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ЧЕРНОГОРСКАЈА АКАДЕМИЈА НАУК И ИСКУССТВ
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FIRST DISCOVERY OF THE FAMILY NIPHARGIDAE
(GAMMARIDEA), IN IRAN
(Contribution to the Knowledge of the Amphipoda 234)

Abstract

First discovery of the members of the subterranean family *Niphargidae* (*Amphipoda Gammaridea*) in Iran is made, and the species *Niphargus valachicus* Dobreaanu & Manolache, 1933, from Ghaem Shahr (Mazandaran province) is redescribed and figured. Some new localities of this species from Croatia and Serbia are given.

PRVO OTKRIĆE FAMILIJE NIPHARGIDAE
(GAMMARIDEA) U IRANU
(234. Prilog poznavanju Amphipoda)

Izvod

Zabilježen je prvi nalaz predstavnika podzemne familije *Niphargidae* (*Amphipoda Gammaridea*) u Iranu, i vrsta *Niphargus valachicus* Dobreaanu & Manolache, 1933, iz mjesta Ghaem Shahr (provincija Mazandaran)

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ponovno je opisana i ilustrovana. Neki novi lokaliteti ove vrste su dati iz Hrvatske i Srbije.

INTRODUCTION

The subterranean family *Niphargidae* (*Amphipoda Gammaridea*) is widely extended over entire central and southern Europe, including also Asia Minor and Near East (Israel, Lebanon, Iraq). The genus *Niphargus* Schiödte, 1849, consisting of over 280 known taxa, is with the similar distribution, except its absence in western parts of Iberian peninsula where this genus is substituted with genus *Haploginglymus* Mateus & Mateus, 1958.

Various authors have been described numerous taxa of the genus *Niphargus* in the regions of the Near East, Black Sea, and the region between Black Sea and Caspian Sea (Abkhasia, Armenia, Azerbaijan, Gruzija, etc.) (BIRSTEIN 1940, 1941, 1954; DERSHAVIN 1945, etc.). SCHELLENBERG (1933) and S. KARAMAN (1950) described *Niphargus* taxa from Asia Minor. ALOUF (1972; 1973; 1977) mentioned genus *Niphargus* for Lebanon. Later, G. KARAMAN mentioned genus *Niphargus* for eastern coast of the Caspian Sea (*Niphargus pseudocaspicus* G. Karaman, 1982), and later also for Israel, Lebanon and Iraq (1986; 1992).

The present discovery of the members of the genus *Niphargus* in the subterranean waters near Ghaem Shahr in the Mazandaran province (S. of Caspian Sea), extended our knowledge of the genus *Niphargus* still more to the south of the Caspian Sea.

Despite we have had only two specimens in hands (one large and one small), we have figured and described the largest specimen (one male of 9.6 mm, probably not yet adult). All established taxonomical characters indicated that this specimens is very similar to the subterranean pontocaspian species *Niphargus valachicus* Dobr. Man. 1933, known from the coast of the Pontocaspian basin (Slovenia, Serbia, Romania, Bulgaria, etc.).

ACKNOWLEDGEMENTS. I am indebted to the deceased prof. Dr. J. H. Stock from Holland for the material of Iran used in this study.

NIPHARGUS VALACHICUS Dobreanu & Manolache,
1933 Figs. I-IV

Niphargus tatrensis valachicus Dobreanu & Manolache 1933: 104, figs. 2-4;

Niphargus valachicus S. Karaman 1934: 332; Schellenberg 1935: 211; S. Karaman 1950: 11-20, 26-32, figs. 1-12; Car. Dobr. Man. 1955: 312, figs. 290-293; Straskraba 1967: 207; Straskraba 1972: 43, fig. 4; Straskraba 1972a: 87; G. Karaman 1973: 150, fig. IV, 6-13; G. Karaman 1974: 27; Sket 1981: 90; G. Karaman & Ruffo 1986: 533;

Niphargus valachicus valachicus Motas et al. 1962: 222;

Niphargus (Phaenogammarus) mediodanubialis Dudich 1941: 61, figs. 1-2;

Niphargus (Phaenogammarus) mediodanubialis f. *aschizotelson* Dudich 1941: 72, fig. 3;

Niphargus (Supraniphargus) valachicus valachicus S. Karaman 1950b: 68, figs. 35-37; Sket 1958: 67;

Niphargus (Phaenogammarus) valachicus S. Karaman 1960: 83; De-dju 1967: 63;

Niphargus ivanovi Schferna (nomen nudum, in litt.). G. Karaman 1974: 27.

MATERIAL EXAMINED: IRAN: Near Ghaem Shahr, prov. Mazandaran; Mr. A. R. Mirzajane coll., sample no. V-24 (leg. B. H. Kiabl et al.), 1995, 2 spec.

SERBIA: Sp. 117= Smederevo, May 1942, 8 spec. (leg. S. Karaman);

Sp. 78= Smederevo, 1944, 3 spec. (leg. S. Karaman);

S-6048= Kupinovo, Obedska Bara, Vojvodina, 1968, 1 exp. (leg. D. Jankovic);

S-5862= open well in village Dolovo (13 km NE. of Panczevo, Vojvodina);

CROATIA: Sp. 100= Zagreb, vicinity, 2 spec. (no data) (leg. H. Coiffait);

DESCRIPTION OF SPECIMENS FROM IRAN: MALE 9.7 mm: Body moderately stout, mesosomal segments smooth; metasomal segments 1-3 with 8 short dorsoposterior marginal setae each (fig. 3A). Urosomites 1-2 with 1 strong spine on each dorsolateral side (fig. 3A), urosomite 3 smooth. Urosomite 1 near basis of peduncle of uropod 1 with 1 short ventroposterior spine (fig. 3C).

Head with short rostrum and short subrounded lateral cephalic lobes (fig. 1F), eyes absent (fig. 1F).

Antenna 1 slightly exceeding half of body (ratio: 6.8:9.7); peduncular segments 1-3 progressively shorter, poorly setose; peduncular segment 3 hardly exceeding half of peduncular segment 2 (fig. 1G); main flagellum consisting of 28+ articles (tip of flagellum is missing); most of the articles with 1 short aesthetasc each; accessory flagellum short, 2-segmented, poorly exceeding half of peduncular segment 3 (fig. 1G).

Peduncular segments 4-5 of antenna 2 subequal, bearing various number of short setae (fig. 1H); flagellum slender, slightly shorter than peduncle, consisting of 12 articles; antennal gland cone short (fig. 1H).

Labrum entire, broader than long.

Labium with well developed inner lobes, outer lobes entire.

Mandibles with tritulative molar; right molar with long distolateral seta. Left mandible: incisor with 5 teeth, lacinia mobilis with 4 teeth, accompanied by 5-6 rakers. Right mandible: incisor with 4 teeth, lacinia mobilis bifurcate, pluritoothed, accompanied by 6 rakers (fig. 3E). Mandibular palp 3-segmented: first segment smooth, second segment with 11 setae; third segment distinctly longer than 2, subfalciform, bearing on outer face one group of 5 A setae, on inner face 3 groups of B-setae (6 B-setae), 27 D setae and 5 long E setae (fig. 1 I).

Maxilla 1: inner plate with 2-3 setae, outer plate with 7 spines (6-7 spines with 1 lateral tooth each, 0-1 spine with 2 lateral teeth); palp short, 2-segmented, not reaching tip of spines of outer plate, bearing 4 setae (fig. 1D, E).

Maxilla 2: inner plate slightly smaller than outer one, both plates with marginal setae only.

Maxilliped: inner plate short, not reaching outer tip of first palp segment and bearing 4 distal smooth spines (fig. 3F); outer plate almost reaching half of second palp segment, bearing a row of smooth marginal spines; palp 4-segmented, segment 4 with nail shorter than pedestal, bearing 2 inner marginal setae only (fig. 3F).

Coxae 1-4 relatively short but longer than broad, with row of short marginal setae each (figs 1A; 2B, D). Coxa 1 with subrounded ventroanterior corner (fig. 2B), coxa 4 without distinct ventroposterior corner. Coxae 5-6 short, bilobed, with subrounded both lobes (fig. 4 A, C); coxa 7 entire (fig. 4E).

Gnathopods 1-2 with almost subequal segment 6 nearly as large as corresponding coxae (fig. 2B, D). Gnathopod 1: segment 2 stout, segments 3-4 short (fig. 2B); segment 5 shorter than 6, with bunches of posterior marginal setae; segment 6 nearly as long as broad, with 7 posterior transverse groups of setae (fig. 2A, B). Palm inclined nearly 1/3 of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied laterally by 5-6 slender toothed spines and 3 facial setae, on inner face by 1 short subcorner spine; dactyl reaching posterior margin of segment 6, with row of 7 setae along outer margin (fig. 2A).

Gnathopod 2: segment 2 stout; segments 3-4 short; segment 5 hardly shorter than 6 (fig. 2D); segment 6 slightly broader than long, with 10 transverse groups of setae along posterior margin (fig. 2C). Palm inclined nearly 1/3 of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied laterally by 3 slender spines and 3 facial

setae, on outer face by 1 short subcorner spine. Dactyl reaching posterior margin of segment 6 and bearing 6 setae along outer margin (fig. 2C).

Pereopods 3-4 stout, similar to each other, with short strong dactyl bearing 4-5 spines along inner margin, and 1 plumose seta at outer margin; nail shorter than pedestal (fig. 1 A-C).

Pereopods 5-7 short and strong, pereopod 5 slightly shorter than pereopods 6-7 (fig. 4 A, C, E), all with ovoid segment 2 less than twice as long as broad and with convex posterior margin bearing 10-12 short setae; ventroposterior lobe indistinct. Segments 3-6 with short marginal spines and setae. Dactyl of pereopod 5 with 3 spines along inner margin and 1 plumose seta at outer margin; nail much shorter than peduncle (fig. 4B).

Dactyl of pereopod 6 with 5 spines along inner margin and with 2 plumose setae at outer margin; nail short (fig. 4D).

Dactyl of pereopod 7 with 4 spines along inner margin and 1-3 plumose setae along outer margin; nail much shorter than pedestal (fig. 4 F, G).

Epimeral plates 1-3 with sharply pointed and produced ventroposterior corner, increasing towards epimeral plate 3 (fig. 3A); epimeral plates 2-3 with 1 submarginal spine each.

Pleopods 1-3 with 2 retinacula each, peduncle of pleopods 1-3 almost naked.

Uropod 1: peduncle with dorsoexternal row of spines, dorsointernal row of spine-like setae and setae (fig. 3B) as well as with distal peduncular tubercle (fig. 3C); outer ramus reaching almost 2/3 of inner one, with lateral and distal short spines and lateral simple setae. Inner ramus nearly as long as peduncle.

Uropod 2: outer ramus distinctly shorter than inner one, both rami with lateral and distal short spines (fig. 3B).

Uropod 3 elongated, with short peduncle and short, scale-like inner ramus (fig. 3D). Outer ramus 2-segmented, its first segment strong, with short spines along both margins, and with single short plumose setae along inner margin (fig. 3D); second segment reaching 1/3 of first segment only.

Telson short, nearly as long as broad, incised nearly 3/5 of its length; each lobe with 3 distal short spines and 1 facial spine and seta; a pair of short plumose setae appears near the middle of each lobe (fig. 1J).

Coxal gills ovoid, never exceeding the tip of segment 2 of corresponding pereopod (figs. 2D; 4 A, C).

FEMALE: Unknown.

VARIABILITY: The number of plumose setae on outer margin of dactyl in pereopod 7, and pereopod 6 is variable.

The second specimen in hands is juv specimen of 5 mm, with reduced number of spines on dactyl of pereopods 3-7, but urosomites 1-2 are with

1 strong dorsolateral spine on each side, outer margin of dactyl of pereopods 5-7 with one plumose seta only.

The specimens from Croatia and Serbia in hands agree completely with the known description of this species. The males and females from these localities have inner ramus of uropod 1 slightly longer than outer one ($1/5$ to $1/4$ usually), and dactyl of last two pereopods along outer margin with 1 or 2 plumose setae.

REMARKS AND AFFINITIES. The specimens from Iran showed the mostly of characters similar to these of *Niphargus valachicus* Dobreanu & Manolache, 1933, and we decided to attribute our specimens to this species (based on typical strong recurved single spines on urosomites 1-2 sitting dorsolaterally, elevated number of spines on dactyl of pereopods 3-7, the presence of distoventral finger on peduncle of uropod 1 in males, sharply recurved and excavated epimeral plates 1-3, short second segment of uropod 3, spinulation of telson, etc.).

But there are some small differences on non adult level (gnathopods 1-2 more quadrate in specimen from Iran, inner ramus of uropod 1 slightly more elongated, dactyls of pereopods 3-7 with slightly lower number of inner marginal spines). For the moment we have neither enough taxonomic characters nor more adult specimens in hands to establish eventual differences on adult males level between *N. valachicus* and our specimens from Iran to try to separate Iranian specimens as distinct taxon. The future collected specimens from Iran will show the exact taxonomic status of Iranian specimens.

There are several other taxa of genus *Niphargus* with or without tubercle on uropod 1 in males, rather similar to our specimens.

N. hrabei S. Karaman, 1932 (loc. typ. Nana Parkan, Tatra Mts.) has some characters similar to these of *N. valachicus* (epimeral plates, some of dactyls of pereopods with elevated number of spines, developed tubercle on peduncle of uropod 1 in male, etc.). But, *N. hrabei* differs from our species by almost subequal rami of uropods 1-2 in male, by lower number of spines on dactyl of pereopods 5-7, less spinose telson, absence of one strong dorsolateral spines on each side of urosomites 1-2, etc.

Niphargus komareki S. Karaman, 1932, known from Kuzy, Ukraine, differs from Iranian specimens by remarkably less pointed epimeral plates 1-2, by almost subequal rami of uropod 2 in males, elongated second segment of uropod 3 in males, by presence of only one inner spine on dactyl of pereopods 5-7, absence of distal tubercle on peduncle of uropod 1 in males.

Niphargus longicaudatus magnus Birstein 1940 from Abkhazia (cave „Golova Atapa”, cave in Cebelde, etc.) is with plurispinose dactyls of pe-

reopods 3-7, quadrate gnathopods and telson, but it differs from Iranian specimens by remarkably less pointed epimeral plates 1-2, by presence of 3 spines in inner plate of maxilliped, more spiniferous telson, etc. (tubercle on uropod 1 unknown).

Niphargus potamophilus Birstein 1954, described from vicinity of Rostov-na Donu (Don River) has tubercle on uropod 1 in males, strongly excavated epimeral plates 1-3, quadrate gnathopods, elevated number of spines on dactyls of pereopods 3-7, short second segment of uropod 3 in males, unequal rami of uropods 1-2, etc. But this species differs from Iranian specimens by presence of 1 seta on inner plate of maxilla 1, inner plate of maxilliped reaching tip of first palp segment bearing 3 distal spines, by gnathopods 1-2 distinctly broader than long, dactyl of pereopods 3-7 with 2-3 spines along inner margin only,

Niphargus cubanicus Birstein 1954, described from Goriachii Kljuch near Krasnodar town (ex URSS) is also very similar to Iranian specimens, but it differs from later by more inclined palm of gnathopods 1-2, by absence of facial spines on telson, dactyl of pereopods 5-7 with 1 spine along inner margin, etc.

Niphargus iniochus Birstein 1941, known from spring going out of the cave in the Andreevka village (Abkhazia-Transcaucasus), differs from Iranian specimens by angular epimeral plates 1-2, by absence of distal tubercle on peduncle of uropod 1 in males, elongated second segment of uropod 3 in males, remarkably unequal size of gnathopods 1-2, etc.

Niphargus eugeniae Dershavin 1945, known from Transcaucasus (spring of Chernaia river near Gudaut), is also with elevated number of spines on dactyl of pereopods, dactyl of nearly quadrate gnathopods is with row of setae along its outer margin, second segment of uropod 3 in male is relatively short, etc., but it differs from Iranian specimens by nearly angular epimeral plate 3, inner plate of maxilla 1 with 4 setae, etc.

DISTRIBUTION. *N. valachicus* is one pontocaspian element presented in the subterranean and semisubterranean (often temporary) waters over Pontocaspian basin. This subterranean species, rather eurivalent, is, after our meaning, trying to colonize the epigeal waters again.

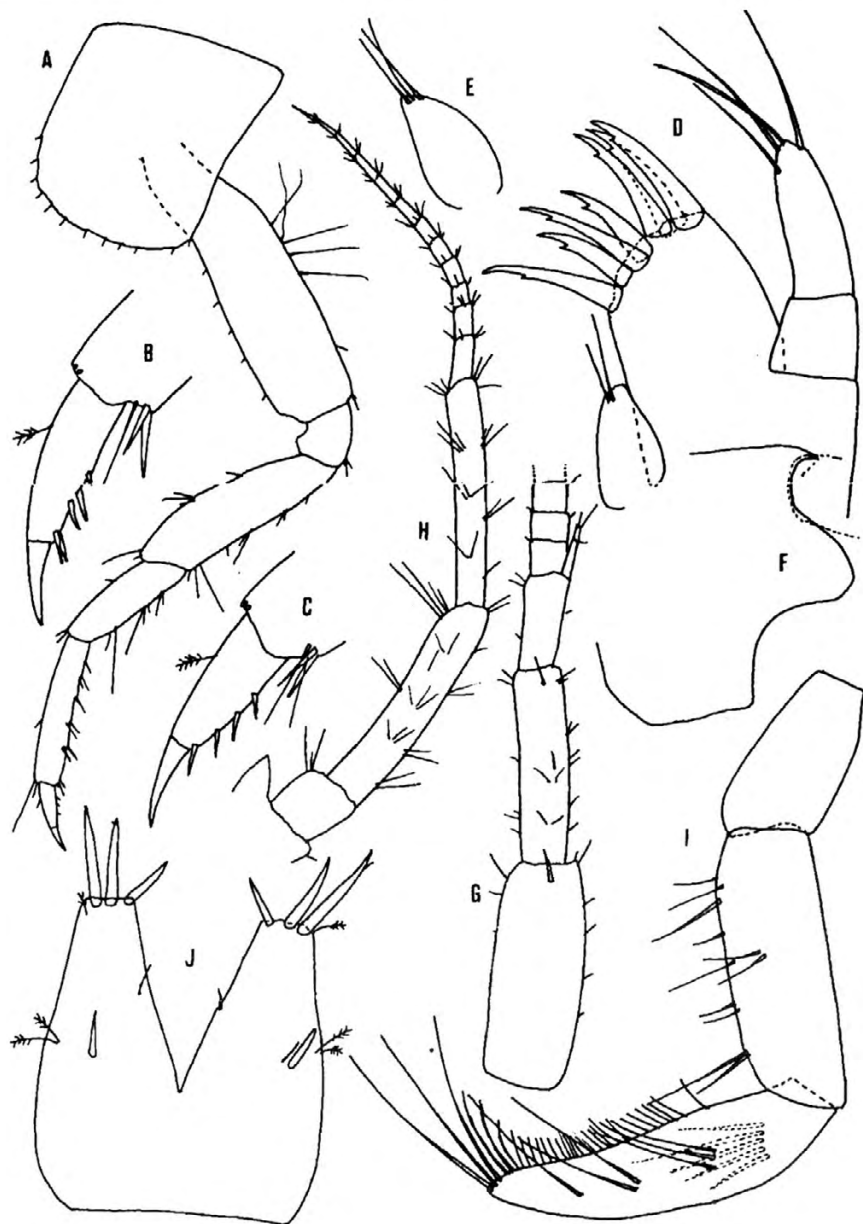


Fig. 1. *Niphargus valachicus* Dobr. Man. 1933, Ghaem Shahr, male 9.7 mm: A-B= pereopod 3; C= pereopod 4; D-E= maxilla 1; F= head; G= antenna 1; H= antenna 2; I= mandibular palp; J= telson.

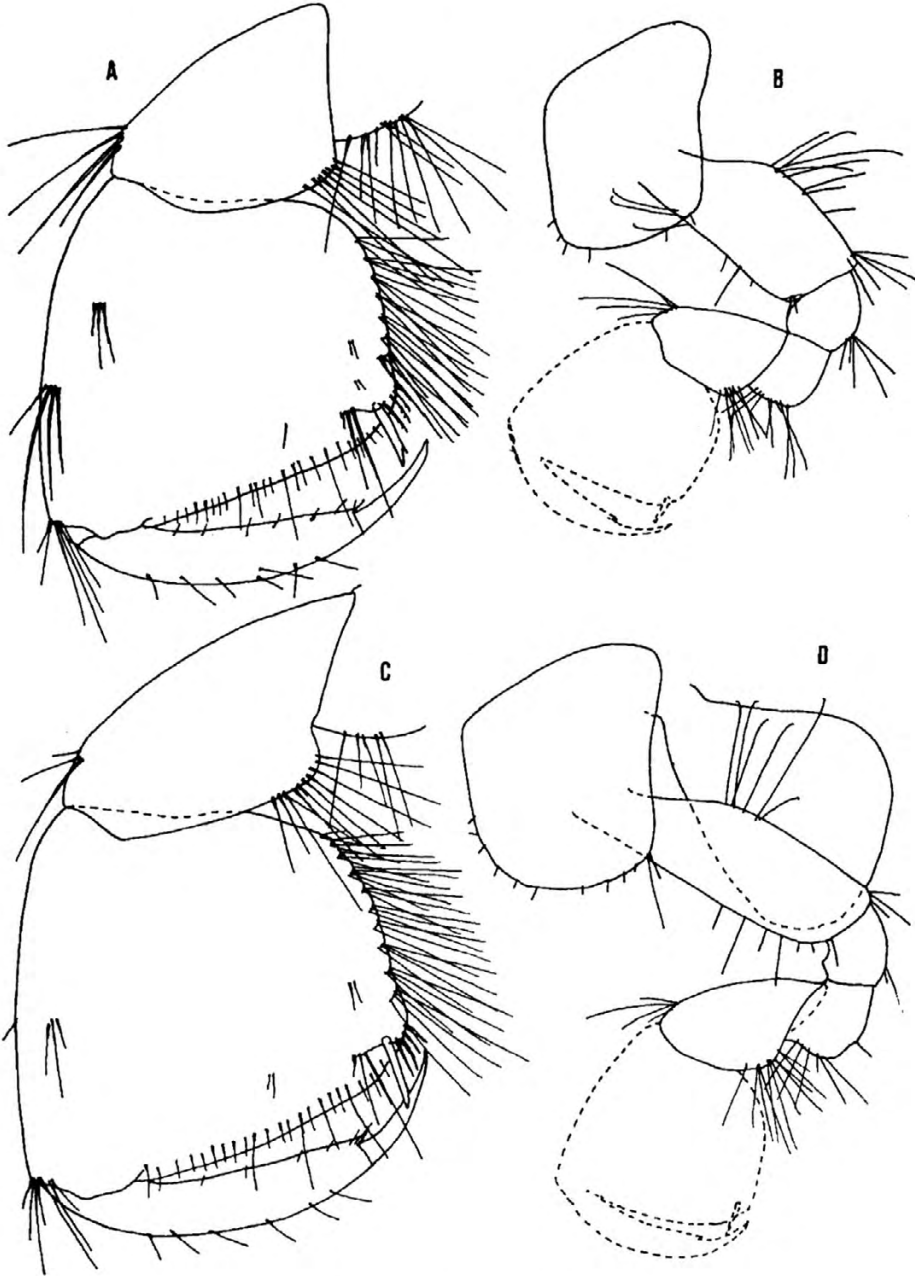


Fig. 2. *Niphargus valachicus* Dobr. Man. 1933, Ghaem Shahr, male 9.7 mm: A-B= gnathopod 1; C-D= gnathopod 2.

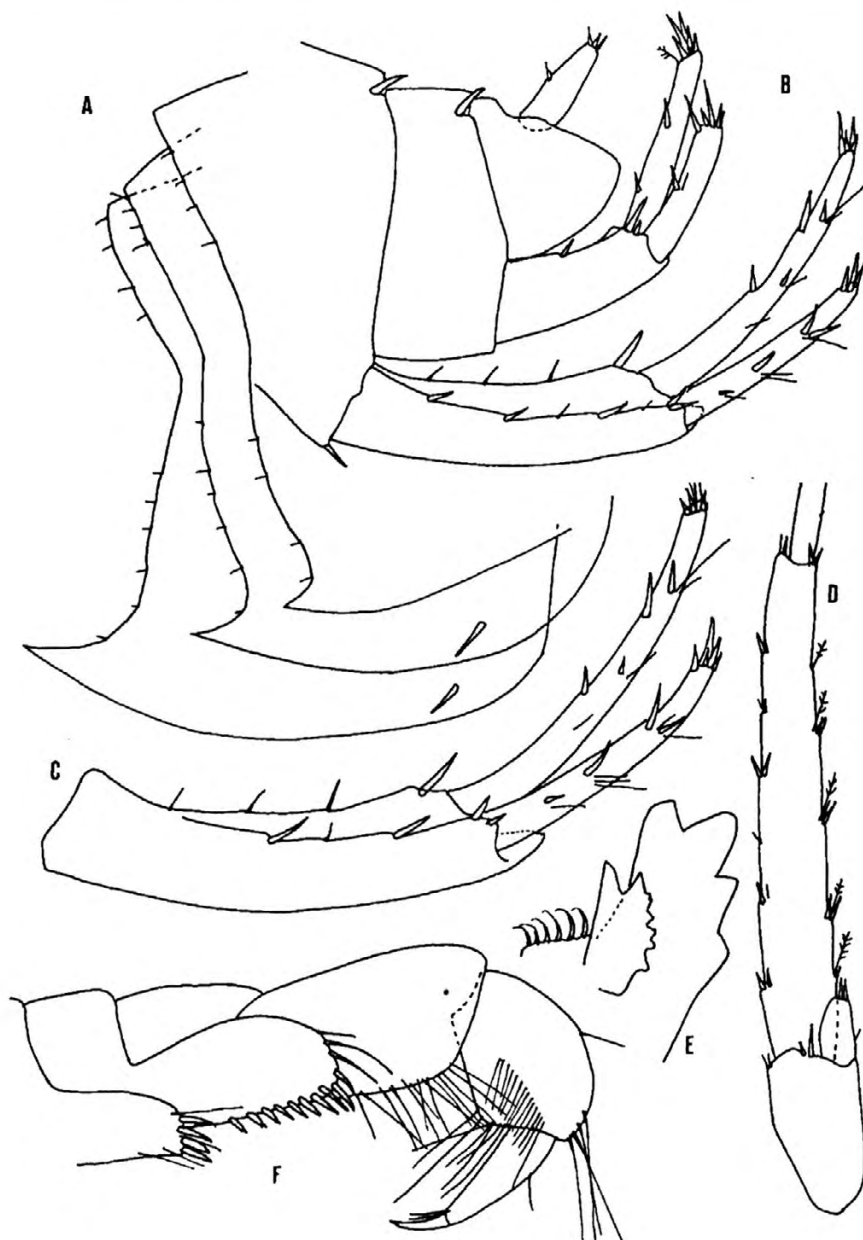


Fig. 3. *Niphargus valachicus* Dobr. Man. 1933, Ghaem Shahr, male 9.7 mm: A= epimeral plates 1-3; B= urosome with uropods 1-2; C= uropod 1; D= uropod 3; E= tip of right mandible; F= maxilliped.

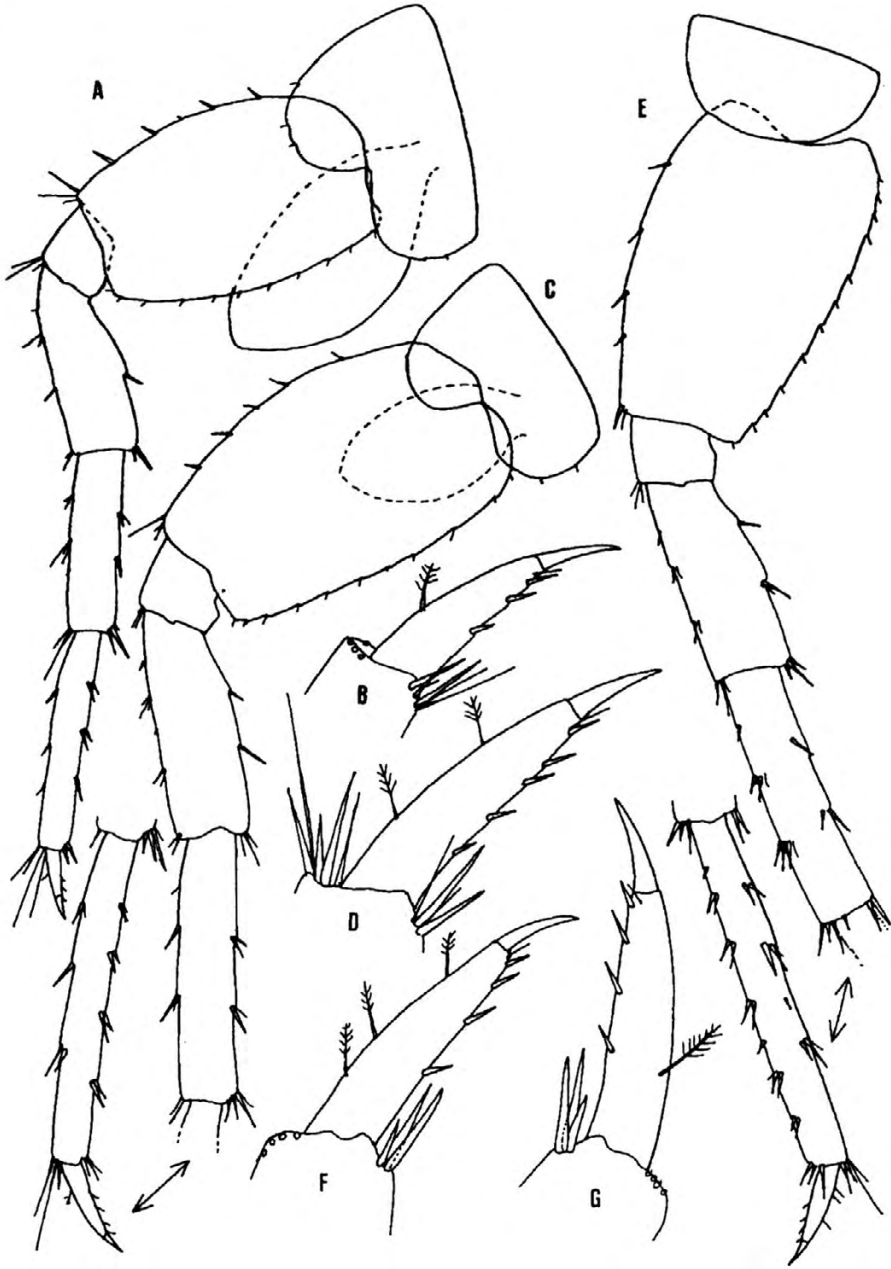


Fig. 4. *Niphargus valachicus* Dobr. Man. 1933, Ghaem Shahr, male 9.7 mm: A-B= pereopod 5; C-D= pereopod 6; E-G= pereopod 7.

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PRVO OTKRÍČE FAMILIJE NIPHARGIDAE (GAMMARIDEA) U IRANU
(234. Prilog poznavanju Amphipoda)

R e z i m e

U podzemnim vodama Irana su po prvi put nađeni predstavnici familije *Niphargidae* (*Amphipoda Gammaridea*) i to vrsta *Niphargus valachicus* Dobreaanu & Manolache, 1933, sakupljena kod mjesta Ghaem Shahr u provinciji Mazandaran (južno od Kaspijskog jezera). To je ustvari najjugoistočnija tačka rasprostranjenja roda *Niphargus* na Bliskom Istoku.

Primjerci *N. valachicus* iz Irana se ne razlikuju značajnije od primjeraka te vrste iz Hrvatske i Srbije (iznijeli smo neke nove lokalitete iz tih krajeva) iako zbog malog broja raspoloživih primjeraka iz Irana (2 jedinke) nije bilo moguće utvrditi širinu variranja pojedinih taksonomskih odlika iranskih populacija.

Niphargus valachicus je jedna pontokaspijska vrsta koja je naseljavala podzemne vode po obodu Panonskog bazena (neogen) i danas poznati lokaliteti te vrste se poklapaju sa obodom tog nekadašnjeg pontokaspijskog bazena.

Ova relativno eurivalentna vrsta je, po našem mišljenju, iz podzemnih voda pokušala ponovo da naseli površinske vode, pa je susrećemo u Jugoslaviji u izvorima i temporalnim podzemnim vodama blizu rijeka, na samoj površini.