

Gordan S. Karaman  
Biological Institute — Titograd

THREE POORLY KNOWN SUBTERRANEAN NIPHARGUS  
SPECIES (FAM. GAMMARIDAE) FROM YUGOSLAVIA  
(CONTRIBUTION TO THE KNOWLEDGE OF THE  
AMPHIPODA 132)

ABSTRACT

Three poorly known subterranean *Niphargus* species of the *N.kochianus*-group (*Amphipoda*, *Gammaridae*) from Yugoslavia are studied, redescribed and figured: *Niphargus wolfi* Schell. 1933 from Planinska jama-cave, *N.minor* Sket 1956 from region of Zagreb (Opatovina; torrent Dolje) and *N. labacensis* Sket 1956 from Ljubljana and Zagreb region (torrent Dolje; Opatovina; Sutinska vrela near Podsused). All these three taxons, considered until now as a subspecies of *N.kochianus* Bate, are removed here to the specific rank, based on their taxonomic characters.

INTRODUCTION

During our study of *Amphipoda* from Yugoslavia, the taxonomic study of some poorly known *Amphipoda* was provided, among them some members of *N. kochianus*-group (Fam. *Gammaridae*) also.

Schellenberg described (1933) *Niphargus kochianus wolfi* n.ssp. from Tartarus lake in Postojna cave (Slovenia). Description of this taxon was very short and many important taxonomic characters were not mentioned and unknown. Later, this taxon was never redescribed or figured again.

After this discovering, many other members of *Niphargus kochianus*-group in Yugoslavia were discovered and described, but

their taxonomic status and relationships regarding *wolfi* remained unknown. We redescribed *wolfi* removing it to the specific rank.

Two other taxons of the same group of species, *N. kochianus minor* Sket and *N. kochianus labacensis* Sket, were described very briefly from the subterranean waters of Slovenia. As many important taxonomic characters of these taxons were undescribed and unknown, their taxonomic status was not certain; we redescribed and figured both taxons in detail, based on specimens in hand from Slovenia and Croatia. We removed both taxons to the specific rank.

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#### TAXONOMIC PART

##### **NIPHARGUS WOLFI Schellenberg 1933 (new rank)**

fig.: I-III

**Syn.:** *Niphargus kochianus wolfi* Schellenberg 1933:33, fig. 2, 3b; Schellenberg 1935:206; G. Karaman 1972:5; G. Karaman 1974:19.

**Description:** male (?) 3 mm: Body moderate, metasom-segments smooth, urosome low, urosomites 1-2 each with 1 slender spine on each side (fig. III, 6), urosomite 3 smooth.

Head normal, lateral cephalic lobes shallow, subrounded anteriorly (fig. III, 4). Antenna 1 reaching 2/3 to 3-4 of body; peduncular segments 1-3 progressively shorter, never shield-shaped (fig. I, 1); main flagellum consisting of over 14 articles, articles each with one aesthetasc shorter than article itself; accessory flagellum 2-articulate, nearly as long as ped article 3 (fig. I, 1).

Antenna 2 slender, flagellum up to 6-articulate, antennal gland cone short (fig. I, 2). Labium with well developed inner lobes.

Maxilla 1: inner plate with 2 setae, outer plate with 7 spines (6 spines with 1 strong lateral tooth, one spine with 3 lateral teeth) palp with 5 setae (fig. I, 4). Maxilla 2 normal.

Maxilliped: inner plate short, bearing 2 distal spines; outer plate not reaching tip of second palp segment (fig. I, 3); palp segment 3 lobed, palp segment 4 without median seta on inner margin, bearing one median seta on outer margin (fig. I, 3; III, 5).

Mandible: palp segment 2 with 4 setae; palp segment 3 with one A-seta on outer face and 2 single B-setae on inner face; 10 D-setae and 3-4 E-setae are present (fig. I, 5).

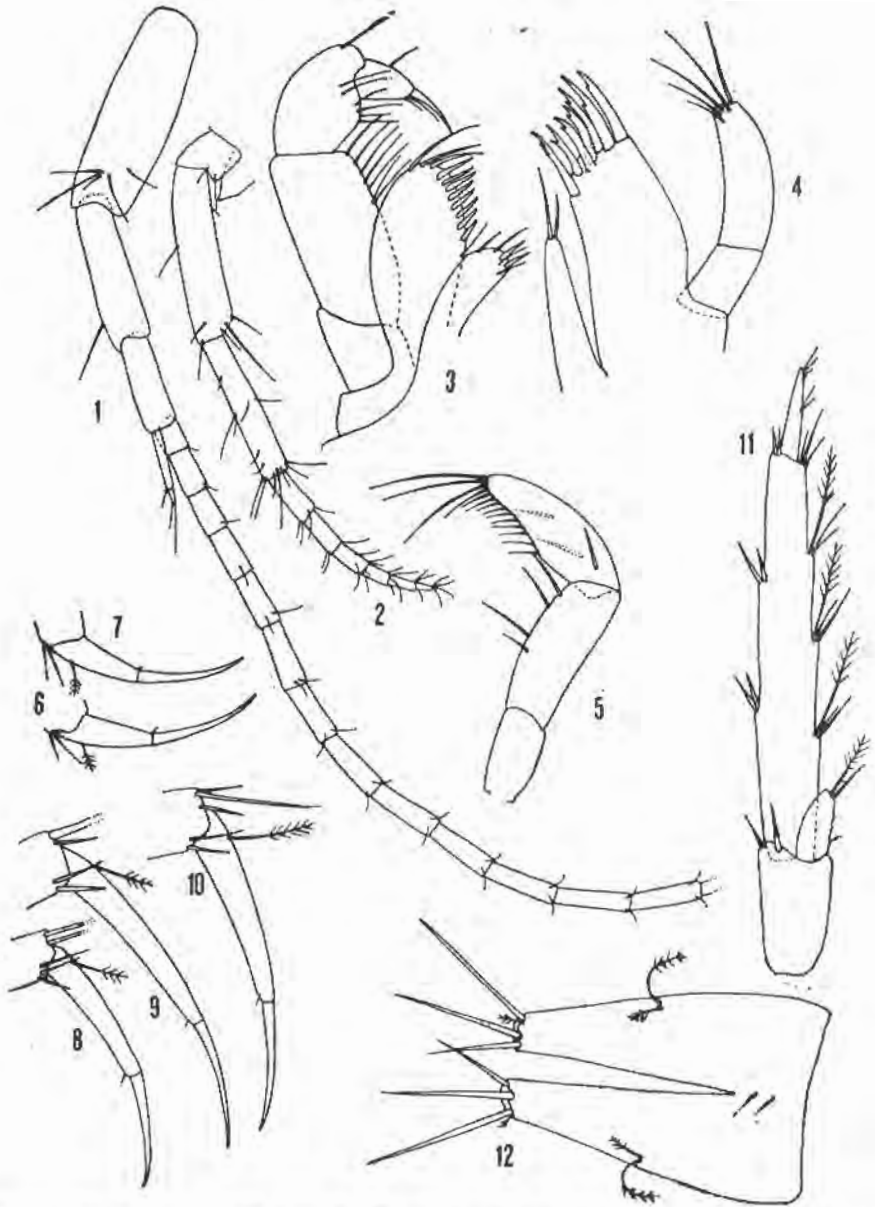


Fig. 1. *Niphargus wolfi* Schell., Planinska jama, male 3 mm: 1 = antenna 1; 2 = antenna 2; 3 = maxilliped; 4 = maxilla 1; 5 = mandibular palp; 6-10 = dactyl of pereopods 3-7; 11 = uropod 3; 12 = telson.

Coxae 1-4 moderate, slightly longer than broad, coxa 1 with subrounded ventroanterior corner (fig. II, 4), coxa 4 practically without ventroposterior lobe (fig. II, 6; III, 1, 2), coxa 5 shorter than 4 (fig. II, 1-3).

Gnathopods 1-2 slender, *kochianus*-type. Gnathopod 1: segment 5 slightly shorter than segment 6 (fig. II, 4); segment 6 slightly longer than broad, with almost parallel lateral margins (fig. II, 4-5), palm transverse, finely serrate, convex, defined by one strong corner spine accompanied laterally by one slender serrate spine on outer face, and one short subcorner spine on inner face of segment 6; dactyl reaching posterior margin of segment 6, bearing one median seta on outer margin.

Gnathopod 2: segment 2 without median setae along anterior margin (fig. II, 6), 3 median setae are at posterior margin; segment 5 is remarkably longer than 6; segment 6 longer than broad, with almost parallel lateral margins, (fig. II, 6, 7); palm transverse, finely serrate, defined by one strong corner spine accompanied laterally by one slender toothed spine on outer face and one subcorner spine on inner face of segment 6; dactyl reaching posterior margin of segment 6, bearing one seta on outer margin.

Pereopods 3-4 moderate, with slender and long dactyl bearing one plumose seta on outer margin and one very short seta on inner margin; nail longer than the remaining part of dactyl (fig. I, 6, 7; III, 2).

Pereopods 5-7 moderate, pereopod 5 is not much longer than 7 (fig. II, 1-3). Segment 2 of pereopods 5-7 ovoid, with well developed ventroposterior lobe; segments 3-6 with slender spine-like setae along both margins; dactyls very slender and long, progressively longer towards pereopod 7 (fig. II, 1-3; I, 8-10), bearing one plumose seta on outer margin and one very short seta on inner margin; dactyl slightly shorter than the remaining part of dactyl.

Pleopods with 2 retinacula each. Epimeral plates 1-3 with pointed, sharply produced ventroposterior corner (fig. III, 3) and with nearly straight posterior margin.

Uropods 1-2 slender (fig. III, 6). Uropod 1: short spine is sitting near the basis of peduncle; rami subequal, with longer spines along margins and tip (fig. III, 6).

Uropod 2: inner ramus is slightly longer than outer one, spines like these in uropod 1 (fig. III, 6). Uropod 3 short, its second segment short (fig. I, 11).

Telson relatively long, much longer than broad (fig. I, 12), deeply incised, tapering distally; each lobe with 3 distal slender and long spines; a pair of moderate plumose setae appears near the middle of each lobe.

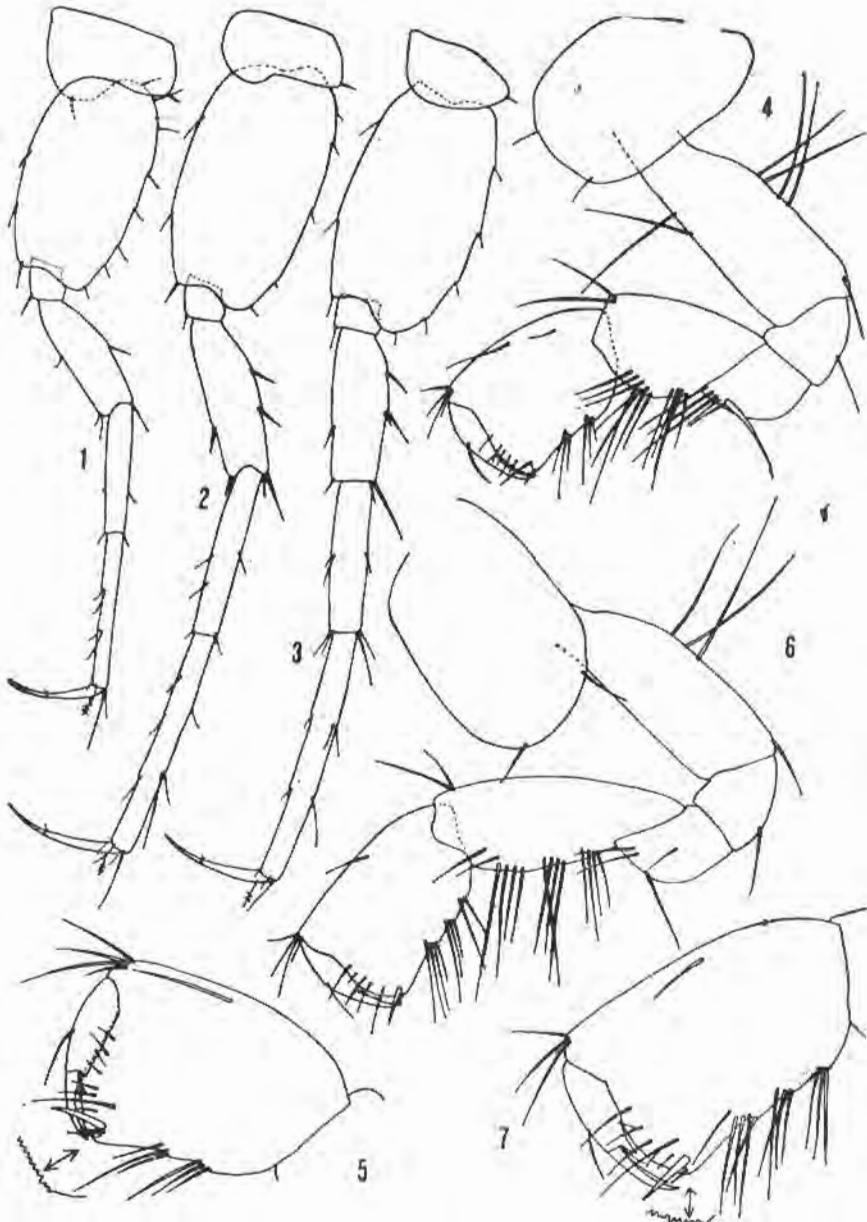


Fig. II. *Niphargus wolfi* Schell., Planinska jama, male 3 mm: 1-3 = pereopods 5-7; 4-5 = gnathopod 1; 6-7 = gnathopod 2.

**Female:** I had no females in hand. Schellenberg mentioned one female of 4.5 mm long, with one lateral spine on each lobe of telson.

**Variability:** Scarse material of this species in hand didn't permit us to establish the variability of this species. The number of segments in main flagellum of antenna 1 in our specimen was 13+ articles (distal part of flagellum was cutted), in other two specimens 12-13 articulate.

Schellenberg's figure of *N. wolfi* show the presence of one lateral spine on each margin of telson. As our specimens was smaller than these of Schellenberg, these spine was not developed.

**Material examined:** Planinska jama-cave in Slovenia, small nappes of water; this carstic massiv belong to the same one from which are coming the subterranean waters and animals into Tartarus cave in Postojna cave (= Adelsberg); 3 spec. (leg. B. Sket); several juv. spec. of *N. stygius* was intermixed with *wolfi*.

**Localities cited:** Tartarus lake in Postojna cave, Slovenia (Schellenberg 1933).

**Neotype:** Schellenberg described this species based on 4 specimens from Tartarus lake in Postojnska jama-cave (= Adelberger Grotte). As these specimens not exist more, we tried to collect new material from type-locality. Because it was not possible to find them in Postojnska jama, we selected the specimen from the same water complex, from Planinska jama-cave (belonging to the same carstic massif which is giving the subterranean water and animals to Postojna cave, Tartarus lake) as a neotype (male 3 mm).

**Loc. typ.:** Planinska jama, Slovenia.

**Remarks and affinities.** *Niphargus wolfi* belongs to the *N. kochianus*-group of species, and it is characterized by very slender dactyl of pereopods 3-7, long coxae, shape of gnathopods 1-2, etc.

*Niphargus kochianus stygocharis* Dudich 1943 differs from *wolfi* by presence of one seta on inner plate of maxilla 1, by shorter dactyl of pereopods 5-7, by elevated number of retinacula, etc.

*Niphargus kochianus petrosani* Dobr. Manolache 1933 differs from *N. wolfi* by much shorter and stouter dactyl of pereopods 3-7, by different armature of telson, shape of segment 2 of pereopods 5-7, etc.

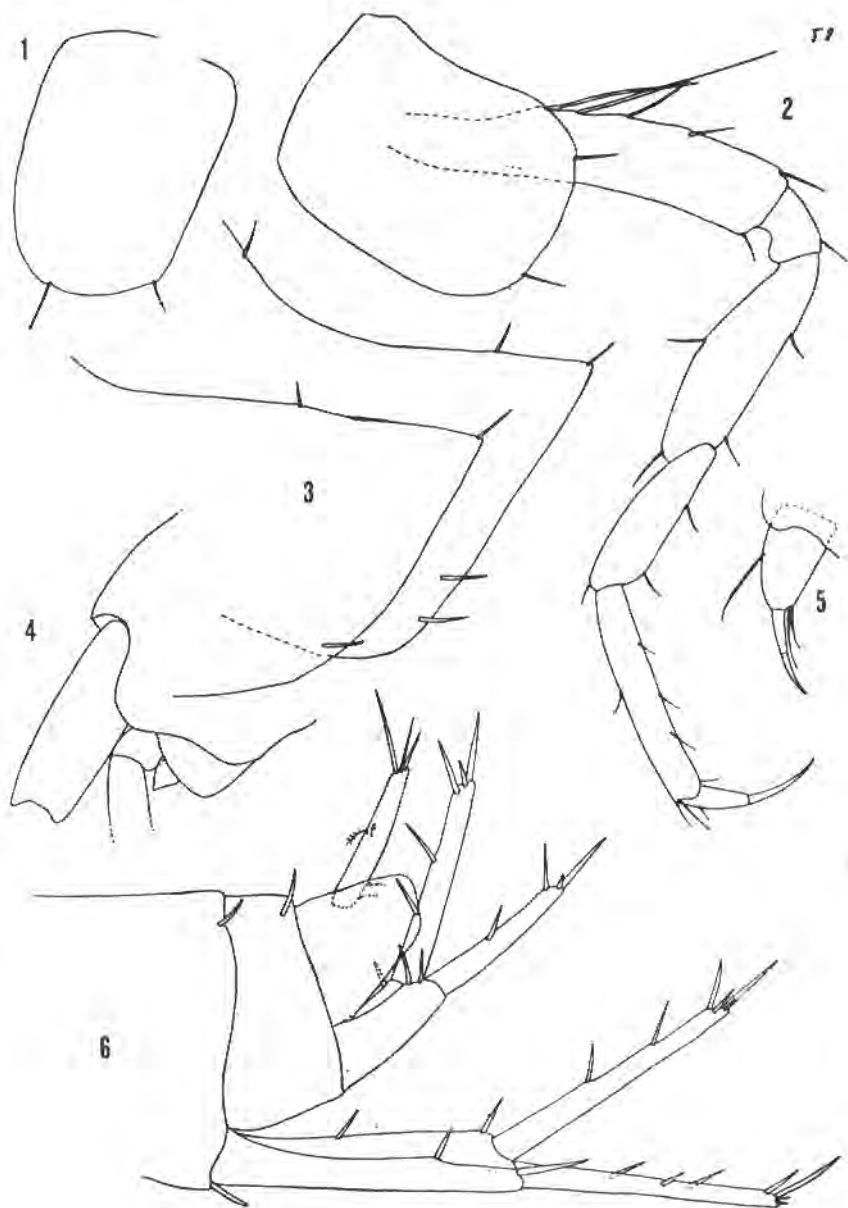


Fig. III. *Niphargus wolffi* Schell., Planinska jama, male 3 mm: 1 = coxa 3; 2 = pereopod 4; 3 = epimeral plates 2-3; 4 = head; 5 = distal part of maxilliped palp; 6 = urosome with uropods 1-2.



**NIPHARGUS MINOR** Sket 1956 (new rank)

fig. IV-VI

Syn.: *Niphargus kochianus minor* Sket 1956:71, fig. 4; G. Karaman 1972:5; G. Karaman 1974:19.

Description: Female 5 mm with setose oostegys: Body stout, metasome smooth, urosomite 1 with one seta on each side, urosomite 2 with 2 spines on each side (fig. V, 1), urosomite 3 smooth.

Lateral cephalic lobes of head subrounded, rostrum short (fig. V, 4). Antenna 1 reaching half of body, peduncular segments 1-3 normal, progressively shorter (fig. IV, 7); main flagellum consisting of up to 15 articles bearing each one aesthetasc shorter than segment itself. Accessory flagellum 2-segmented.

Antenna 2 normal, peduncular segments 4-5 subequal, flagellum consisting of up to 8 articles, antennal gland cone short. Maxilla 1: inner plate with one seta (fig. V, 7), outer plate with 7 spines (6 spines with one lateral tooth, one spine with several teeth), palp with 5 setae.

Maxilliped: inner plate with 3 distal spines, outer plate not reaching distal tip of second palp segment (fig. V, 6); palp segment 3 lobed, palp segment 4 with one median seta on outer margin, without median seta on inner margin.

Mandibular palp: segment 2 with 5-6 setae, segment 3 with one group of A-setae (3 setae) and 2 single B-setae, up to 12 D-setae and 5 E-setae (fig. V, 5).

Coxae 1-4 longer than broad, coxa 4 with poorly lobed ventroposterior margin (fig. IV, 1, 3; VI, 6, 9), coxa 5 much shorter than 4 (fig. VI, 10). Gnathopods 1-2 slender, *kochianus*-type. Gnathopod 1: segment 2 with many setae at both margins; segment 5 as long as 6 (fig. IV, 1, 2); segment 6 longer than broad, with almost transverse palm very finely crenellated, defined by one strong corner spine accompanied laterally by 2 slender toothed spines on outer face, and one short subcorner spine on inner face of segment 6; dactyl almost reaching posterior margin of segment 6, bearing one median seta on outer margin.

Gnathopod 2: segment 5 longer than 6; segment 6 longer than broad, dilated distally (fig. IV, 3-5) palm almost transverse, finely crenellated, convex, defined by one strong corner spine accompanied laterally by 2 slender toothed spines on outer face and one short subcorner spine on inner face of segment 6 (fig. IV, 5); dactyl like that in gnathopod 1.



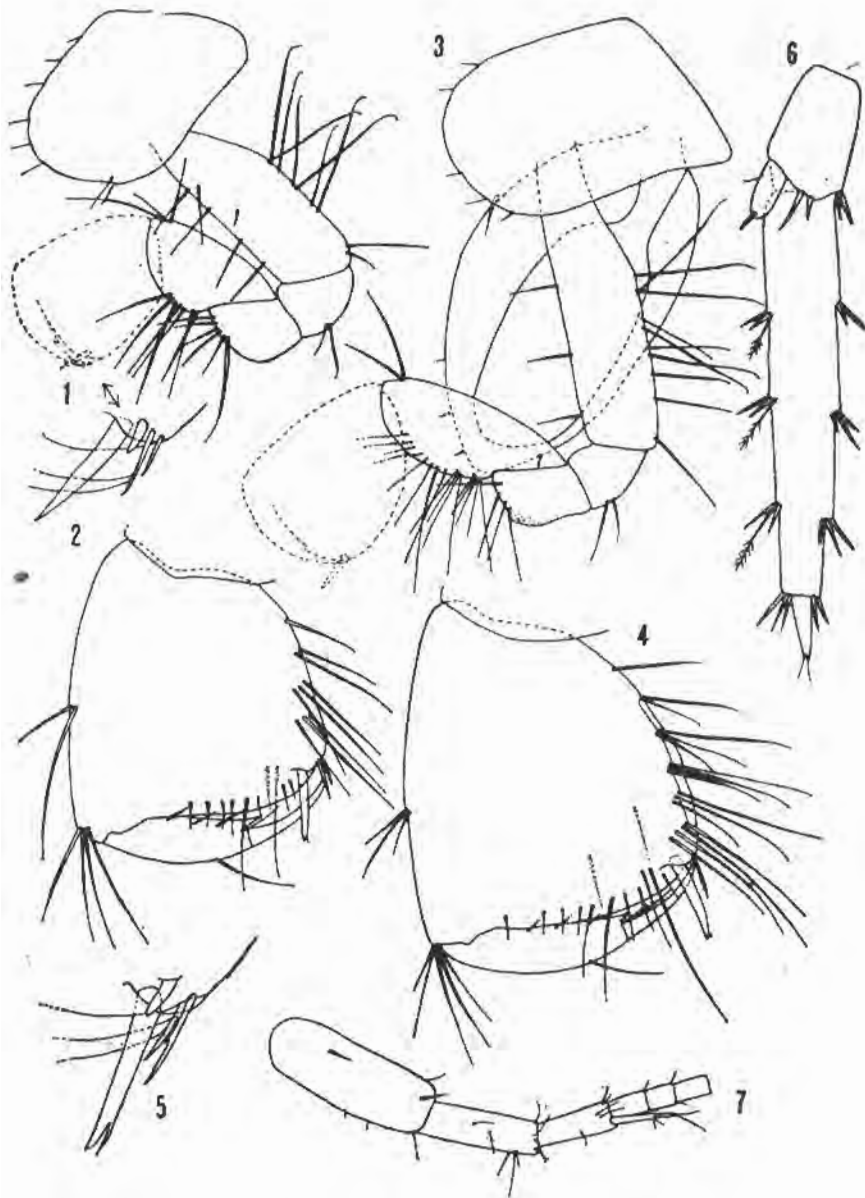


Fig. IV. *Niphargus minor* Sket, Opatovina, female 5 mm: 1-2 = gnathopod 1; 3-5 = gnathopod 2; 6 = uropod 3; 7 = antenna 1.

Pereopods 3-4 normal, slender, dactyl slightly exceeding half of segment 6, with long nail (fig. VI, 6-8), bearing one plumose seta on outer margin and one seta on inner margin.

Pereopods 5-7 relatively stout, pereopod 7 is not much longer than 5 (fig. VI, 1, 3, 4), their segment 2 ovoid, large, with marked ventroposterior lobe; segments 3-6 stout; dactyl slender but with nail shorter than the remaining part of dactyl (fig. VI, 2, 5), and provided with one slender spine or seta on inner margin.

Pleopods with 3 retinacula each. Epimeral plates 1-3 produced and pointed, with slightly convex posterior margin (fig. V, 3).

Uropod 1 and 2 relatively stout (fig. V, 1). Uropod 1: short spine appears near the basis of peduncle; inner ramus is slightly longer than outer one, both rami with short lateral and distal spines.

Uropod 2: inner ramus is slightly longer than outer one, both rami with short lateral and distal spines (fig. V, 1). Uropod 3 short, with short second segment of outer ramus (fig. IV, 6).

Telson long, exceeding tip of peduncle of uropod 3, deeply incised (fig. V, 2); each lobe with 4-5, rarely only 3 distal spines and 1-2 lateral spines; a pair of short plumose setae appears near the middle of each lobe.

Males like females, including uropods 1-3.

Variability: Armatura of telson is rather variable: usually 4-5 distal and 1-2 lateral spines appears on each lobe. Some specimens from Dolje are with 0-1 lateral spine on inner margin of telson lobes and 2 single spines on outer margin. Nail of pereopods 3-4 is slightly longer in specimens from Dolje, and often 3 slender toothed spines are present near corner spine on gnathopods 1-2.

Number of retinacula is variable (3-3-3; 4-3-3; 3-2-2).

Material examined: Croatia: — Opatovina near Podused, W. of Zagreb, December 20, 1979, many spec. (leg. M. Kerovec);

— subterranean waters of torrent Dolje (foot of Medvednica Mt. near Zagreb), May 11, 1977, one spec. (leg. R. Lattinger); — ibid., Oct. 4, 1977, one spec. (leg. R. Lattinger).

Localities cited: wells in Dravlje, Gabrje and Dobrova, N and NW of Ljubljana (S ket 1956).

Loc. typ.: Gabrje, Slovenia.

Remarks and affinities: *Niphargus minor* is rather similar to *Niphargus lattingerae* G. Karaman 1983 known from subterranean thermal waters of torrent Dolje near Zagreb (Med-

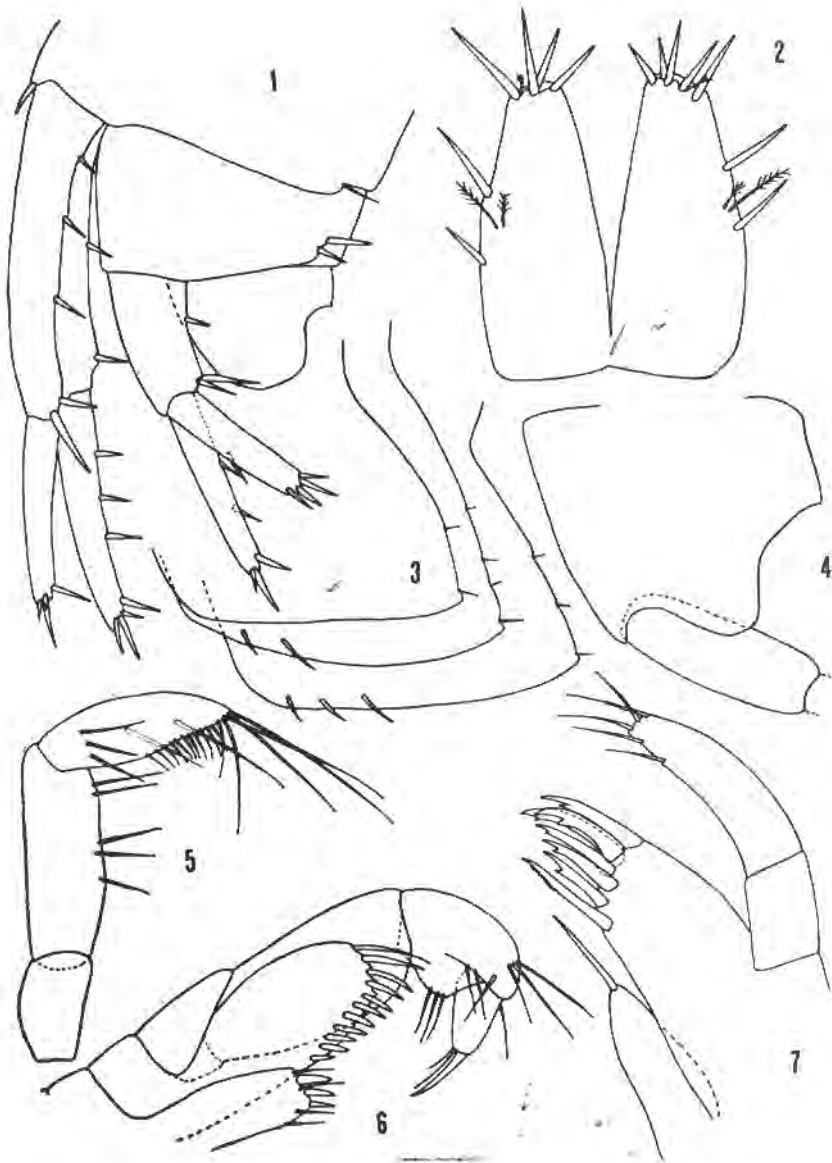


Fig. V. *Niphargus minor* Sket, Opatovina, female 5 mm : 1 = urosome with uropods 1-2; 2 = telson; 3 = epimeral plates 1-3; 4 = head; 5 = mandibular palp; 6 = maxilliped; 7 = maxilla 1.

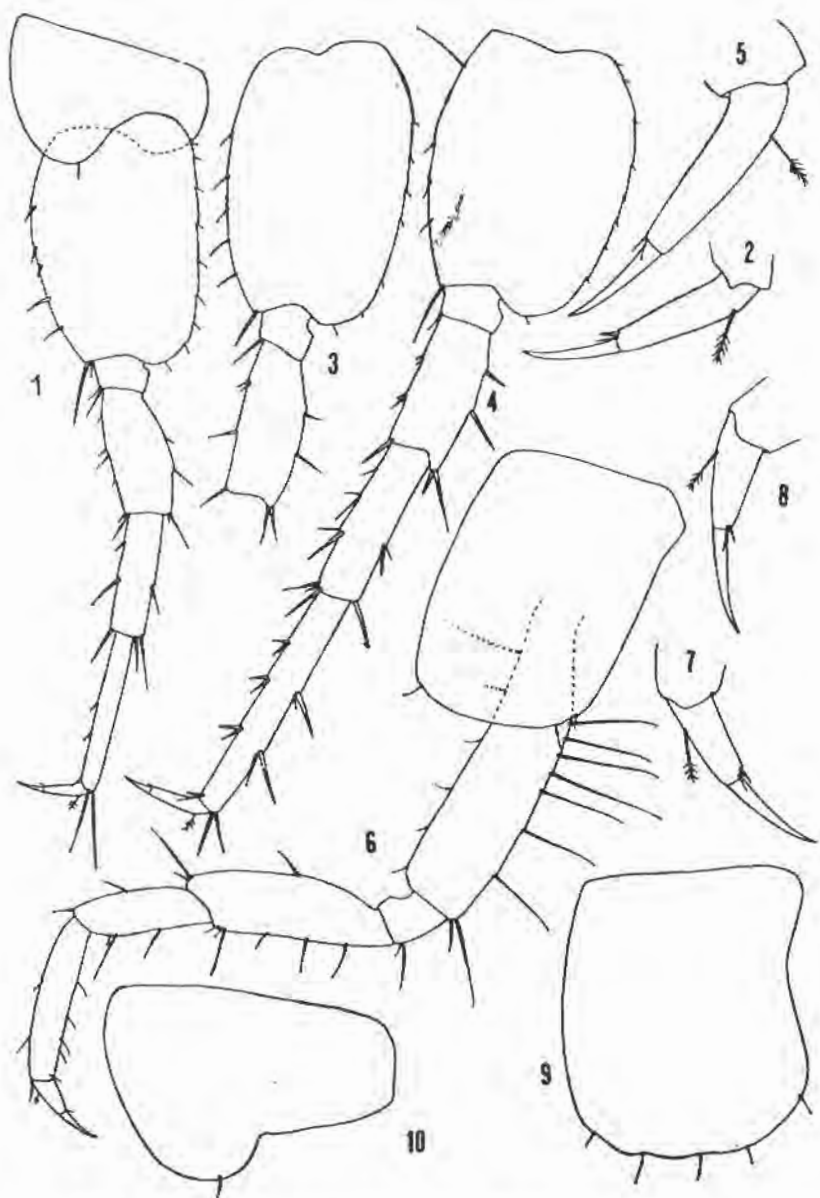


Fig. VI. *Niphargus minor* Sket, Opatovina, female 5 mm: 1-2 = pereopod 5; 3 = pereopod 6; 4-5 = pereopod 7; 6-7 = pereopod 3; 8 = dactyl of pereopod 4; 9 = coxa 4; 10 = coxa 5.

vednica Mt.) (armature of urosomites 1-2, uropods 1-2, shape of dactyls of pereopods 3-7). *N. latingerae* differs from *N. minor* by presence of 2-3 slender toothed spines near corner spine on gnathopods 1-2, by short coxae 1-4, by narrower segment 2 of pereopods 5-7, by absence of lateral spines on telson, less number of retinacula, by longer basal spines near basis of peduncle in uropod 1, etc.

*Niphargus labacensis* Sket 1956, known from subterranean waters of Slovenia and Croatia, is also rather similar to *N. minor*, but differs from later by presence of spine on urosomite 1, by shorter nail of dactyls in pereopods 5-7, by shorter coxae 1-4, by presence of long distal spines on outer ramus of uropod 1, by shorter dactyl of gnathopods 1-2 not reaching posterior margin of segment 6, etc.

*N. kochianus petrosani* Dobr. Man. 1933, known from Romania (Petrosani; Cetatuiia) is also very similar to *N. minor* (shape of telson, gnathopods 1-2, pereopods 5-7, coxae), but differs from minor by elevated number of spines on urosomites 1-2, lower number of retinacula (2), by nearly subequal rami of uropods 1-2, by presence of strong spine near basis of peduncle of uropod 1, shape of epimeral plates, etc.

As some of taxonomic characters of ssp. *petrosani* are unknown (i. e. undescribed), one exact relationship between *petrosani* and *minor* is not possible to establish without the comparison of specimens of both taxons.

*N. k. stygocharis* Dudich 1943 differs from *N. minor* by distinctly narrower gnathopods 1-2, more spinose urosomites 1-2, shape of epimeral plates, etc.

#### **NIPHARGUS LABACENSIS** Sket 1956 (new rank)

fig. VII-IX

Syn.: *Niphargus kochianus labacensis* Sket 1956:71, fig. 5; G. Karaman 1972:5; G. Karaman 1974:19.

**Description:** Female ovig. 5 mm: Body stout, metasome smooth, urosomites 1-2 each with one spine on each side (fig. VII, 6), urosomite 3 smooth.

Lateral cephalic lobes of head short, subrounded (fig. VIII, 9). Antenna 1 almost reaching body-length, peduncular segments 1-3 normal, progressively shorter (fig. IX, 2); main flagellum consisting of up to 34 articles, segments with one aesthetasc each (fig. IX, 3). Accessory flagellum 2-segmented.

Antenna 2 with subequal peduncular segments 4-5, flagellum consisting of up to 11 articles (fig. IX, 1), gland cone short.

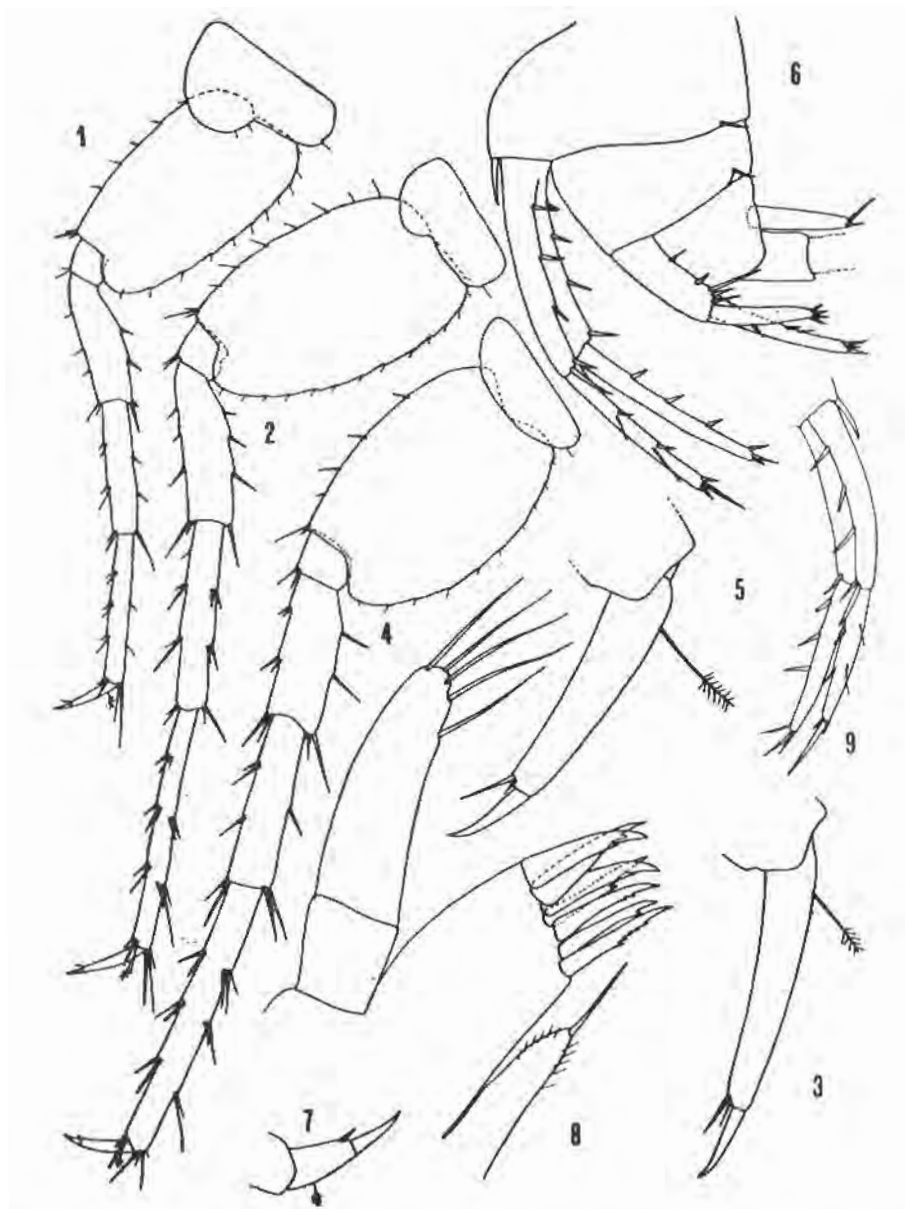


Fig. VII. *Niphargus labacensis* Sket, Ljubljana, female 4.9 mm: 1 = pereopod 5; 2-3 = pereopod 6; 4-5 = pereopod 7; 6 = urosome with uropods 1-2; 7 = dactyl of pereopod 3; 8 = maxilla 1; 9 = uropod 1; female 4.8 mm.

Maxilla 1: inner plate with 1 seta, outer plate with 7 spines (6 spines with one lateral tooth, one spine with several teeth; occasionally one median spine with 2 lateral teeth (fig. VII, 8), palp with 5 setae. Maxilliped: inner plate with 4 excavated distal spines (fig. IX, 4, 5), outer plate not reaching tip of second palp segment; palp segment 3 lobed, segment 4 with nail (fig. IX, 5).

Mandibular palp: segment 2 with up to 4 setae (fig. VIII, 10), third segment with up to 14 D-setae, 3-4 E-setae, one B-seta and one group of 2 A-setae (fig. VIII, 10).

Coxae 1,3 and 4 nearly as long as broad, coxa 2 hardly longer than broad (fig. VIII, 1, 4; IX, 7, 8), coxa 5 shorter than 4 (fig. VII, 1, 2, 4).

Gnathopods 1-2 *kochianus*-type, slender. Gnathopod 1: segment 5 longer than 6 (fig. VIII, 1, 2, 3), segment 6 subovoid, weakly longer than broad; palm convex, transverse, finely crenellated, defined by one strong corner spine accompanied laterally by one slender spine on outer face and one short subcorner spine on inner face of segment 6 (fig. VIII, 3); dactyl distinctly not reaching posterior margin of segment 6, bearing one median seta on outer margin.

Gnathopod 2: segment 5 much longer than 6 (fig. VIII, 4-6), segment 6 distinctly longer than broad, trapezoid; palm finely crenellated, convex, defined by one strong and one slender corner spine on outer face and one short subcorner spine on inner face of segment 6 (fig. VIII, 6); dactyl like that in gnathopod 1.

Pereopods 3-4 normal, slender, dactyl reaching 1/3 of segment 6, nail almost as long as remaining part of dactyl (fig. VII, 7), bearing one spine on inner margin and one plumose seta on outer margin.

Pereopods 5-7 moderately long, pereopod 5 remarkably shorter than 7 (fig. VII, 1, 2, 4); segment 2 ovoid, with strong ventro-posterior lobe (fig. VII, 1, 2, 4); dactyl slender but short; nail much shorter than the remaining part of dactyl (fig. VII, 3, 5) (nail of pereopod 7 reaching 1/3 of the remaining part of dactyl).

Pleopods with 3 retinacula each. Epimeral plates 1-3 angular, poorly produced, with straight posterior margin (fig. VIII, 8). Uropods 1-2 slender (fig. VII, 6). Uropod 1: one strong spine appears near the basis of peduncle; inner ramus is longer than outer one, distal spine of outer ramus is long, other spines of both rami are short (fig. VII, 6, 9).

Uropod 2: outer ramus is remarkably shorter than inner one, both rami with short lateral and distal spines (fig. VII, 6). Uropod 3 short, second segment of outer ramus short (fig. VIII, 7).



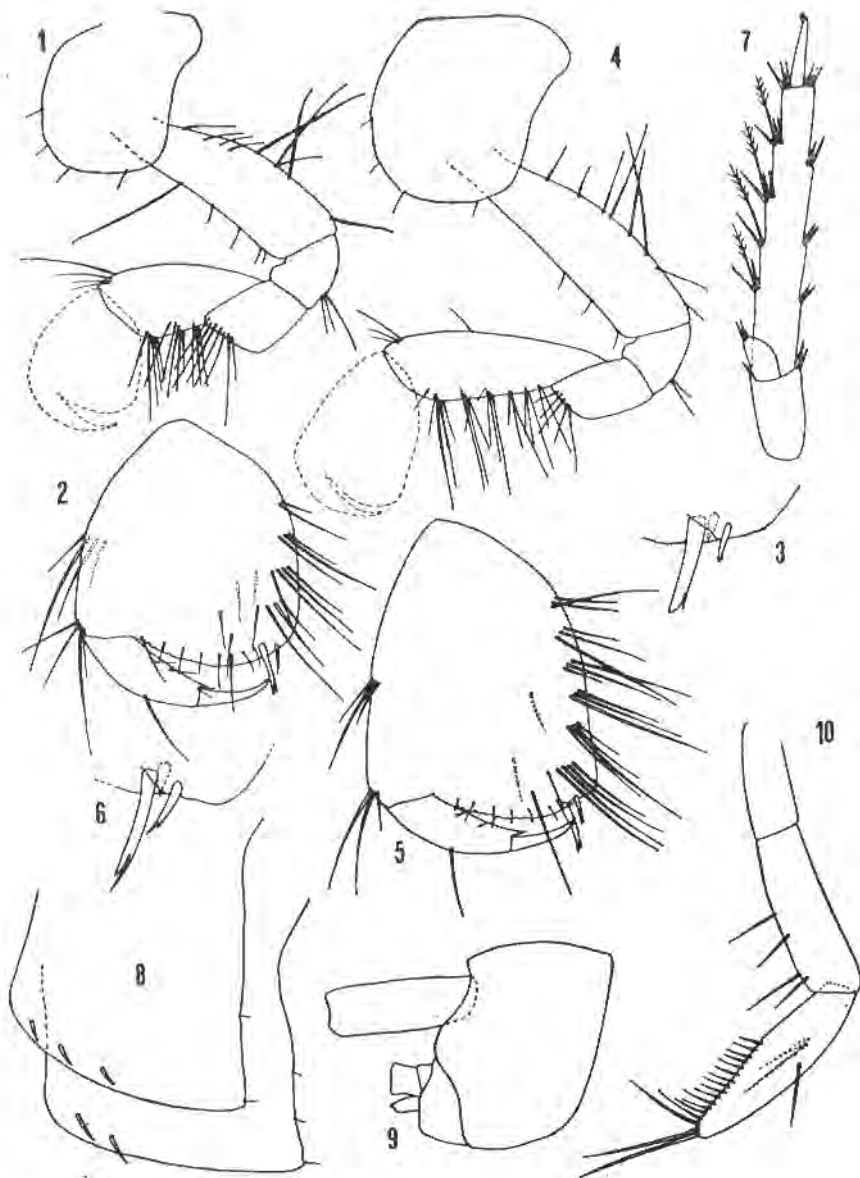


Fig. VIII. *Niphargus labacensis* Sket, Ljubljana, female 4.9 mm: 1-3 = gnathopod 1; 4-6 = gnathopod 2; 7 = uropod 3; 8 = epimeral plates 2-3; 9 = head; 10 = mandibular palp.

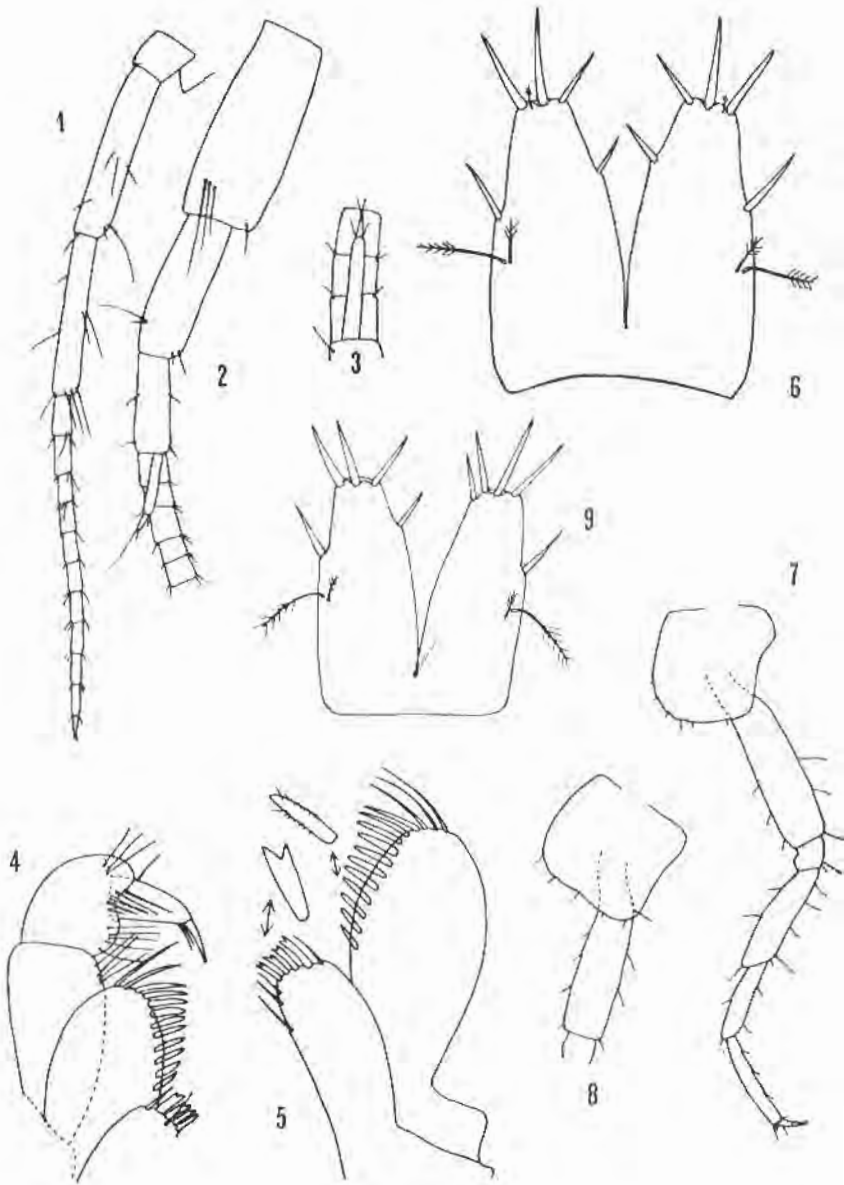


Fig. 1X. *Niphargus labacensis* Sket, female 4.9 mm; 1 = antenna 2; 2 = antenna 1; 3 = accessory flagellum; 4-5 = maxilliped; 6 = telson; 7 = pereopod 3; 8 = pereopod 4; 9 = telson, female 4.8 mm.

Telson slightly longer than broad, deeply incised (fig. IX, 6, 9); each lobe with 3 distal and one lateral spine on each margin (fig. IX, 6, 9); a pair of long plumose setae appears below the middle of each lobe.

Males like females including uropods 1-3.

Variability: distal spine on outer ramus of uropod 1 is always longer than other spines (fig. VII, 6, 9). A spine near basis of peduncle of uropod 1 is nearly as long as the diameter of peduncle itself.

Material examined: — Ljubljana, 10 spec. accompanied by *N. longidactylus* (leg. T. Petkovski);

— torrent Dolje (Medvednica Mt. near Zagreb), subterranean water near thermal springs, 5 spec. (leg. R. Lattinger);

— Opatovina, Dec. 20, 1979, 2 spec. intermixed with *Niphargus serbicus* and *Niphargus longidactylus* (leg. M. Kerovec);

— Sutinska vrela, vill. near Podsused (Zagreb reg.), Oct. 17, 1979, one spec. (leg. R. Lattinger).

Localities cited: Slovenia: Stožice (S ket 1956); Dovjež (S ket 1971).

Loc typ.: Stožice near Ljubljana, Slovenia.

Remarks and affinities: *N. labacensis* was found in the same locality with *N. lattingerae* in subterranean waters of torrent Dolje near thermal waters. *N. lattingerae* differs from *labacensis* by longer dactyl of gnathopods 1-2, by absence of lateral spines on telson, only 2 retinacula on pleopods, narrower article 2 of pereopods 5-7, different shape of gnathopods 1-2, by armature of urosomites 1-2, etc.

*Niphargus k. stygocharis* differs from *labacensis* by narrower gnathopods 1-2, longer dactyl of gnathopods 1-2, longer coxae, more spinose urosomites, etc.

*N. tamaninii* Rufflo 1953 differs from *labacensis* by longer dactyls of gnathopods 1-2 and pereopods 3-7, shape of gnathopods 1-2, etc.

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## REZIME

### TRI SLABO POZNATE PODZEMNE NIPHARGUS- VRSTE (FAM. GAMMARIDAE) IZ JUGOSLAVIJE (132 PRILOG POZNAVANJU AMPHIPODA)

Gordan S. Karaman  
Biološki zavod — Titograd

Za vrijeme naše studije površinskih i podzemnih Amphipoda iz roda *Niphargus* u Jugoslaviji, naročita pažnja je posvećena studiji nekih slabo i nedovoljno poznatih vrsta, posebno onih iz grupe *Niphargus kochianus*.

Schellenberg je opisao 1933 godine novu podvrstu *Niphargus kochianus wolfi* n. ssp. iz podzemnog jezera Tartarus u Postojnskoj jami u Sloveniji. Kako je opis ove vrste bio vrlo kratak i bez detalja, to je uporedba kasnije nađenih novih taksona iz iste grupe roda *Niphargus* sa podvrstom *wolfi* bila veoma otežana zbog nepoznavanja mnogih taksonomskih odlika podvrste *wolfi*. Zahvaljujući prof. Dr. B. Sketu sa Ljubljanskog univerziteta, koji nam je dao na raspolaganje nekoliko primjeraka ove vrste, detaljno smo proučili ovaj takson i utvrdili da nije podvrsta od *N. kochianus* već samostalna vrsta *Niphargus wolfi*. U radu je dat detaljni opis i slike ove vrste iz Planinske jame u Sloveniji.

Sket je opisao 1956. godine dvije druge podvrste iz Slovenije, *Niphargus kochianus minor* iz podzemnih voda u Gabrje, i *Niphargus kochianus labacensis* iz podzemnih voda u Stožicama kod Ljubljane. Analizom novog materijala obe vrste iz nekoliko lokaliteta u Hrvatskoj i Sloveniji, pokazali smo da oba taksona predstavljaju posebne vrste, *Niphargus minor* i *Niphargus labacensis*, koje su jasno razdvojene od *N. kochianus* mnogobrojnim razlikama u građi dijelova tijela.

*Niphargus minor* smo opisali na osnovu materijala iz Hrvatske (podzemne vode u Opatovina kod Podsuseda (Zagreb) i iz podzemnih voda potoka Dolje na području Medvednice planine kod Zagreba).

*Niphargus labacensis* je opisan ponovo na osnovu novog materijala iz Slovenije (Ljubljana, podzemne vode) i iz Hrvatske (Opatovina; Sutinska vrela kod Podsuseda i iz podzemnih voda potoka Dolje na podnožju Medvednice planine kod Zagreba).