

Gordan S. KARAMAN¹

***NIPHARGUS CERJANENSIS*, SP. N. AND *N. KARAMANI* SCHELL. 1935
FROM THE SUBTERRANEAN WATERS OF WESTERN BALKAN
(CONTRIBUTION TO THE KNOWLEDGE OF THE AMPHIPODA 277)**

SUMMARY

From the subterranean waters of Cerjanska Jama Cave in Croatia (Klenovnik, Ravna Gora, Varaždin reg.) a new species of the family Niphargidae (Crustacea, Amphipoda), *Niphargus cerjanensis*, sp. n. is described and figured, species rather close to the *Niphargus stygius* Complex of taxa.

The poorly known taxon *Niphargus stygius karamani* Schellenberg, 1935 known from the subterranean waters on Slovenian-Croatian border region is redescribed and figured. Taxonomical position of both taxa is discussed and *N. karamani* is elevated to the specific rank.

Keywords: Amphipoda, *Niphargus cerjanensis*, *karamani*, taxonomy, Croatia, Slovenia, new species, subterranean

INTRODUCTION

The subterranean fauna of Amphipoda in Balkan is very rich in species. Within this richness, the family Niphargidae is presented mainly by genus *Niphargus* Schiödte, 1849, in Europe with over 200 taxa of various origin and age: at one side, numerous more primitive species as *Niphargus parapupetta* G. Karaman, 1984, *N. transitivus* Sket, 1971, etc., at other side numerous more advanced species, often still in segregation into a different isolated populations or species, as *N. stygius*-Complex of taxa, *N. longicaudatus*-Complex of taxa, etc.

Because of very large morphological variability of various populations and taxa, often is very difficult to recognize the limits of variability of single species or subspecies within the genus *Niphargus* based on classic morphological and ecological characters.

Regarding this problem, it is important to recognize and describe as much as possible different taxa to create a base for further cytogenetic, molecular and evolutionary study of genus *Niphargus*, which will support or deny the taxonomical categories established based on morphology, ecology and zoogeography only.

Thanks to the speleologist Mr. Sci. R. Ozimec from Zagreb who collected with some other speleologists the samples of genus *Niphargus* from Croatia, and sent us at disposition for study, we described here one new species from the cave Cerjanska Jama, close to *Niphargus stygius*-Complex of taxa. On the other hands, poorly known taxon *Niphargus stygius karamani* Schellenberg, 1935 is redescribed and elevated to the species level.

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MATERIAL AND METHODS

The samples of *Niphargus* have been preserved in 70% ethanol. The specimens were examined and dissected in the mixture of glycerine and water, using a Wild M 20 stereomicroscope and drawn using the camera lucida attachment. Later the dissected specimens have been transferred on slides in Liquid of Faure for final preservation. The advantage of Faure liquid is because it is possible always again dissolve the Faure liquid on slides using normal water, and move the dissected pieces for further studies.

The body length of examined specimens was measured by tracing individual's mid-trunk lengths (tip of the rostrum to end of telson) and drawings were made using a camera lucida and inked manually. Some morphological terminology and seta formulae follows Karaman's terminology (Karaman, G., 1969; 1993; 2012).

Some used samples are from KARAMAN's Collection. All studies in this work are based on the classic morphological, ecological and zoogeographical studies.

TAXONOMICAL PART

Family Niphargidae

NIPHARGUS CERJANENSIS sp. n.

Figures 1-9

MATERIAL EXAMINED: CROATIA: S-7170 (R-51) =: Cerjanska Jama Cave, Klenovnik, Ravna Gora, Varaždin reg., 15.5.2013, 7 exp. (leg. R. Ozimec);

R-25= *ibid.*, 16.10.2008, 1 exp. (leg. E. Domina).

R-32= *ibid.*, 2.11.2007, 5 juv. exp. (leg. H. Cvitanović);

R-40= *ibid.*, 27.5.2007, 5 exp. (leg. R. Ozimec);

R-41= *ibid.*, 15.5.2006 4 exp. (leg. R. Ozimec).

DIAGNOSIS. Epimeral plates 1-3 quadrate, with convex posterior margin. Epimeral plate 3 with ventroposterior corner marked and more angular in females and juvenile specimens than in the males. Urosomal segment 1 with 1 seta, urosomal segment 2 with 1-2 spines on each side, in males and females.

Maxilla 1 inner plate with 4-5 setae, outer plate with 7 spines (6 with one lateral tooth only, one spine with 2-3 teeth). Maxilliped inner plate with 3 distal spines. Coxae 1-4 relatively short, slightly longer in females than in males. Propodus of gnathopods 1-2 trapezoid, with palm inclined nearly to the half of propodus-length, and with dactylus bearing a row of single strong setae along outer margin. Article 2 of pereopods 5-7 longer than broad, without distinct ventroposterior lobe. Pleopods with 2 retinacula each, peduncle of all pleopods scarcely setose.

Dactylus of pereopods 3-7 strong, with one spine at inner margin near basis of the nail. Uropod 1 with equal rami in males and females. Uropod 2 with equal or hardly unequal rami in males and females. Uropod 3 with elongated second article of outer ramus. Telson obtuse distally, each lobe with 4-5 distal spines and often with distolateral spine along outer margin, facial spines absent.

DESCRIPTION. MALE 17.2 mm (holotype)

Body moderately slender, metasomal segments 1-3 with 3-4 dorsoposterior marginal setae each (fig. 3G). Epimeral plates 1-3 quadrate; epimeral plates 1-2 with marked ventroposterior spine and strongly convex posterior margin (fig. 3G). Epimeral plate 3 poorly to moderately convex posterior margin and distinct ventroposterior corner (fig. 3G). Epimeral plates 2-3 with 3 subventral short spines each.

Urosomal segment 1 with one seta on each dorsolateral side (fig. 1F); urosomal segment 2 with 1-2 spines and 1 seta on each dorsolateral side (fig. 1F); urosomal segment 3 naked. Urosomal segment 1 on both sides with one small ventroposterior spine near basis of uropod 1-peduncle (fig. 1F).

Head with short rostrum and subrounded lateral cephalic lobes (fig. 1A), ventroanterior sinus developed, eyes absent.

Antenna 1 reaching nearly half of body; peduncular articles 1-3 very scarcely setose, progressively shorter (ratio: 67:55:28) (fig. 1B); main flagellum with 17+ articles (several distal articles are missing) (most of articles with one short aesthetasc); accessory flagellum 2-articulated, much shorter than last peduncular article (ratio: 8:28) (fig. 1B).

Antenna 2: peduncular article 3 with distal bunch of ventral setae; peduncular articles 4 and 5 of equal length, both articles with several bunches of setae as long as or longer than the diameter of articles themselves (fig. 1C). Flagellum longer than last peduncular article (ratio: 85:67), slender, scarcely setose, consisting of 9 articles (fig. 1C); antennal gland cone short,

Mouthparts basic. Labrum broader than long, with obtuse anterior margin (fig. 1D). Labium with subrounded outer lobes, inner lobes short but well developed (fig. 3A).

Mandible: molar triturative. Left mandible: incisor with 5 teeth, lacinia mobilis with 4 teeth. Right mandible: incisor with 4 teeth, lacinia mobilis bifurcate, toothed. Mandible palpus 3-articulated: first article naked; second article with 13 strong setae (fig. 5B). Palpus article 3 falciform, slightly longer than second palpus article (ratio 79:61), along ventral margin with nearly 26 marginal D-setae and 8 distal E-setae; on outer face appear 9 A-setae in two rows (fig. 5C); on inner face appear nearly 12 setae in 5 rows (2-3-2-3-2), C-setae absent (fig. 5B).

Maxilla 1: inner plate with 4-5 setae, outer plate with 7 spines (6 spines with one lateral tooth, one spine with 3 teeth) (fig. 5A); palpus 2-articulated, not reaching distal tip of outer plate-spines and bearing 11 setae (fig. 5A).

Maxilla 2: both plates with marginal setae only (fig. 3B).

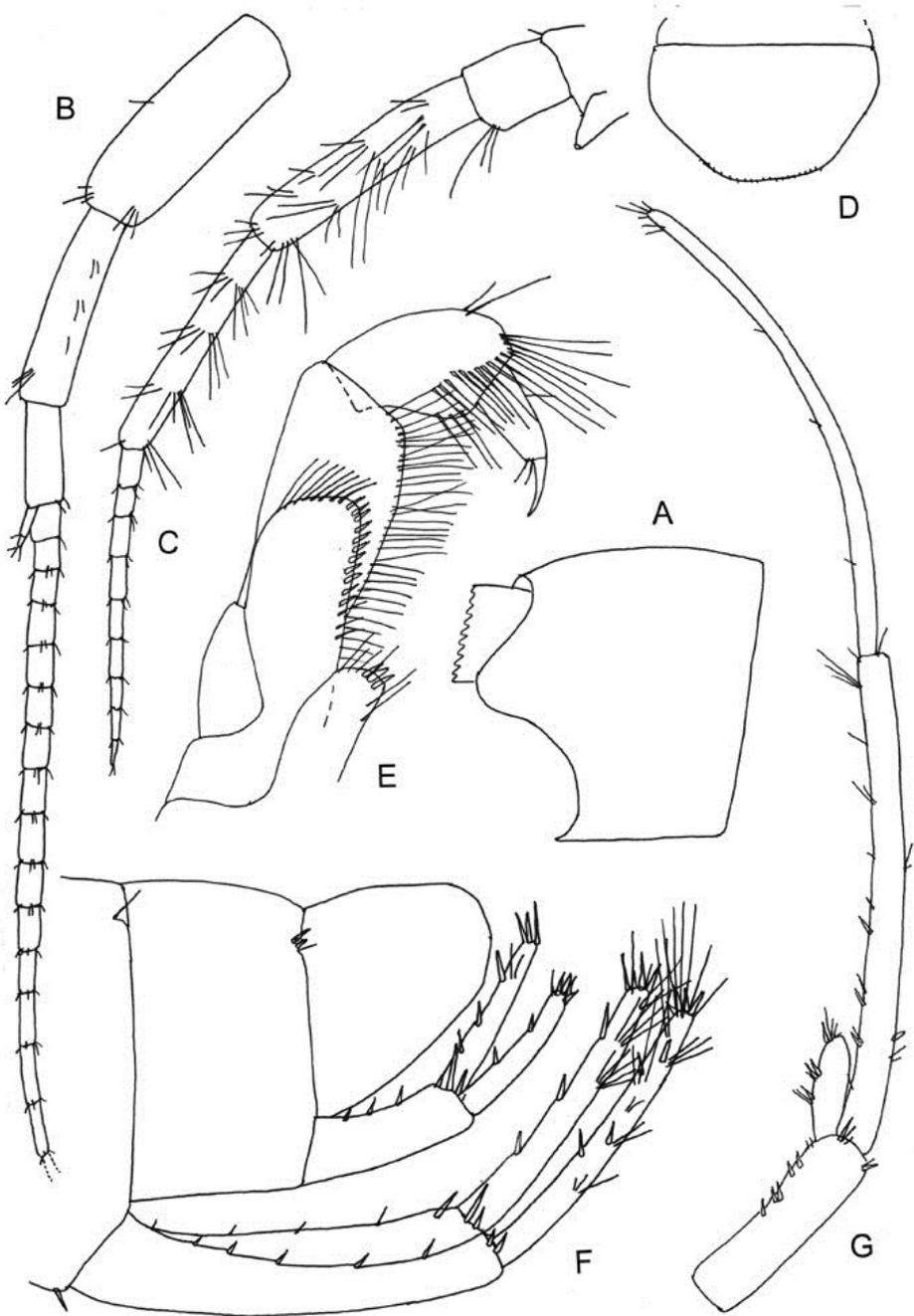


Fig. 1. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, male 17.2 mm (holotype): A= head; B= antenna 1; C= antenna 2; D= labrum; E= maxilliped; F= urosome with uropods 1-2; G= uropod 3.

Maxilliped: inner plate short, with 3 distal pointed spines accompanied by several setae (fig. 1E); outer plate reaching half of palpus article 2, bearing row of short spines and setae along inner margin; palpus article 3 along outer margin with one median and one distal bunch of setae; palpus article 4 with 2 short setae near basis of the nail (fig. 1E).

Coxae 1-4 relatively short, with several marginal setae each. Coxa 1 remarkably broader than long (high) (ratio: 53:37), with subrounded ventroanterior corner (fig. 2A). Coxa 2 hardly broader than long (ratio: 57:53) (fig. 2D). Coxa 3 nearly as long as broad (fig. 3C).

Coxa 4 remarkably broader than long (ratio: 65:55), with slightly concave posterior margin (fig. 3E).

Coxae 5-7 progressively smaller: coxae 5 and 6 bilobed, with several short marginal setae (fig. 4A, C); coxa 7 convex, entire (fig. 4F).

Gnathopods 1-2 with propodus slightly larger than corresponding coxae (fig. 2A, D). Gnathopod 1: article 2 along anterior margin with row of long simple setae, and along posterior margin with 2 bunches of long setae; articles 3 and 4 with one bunch of setae along posterior margin; article 5 shorter than article 6 (ratio: 40:58), along anterior margin with one distal bunch of setae (fig. 2A). Propodus trapezoid, hardly broader than long (ratio: 80:78), along posterior margin with 10 transverse rows of setae (fig. 2B).

Palm only slightly convex, inclined nearly half of propodit-length, defined on outer face by one strong corner S-spine accompanied laterally by 3 slender serrate L-spines and 5 facial M-setae (fig. 2B, C), on inner face by one short subcorner R-spine (fig. 2C). Dactylus reaching posterior margin of propodus, bearing along outer margin a row of single 10 setae, along inner margin a row of short setae (fig. 2B).

Gnathopod 2 remarkably larger than gnathopod 1 (fig. 2D). Article 2 along anterior margin with row of long setae, along posterior margin with bunches of long setae; articles 3 along posterior margin with one bunch of setae (fig. 2D). Article 5 shorter than article 6 (ratio: 48:58). Article 6 (propodus) trapezoid, hardly broader than long (ratio: 96:92), along posterior margin with 13 transverse rows of setae (fig. 2E). Palm inclined nearly 3/5 of propodus-length, convex, defined on outer face by one strong corner S-spine accompanied laterally by one slender serrate L-spine and 5 facial M-setae (fig. 2E, F), on inner face by one short subcorner R-spine (fig. 2F). Dactylus reaching posterior margin of propodus, bearing along inner margin a row of short setae, along outer margin with 12 strong single setae (fig. 2E).

Pereopod 3 moderately slender, article 2 along both margins with long setae; articles 4-6 of different length (ratio: 65:40:47); article 4 along both margins with setae not exceeding the width of the article itself (fig. 3C); article 5 along posterior margin with single short spines and setae; article 6 along posterior margin with a row of 6 short spines; dactylus short and strong, with one spine at inner margin near basis of the nail, and with one median plumose seta along outer margin (fig. 3D); nail shorter than pedestal (ratio: 27:30).

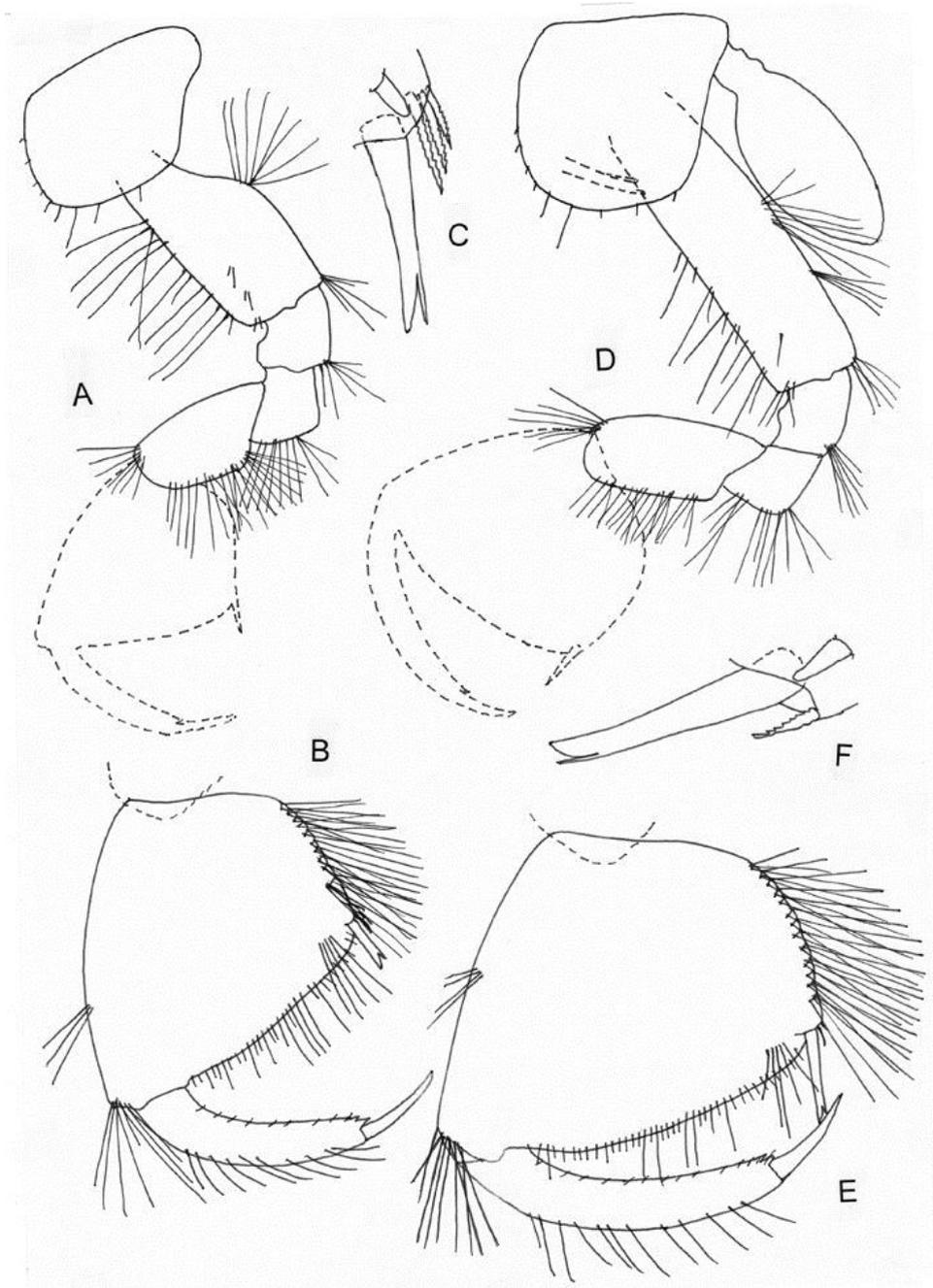


Fig. 2. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, male 17.2 mm (holotype): A-B= gnathopod 1, outer face; C= distal corner of gnathopod 1 propodus, inner face; D-E= gnathopod 2, outer face; F= distal corner of gnathopod 2 propodus, inner face.

Pereopod 4 is similar to pereopod 3 but scarcely less setose (fig. 3E); article 2 along both margins with long setae in proximal part; articles 4-6 of unequal length (ratio: 61:35:48); article 4 along both margins with setae not exceeding the diameter of article itself (fig. 3E); article 5 along posterior margin with 2 spines and single short setae; article 6 along posterior margin with row of 5 single short spines; dactylus strong, along inner margin with one spine near basis of the nail (fig. 3F); nail only slightly shorter than the pedestal (ratio: 26:28).

Pereopod 5 remarkably shorter than pereopods 6 and 7; article 2 (basipodit) longer than broad (ratio: 80:50), with slightly convex anterior and posterior margin, but without distinct ventroposterior lobe (fig. 4A); anterior margin with row of strong setae, posterior margin with 15-17 short setae. Articles 4-6 of unequal length (ratio: 50:53:56), along both margins with short spines and setae. Dactylus short and stout, along inner margin with one strong short spine near basis of the nail and one plumose median seta along outer margin; nail shorter than pedestal (ratio: 33:25) (fig. 4B).

Pereopod 6: article 2 narrow, much longer than broad (ratio: 93:52), without ventroposterior lobe, along anterior margin with several short spine-like setae, along posterior margin with nearly 15 short setae (fig. 4C); articles 4-6 of unequal length (ratio: 60:74:87), article 4 along anterior margin with short setae, along posterior margin with short spines; articles 5 and 6 along both margins with several spines (fig. 4D). Dactylus short and stout, at inner margin with one spine near basis of the nail (fig. 4E); nail shorter than pedestal (ratio: 52:28).

Pereopod 7: article 2 tapering ventrally, without lobe, much longer than broad (ratio: 100:54), along anterior margin with row of spine-like setae; along posterior margin with nearly 18 short setae (fig. 4F); articles 4-6 of unequal length (ratio: 58:78:103), along both margins with short spines (fig. 4F, G); dactylus strong, with one spine at inner margin near basis of the nail and with one median plumose seta along outer margin (fig. 4H); nail shorter than pedestal (27:60).

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopods 1 and 2 naked (fig. 5D, E); peduncle of pleopod 3 along posterior margin with 2 strong setae (fig. 5F).

Uropod 1: peduncle with dorsoexternal row of spines and dorsointernal row of setae (except distal spine) (fig. 1F); rami of equal length, provided with lateral and distal short spines and with 2-3 bunches of simple setae each (fig. 1F).

Uropod 2: peduncle with lateral and distal spines; inner ramus slightly longer than outer one, both rami with lateral and distal short spines, accompanied on inner ramus with 2 simple setae (fig. 1F).

Uropod 3 very elongated, slightly exceeding half of the body (ratio: 90:172); peduncle remarkably longer than broad (ratio: 56:15), with row of short lateral and distal spines (fig. 1G). Inner ramus shorter than peduncle, with 3 bunches of short spines (fig. 1G). Outer ramus 2-articulate, both articles of equal length (fig. 1G); first article along inner margin with several short single spines, and several short setae along both margins; second article with several short lateral and distal simple setae (fig. 1G).

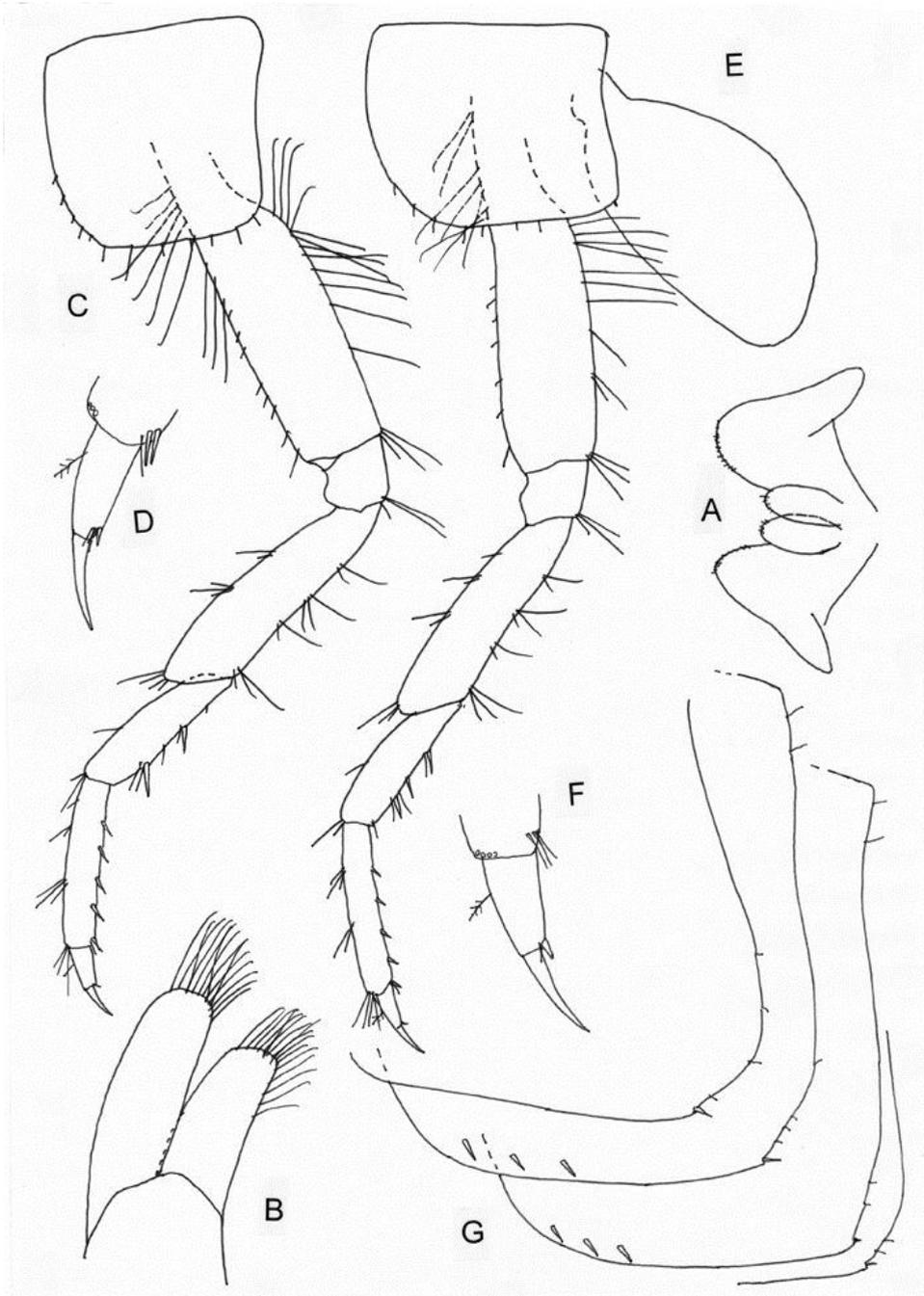


Fig. 3. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, male 17.2 mm (holotype): A= labium; B= maxilla 2; C-D= pereopod 3; E-F= pereopod 4; G= epimeral plates 1-3.

Telson short, as long as broad, incised nearly 2/3 of telson-length (fig. 5G). Lobes obtuse distally, with 4 short distal spines and one distolateral marginal spine each; a pair of short plumose setae is attached near the middle of each lobe (fig. 5G).

Coxal gills ovoid, appear on pereopods 2-6, not reaching ventral margin of corresponding basipodit (figs. 2D, 3E, 4C).

FEMALE 14.0 mm with setose oostegites. Rather similar to the males. Metasomal segments 1-3 with 4-5 dorsolateral posterior marginal setae (fig. 5H). Epimeral plates 1-3 quadrate, with well marked ventroposterior corner spine and convex posterior margin bearing a row of marginal short setae (fig. 5H). Posterior margin of epimeral plates 1-2 is more convex than that of epimeral plate 3 (fig. 5H), epimeral plates 2-3 with 3 subventral spines each.

Urosomal segment 1 on each dorsolateral side with 1 seta; urosomal segment 2 on each dorsolateral side with 1 spine and 1 seta; urosomal segment 3 naked.

Head like that in males. Antenna 1 slightly shorter than half of the body (ratio: 61:140); peduncular articles 1-3 progressively shorter, scarcely setose (ratio: 65:53:26); main flagellum consisting of 21 articles; accessory flagellum 2-articulate (fig. 6A).

Antenna 2: peduncular articles 4 and 5 nearly equally long (ratio: 65:63), both articles with several bunches of long setae (fig. 6B); flagellum slender, only slightly longer than last peduncular article and consisting of 8 articles (fig. 6B).

Mouthparts mainly like these in male (labrum, labium, maxilla 2). Mandible palpus article 2 with 12 setae; palpus article 3 on outer face with 7 setae (5+2), on inner face by 4 bunches of B-setae (2-3-2-3).

Maxilla 1 inner plate with 4 setae. Inner plate of maxilliped with 3 distal spines accompanied by several setae.

Coxae 1-4 slightly longer than these in male, with short marginal setae. Coxa 1 slightly broader than long (ratio: 44:40), with subrounded ventroanterior corner (fig. 6C). Coxa 2 distinctly longer than broad (ratio: 58:50) (fig. 6F). Coxa 3 slightly longer than broad (ratio: 65:55) (fig. 9A). Coxa 4 slightly longer than broad (ratio: 63:57), with posterior margin slightly concave (fig. 9B).

Coxa 5 bilobed, with several marginal setae (fig. 8A). Coxa 6 bilobed, but smaller than coxa 5 (fig. 8B). Coxa 7 entire, subrounded ventrally (fig. 8D).

Gnathopods 1-2 hardly smaller than these in males, gnathopod 1 slightly smaller than gnathopod 2 (fig. 6C, F). Gnathopod 1: article 2 with long setae along both margins; article 3 along posterior margin with one bunch of setae; article 5 shorter than article 6 (ratio: 38:50) (fig. 6C). Propodus (article 6) trapezoid, slightly longer than broad (ratio: 75:70), bearing 10 transverse rows of setae (fig. 6D); palm convex, inclined nearly half of propodus-length, defined on outer face by 1 corner S-spine accompanied laterally by 3 slender L-spines and 5 facial M-setae (fig. 6D, E), on inner face by one short subcorner R-spine (fig. 6E). Dactylus reaching posterior margin of article 6, with 9 strong setae along outer margin and with row of short setae along inner margin (fig. 6D).

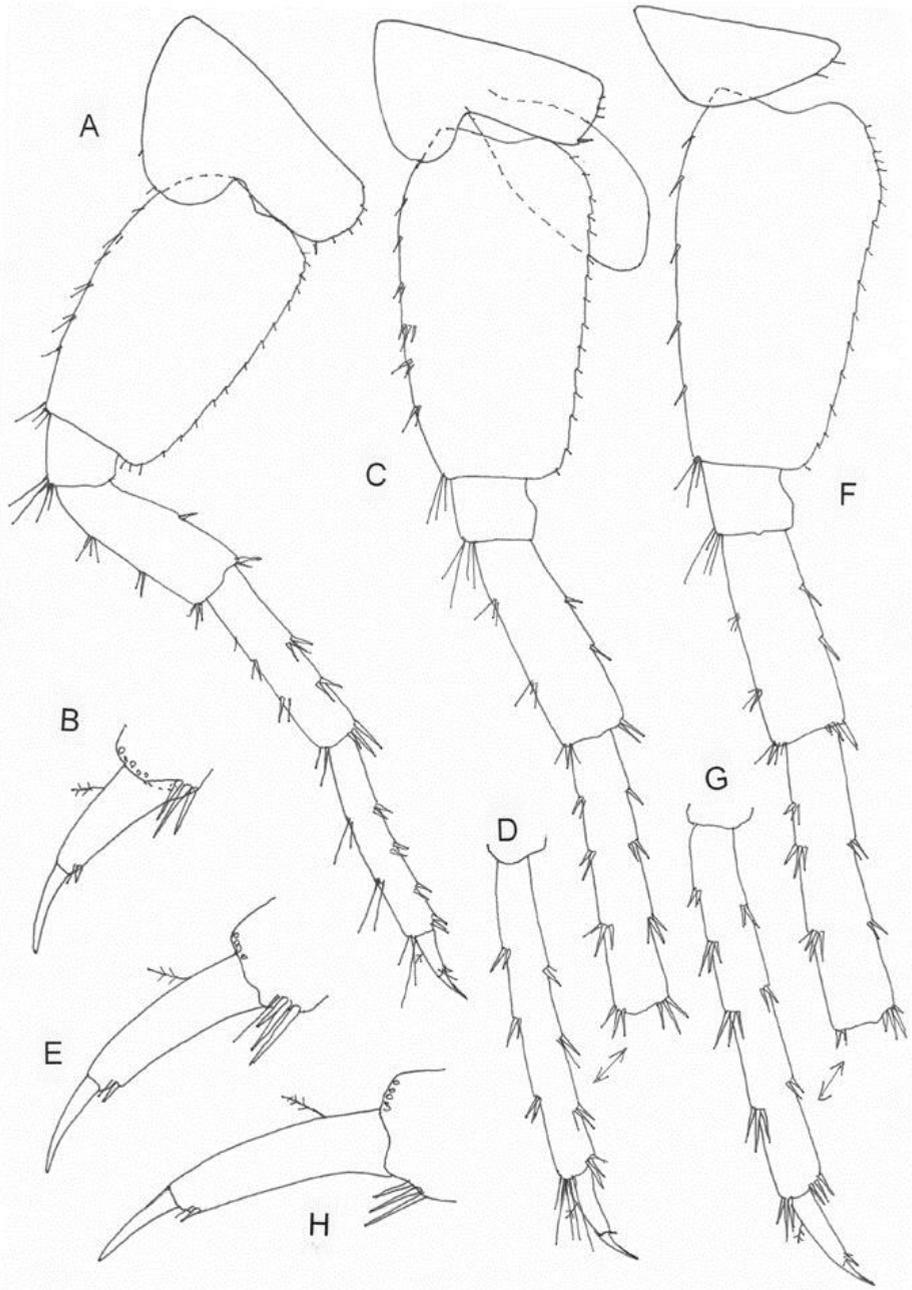


Fig. 4. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, male 17.2 mm (holotype): A-B= pereopod 5; C-E= pereopod 6; F-H= pereopod 7.

Gnathopod 2: article 2 with long setae along both margins; article 3 at posterior margin with one bunch of setae (fig. 6F); article 5 shorter than article 6 (ratio: 45:57). Article 6 (propodus) trapezoid, as long as broad, with nearly 14 transverse rows of setae along posterior margin (fig. 7A); palm convex, inclined slightly over half of propodus-length, defined on outer face by one S-spine accompanied laterally by 1 slender L-spine and 5 facial M-setae (fig. 6G, 7A), on inner face by one short subcorner R-spine (fig. 6G). Dactylus reaching posterior margin of propodus, bearing 11 strong setae along outer margin and a row of short setae along inner margin (fig. 7A).

Pereopods 3-4 similar to each other, but pereopod 4 slightly less setose than pereopod 3. Pereopod 3: article 2 along posterior margin with long setae; articles 4-6 of unequal length (ratio: 56:37:43); posterior margin of article 4 with several longer setae (fig. 9A); articles 5 and 6 along posterior margin with short spines, dactylus like that in male.

Pereopod 4: posterior margin of article 4 with several setae up to as long as diameter of article itself; articles 4-6 of unequal length (ratio: 52:35:42); posterior margin of articles 5 and 6 with several short spines each; dactylus like that in male (fig. 9B).

Pereopod 5 remarkably shorter than pereopods 6 and 7, with article 2 longer than broad (ratio: 80:47), along anterior margin with several strong spine-like setae, along posterior margin with a row of short setae. Articles 4-6 of unequal length (ratio: 52:50:58); anterior margin of article 4 with several setae and distal spines (fig. 8A); posterior margin of articles 5 and 6 with short spines; dactylus like that in male.

Pereopod 6: article 2 poorly tapering distally, much longer than broad (ratio: 96:53), along anterior margin with row of slender spines and setae, along posterior margin with up to 18 short setae. Articles 4-6 of unequal length (ratio: 60:76:84), bearing the bunches of spines along anterior and posterior margin (fig. 8B, C). Dactylus like that in male.

Pereopod 7: article 2 much longer than broad (ratio: 96:55), along anterior margin with row of spine-like setae, along posterior convex margin with up to 18 short setae, ventroposterior lobe absent (fig. 8D); articles 4-6 of unequal length (ratio: 61:74:97), with spines along both margins (fig. 8D, E). Dactylus strong, with one spine at inner margin near basis of the nail (fig. 8F) and one median plumose seta at outer margin; nail much shorter than pedestal (ratio: 52:30).

Pleopods 1-3 with 2 retacula each. Peduncle of pleopod 1 with one strong distal seta at anterior margin (fig. 7B); peduncle of pleopod 2 naked (fig. 7C); peduncle of pleopod 3 with 2 strong setae along posterior margin (fig. 7D).

Uropod 1: peduncle with dorsoexternal row of spines and dorsointernal row of setae (except distal spine) (fig. 7E); outer and inner ramus of the same length, both with lateral and distal spines (fig. 7E), as well as 2 bunches of simple setae in distal half of each ramus.

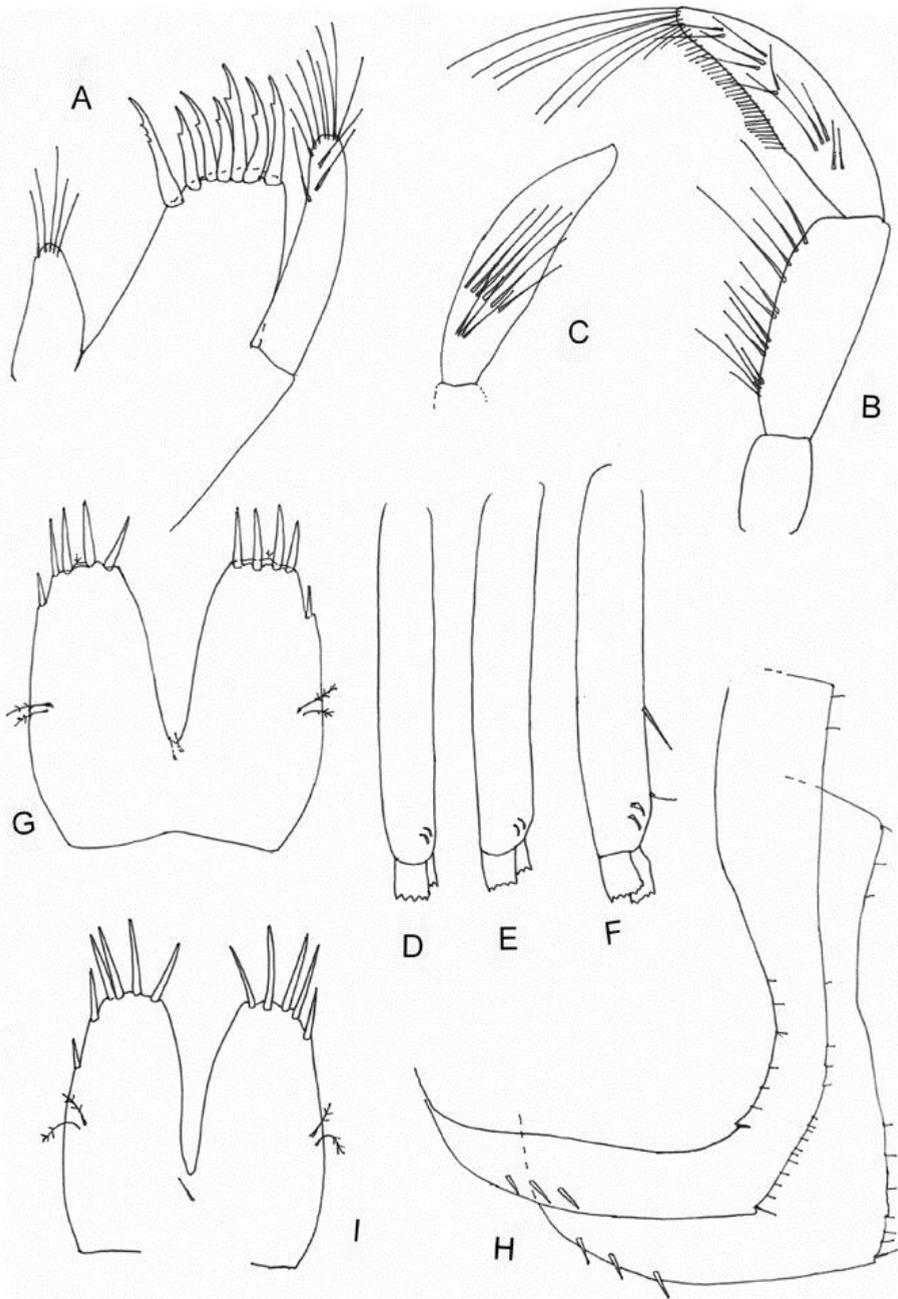


Fig. 5. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, male 17.2 mm (holotype): A= maxilla 1; B= mandible palpus, inner face; C= tip of mandible palpus, outer face; D-F= peduncle of pleopods 1-3; G= telson. Female 14.0 mm: H= epimeral plates 1-3; I= telson.

Uropod 2: peduncle with lateral and distal spines (fig. 7F), inner ramus slightly longer than outer ramus, both rami with lateral and distal spines.

Uropod 3 elongated: peduncle remarkably longer than broad (ratio: 57:25), with several lateral and distal spines (fig. 7G); inner ramus short, scale-like, with distal bunch of spines (fig. 7G). Outer ramus 2-articulated; first article longer than second one (ratio: 143:77), along both margins with bunches of spines; single plumose setae are attached along inner margin of article 1 (fig. 7G), second article along both margins and tip with simple short setae.

Telson short, as long as broad, incised over half of telson-length (fig. 5 I), each lobe obtuse distally, provided with 4 short distal and 1-2 outer lateral spines; facial spines absent. A pair of short plumose setae appears near the middle of outer margin in each lobe (fig. 5 I).

Coxal gills relatively short, ovoid (figs. 9A, B). Oostegites large, with marginal setae each (fig. 9A).

VARIABILITY. Urosomal segment 1 in males and females always with 1 seta only. Urosomal segment 2 on each dorsolateral side with 1-2 spines. Lobes of telson with 4-5 distal spines, facial spines absent; lateral spines on lobes can be sometimes absent. Uropod 1 both rami of equal length in males and females. Uropod 2 with rami of equal length or inner ramus hardly longer. Uropod 3 second article of outer ramus elongated in males and females

Juvenile specimens are with more dilated article 2 of pereopods 5-7, more slender dactylus, less number of distal spines on telson and more pointed epimeral plates (fig. 9C). In female of 10.5 mm article 2 of pereopod 7 was poorly lobed (fig. 7H).

LOCUS TYPICUS: Cerjanska Jama Cave, Croatia.

HOLOTYPE: male 17.2 mm. Holotype is deposited in Museum of Natural History in Zagreb, Croatia.

DERIVATIO NOMINIS. The name “*cerjanensis*” arrives from the name of the locality Cerjanska Jama Cave, where the species was collected.

REMARKS AND AFFINITIES.

Niphargus cerjanensis, sp. n. is rather similar to *Niphargus stygius*-Complex of taxa by shape and pilosity of gnathopods, metasomal segments, epimeral plates, pleopods, uropods and telson, but differs from all of them by combination of various characters.

Niphargus stygius (Schiodte, 1847) [loc. typ.: Postojna Cave, Slovenia) differs from *N. cerjanensis* by different telson, pleopods, maxilla 1, etc.

N. hvarensis S. Karaman, 1952b [loc. typ.: Hvar island, Adriatic Sea, Croatia] is also rather similar to *N. cerjanensis* by rami of uropod 1 of equal length in males and females, dactylus of gnathopods 1-2 along outer margin with a row of median setae, strong dactylus of pereopods 3-7 with one spine at inner margin near basis of the nail, inner plate of maxilla 1 with several setae, etc., but *hvarensis* differs by telson tapering distally, lobes with facial spines, elevated number of spines on urosomal segment 1, etc.

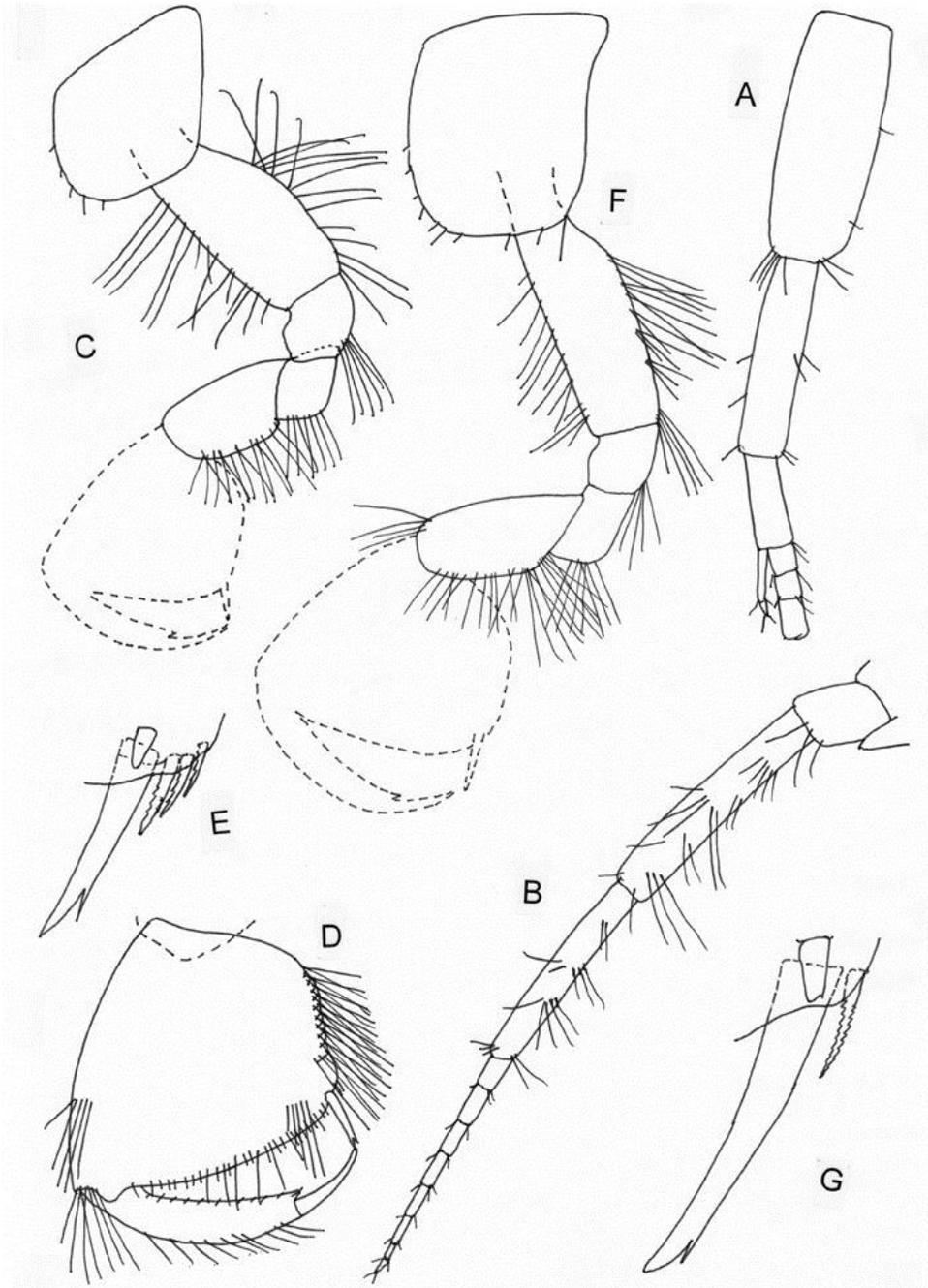


Fig. 6. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, female 14.0 mm (paratype): A= antenna 1; B= antenna 2; C-D= gnathopod 1, outer face; E= distal corner of gnathopod 1 propodus, inner face; F= gnathopod 2, outer face; G= distal corner of gnathopod 2 propodus, inner face.

N. boskovici S. Karaman, 1952c [loc. typ.: Vjetrenica Cave, Popovo polje, Herzegovina) has also rami of uropod 1 of equal length in males, elongated second article of uropod 3 in females and males, but differs from our species by absence of lateral spines on telson, by maxilla 1 inner plate with 2 setae only, acute epimeral plate 3 in males.

N. borkanus S. Karaman, 1960 [loc. typ.: spring at Borke Lake (Herzegovina)] has also uropod 1 with nearly equal rami, but differs from *N. cerjanensis* by remarkably more spinose telson, more acute epimeral plate 3 in males, etc.

N. boskovici alatus G. Karaman, 1973 [loc. typ.: spring on Veruša, Prokletije Mts, Crna Gora] is very similar to *N. cerjanensis* by uropod 1 with equal rami in males, by elongated distal article of uropod 3 outer ramus in females, but differs from *N. cerjanensis* by absence of lateral spines on telson, by more angular or acute epimeral plates in male, broader propodus of gnathopods 1-2, less slender uropod 3 in males bearing first article of outer ramus with bunches of spines along both margins and single plumose setae along inner margin of article 1, etc.

N. ozimeci G. Karaman, 2011 [loc. typ.: spring-cave of Mokrinjska Miljacka near Pale, Bosnia & Herzegovina] has telson without facial spines, nearly subrounded epimeral plates in male, long uropod 3, etc., but differs from *N. cerjanensis* by elongated inner ramus of uropod 1 in males, by more shallow coxae in males, less number of setae on maxilla 1 inner plate, more inclined palm of gnathopods 1-2 propodus, etc.

N. scopicauda Fišer et al., 2010 [loc. typ.: puddles in Huda luknja Cave near Gornji Dolič, Slovenia] has telson like *N. cerjanensis*, nearly equal rami of uropod 1 in males, etc., but this species differs remarkably from *N. cerjanensis* by low number of setae on maxilla 1 inner plate, by often presence of additional tiny spiniform seta or spine at inner margin of dactylus in pereopods 6 and 7, rarely on pereopods 3 and 4 also, etc.

N. ravanicanus S. Karaman, 1943 [loc. typ.: Ravanica Cave, Serbia] has telson mainly without facial spines, angular epimeral plates, but maxilla 1 is provided with only 2-3 setae, telson with lobes tapering distally bearing strong distolateral spines, etc.

N. tridentinus Stoch, 1998 [loc. typ.: Cave named "Grotta della Bigonda" (cadastre number 243 VT/TN), Grigno, Valsugana, province of Trento] has also equal rami of uropod 1 in males, but differs from *N. cerjanensis* by long distal article of accessory flagellum, less setose inner plate of maxilla 1, more pointed epimeral plates in males, by presence of facial slender spines, etc.

N. bureschi Fage, 1926, known from several caves of Lowetch region in Bulgaria, is very similar to *N. cerjanensis* by equal rami of uropod 1 in males, by elevated number of setae on maxilla 1 inner plate, oblique propodus of gnathopods 1-2, pereopods 5-7, absence of distinct facial spines on lobes of telson, etc., but differs from *N. cerjanensis* by distally narrowed telson, pointed epimeral plates, by higher number of dorsolateral spines on urosomal segments 1-2, by elevated number of distal spines on maxilliped inner plate, etc. As *N. bureschi* was never described in detail, it is not possible at the moment to recognize all differences between these two taxa.

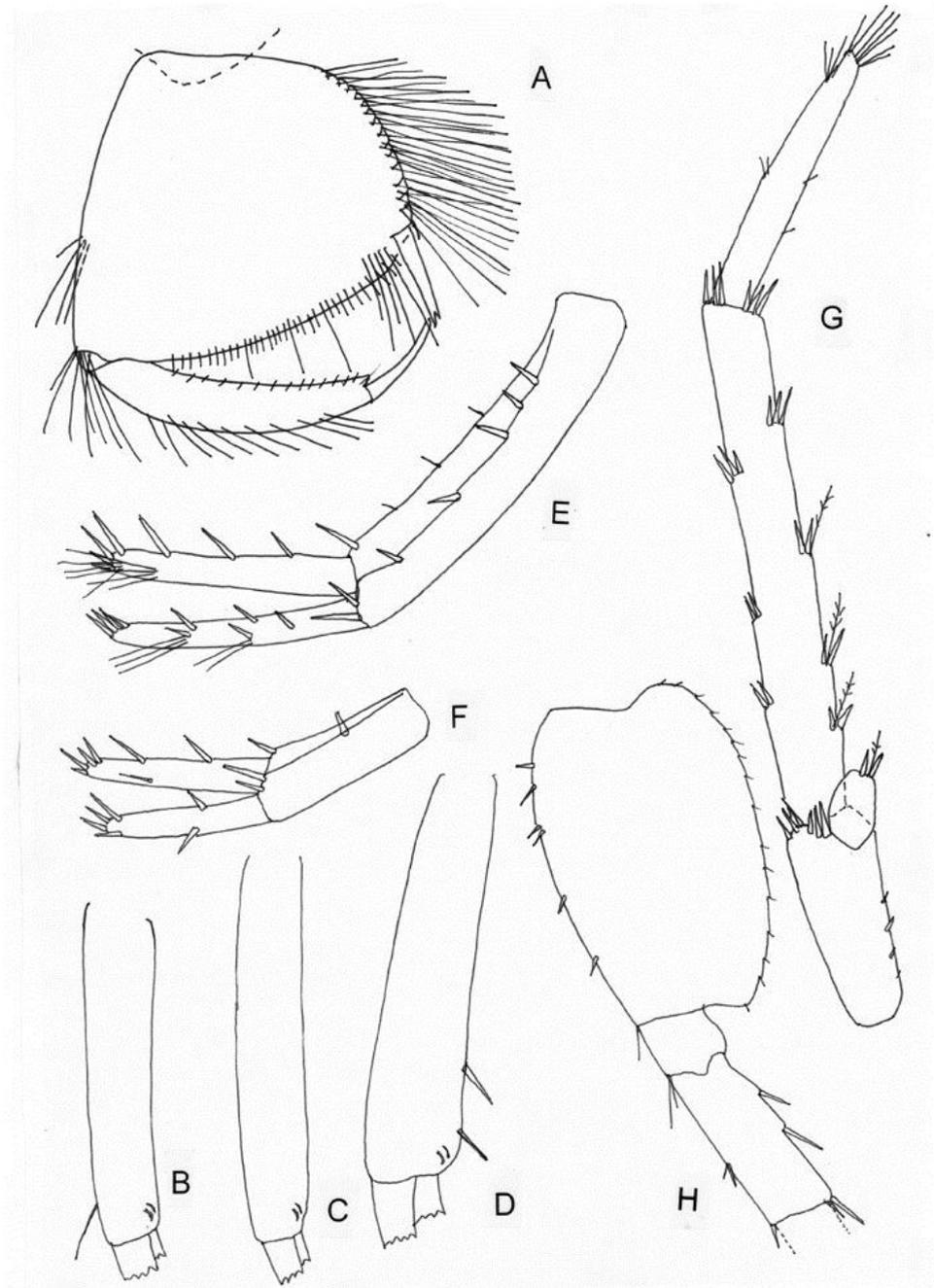


Fig. 7. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, female 14.0 mm (paratype): A= gnathopod 2 propodus, outer face; B-D= peduncle of pleopods 1-3; E= uropod 1; F= uropod 2; G= uropod 3; H= basipodit of pereopod 7, female 10.0 mm.

NIPHARGUS KARAMANI Schellenberg, 1935 (new rank)

Figs. 10-15

- Niphargus longicaudatus karamani* Schellenberg, 1935: 210 (key);
Schellenberg, 1936: 25, fig. 13;
Niphargus (Stygoniphargus) stygius karamani S. Karaman, 1952a: 18, pl.
XI, figs. 50-53; pl. XII, figs. 54-57;
Niphargus stygius karamani G. Karaman, 1972: 6; G. Karaman, 1974: 25;
Barnard & Barnard, 1983: 695; G. Karaman & Ruffo, 1986: 532.

Locus typicus: well near Miljana castle (on riverbank of Sutla river, Sava tributary), Croatia.

MATERIAL EXAMINED:

- 321= Podčetrtek, near Stašek, May, 1926, Croatia 5 exp. [leg. Jäger];
--327= Podčetrtek, wells, Verbovšek, 3.5.1925, 10 exp. [leg. Dr. Jäger];
Sp. 208= Miljana, Meierbrunnen, Croatia, Dec. 1922, 5 exp. [leg. Dr.
Jaeger];
Sp. 553A= well Verbovšek, Podčetrtek, Slovenia, August 1932, many
exp. [leg. Sturany].

DESCRIPTION (well Verbovšek, Podčetrtek): MALE 21.0 mm:
Body large, relatively slender, metasomal segments 1-3 with 4-6
dorsoposterior marginal setae each (fig. 10 I). Urosomal segment 1 on
each dorsolateral side with 1 seta, urosomal segment 2 on each
dorsolateral side with 2-4 spine-like setae (fig. 13G), and urosomal
segment 3 naked. Urosomal segment 1 on each ventroposterior side with
one spine (fig. 13G).

Epimeral plates 1-2 subrounded, with 1 strong seta at
ventroposterior corner (fig. 10 I), posterior margin convex, bearing 8-10
short marginal setae; epimeral plate 3 sharply pointed, with sinusoid
posterior margin bearing 7-8 short marginal setae. Epimeral plate 2 with 2
subventral spines, epimeral plate 3 with 3 subventral spines (fig. 10 I).

Head with short rostrum and short subrounded lateral cephalic
lobes and ventroanterior sinus.

Antenna 1 not reaching half of body-length; peduncular articles 1-3
relatively short, progressively shorter (ratio: 63:54:26), scarcely setose
(fig. 10A); main flagellum consisting of 34 articles (most of them with one
short aesthetasc each); accessory flagellum short, 2-articulated (fig. 10A).

Antenna 2 well developed, moderately slender, remarkably setose;
peduncular article 3 short, as long as broad, with distoventral bunch of
setae nearly as long as the diameter of the article itself; peduncular article
4 slightly longer than 5 (ratio: 65:55); article 4 along ventral margin with
5 transverse rows of setae as long as or slightly longer than width of
article itself, along dorsal margin with 4 bunches of short setae (fig. 10B);
peduncular article 5 at ventral margin with 4 transverse rows of setae
mainly remarkably longer than the width of article itself, along dorsal
margin with 4 bunches of short setae. Flagellum slightly longer than last
peduncular article (ratio: 55:59), moderately setose, consisting of 10
articles (fig. 10B). Antennal gland cone short.

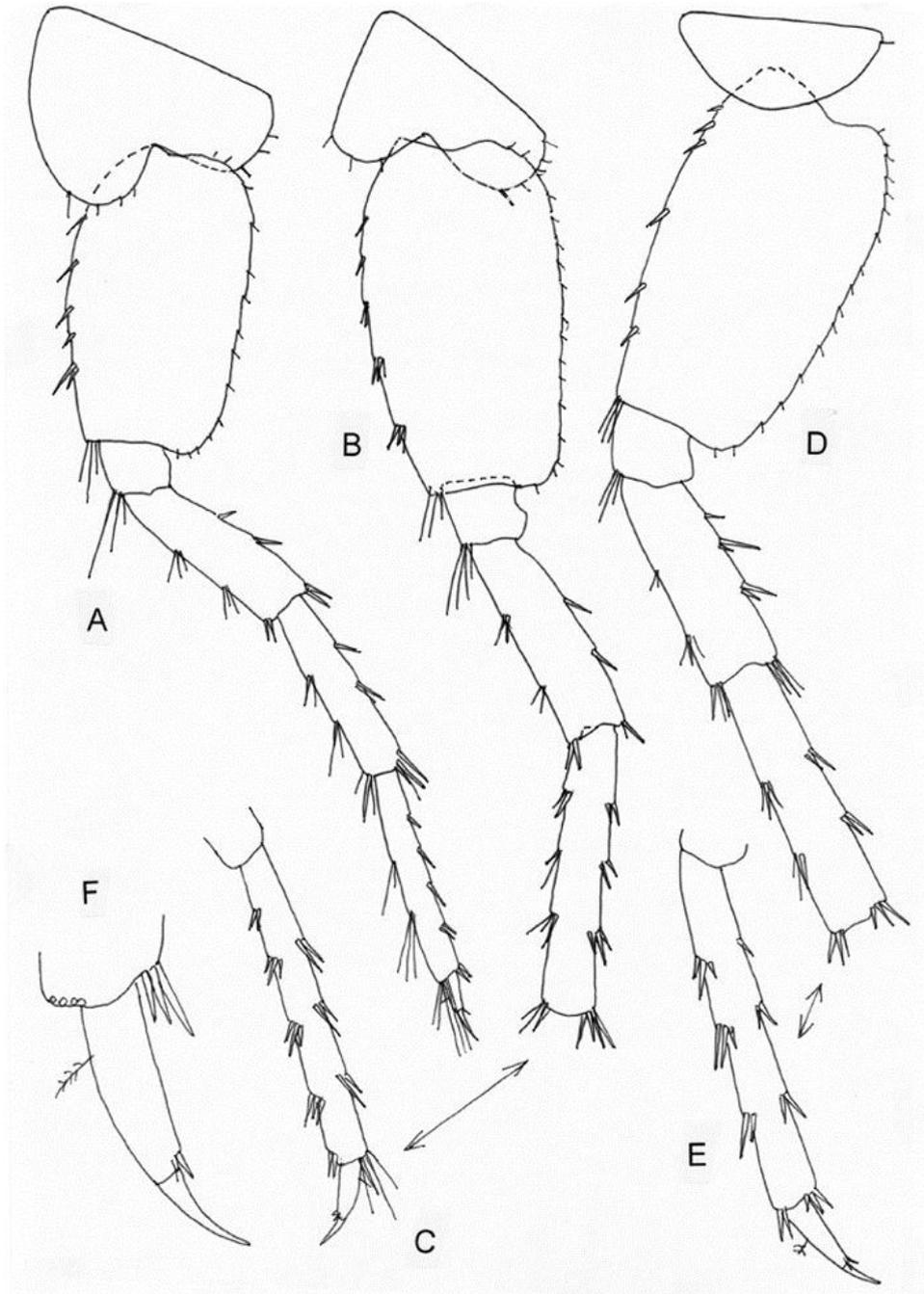


Fig. 8. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, female 14.0 mm (paratype): A= pereopod 5; B-C= pereopod 6; D-F= pereopod 7.

Mouthparts well developed. Labrum entire, broader than long, convex distally. Labium with well developed inner lobes, outer lobes entire.

Mandible with tritulative molar. Right mandible: incisor with 4 teeth, lacinia mobilis bifurcate, with several unequal teeth accompanied by several rakers. Left mandible: incisor with 5 teeth, lacinia mobilis with 4 teeth accompanied by several rakers.

Mandible palpus 3-articulated: first article naked; second article with 17-18 setae (fig. 10D); palpus article 3 falciform, nearly as long as article 2, along margin with nearly 26 short D-setae and 10-11 distal E-setae; on outer face is attached a row of 10 A-setae (fig 10D, on inner face appear 4 bunches of B-setae (6-5-3-2) (fig. 10E).

Maxilla 1: inner plate with 2 distal setae (fig. 11A); outer plate with 7 spines (6 spines with one lateral tooth, one spine with 1-2 lateral teeth); palpus 2-articulated, reaching or exceeding tip of outer plate spines; first article naked, second article with 7 setae (fig. 11A).

Maxilla 2: both plates with marginal setae only.

Maxilliped: inner plate not reaching distoexternal tip of palpus article 1, bearing 3-4 distal smooth spines accompanied by single strong setae (fig. 10C); outer plate nearly reaching half of palpus article 2 and provided with distolateral row of smooth spines (fig. 10C), palpus article 3 along outer margin with one median and one distal bunch of setae; palpus article 4 along outer margin of pedestal with 2-3 single median setae, along inner margin with 2 unequal setae near basis of the nail.

Coxae relatively short and broad. Coxa 1 broader than long (ratio: 50:38) with broadly subrounded ventroanterior corner and provided with 11-13 marginal setae (fig. 11B). Coxa 2 broader than long (ratio: 56:45), bearing 8-10 short marginal setae (fig. 11E). Coxa 3 broader than long (ratio: 57:49), along convex ventral margin with 10-13 marginal setae (fig. 12A); coxa 4 remarkably broader than long (ratio: 60:46), with shallow posterior excavation and 8-9 marginal setae (fig. 12C).

Coxa 5 shallow, much broader than long (ratio: 73:40), anterior lobe subrounded (fig. 13A). Coxa 6 broader than long (ratio: 61:32), anterior lobe subrounded (fig. 13C). Coxa 7 entire, convex ventrally, broader than long (ratio: 53:30) (fig. 13E).

Gnathopods 1-2 of the moderate size, remarkably setose, its propodus nearly as large as corresponding coxa (fig. 11B, E). Gnathopod 1: article 2 stout, along anterior and posterior margin with numerous long setae; article 3 at posterior margin with distal bunch of longer setae; article 5 shorter than article 6 (ratio: 32:44), along anterior margin with one distal bunch of setae (fig. 11B). Propodus (article 6) trapezoid, hardly longer than broad (ratio: 83:77), along posterior margin with 8 transverse rows of setae (fig. 11C), along anterior margin with bunches of longer setae. Palm poorly convex, inclined over half of propodus-length, defined on outer face by 1 strong corner S-spine accompanied laterally by 3 slender serrate L-spines and 11 facial M-setae (fig. 11C, D), on inner face by one short subcorner R-spine (fig. 11D). Dactylus reaching posterior margin of propodus, along outer margin with nearly 16 setae sitting in 8 bunches (2-1-2-2-2-2-2-3) (fig. 11C).

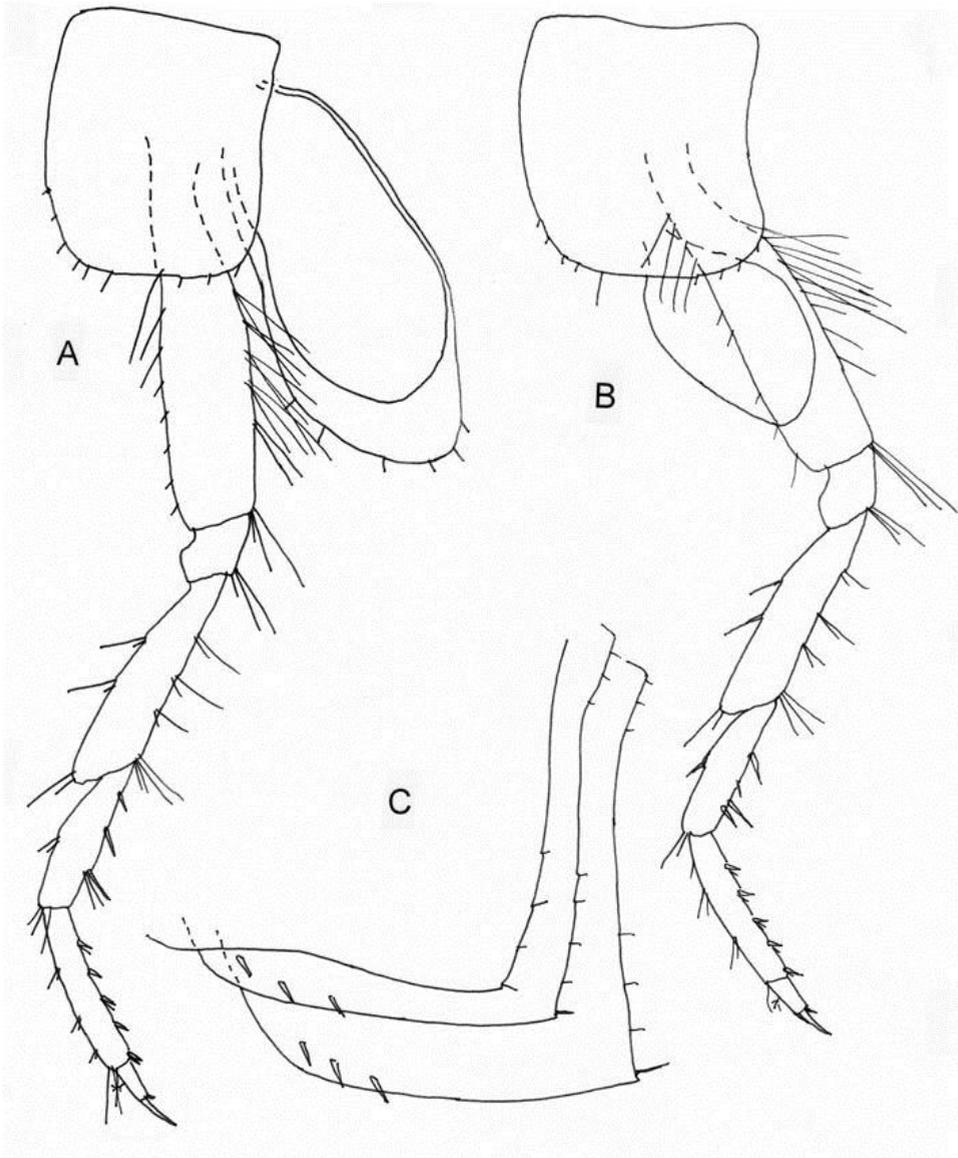


Fig. 9. *Niphargus cerjanensis*, sp. n., Cerjanska jama Cave, female 14.0 mm (paratype): A= pereopod 3; B= pereopod 4; C= epimeral plates 1-3, female 10.0 mm.

Gnathopod 2: article 2 along anterior and posterior margin with numerous long marginal setae; article 3 along posterior margin with distal bunch of setae. Article 5 shorter than article 6 (ratio: 43:40), along anterior margin with distal bunch of setae (fig. 11E). Propodus trapezoid, only slightly larger than that of gnathopod 1, as long as broad or hardly broader than long (ratio: 89:87), along posterior margin with 9 transverse rows of setae (fig. 11F), along anterior margin with 3-4 bunches of setae; palm slightly convex, inclined rather over half of propodus-length, defined on outer face by 1 corner S-spine accompanied laterally by 3 slender serrate L-spines and 11 facial M-setae (fig. 11F, G), on inner face by 1 short subcorner R-spine (fig. 11G). Dactylus reaching posterior margin of propodus, along outer margin with 23-24 setae sitting in 9-10 bunches (1-1-1-3-2-3-5-4-3-2, or 1-2-2-3-3-4-3-3-1-1) (fig. 11F).

Pereopods 3-4 moderately stout, rather similar to each other, but pereopod 4 is hardly less setose. Pereopod 3: article 2 along both margins with setae; article 3 at posterior margin with distal bunch of setae only; articles 4-6 of unequal length (ratio: 52:30:32), articles 4 and 5 along posterior margin with several bunches of setae as long as or longer than width of articles themselves; article 6 along posterior margin with 6 bunches of short spines intermixed with short setae (fig. 12A); dactylus short and strong, much shorter than article 6 (ratio: 32:14), along inner margin with one strong spine near basis of the nail, along outer margin with one median plumose seta (fig. 12B), nail is shorter than pedestal (ratio: 38:42).

Pereopod 4: articles 4-6 of unequal length (ratio: 45:33:40), posterior margin of article 4 with 4-6 bunches of shorter setae; article 5 at posterior margin with single spines and longer setae; posterior margin of article 6 like that in pereopod 3 (fig. 12 C); dactylus much shorter than article 6 (ratio: 15:40), at inner margin with one strong spine near basis of the nail, along outer margin with one median plumose seta; nail shorter than pedestal (ratio: 34:42) (fig. 12D).

Pereopods 5-7 relatively stout, progressively longer towards pereopod 7. Pereopod 5: article 2 longer than broad (ratio: 70:42), anterior margin slightly convex, with 6 bunches of short spine or pairs of short setae; posterior margin concave in the middle and bearing 80-20 short marginal setae, ventroanterior protrusion absent, ventroposterior lobe not distinctly developed (fig. 13A); articles 4-6 of unequal length (ratio: 45:45:37); along anterior margin of article 4 several bunches of short setae are implanted; anterior margin of articles 5 and 6 provided with 3-4 bunches of short spines accompanied by single short setae. Dactylus short and strong, much shorter than article 6 (ratio: 14:36), along inner margin with one strong spine, along outer margin with one median plumose seta (fig. 13B), nail as long as pedestal.

Pereopod 6 scarcely spinose: article 2 longer than broad (ratio: 82:45), along anterior margin with 5-6 bunches of spine-like setae, along nearly straight posterior margin with 13-14 short setae, ventroanterior tip is not produced, ventroposterior lobe is not developed (fig. 13C); articles 4-6 of unequal length (ratio: 57:61:58), along both margins with short single spines and short setae; dactylus much shorter than pedestal (ratio: 18:58), along inner margin with one spine near basis of the nail, along outer margin with one median plumose seta (fig. 13D), nail shorter than pedestal (ratio: 33:47).

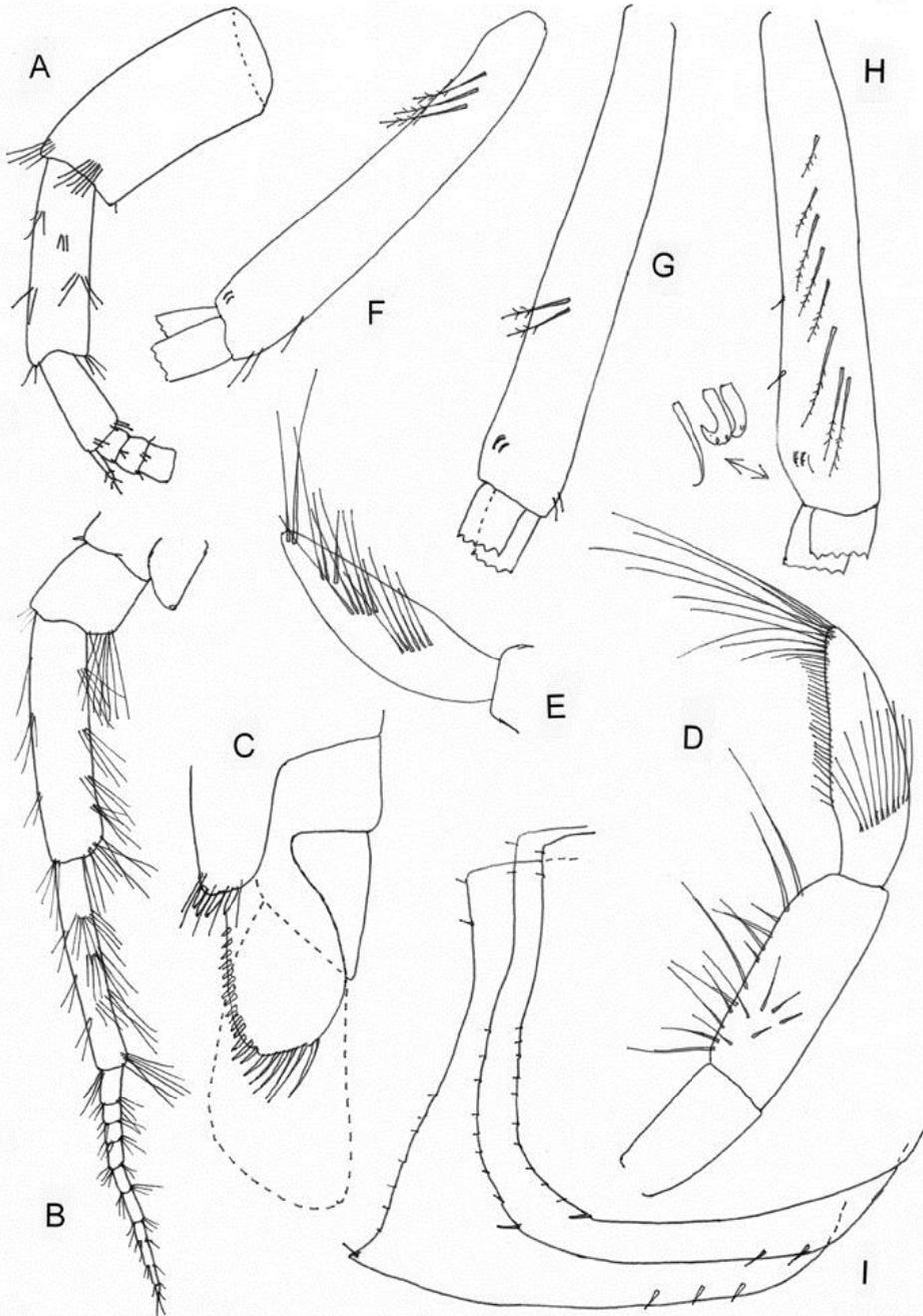


Fig. 10. *Niphargus karamani*, Schellenberg, 1935, well Verbovšek, Podčetrtek, male 22.0 mm.: A= antenna 1; B= antenna 2; C= proximal part of maxilliped; D= mandible palpus, outer face; E= distal article of mandible palpus, inner face; F-H= peduncle of pleopods 1-3; I= epimeral plates 1-3.

Pereopod 7 scarcely spinose: article 2 elongated, much longer than broad (ratio: 84:49), along anterior margin with row of short spine-like setae, along posterior poorly concave margin, with nearly 15 short setae, ventroposterior lobe not developed, ventroanterior corner not produced (fig. 13E). Articles 4-6 of unequal length (ratio: 50:65:73), scarcely armed. Dactylus strong, much shorter than article 6 (ratio: 20:72), along inner margin with one spine near basis of the nail, along outer margin with one median plumose seta (fig. 13F), nail shorter than pedestal (ratio: 35:60).

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopod 1 along anterior margin with 3 short distal simple setae and with 2-3 mediolateral plumose setae in proximal part of peduncle (fig. 10F). Peduncle of pleopod 2 with 2 short simple setae at distoanterior margin and 2 median plumose setae near the middle of the peduncle (fig. 10G); peduncle of pleopod 3 with 3 lateral short simple setae along posterior margin and with a row of 8 median plumose setae (fig. 10H).

Uropods 1-3 relatively slender. Uropod 1: peduncle nearly as long as inner ramus and provided with dorsoexternal row of spines and dorsointernal row of setae (except distal spine) (fig. 13G). Inner ramus elongated, along margins and top with short single spines and several bunches of simple setae. Outer ramus reaching nearly half of inner ramus-length, along margins with several bunches of simple short setae and with 4-5 distal short spines (fig. 13G).

Uropod 2: peduncle longer than rami, with dorsal row of spines (fig. 13G); outer ramus slightly shorter than inner one, both rami with several short lateral and distal spines.

Uropod 3 elongated, peduncle remarkably longer than broad (ratio: 71:25), inner ramus slightly elongated, nearly as long as peduncle, bearing laterally and distally several very short spines and setae (fig. 12E). Outer ramus 2-articulated, first article along both margins with several very short spines and simple setae; second article narrowed, nearly as long as first one, along both margins with several short simple setae; a bunch of short simple setae is attached at the top of second article (fig. 12E, F).

Telson nearly as long as broad, incised only slightly over half of telson-length, rather gapping; on each lobe are attached 3 short distal spines, 3 spines along outer margin, 1-2 spines along inner margin and 3-4 facial spines accompanied sometimes with 1 short seta (fig. 12G); a pair of short plumose setae is attached in the middle of outer margin (fig. 12G).

Coxal gills normal, of moderate size.

FEMALE 13.2 mm with setose oostegites and with eggs: Body rather similar to males, including antennae and mouthparts, but coxae 1-4 are slightly longer. Coxa 1 is slightly broader than long (high) (ratio: 60:52), with subrounded ventroanterior corner bearing 10-12 marginal setae (fig. 14A). Coxa 2 is only slightly longer than broad (ratio: 66:63) bearing 12-13 marginal setae (fig. 14B); coxa 3 is nearly as long as broad, with 13 marginal setae (fig. 14C); coxa 4 is hardly broader than long (ratio: 73:70), bearing 14 short marginal setae (fig. 14D). Coxae 5-7 like these in male (fig. 15G).

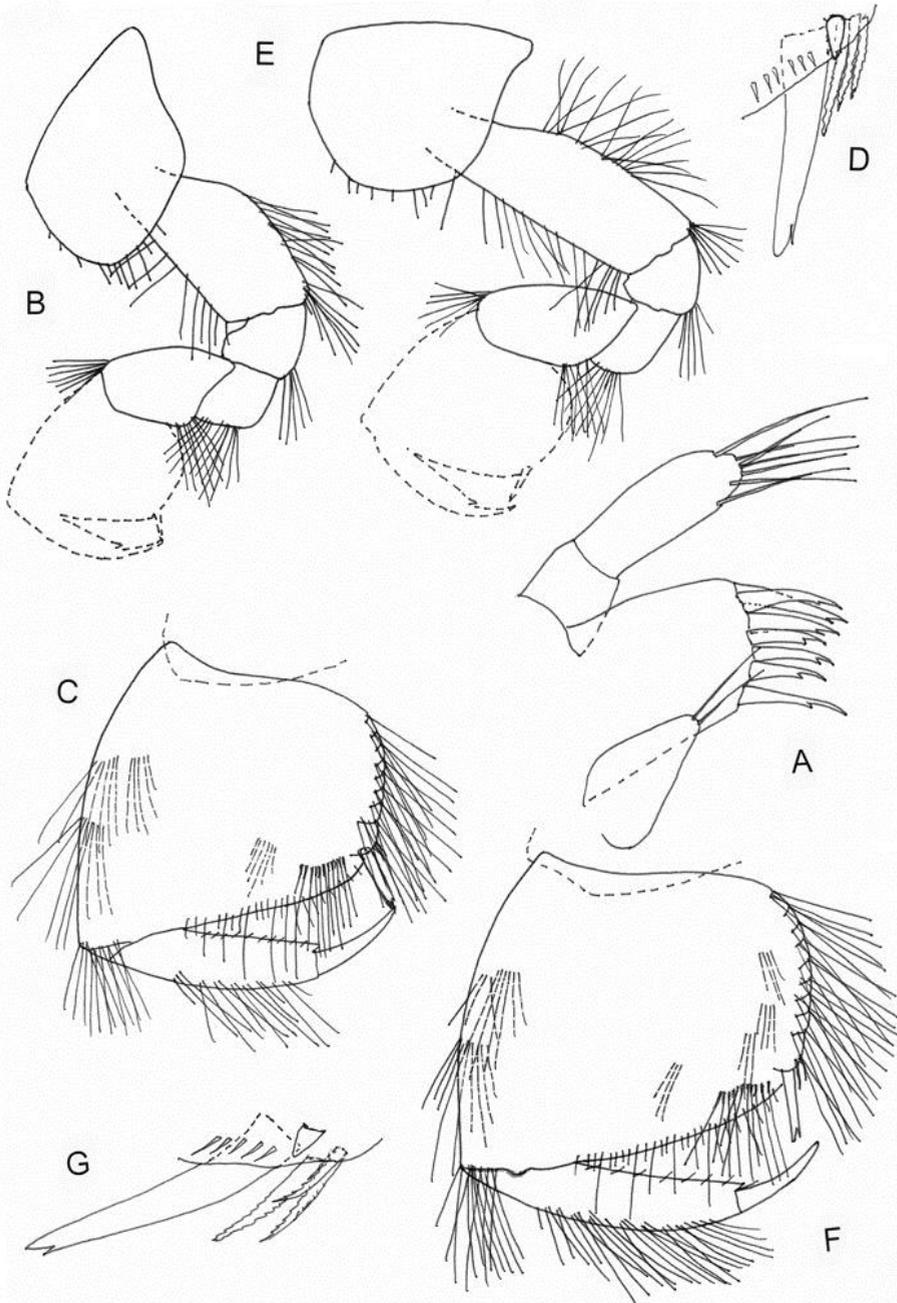


Fig. 11. *Niphargus karamani*, Schellenberg, 1935, well Verbovšek, Podčetrtek, male 22.0 mm.: A= maxilla 1; B-C= gnathopod 1, outer face; D= distal corner of gnathopod 1 propodus, inner face; E-F= gnathopod 2, outer face; G= distal corner of gnathopod 2 propodus, inner face.

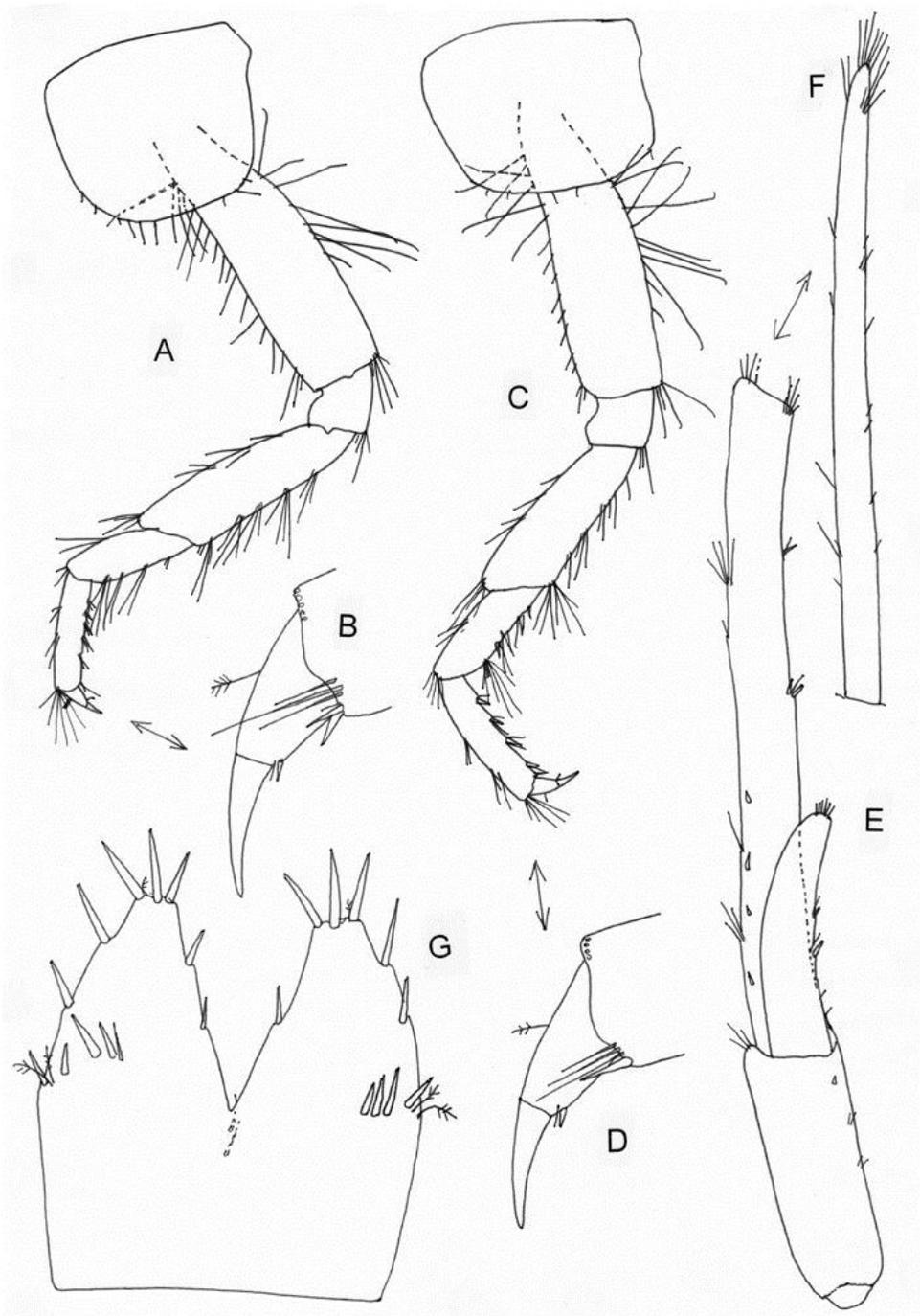


Fig. 12. *Niphargus karamani*, Schellenberg, 1935, well Verbovšek, Podčetrtek, male 22.0 mm.: A-B= pereopod 3; C-D= pereopod 4; E-F= uropod 3; G= telson.

Metasomal segments 1-3 with 6-7 dorsoposterior marginal setae each (fig. 15A). Urosomal segment 1 on each dorsolateral side with 1 seta; urosomal segment 2 on each dorsolateral side with 2 spines; urosomal segment 3 naked (fig. 15E). Urosomal segment 1 at each ventroposterior corner with one short spine-like seta near basis of uropod 1 peduncle (fig. 15E).

Epimeral plates 1 and 2 with marked ventroposterior corner and convex posterior margin provided with 11-12 short setae (fig. 15A); epimeral plate 3 sharply pointed, with poorly sinusoid posterior margin bearing nearly 11 short setae; epimeral plates 2 with 2 subventral spines, epimeral plate 3 with 3 subventral spines (fig. 15A).

Gnathopods 1-2 remarkably setose like that in male. Gnathopod 1 propodus trapezoid, slightly longer than broad (ratio: 94:84), along posterior margin with 6 transverse rows of setae, along anterior margin with 3-4 marginofacial bunches of long setae (fig. 14E). Palm convex, inclined hardly over half of propodus-length, defined on outer face by one strong corner S-spine accompanied laterally by 3 slender L-spines and 10 facial M-setae, on inner face by 1 short subcorner R-spine. Dactylus reaching posterior margin of propodus, along outer margin with 12 single or paired setae (fig. 14E).

Gnathopod 2 propodus trapezoid, nearly as long as broad, along posterior margin with 9 transverse rows of setae (fig. 14F), along anterior margin with 3-4 marginofacial bunches of long setae; palm convex, inclined almost half of propodus-length, defined on outer face by 1 corner S-spine, accompanied laterally by 2 L-spines and 11 facial M-setae (fig. 14F) on inner face by 1 short subcorner R-spine. Dactylus reaching posterior margin of propodus, along outer margin with 10-12 single or paired setae (fig. 14F), along inner margin near the basis of the nail with double short teeth (fig. 14G).

Pereopods 3-4 like these in male. Pereopods 5-7 like these in male. Basipodit of pereopod 7 longer than broad (ratio: 98:60), along anterior margin with several paired spine-like setae, along posterior slightly convex margin with nearly 17 short setae, ventroanterior corner not produced, ventroposterior lobe not fully developed (fig. 15G). Dactylus of pereopods 3-7 along inner margin with one spine, at outer margin with one median plumose seta.

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopod 1 along anterior margin with 4 simple setae, 4 facial plumose setae are sitting in proximal-lateral region of peduncle (fig. 15B). Peduncle of pleopod 2 with 3 short distal simple setae at distoanterior margin, and with 6 lateral plumose setae (fig. 15C). Peduncle of pleopod 3 with 2 distal short simple setae along posterior margin and with row of 9 lateral plumose setae (fig. 15D).

Uropod 1: peduncle longer than rami, with dorsoexternal row of spines and dorsointernal row of setae (except distal spine); inner ramus is slightly longer than outer one, both rami with several lateral strong spines and bunches of simple setae and with 4-5 short distal strong spines each (fig. 15E).

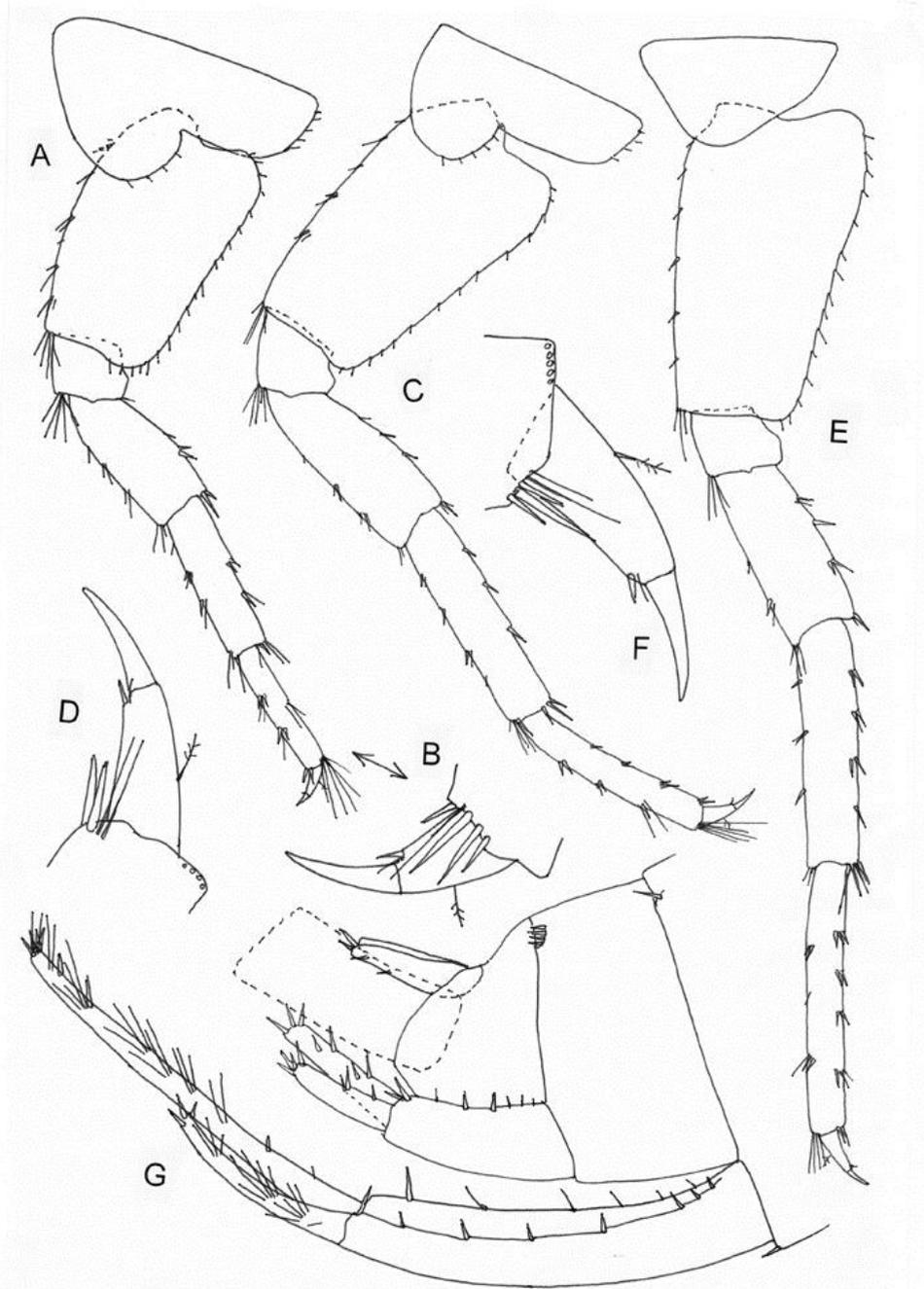


Fig. 13. *Niphargus karamani*, Schellenberg, 1935, well Verbovšek, Podčetrtek, male 22.0 mm.:A-B= pereopod 5; C-D= pereopod 6; E-F= pereopod 7; G= urosome with uropods 1-2.

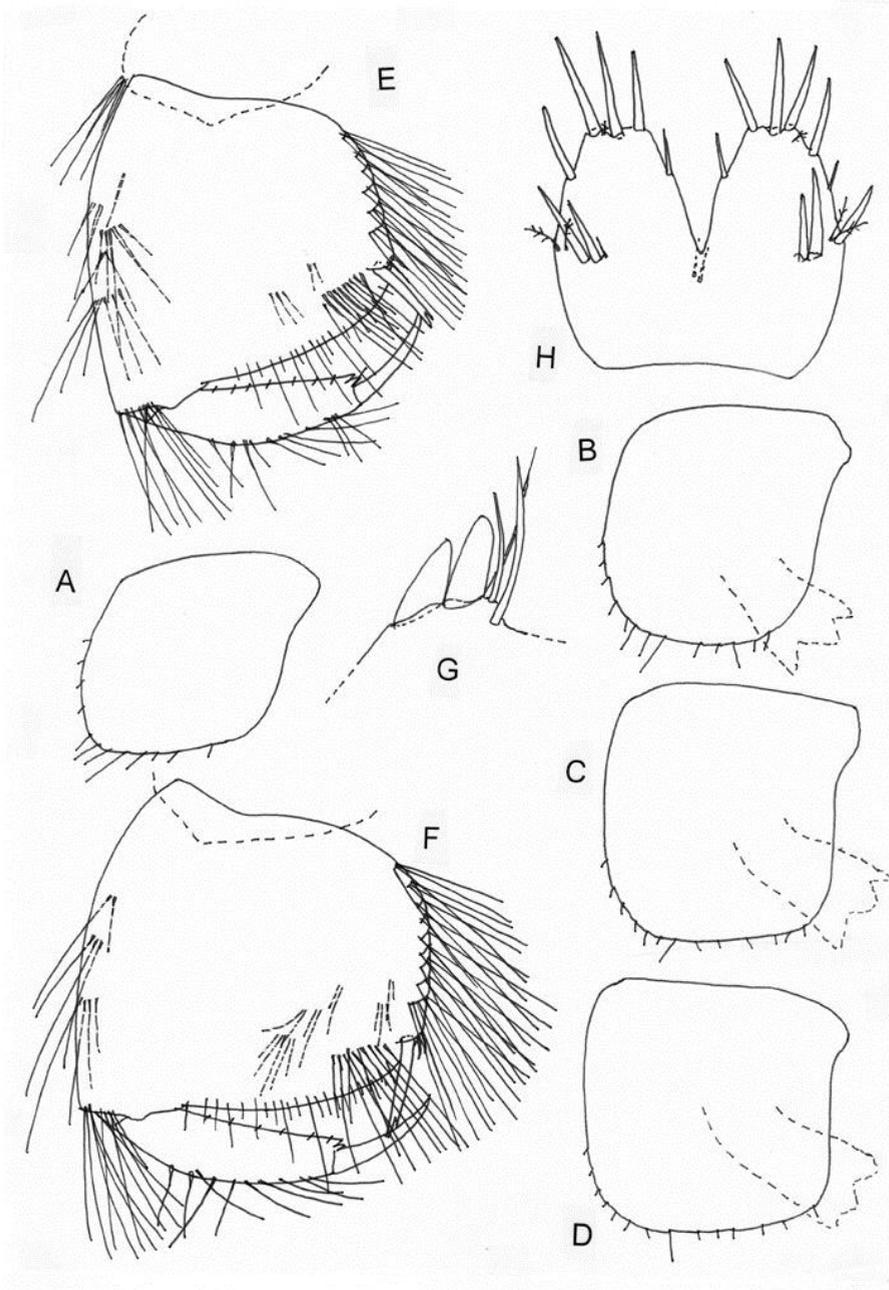


Fig. 14. *Niphargus karamani*, Schellenberg, 1935, well Verbovšek, Podčetrtek, female 13.2 mm.: A-D= coxae 1-4; E= gnathopod 1 propodus, outer face; F= gnathopod 2 propodus, outer face; G= tip of ventral margin in gnathopod 2 dactylus pedestal.

Uropod 2 peduncle with lateral and distal spines; inner ramus is slightly longer than outer ramus, both rami with bunches of lateral and distal short spines (fig. 15E).

Uropod 3: peduncle short, less than twice as long as broad, with several distal spines (fig. 15F). Inner ramus short, scale-like, much shorter than uropod 3 peduncle, bearing 1-2 distal simple setae and spine. Outer ramus 2-articulated: first article slightly dilated, along outer margin with 6 bunches of simple setae accompanied by single spine, along inner margin with a row of single or paired spines accompanied by single plumose setae longer than spines (fig. 15F); second article narrow, much shorter than first article (ratio: 52:151), along both margins and tip with simple longer setae (fig. 15F).

Telson broader than long (ratio: 80:65), gaping, each lobe with 3 distal spines; along outer margin with 1-3 spines, along inner margin of each lobe is attached 1 spine; a pair of facial spines is sitting in the middle of each lobe (fig. 14H); a pair of short plumose setae is implanted near the median part of outer margin of each lobe.

Coxal gills ovoid; oostegites broad, setose.

VARIABILITY. All adult males were with elongated peduncle and inner ramus of uropod 3. The number of lateral plumose setae on peduncle of pleopods 1-3 is rather variable, but always present. Urosomal segment 1 at each ventroposterior corner with one spine-like seta or spine. Dactylus of gnathopods 1-2 propodus usually with one tooth near basis of the nail, occasionally 2 teeth occur (fig. 14G).

The elevated number of setae along outer margin of gnathopods 1-2 propodus is rather variable, but always present. Retinacula on peduncle of pleopods can be sometimes accompanied by one hooked strong seta (fig. 10H).

ECOLOGY: settle subterranean waters (wells).

GENERAL DISTRIBUTION: endemic, Slovenia, Croatia.

LOCALITIES CITED

Schellenberg briefly described this taxon in the key (1935) as *N. longicaudatus karamani*, n. ssp. from "North Yugoslavia, in wells and caves".

Next year (1936) Schellenberg made a short description of this subspecies, mentioning localities: well near Miljana Castel near river Sotla (Sava River tributary) on Croatian side, and well near "Windisch Landsberg" (Podčetrtek?) in Slovenia, and cited that in other well in Miljana Castel (150 meters far from first well) was found *N. longicaudatus maximus* S. Kar. (= *N. kenki* S. Karaman, 1952a).

S. Karaman (1952a) partially redescribed this taxon from wells in Podčetrtek on right bank of Sotla River in Slovenia: from well Verbovšek and well Strašek, considering it as subspecies of *N. stygius* (Schiodte, 1849). Later, other authors cited these localities only.

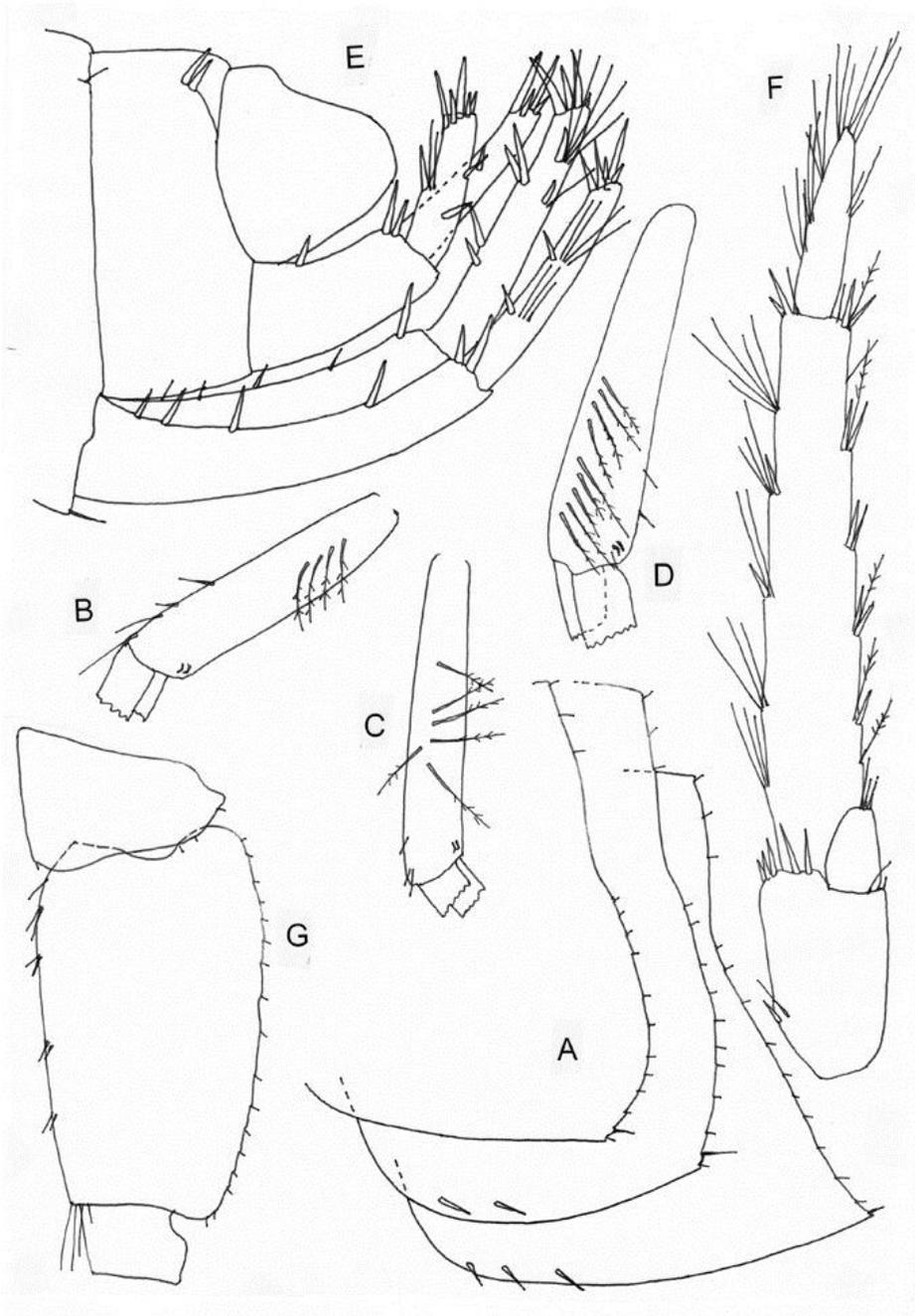


Fig. 15. *Niphargus karamani*, Schellenberg, 1935, well Verbovšek, Podčetrtek, female 13.2 mm.: A= epimeral plates 1-3; B-D= peduncle of pleopods 1-3; E= urosome with uropods 1-2; F= uropod 3; G= basipod of pereopod 7.

REMARKS AND AFFINITIES

Schellenberg (1935) dedicated this species to my father Dr. Stanko L. Karaman who studied various freshwater Amphipoda from Europe, especially Balkan.

Niphargus karamani is rather similar to *N. spoeckeri* Schellenberg, 1933 [loc. typ.: Crna Jama cave near Postojna, Slovenija] by strongly setose gnathopods 1-2, by inner plate of maxilla 1, etc., but *spoeckeri* shows different pilosity of pleopods 1-3, short peduncle and inner ramus of uropod 3 in males, etc.

Despite the fact that many taxa of the *N. Stygius* -Complex from Balkan are poorly or partially described only, and by this way not satisfactorily comparable, the existing known taxonomical characters of other taxa of *N. stygius* -Complex suggested that taxon *karamani* is not a subspecies of *N. stygius* but a distinct species. *N. karamani* Schellenberg, 1935, differing from all other known taxa of this complex by elongated peduncle and inner ramus of uropod 3 in males, and combination of other taxonomical characters.

CONCLUSIONS

The subterranean fauna of the family Niphargidae (Crustacea, Amphipoda) in western Balkan is still only partially known and various new taxa have been discovered during last 60 years. The *Niphargus stygius* Complex of known taxa is consisting of various well described, as well as still poorly or partially described valid taxa. By this way, the recognition of new taxa regarding already known species and subspecies becomes very problematic, indicating the importance of detailed redescription of already known taxa.

In this work is redescrbed poorly known species *Niphargus kenki* Schellenberg, 1935, known from Slovenian-Croatian border region, previously considered as a subspecies of *N. stygius* Schiödte, 1849. The new species *Niphargus cerjanensis* sp. n. is described from Cerjanska Jama Cave in Croatia, species rather similar to *stygius* Complex.

ACKNOWLEDGEMENTS

We would like to thanks the biologists and speleologists Mr Sci R. Ozimec, H. Cvitanović and E. Domina from Zagreb for the collected material of Amphipoda sent us at disposition for study, and used in this work.

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***NIPHARGUS CERJANENSIS*, SP. N. AND *N. KARAMANI* SCHELL. 1935
IZ PODZEMNIH VODA ZAPADNOG BALKANA
(277. PRILOG POZNAVANJU AMPHIPODA)**

SAŽETAK

Iz podzemnih voda špilje Cerjanske Jame kod Klenovnika (Ravna Gora, Varaždin region, Hrvatska) opisana je i nactana nova vrsta iz familije Niphargidae (Crustacea, Amphipoda), *Niphargus cerjanensis*, sp. n. koja je dosta bliska *Niphargus stygius* kompleksu taksona.

Slabo poznati takson *Niphargus stygius karamani* Schellenberg, 1935, opisan iz podzemnih voda u pograničnom regionu Hrvatske i Slovenije je detaljno opisan i nacrtan na osnovu materijala iz kolekcije KARAMAN-a. Taksonomski položaj obiju taksona je razmatran i *N. karamani* je podignut na nivo zasebne vrste.

Ključne riječi: Amphipoda, *Niphargus cerjanensis*, *karamani*, taksonomija, Hrvatska, Slovenija, nova vrsta, podzemlje