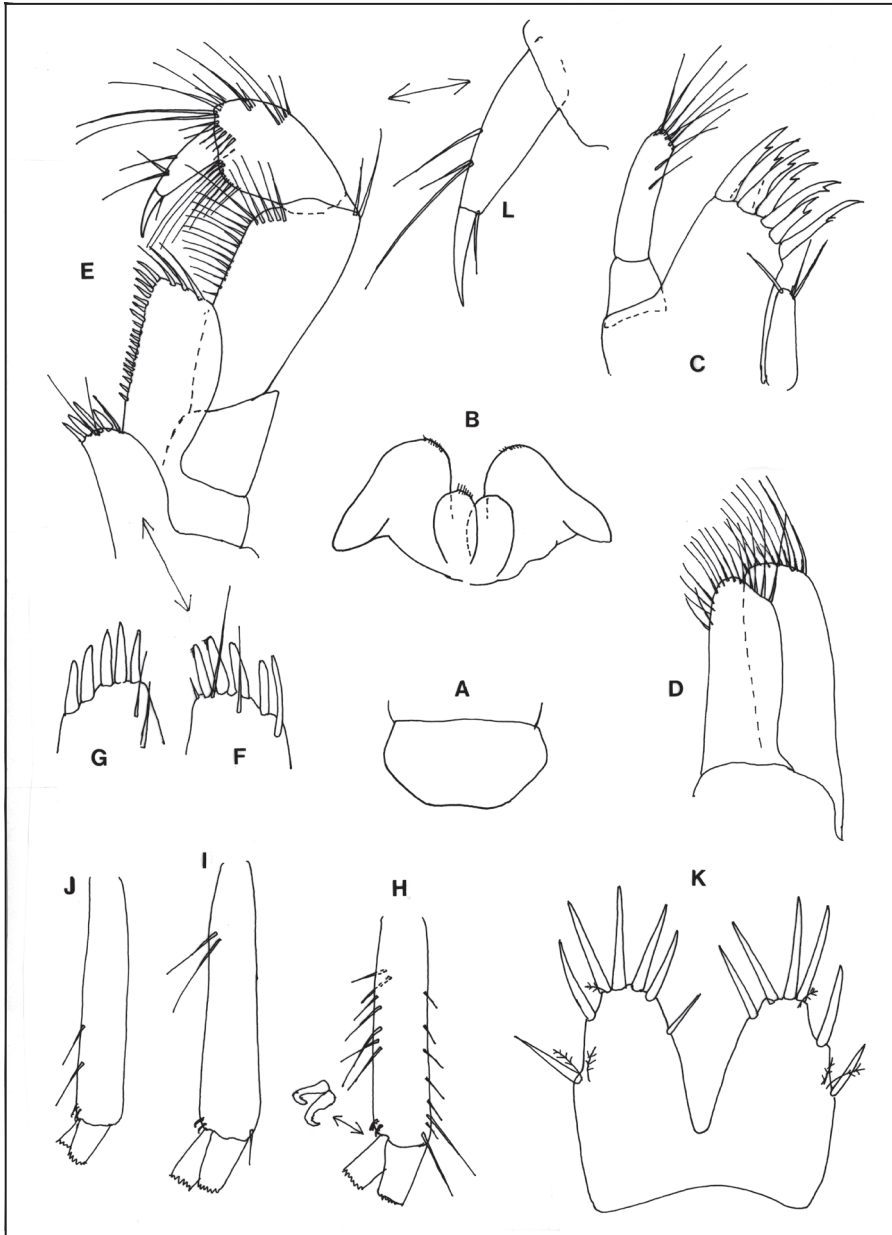


Fig. 2. *Niphargus bogdani*, n. sp., female 12.6 mm (holotype), Grlić Cave: A= labrum; B= labium; C= maxilla 1; D= maxilla 2; E-F= right maxilliped; G= left inner plate of maxilliped; H-J= pleopods 1-3; K= telson; L= palp article 4 of maxilliped.

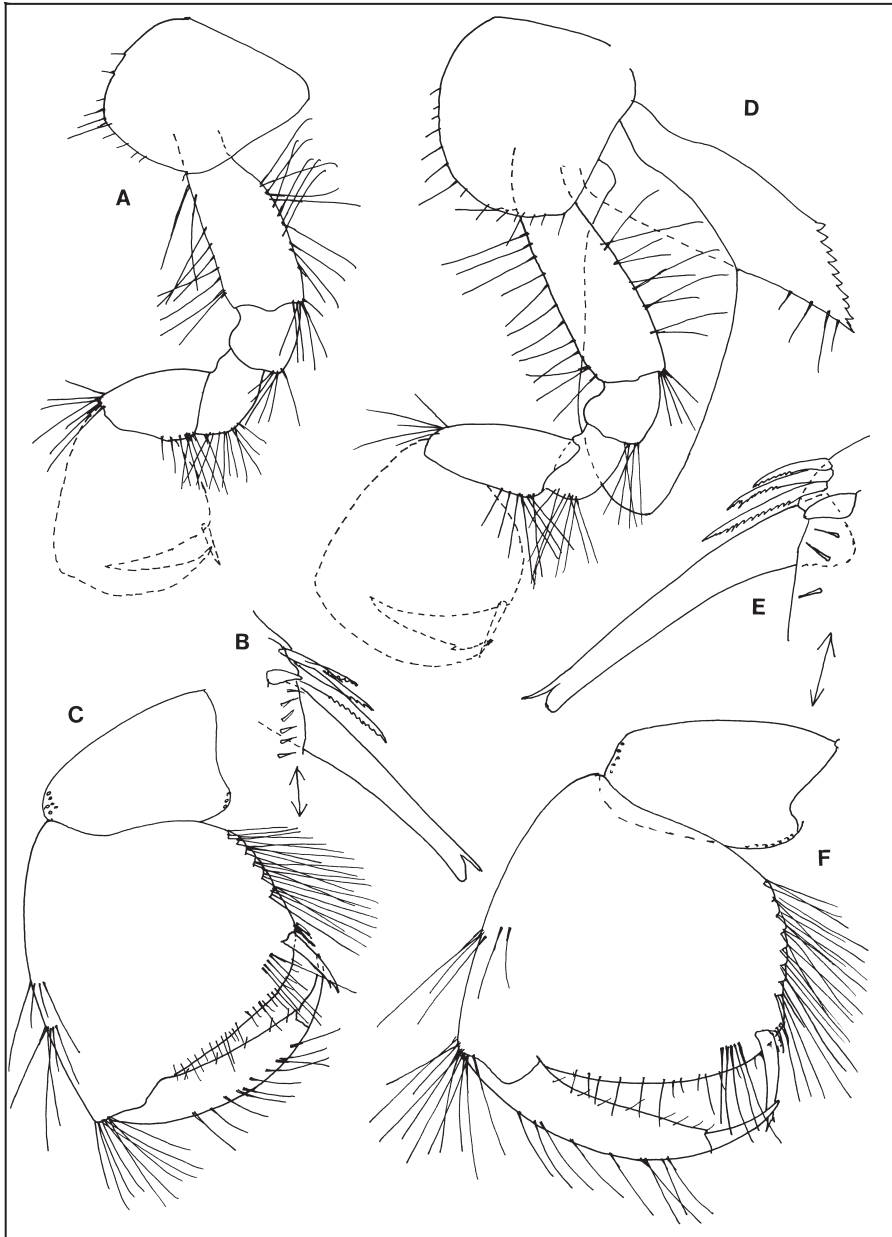


Fig. 3. *Niphargus bogdani*, n. sp., female 12.6 mm (holotype), Grlić Cave: A-C= gnathopod 1; D-F= gnathopod 2.

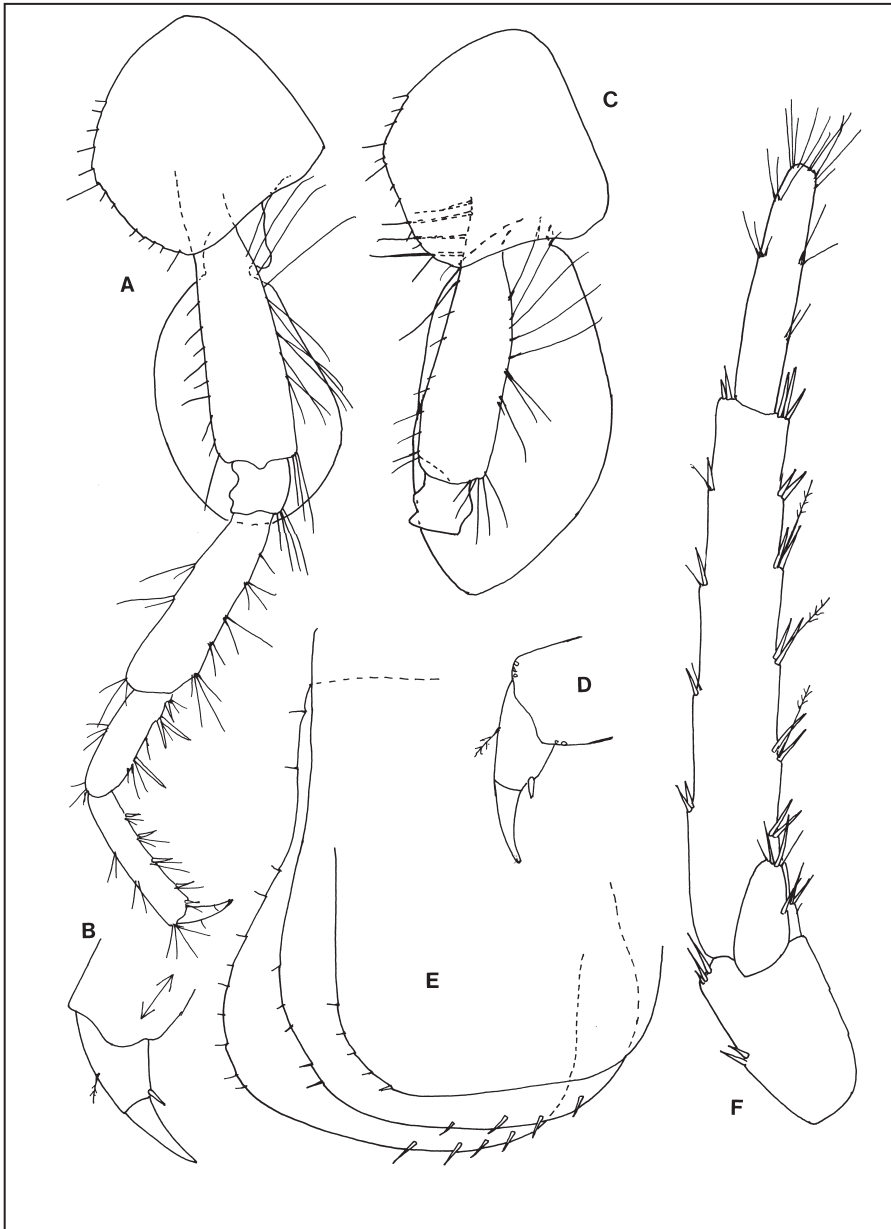


Fig. 4. *Niphargus bogdani*, n. sp., female 12.6 mm (holotype), Grlić Cave: A-B= pereopod 3; C-D= pereopod 4; E= epimeral plates 1-3; F= uropod 3.



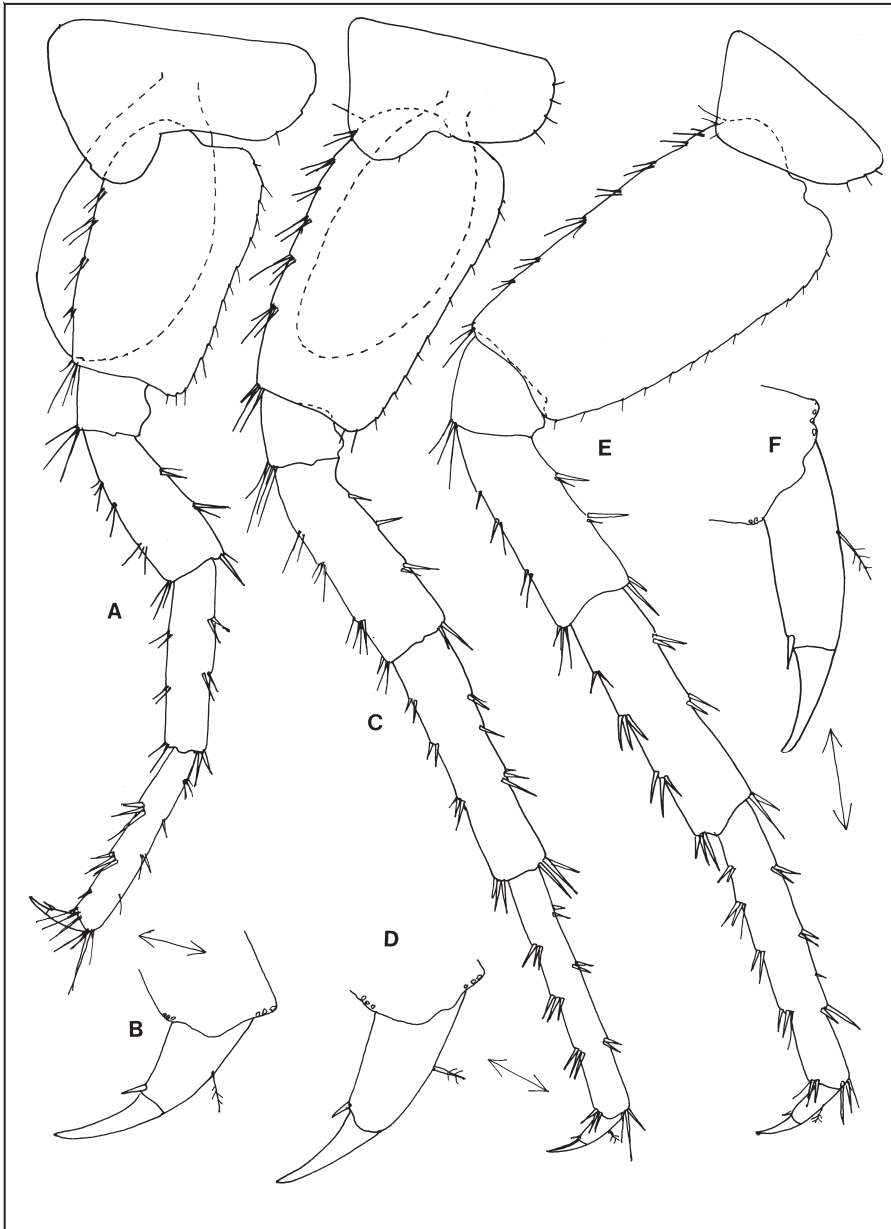


Fig. 5. *Niphargus bogdani*, n. sp., female 12.6 mm (holotype), Grljić Cave: A-B= pereopod 5; C-D= pereopod 6; E-F= pereopod 7.

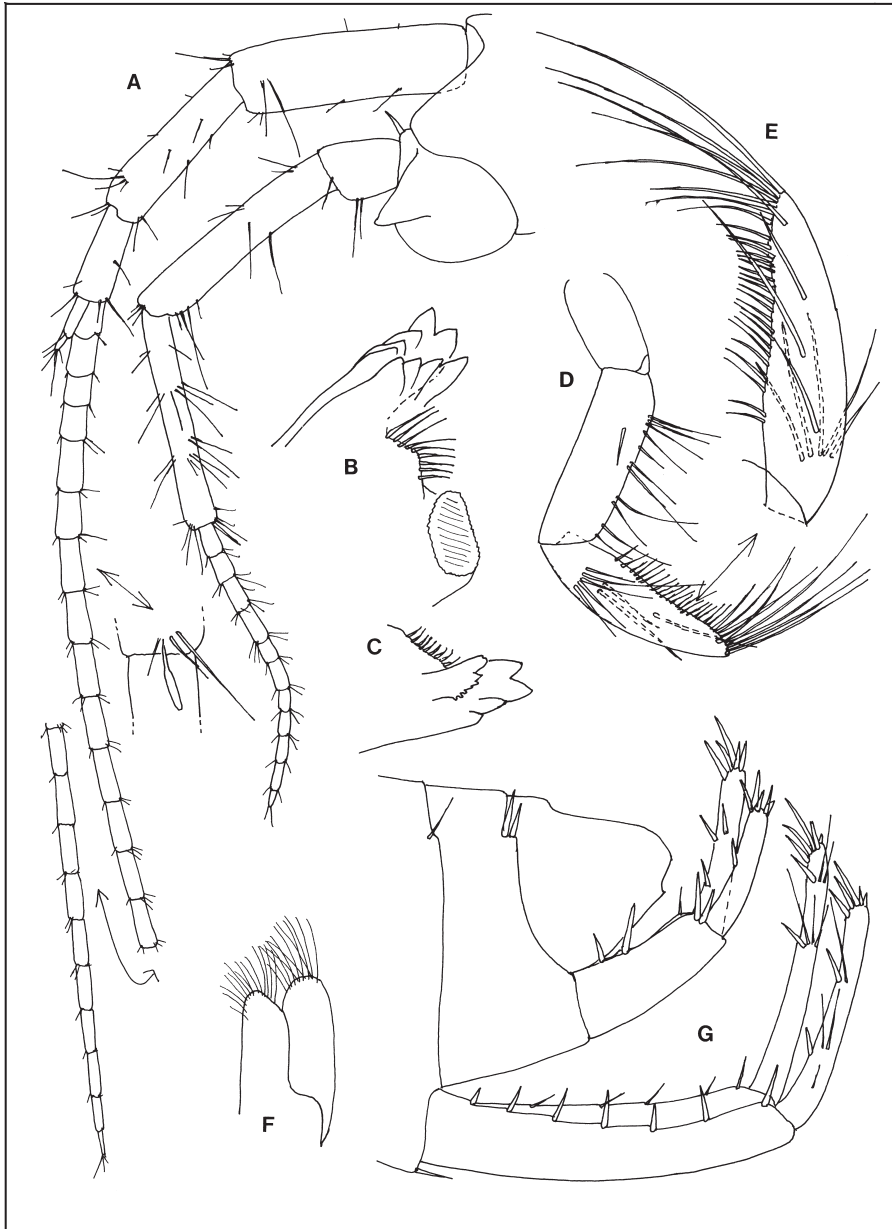


Fig. 6. *Niphargus bozanae*, n. sp., female 8 mm (holotype), Jama Jamina Cave:  
 A = head with antennae 1-2; B= left mandible; C= right mandible;  
 D= mandibular palp, outer face; E= mandibular palp, inner face;  
 F= maxilla 2; G= urosome with uropods 1-2.

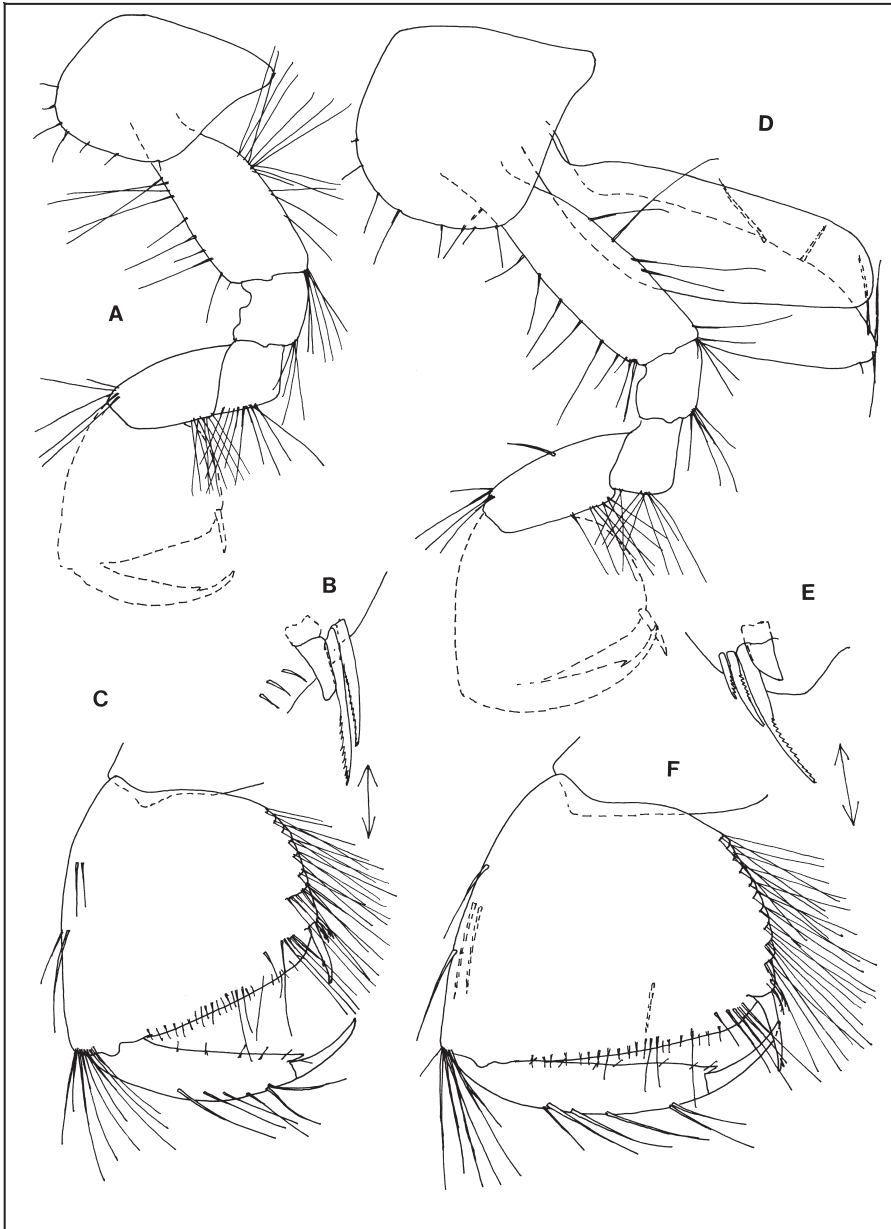


Fig. 7. *Niphargus bozanae*, n. sp., female 8 mm (holotype), Jama Jamina Cave: A-C= gnathopod 1; D-F= gnathopod 2.

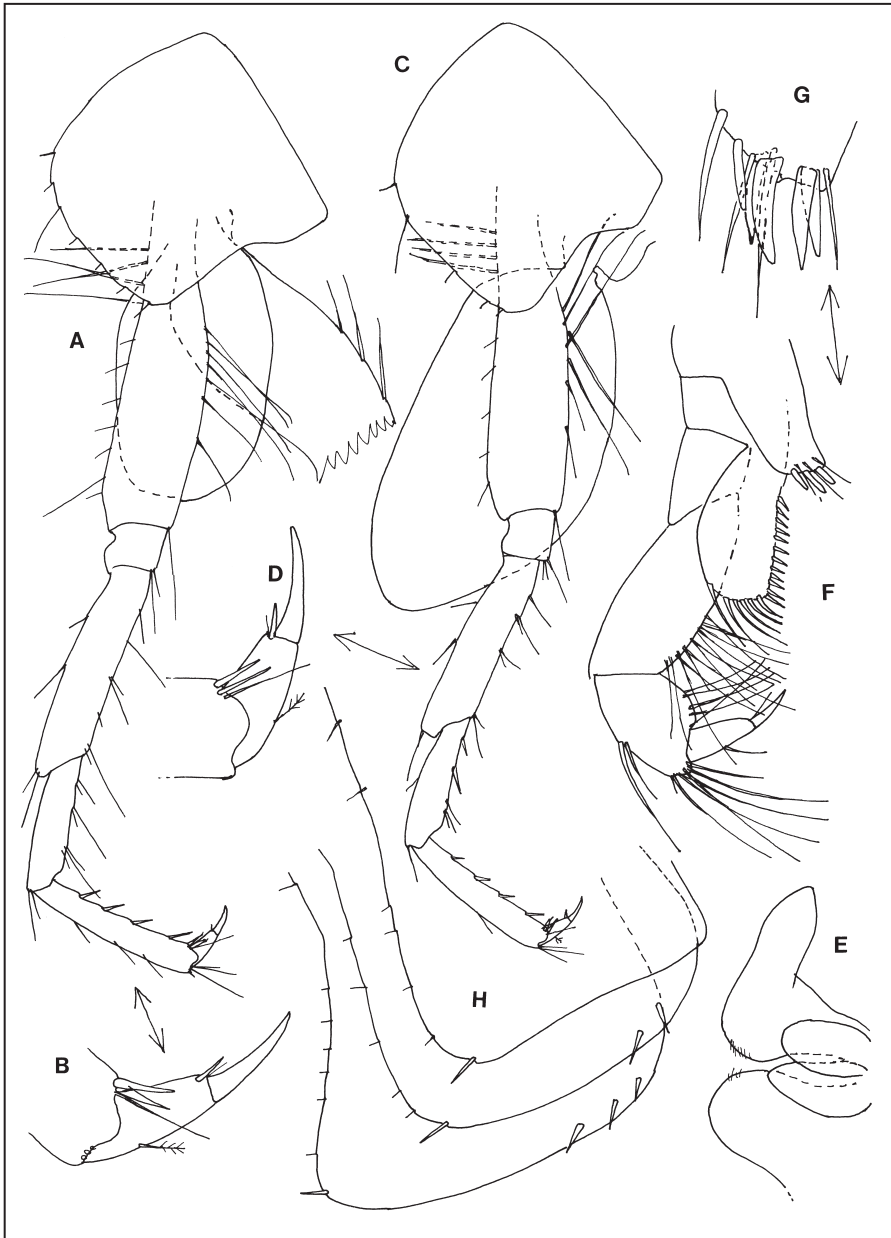


Fig. 8. *Niphargus bozanae*, n. sp., female 8 mm (holotype), Jama Jamina Cave: A-B= pereopod 3; C-D= pereopod 4; E- labium; F-G= maxilliped; H= epimeral plates 1-3.

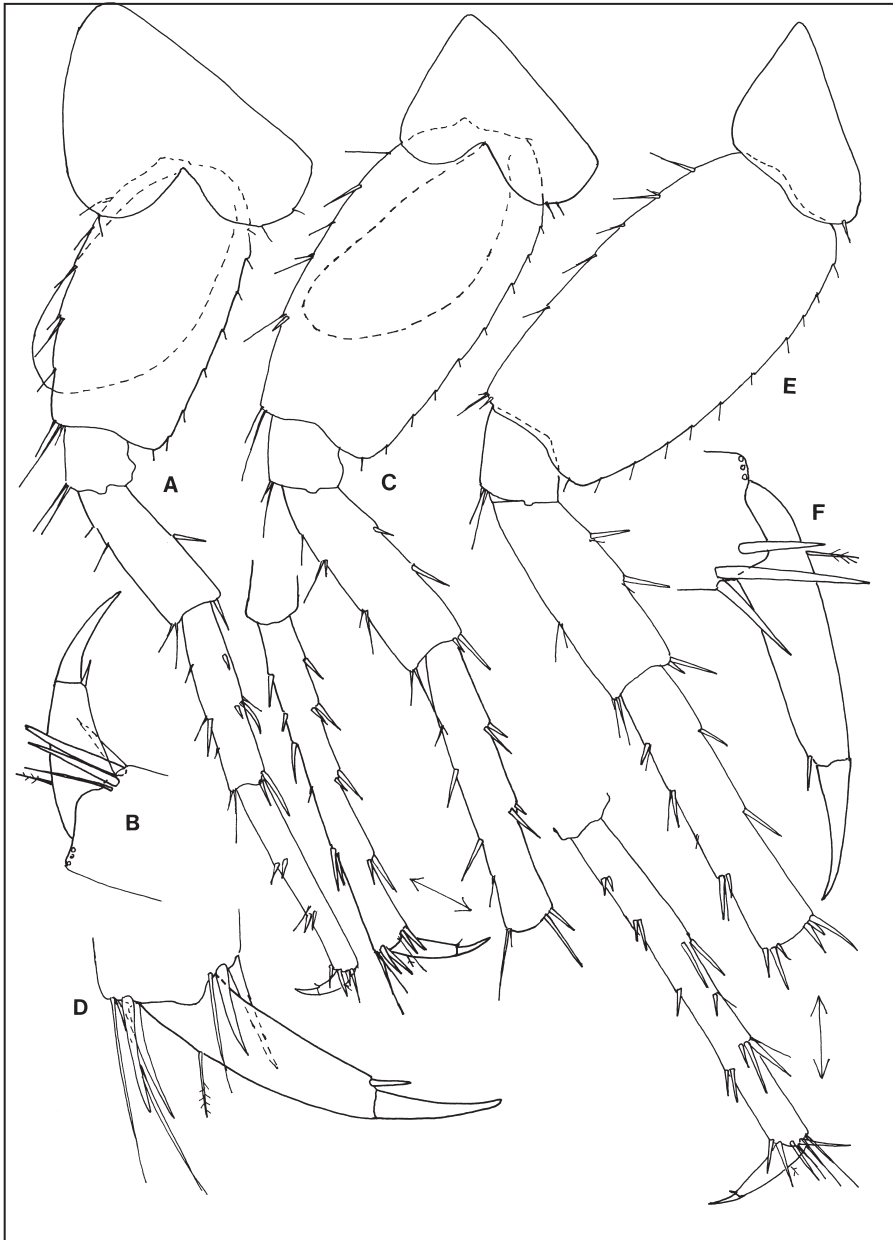


Fig. 9. *Niphargus bozanae*, n. sp., female 8 mm (holotype), Jama Jamina Cave: A-B= pereopod 5; C-D= pereopod 6; E-F= gnathopod 7.

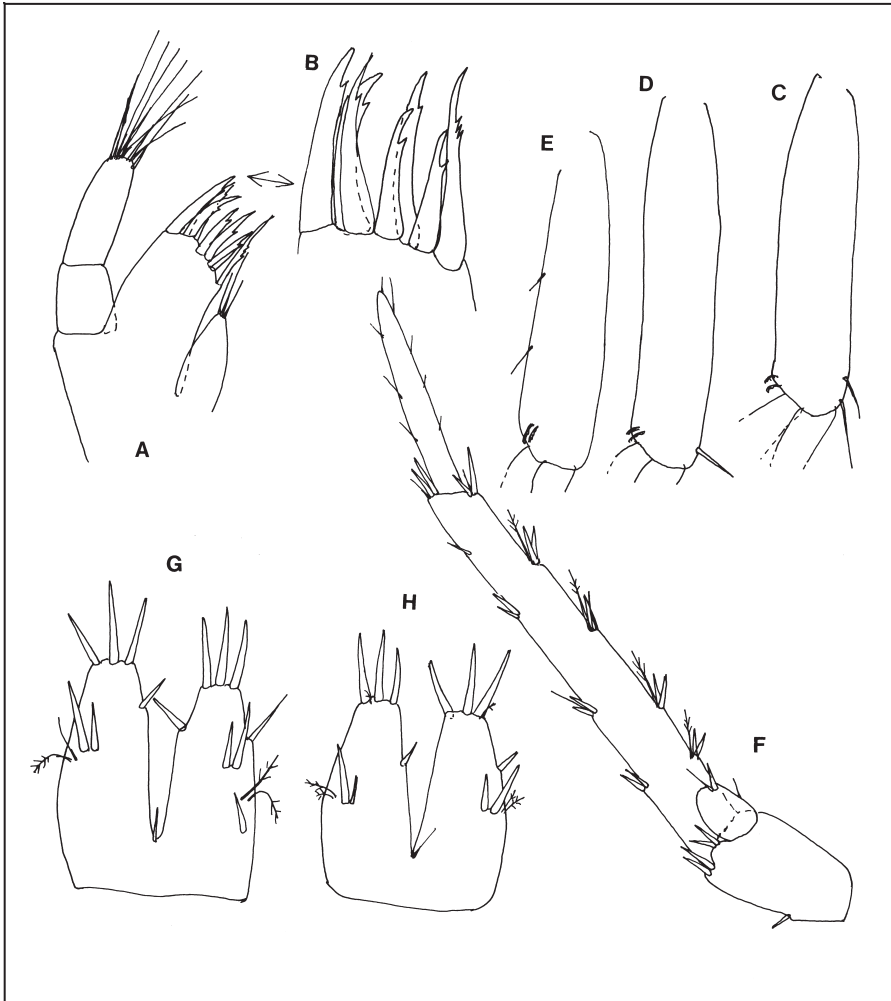


Fig. 10. *Niphargus bozanae*, n. sp., female 8 mm (holotype), Jama Jamina Cave: A-B= maxilla 1; C-E= pleopods 1-3; F= uropod 3; G= telson; H= female 7.0 mm (paratype): telson.