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# ON SOME GAMMARIDEAN AMPHIPODS FROM WESTERN BALKAN PENINSULA (CONTRIBUTION TO THE KNOWLEDGE OF THE AMPHIPODA 275)

## SUMMARY

One new species of the family Niphargidae (Amphipoda, Gammaridea), *Niphargus navotinus*, sp. n. from Navotinska pećina Cave near Berane, Montenegro, is described and its relation to other members of this genus is discussed.

New localities of the species *Niphargus jurinaci* S. Karaman, 1950 from Croatia, *Typhlogammarus mrazeki* (Schäferna, 1906) (fam. Typhlogammaridae) from Croatia, Herzegovina and Montenegro, *Orchestia stephenseni* Cecchini, 1928 (fam. Talitridae) and *Synurella ambulans* (F. Müller, 1846) (fam. Crangonyctidae) from Croatia are presented.

**Keywords:** Niphargidae, Amphipoda, western Balkan peninsula

## INTRODUCTION

The subterranean fauna of Dinaric Mountain chain in western Balkan is extremely rich with endemic and nonendemic fauna, including Amphipoda, thanks to the geological, hydrological, geomorphological and other conditions in the past and recent time. Through the numerous studies of this fauna by various scientists and expeditions, many new species of Amphipoda were collected, studied and described, sometimes within very narrow or single known locality. For this reason we consider very important to publish localities of all these species as much as possible, to understand its variability, distribution and origin.

Our investigations are provided using the classic approach in recognition of single taxa. This approach, in combination with genetic and molecular approach in taxonomy of amphipods by various authors, will help us to understand the present status of single taxa and its origin.

## MATERIAL AND METHODS

The samples were collected in the subterranean waters by various methods: diving into the cave-waters, use of traps, various types of hand-nets, catching by hands. The collected specimens were preserved in 70% ethanol. Specimens were examined and dissected using a Wild M 20 stereomicroscope and drawn using a camera lucida attachment. The animals were temporarily

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mounted in the mixture of glycerin and water for dissection and drawing of body parts, and later transferred on slides with liquid of Faure for final preservation.

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 setae formulae follow G. Karaman's terminology (Karaman, G., 1969; 1970a; 2012).

## RESULTS AND DISCUSSION

## TAXONOMICAL PART
## Family Niphargidae

*NIPHARGUS NAVOTINUS*, sp. n.

Figs. 1-8

MATERIAL EXAMINED: CRNA GORA (Montenegro):

S-5285= Navotinska pećina Cave near village Navotino (Berane reg., Crna Gora), 21.7.1995, 8 exp, (holotype and paratype) (leg.: G. Karaman & B. Karaman);

S-3158= ibid., 25.11.1978, 1 exp. (leg.: G. Karaman);

S-5459= ibid., 21.7.1995, 1 exp. (leg.: T. Karanović);

S-5364= ibid., 20.11.1995, 5 exp. (leg.: G. Karaman);

S-5516= ibid., 13.10.1997, 1 exp. (leg.: G. Karaman & B. Karaman);

S-3159= spring below the entrance of the cave Navotinska pećina, 25.11.1978, 6 juv. exp. (leg.: G. Karaman);

S-4377= pump in Lim River near Novšića village, 5 km downstream of Plav, 12.8.1986, pump, 1 exp. (leg. G. Karaman);

S-5286= outlet of Lim River from Plavsko jezero Lake, pump in the river, Plav, 29.7.1995, 5 juv. exp. accompanied by *Bogidiella* sp. (leg. G. Karaman);

S-5365= fountain on Lim River near Plav, 19.11.1995, 5 juv. exp. (leg. G. Karaman);

S-5418= Lim river after outlet of Plavsko jezero Lake, Crna Gora, pump in the river, 17.11.1995, 7 juv. exp. (leg. G. Karaman).

DIAGNOSIS. Metasomal segments 1-3 along posterior margin with several setae each, urosome segments 1-2 with spines, urosome segment 3 naked. Epimeral plate 3, with poorly pointed ventroposterior corner. Peduncular article 3 of antenna 1 short. Antenna 2 flagellum as long as or longer than last peduncular article. Coxae of moderate size. Maxilla 1 with 3-6 setae on inner plate, outer plate with 7 spines, palpus relatively short. Gnathopods 1-2 large, propodus trapezoid, palm inclined half of propodus length, dactylus bearing several setae along outer margin.

Dactylus of pereopods 3-4 relatively slender, with 1, rarely 2 spines at inner margin. Basipodit of pereopods 5-7 narrowed, with very short ventroposterior lobe, dactylus usually with one spine at inner margin. Pleopods with 2 retinacula, peduncle scarcely setose. Uropod 1 peduncle with

dorsoexternal and dorsointernal row of strong spines. Rami of uropod 1 nearly equal in both sexes, with spines and single simple setae. Uropod 3 short, strongly spinose, second article of outer ramus very short. Telson with distal long spines, facial spines usually absent.

DESCRIPTION. FEMALE 13.0 mm with setose oostegites (holotype): Body relatively slender, metasomal segments 1-3 along dorsoposterior margin with row of 6-9 short setae (fig. 3G).

Urosome segment 1 on each dorsolateral side with 1 spine or one spine and 1 seta (fig. 5E); urosome segment 2 on each dorsolateral side with 3 strong spines, urosome segment 3 naked (fig. 5E). Urosome segment 1 on each ventroposterior corner with 1 spine (fig. 5E).

Epimeral plates 1-3 distinctly angular, with obtusely pointed ventroposterior corner defined by one distinct spine-like seta (fig. 3G); along posterior margin of epimeral plates 1-3 appear a few short setae. Epimeral plate 2 with 2 subventral spines, epimeral plate 3 with 3 subventral spines (fig. 3G). Epimeral plate 1 is not produced ventrally.

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

Antenna 1 hardly exceeding half of body (ratio: 7.3: 13.0); peduncular articles 1-3 progressively shorter (ratio: 55: 50: 28), scarcely setose (fig. 1B); peduncular article 3 slender, much longer than broad (ratio: 28: 8); main flagellum consisting of 29 articles (most of them with one short aesthetasc); accessory flagellum shorter than half of peduncular article 3, consisting of 2 articles (fig. 1B).

Antenna 2 relatively slender, shorter than antenna 1 (fig. 1C); peduncular article 3 short, with one ventrodistal bunch of setae (the longest setae hardly exceeding diameter of article itself); peduncular article 4 slightly shorter than article 5 (ratio: 62: 68), both articles along ventral margin with 4 bunches of longer setae (the longest setae remarkably exceeding the diameter of articles themselves); along dorsal margin of articles 4 and 5 are attached 4 bunches of short setae each (fig. 1C); flagellum slender, nearly as long as peduncular article 5, scarcely setose; antennal gland cone short (fig. 1C).

Mouthparts: Labrum much broader than long (high), subrounded distally (fig. 3A). Labium with short, well developed inner lobes and subrounded entire outer lobes (fig. 3B).

Mandible with triturative molar. Left mandible: incisor with 5 teeth, lacinia mobilis with 4 teeth accompanied by 7 rakers. Right mandible: incisor with 4 teeth, lacinia mobilis bifurcate, with several unequal teeth accompanied by 6 rakers (fig. 1D). Palpus mandible consisting of 3 articles: first article short, slightly longer than broad, naked (fig. 1E); palpus article 2 with 13 strong setae; palpus article 3 longer than article 2 (ratio: 76: 56), falciform, along margin with nearly 29 D- setae and 6 distal E- setae (fig. 1E); on outer face is one row of 7A setae (fig. 1F), on inner face appears 5 groups of B- setae (2-3-3-2-1) (fig. 1E), C- setae absent.

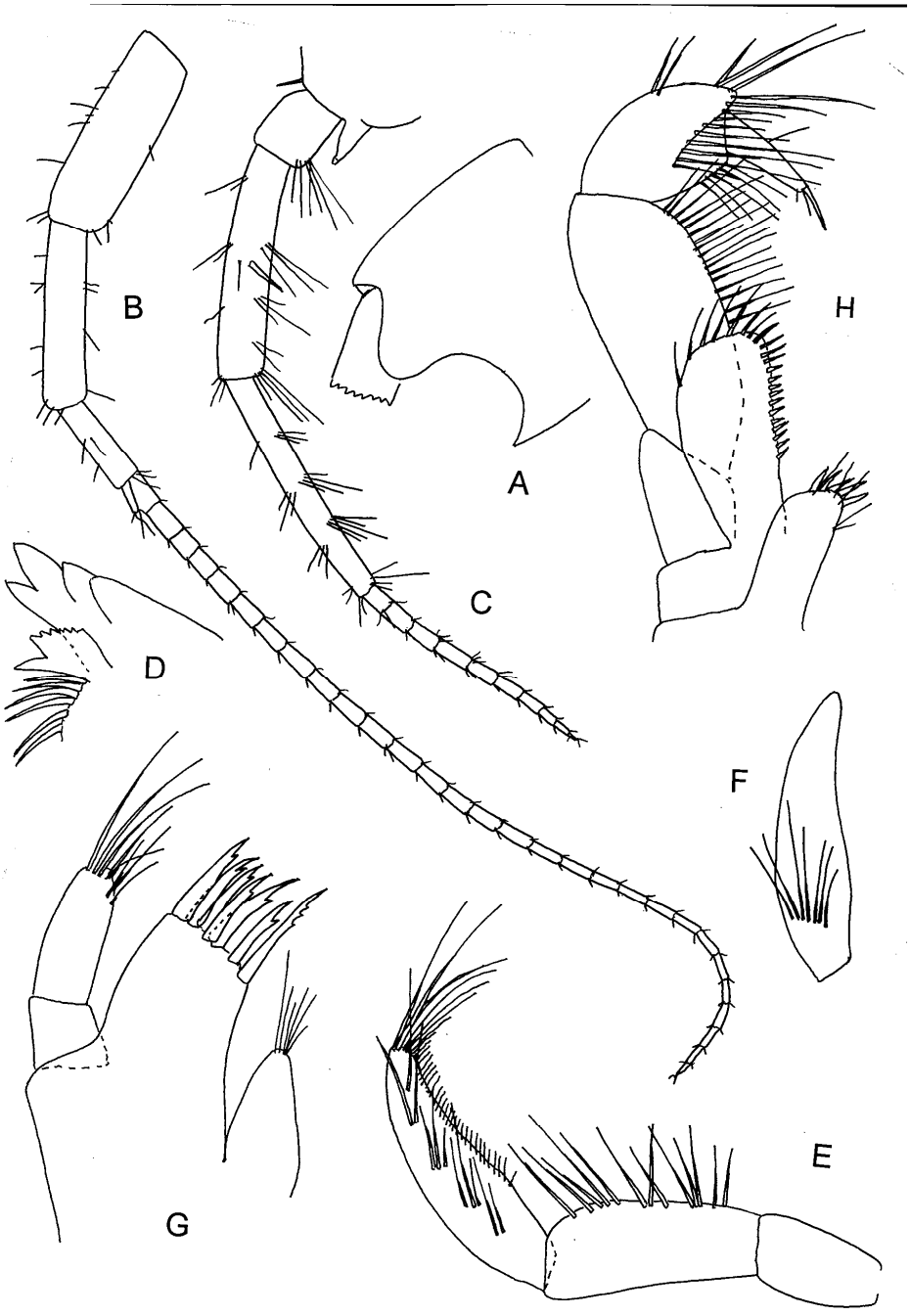


Fig. 1. *Niphargus navotinus*, sp. n., female 13.0 mm (holotype), Navotinska pećina Cave: A- head; B=antenna i; C=antenna 2; D=right mandible, incisor and lacinia mobilis; E=mandible palpus, inner face; F= tip of mandible palpus, outer face; G= maxilla 1; H= maxilliped.

Maxilla 1: inner plate with 6 distal unequal setae (fig. 1G); outer plate of left maxilla 1 with 7 spines (6 spines with one lateral tooth, one spine with 3 lateral teeth). Outer plate of right maxilla 1 with 8 spines (7 spines with one lateral tooth, one spine with 2 strong lateral teeth). Palpus of maxilla 1 is 2-articulated, short, not reaching tip of spines on outer plate and provided with 8 setae (fig. 1G).

Maxilla 2: both plates with marginal setae only (fig. 5A).

Maxilliped: inner plate short, not reaching outer tip of first palpus article (fig. 1H), bearing 5 distal pointed spines; outer plate not reaching half of palpus article 2, bearing a row of distal and marginal spines; palpus article 3 along outer margin with one median and one distal group of setae; palpus article 4 at inner margin with 2 setae near basis of the nail (fig. 1H).

Coxae 1-4 relatively short, with ventral row of several short setae each. Coxa 1 hardly longer than broad (ratio: 38: 36) with subrounded ventroanterior corner (fig. 2A); coxa 2 distinctly longer than broad (ratio: 60: 50) (fig. 2D); coxa 3 longer than broad (ratio: 65: 52) with poorly concave posterior margin (fig. 3C); coxa 4 slightly longer than broad (ratio: 65: 54), with slightly concave posterior margin (fig. 3E).

Coxa 5 much broader than long (high) (ratio: 63: 42), with well developed subrounded anterior lobe (fig. 4A). Coxa 6 broader than long (ratio: 50: 35), with subrounded anterior lobe smaller than that of coxa 5 (fig. 4C). Coxa 7 entire, much broader than long (ratio: 44: 24) (fig. 4E).

Gnathopods 1-2 relatively large, with propodus much larger than corresponding coxa (fig. 2A, D). Gnathopod 1 is smaller than gnathopod 2, article 2 bearing long setae in proximal part of both margins and with shorter setae in distal part (fig. 2A); article 3 along posterior margin with one median bunch of setae (fig. 2A); article 5 much shorter than article 6 (propodus) (ratio: 38: 56), along anterior margin with one distal bunch of setae.

Article 6 (propodus) trapezoid, slightly longer than broad (ratio: 80: 75), along posterior margin with 12 transverse rows of setae (fig. 2B); palm slightly convex, inclined nearly half of propodus length; defined on outer face by one strong corner S- spine accompanied laterally by 3 serrate L- spines and 2 long facial M- setae (fig. 2C), on inner face by one subcorner R- spine (fig. 2C); dactylus reaching posterior margin of article 6, with row of 6 single median setae along outer margin (fig. 2B).

Gnathopod 2: article 2 along posterior margin with numerous long setae and along anterior margin with mainly short setae, except 2 proximal long setae (fig. 2D); article 3 along posterior margin with one median group of setae (fig. 2D); article 5 (carpus) shorter than propodus (ratio: 48: 68), along anterior margin with one median and one distal group of setae (fig. 2D).

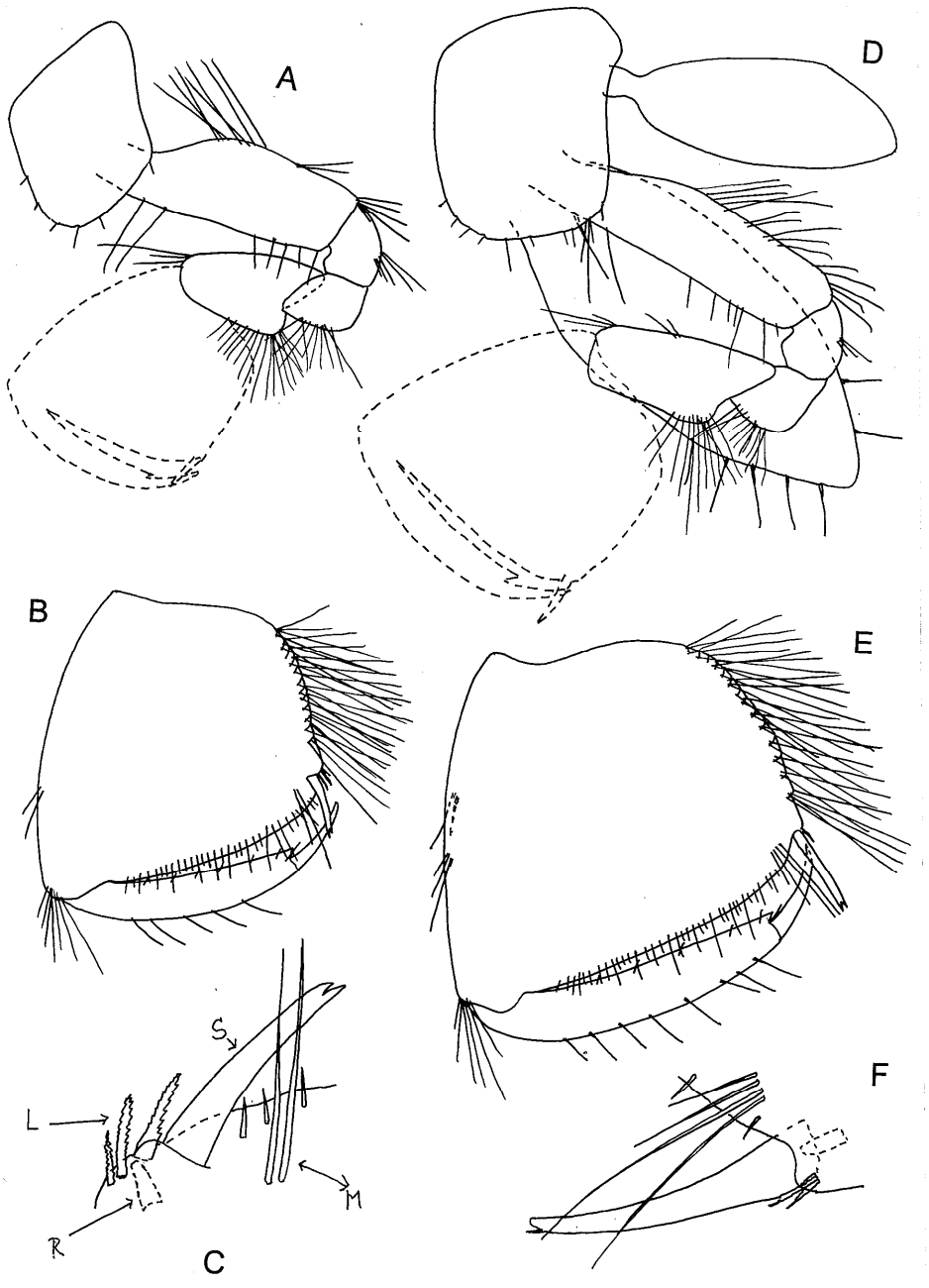


Fig. 2. Niphargus navotinus, sp. n., female 13.0 mm (holotype), Navotinska pećina Cave: A-B= gnathopod 1; C= distal corner of gnathopod 1 propodus (S= corner spine; L= lateral serrate spines; R= subcorner spine; M= facial seta); D-E= gnathopod 2; F= distal corner of gnathopod 2 propodus.

Article 6 (propodus) trapezoid, hardly broader than long (55: 53), along posterior margin with 14 transverse rows of setae (fig. 2E); palm slightly convex, inclined nearly half of propodus- length, defined on outer face by one strong corner S- spine accompanied laterally by 2 slender L- spines attached very close to the S- spine, and 4 facial M- setae (fig. 2F), on inner face by one subcorner R-spine; dactylus reaching posterior margin of propodus, along outer margin with a row of 8 single median setae (fig. 2E).

Pereopods 3-4 relatively slender, with article 2 along posterior margin with long setae in proximal part. Pereopod 3: articles 4-6 of unequal length (ratio: 46: 40: 42), scarcely setose, articles 5 and 6 along posterior margin with short spines and short setae (fig. 3C); dactylus much shorter than article 6 (ratio: 22: 42), moderately slender, along inner margin with 2 single spines (fig. 3D), along outer margin with one median plumose seta; nail shorter than pedestal (ratio: 35: 53) (fig. 3D).

Pereopod 4 is rather similar to pereopod 3 (fig. 3E); articles 4-6 of unequal length (ratio: 46: 44: 47); articles 5 and 6 along posterior margin with several single spines and short setae; dactylus much shorter than article 6 (ratio: 21: 52), along inner margin with 2 single spines, along outer margin with one median plumose seta (fig. 3F); nail shorter than pedestal (ratio: 31: 53) (fig. 3F).

Pereopods 5-7 slightly elongated, pereopod 5 shorter than pereopods 6 and 7 (fig. 4A, C, E). Pereopod 5: article 2 much longer than broad (ratio: 85 43), along anterior slightly convex margin are attached strong setae, along posterior almost straight margin with a row of nearly 13 short setae, ventroposterior lobe very short (fig.4A); articles 4-6 are of unequal length (ratio: 53:71:87), along both margins with spines and setae; dactylus much shorter than article 6 (ratio: 23:87), along inner margin with one spine near basis of the nail (fig.4B), along outer margin with one median plumose seta; nail shorter than pedestal (ratio: 20: 43).

Pereopod 6: article 2 much longer than broad (ratio: 95: 48), along anterior margin with row of strong setae, along posterior straight margin with nearly 14 short setae, ventroposterior lobe short (fig. 4C); articles 4-6 of unequal length (ratio: 66: 90: 115), along both margins with spines sometimes accompanied by single short setae; dactylus much shorter than peduncle (ratio: 30: 115), at inner margin with one spine near basis of the nail, along outer margin with 2 median setae (fig. 4D), nail much shorter than pedestal (ratio: 23: 50).

Pereopod 7: article 2 (basipodit) much longer than broad (ratio: 93: 50), anterior slightly convex margin with row of strong spine-like setae, along posterior slightly convex margin with row of nearly 12 short setae, ventroposterior lobe short (fig. 4E). Articles 4-6 of unequal length (ratio: 55: 82: 121), along both margins with spines and several short setae (fig. 4E, F). Dactylus of left pereopod 7 much shorter than article 6 (ratio: 121: 33), along inner margin with one spine, along outer margin with 2 median plumose setae; nail shorter than pedestal (ratio: 64: 27) (fig. 4G).

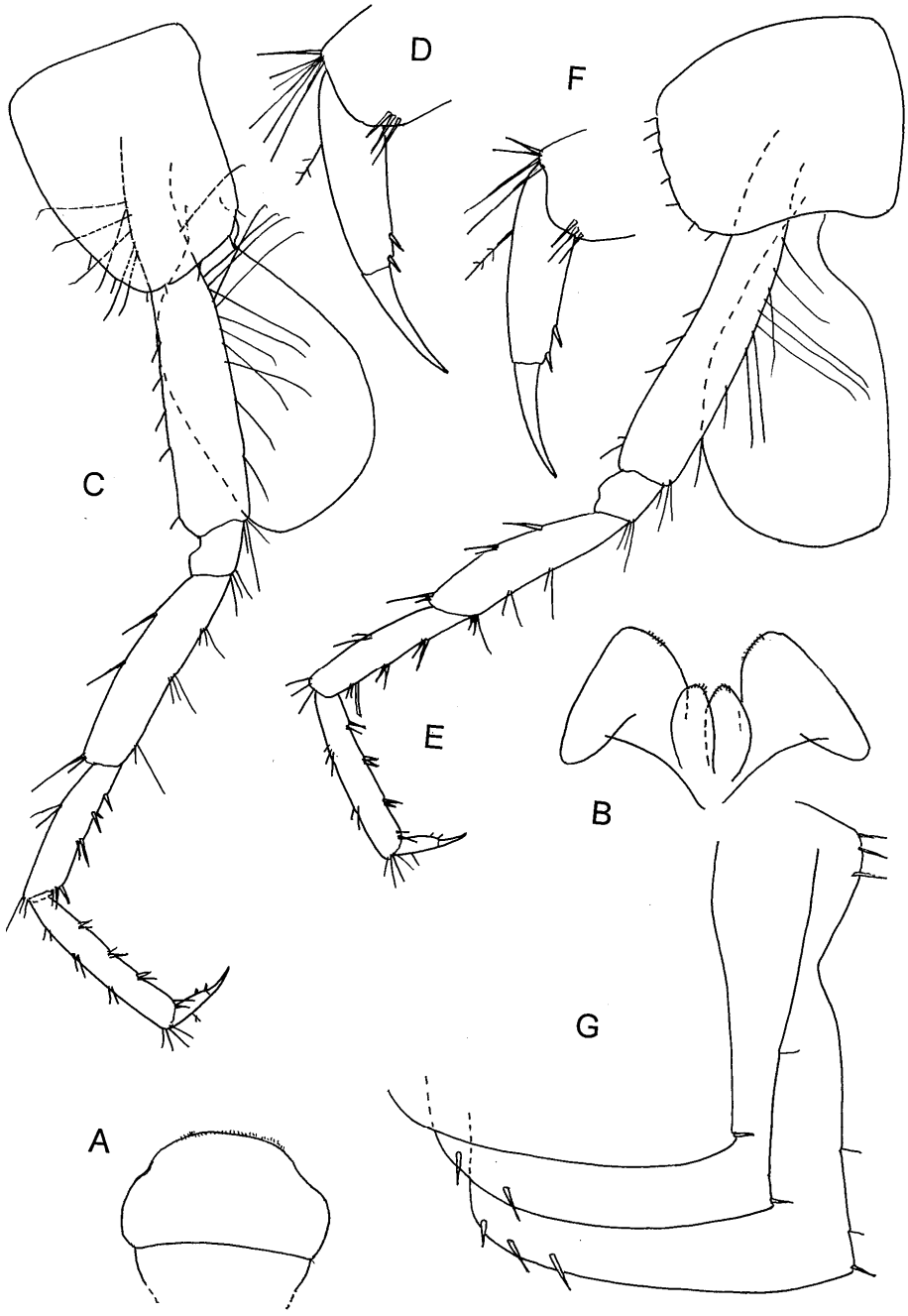


Fig. 3. *Niphargus navotinus*, sp. n., female 13.0 mm (holotype), Navotinska pećina Cave: A= labrum; B= labium; C-D= pereopod 3; E-F= pereopod 4; G= epimeral plates 1-3

Right dactylus along inner margin is provided with two slender median spine (fig. 4H), along outer margin with 2 median setae.

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopod 1 with 4-6 setae at anterior margin (fig. 5B); peduncle of pleopod 2 with 4 setae at anterior margin (fig. 5C); peduncle of pleopod 3 with 2 setae at anterior margin and 2 setae along posterior margin (in lateral projection) (fig. 5D).

Uropod 1: peduncle (basipodit) longer than rami, with dorsoexternal and dorsointernal row of spines (fig. 5E); rami of nearly equal length, with several lateral and distal short spines; outer ramus with 2 bunches of simple setae, inner ramus with one bunch of simple setae (fig. 5E).

Uropod 2: peduncle nearly as long as rami. Rami of nearly equal length, with several lateral and distal short spines; outer ramus is slightly recurved upward (fig. 5E).

Uropod 3 relatively short (fig. 5F); peduncle short, with several distal spines in two bunches; inner ramus scale-like, short, with distal spine and seta; outer ramus 2-articulated; first article along outer margin with 4 bunches of spines, along inner margin with 5 bunches of spines and 1-3 single plumose setae; second article of outer ramus much shorter than first article (ratio: 16: 120), bearing a bunch of distal short setae (fig. 5F).

Telson short, longer than broad (ratio: 75: 58), incised over 2/3 of telson length; each lobe with 4 distal long spines and 1 short facial spine (fig. 5G); a pair of short plumose setae appears in the middle of each lobe (fig. 5G).

Coxal gills ovoid, occur on pereopods 2-6 (figs. 2D; 3C, E; 4A, C).

Oostegites large, with marginal setae, occur on pereopods 2-5 (fig. 2D).

MALE 10.0 mm (paratype). Mainly similar to female. Metasomal segments 1-3 with 8-9 dorsoposterior marginal short setae each (fig. 7F). Urosome segment 1 on each dorsolateral side with 1 strong spine (fig. 8C); urosome segment 2 on each dorsolateral side with 2 spines, urosome segment 3 naked (fig. 8C).

Epimeral plates 1-3 with distinctly angular ventroposterior corner defined by strong corner spine-like seta, along posterior margin with a few short setae (fig. 7F). Epimeral plate 2 with 2 subventral spines, epimeral plate 3 with 3 subventral spines (fig. 7F). Epimeral plate 1 is not produced ventrally.

Antenna 1 hardly exceeding half of the body- length (ratio: 52: 50); peduncular articles 1-3 progressively shorter (ratio: 54: 45: 20), scarcely setose (fig. 8A); main flagellum composed of 25 articles; accessory flagellum 2-articulated, short (fig. 8A).

Antenna 2: peduncular article 3 short, with distoventral bunch of setae (fig. 8B); peduncular articles 4 and 5 of equal length, both articles along ventral margin with several bunches of longer setae, along dorsal margin with shorter setae; flagellum nearly as long as peduncular article 5 (fig. 8B).

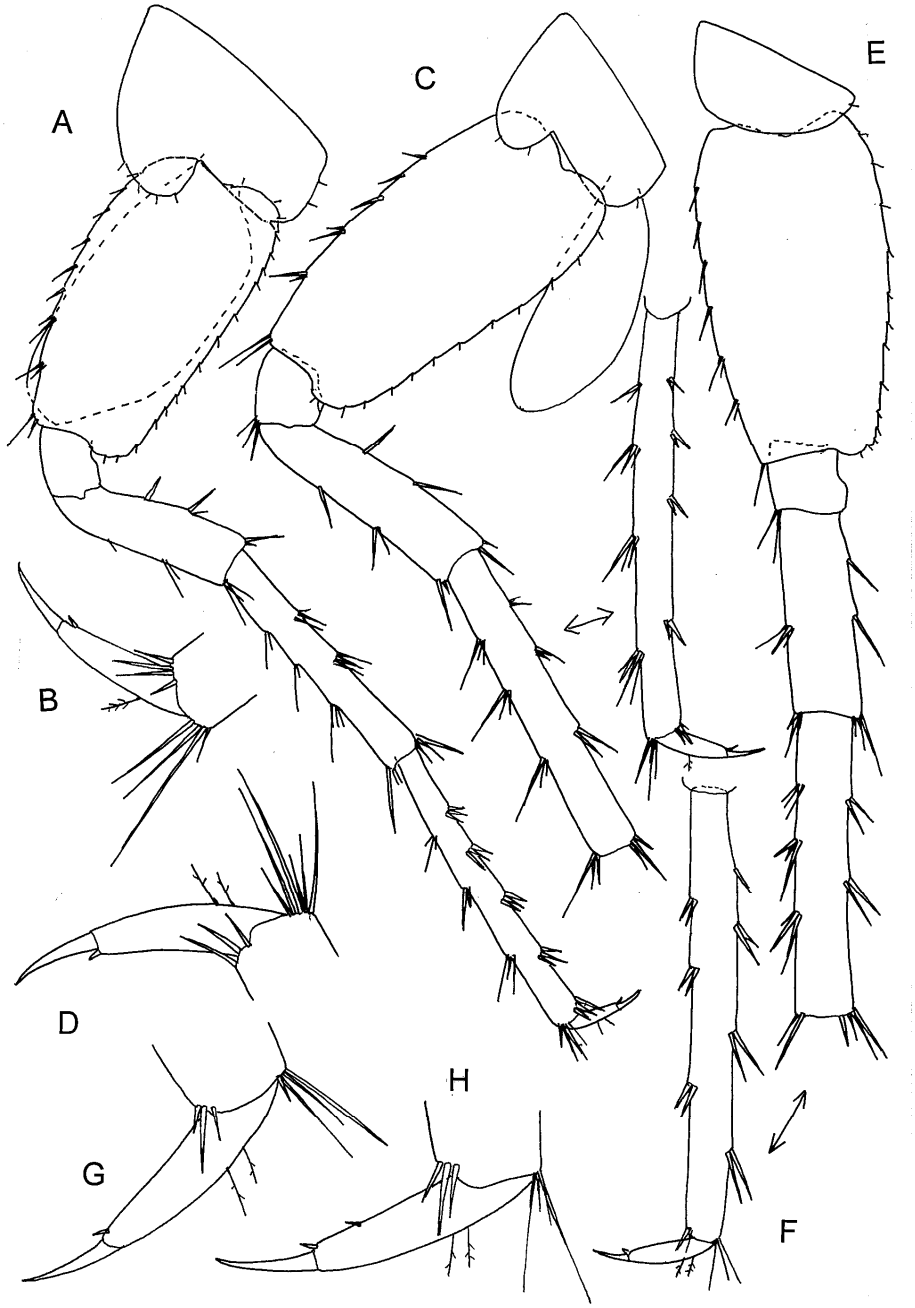


Fig. 4. Niphargus navotinus, sp. n., female 13.0 mm (holotype), Navotinska pećina Cave: A-B= pereopod 5; C-D= pereopod 6; E-G= left pereopod 7; H= dactylus of right pereopod 7

Mouthparts mainly like these in female. Mandible palpus article 3 on inner face with row of facial B setae (2-2-2-1-1), on outer face by one row of 5 A setae.

Maxilla 1: inner plate with 3 setae, outer plate with 7 spines (6 spines with one lateral tooth, one spine with 3 teeth); palpus short, with 5 distal setae.

Inner plate of maxilliped with 5 spines.

Coxae 1-4 relatively short, with row of short marginal setae each. Coxa 1 nearly as long as broad, with subrounded ventroanterior corner (fig. 6A); coxa 2 longer than broad (ratio: 56:45) (fig. 6C); coxa 3 longer than broad (ratio: 60: 48) (fig. 6E); coxa 4 only slightly longer than broad (ratio: 56: 50) (fig. 6F). Coxae 5-7 short, coxae 5 and 6 with subrounded anterior lobe (fig. 7A, B); coxa 7 entire, with subrounded anterior margin (fig. 7C).

Gnathopods 1-2 of unequal size, gnathopod 2 is larger than 1. Gnathopod 1: article 2 along both margins with long setae, article 3 at posterior margin with one bunch of setae; article 5 shorter than 6 (fig. 6A). Propodus (article 6) trapezoid, slightly longer than broad (ratio: 80:72), along posterior margin with 10 transverse rows of setae; palm slightly convex, inclined nearly half of propodus- length (fig. 6B), defined on outer face by one corner S- spine accompanied laterally by 2 slender L- spines and 4 facial M- setae, on inner face by one subcorner R- spine.

Gnathopod 2: article 2 along both margins with long setae; article 3 at posterior margin with one bunch of setae (fig. 6C); article 5 shorter than 6. Article 6 (propodus) trapezoid, as long as broad, along posterior margin with 11 transverse rows of setae (fig. 6D); palm slightly convex, inclined nearly half of propodus- length, defined on outer face by one corner S-spine accompanied laterally by 2 slender L-spines attached very close to S-spine, and 3 facial M-setae, on inner face by one subcorner R-spine. Dactylus reaching posterior margin of propodus, with row of 5 single median setae along outer margin (fig. 6D).

Pereopods 3-4 similar to these in female. Pereopod 3: article 2 at both margins with long proximal setae (fig. 6E); articles 4-6 of unequal length (ratio: 55: 40: 38), articles 5 and 6 along posterior margin with short spines and single setae; dactylus along inner margin with one spine near basis of the pedestal.

Pereopod 4 like that in females (fig. 6F) but dactylus at inner margin with 2 single spines (fig. 6G), along outer margin with 1 median plumose seta.

Pereopods 5-7 slightly elongated, like these in female. Pereopod 5: article 2 longer than broad (ratio: 82:50), along anterior slightly convex margin with a row of strong spine-like setae (fig. 7A), along poorly convex posterior margin with row of nearly 14 short setae, ventroposterior lobe very short (fig. 7A); dactylus at inner margin with one spine near basis of the nail, along outer margin with one median plumose seta.

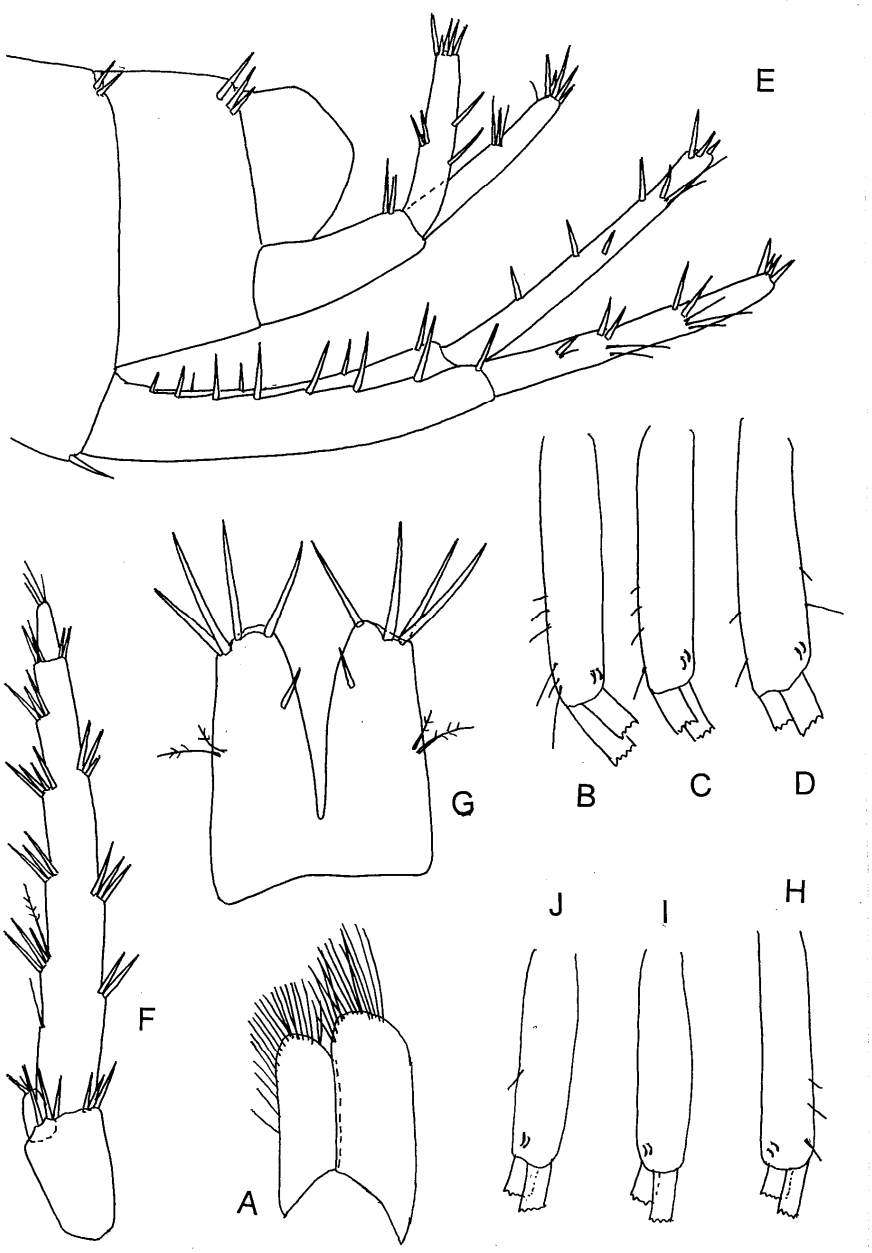


Fig. 5. *Niphargus navotinus*, sp. n., female 13.0 mm (holotype), Navotinska pećina Cave: A= maxilla 2; B-D= peduncle of pleopods 1-3; E= urosome with uropods 1-2; F= uropod 3; G= telson. H-J= peduncle of pleopods 1-3, male 10.0 mm (paratype).

Pereopod 6: article 2 much longer than broad (ratio: 94:52), along anterior slightly convex margin with row of strong spine-like setae, along posterior almost straight margin with nearly 15 short setae, ventroposterior short lobe short (fig. 7B); dactylus at inner margin with one spine near basis of the nail, at outer margin with one median plumose seta.

Pereopod 7: article 2 (basipodit) longer than broad (ratio: 90: 55), along anterior convex margin with row of slender spines or spine-like setae, along posterior poorly convex margin with nearly 12 short setae, ventroposterior lobe very short (fig. 7C); articles 4-6 of unequal length (ratio: 60: 76: 112), along both margins with strong spines and single short setae (fig. 7C, D); dactylus much shorter than article 6 (ratio: 26: 112), along inner margin with 1 spine near basis of the pedestal (fig. 7E), nail shorter than pedestal (ratio: 20: 38).

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopod 1 with 3 anterior marginal setae (fig. 5H); peduncle of pleopod 2 naked (fig. 5 I); peduncle of pleopod 3 along posterior margin with one strong seta (fig. 5J).

Uropod 1: peduncle longer than rami, bearing dorsoexternal and dorsointernal row of strong spines (fig. 8C); rami of nearly equal length, with several lateral and distal strong spines each; 1-2 bunches of smooth setae are attached in the middle of each ramus.

Uropod 2: with rami of equal length, outer ramus is slightly recurved upward, both rami with several lateral and distal strong spines (fig. 8C).

Uropod 3: relatively short, like that in female. Peduncle slightly longer than broad, with distal spines (fig. 8D); inner ramus scale-like, short, with one distal spine and seta; outer ramus 2-articulated: first article along both margins with 5 bunches of strong spines, intermixed along inner margin of article 1 with single plumose setae; second article very short, not exceeding the diameter of article 1 and bearing 2 distal setae (fig. 8D).

Telson short, longer than broad (ratio: 67: 53), incised nearly ¾ of telson length, each lobe with 4-5 distal long spines; lateral and facial spines absent; a pair of short plumose setae appears near the middle of each lobe (fig. 7G).

Coxal gills on gnathopod 2 and pereopods 3 and 4 are large, reaching ventral tip of article 2 (figs. 2D, 3C, E); gills on pereopod 5 almost reaching ventral tip of article 2 (fig. 4A), that of pereopod 6 shorter and smaller (fig. 4C).

MALE 8.6 mm: Antenna 1 slightly exceeding half of body length (ratio: 86: 51); dactylus of pereopod 3 with one spine at inner margin near basis of the nail; dactylus of pereopod 4 along inner margin with 1 or 2 slender spines.

Dactylus of pereopods 5-7 at inner margin with 1 spine only, and one median seta along outer margin. Urosome segment 1 on each dorsolateral side with 1 spine or one spine and 1 seta; urosome segment 2 on each dorsolateral side with 3 spines, urosomite segment 3 naked.

Maxilla 1: inner plate with 4 setae, outer plate with 7 spines, palpus short, with 7 distal setae. Telson with 4 long distal spines each, facial spines absent (fig. 8E).

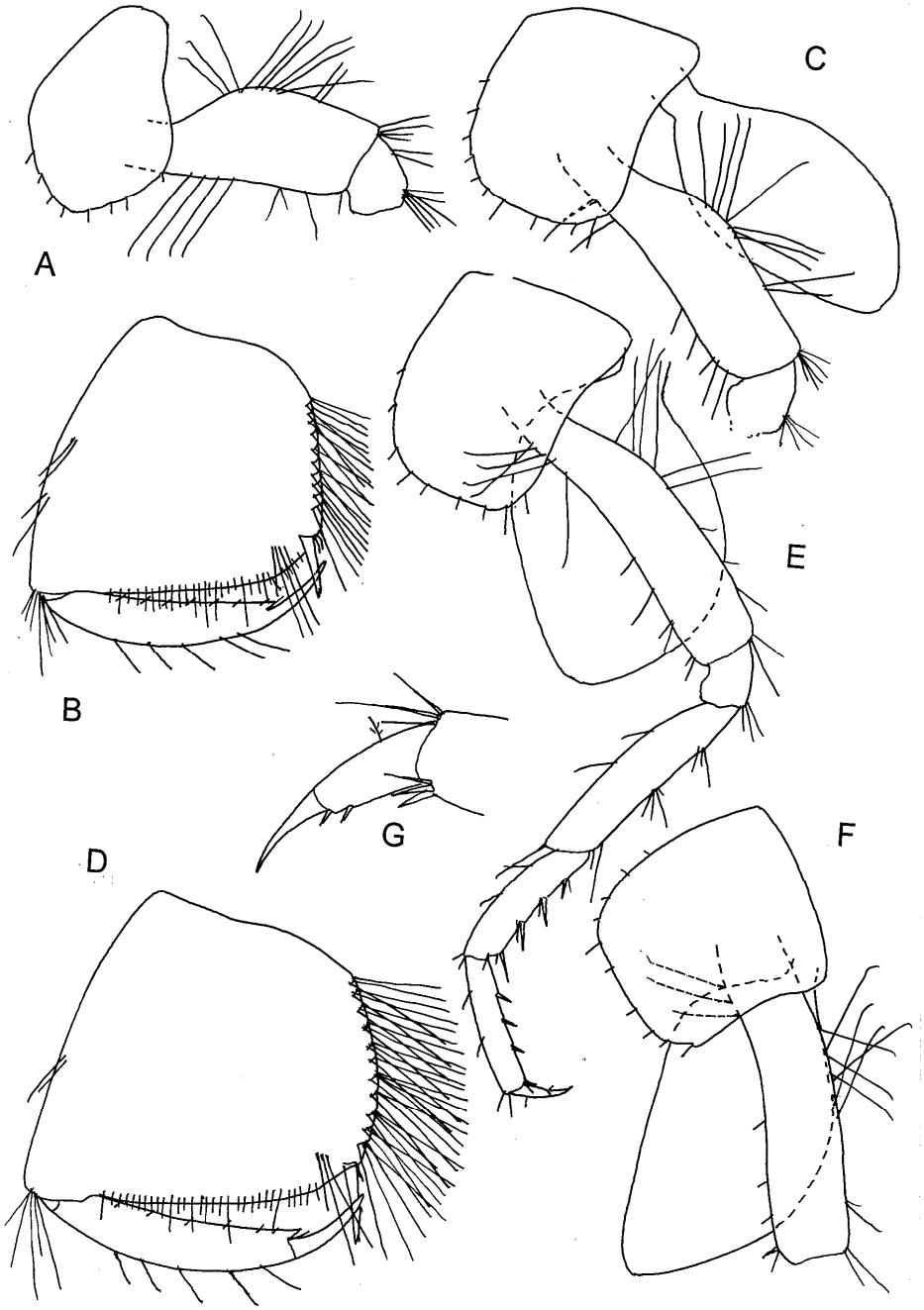


Fig. 6. *Niphargus navotinus*, sp. n., male 10.0 mm (paratype), Navotinska pećina Cave: A-B= gnathopod 1; C-D= gnathopod 2; E= pereopod 3; F-G= pereopod 4

VARIABILITY.

We visited Navotinska pećina Cave several times, but the specimens over 13 mm were never collected, and we suppose that size of N. navotinus is smaller than that of N. vjetrenicensis or N. kusceri.

The largest specimens in hands of this species (holotype and paratype) have additional spines on dactylus of pereopods 3-4, But in almost all other specimens in hands, dactylus of pereopods 3-7 was usually with one strong spine at inner margin near basis of the nail.

We can suppose that the presence or absence of additional spines on dactylus of certain pereopods in this species is not significant taxonomic character for this species, but only the existing tendency of appearance of this character under some conditions. Similar appearance was observed in some other taxa also (N. bozanae omnivagus G. Karaman, 2013b, N. longicaudatus Costa, 1851, N. microcerberus Sket, 1972, etc.). We don`t know the genetic value of this taxonomic character.

Slender flagellum of antenna 2 is usually longer than last peduncular article, sometimes is flagellum as long as, or rarely shorter than last peduncular article. Telson is usually without facial spines, rarely with one facial spine.

Maxilla 1 inner plate with 3-6 setae, outer plate usually with 7 spines, only occasionally 8 spines (in this case only left or only right maxilla 1). It seems that the appearance of 8 spines on maxilla 1 in female outer plate is not normal, but only occasional character.

Various number of short simple setae is present on peduncle of pleopods 1-3, but pilosity of these peduncles is always scarce.

As we have two males only, smaller than the ovigerous females, taxonomic characters of the adult males regarding the females and some other taxa must be confirmed in the future over new material.

DERIVATIO NOMINIS

The name “navotinus” is derived from the name of the type locality, Navotinska pećina Cave.

LOCUS TYPICUS: Navotinska pećina Cave, Navotino village near Berane, Crna Gora (Montenegro). Holotype and paratype are deposited in KARAMAN`s Collection in Podgorica, Crna Gora (Montenegro) under the No. S-5285.

REMARKS AND DISCUSSION

Based on present known taxonomic characters, N. navotinus seems to be close to Orniphargus group of taxa (S. Karaman, 1950) [short uropod 3, strong spines on urosome segments, large gnathopods, spinulose uropods 1-3, etc.].

N. dabarensis Fišer, Trontelj & Sket, 2006 [loc. typ.: Dabarska pečina Cave, Bosnia and Herzegovina] is rather similar to our species by large gnathopods 1-2 and position of corner spines on propodus of gnathopods 1-2, by telson, but N. dabarensis differs by presence of plumose setae on rami of uropods 1 and 2, by more narrowed basipodit of pereopods 5-7, by angular ventroanterior corner of coxa 1.

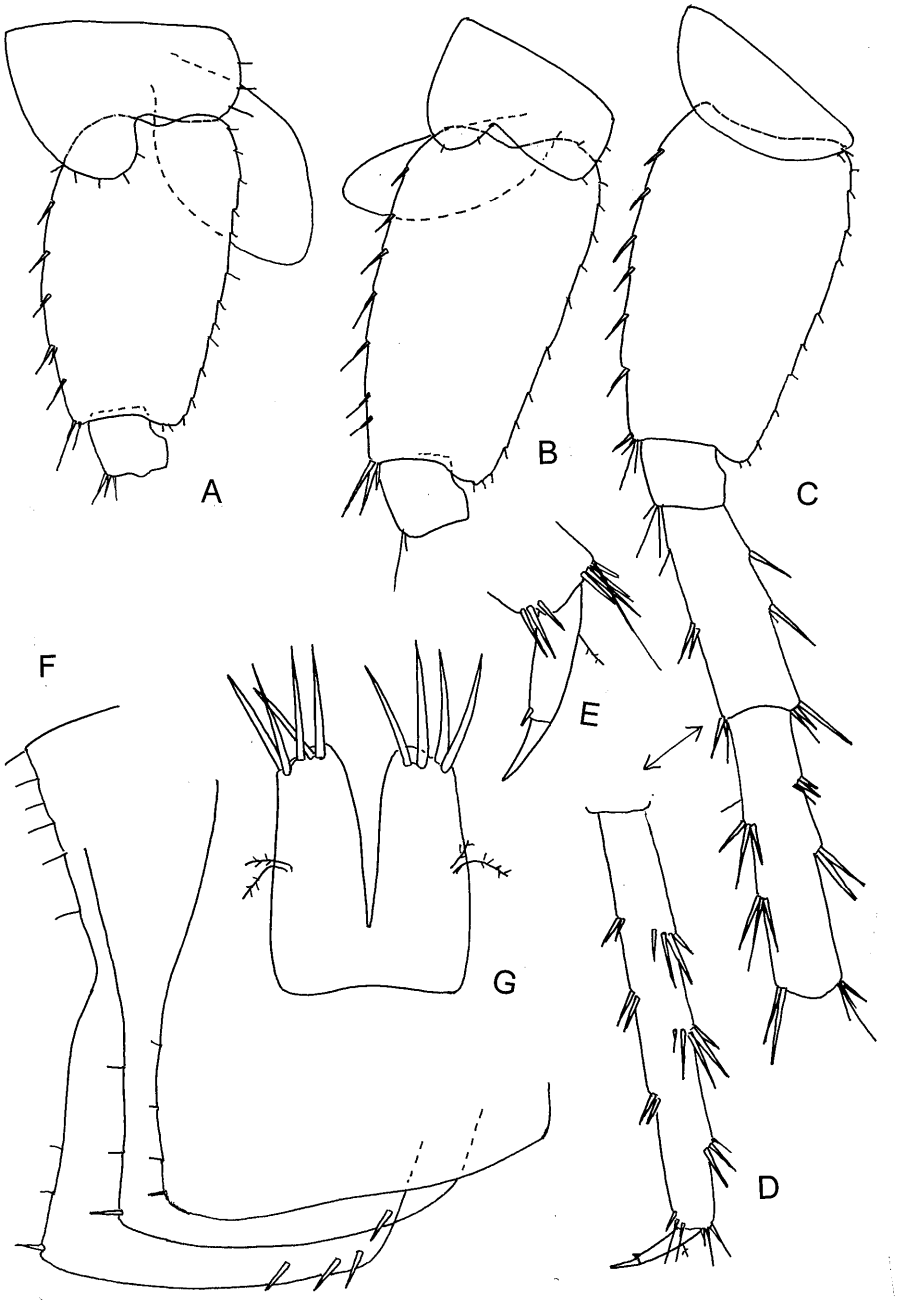


Fig. 7. *Niphargus navotinus*, sp. n., male 10.0 mm (paratype), Navotinska pećina Cave: A= pereopod 5; B= pereopod 6; C-E= pereopod 7; F= epimeral plates 1-3; G= telson

One other species of Orniphargus group present in western Balkan, N. polymorphus Fišer, Trontelj & Sket, 2006 [loc. typ.: Bileća, Bosnia and Herzegovina], differs remarkably from N. navotinus by broad ovoid basipodit of pereopods 5-7, etc.

Niphargus dolichopus Fišer, Trontelj & Sket, 2006 [loc. typ.: Suvaja pečina Cave, Lušci polje, Sanski Most, Bosnia and Herzegovina] differs from our species by very elongated first article of uropod 3 outer ramus, by less incised telson, by very elongated pereopods 5-7 without ventroposterior lobe on basipodit, etc.

N. navotinus is rather close to Niphargus vjetrenicensis vjetrenicensis S. Karaman, 1932 [loc. typ. Vjetrenica Cave in Popovo Polje, Herzegovina] and N. vjetrenicensis kusceri S. Karaman, 1950 [loc. typ.: Springs Ljuta near Orahovac, Boka Kotorska] by some characters, but navotinus differs from them by smaller body size (ovigerous females of 11.0 mm and 13.0 mm), absence of plumose setae on rami of uropods 1-2, longer distal spines on telson, more slender dactylus of pereopods 3-7, provided sometimes with one additional median spine on dactylus of pereopods 3-4, permanent absence of spines along dorsoposterior margin of metasomal segments 1-3.

All these differences can be attributed to the small size of specimens from Navotino regarding the large specimens of vjetrenicensis and kusceri, but the small specimens of kusceri show distinct differences regarding specimens of the same size from Navotino (uropods 1-2, gnathopods, pereopods, etc.).

Niphargus luka, G. Karaman, 2013a [loc. typ. Čačak, vicinity, reno- wells, Prijevor, Serbia] is rather similar to N. navotinus by presence of dorsointernal row of spines on peduncle of uropod 1, elevated number of spines on each dorsolateral side of urosome segment 2, presence of row of setae along outer margin of dactylus on gnathopods 1-2 propodus, by maxilla 1, pleopods 1-3 with 2 retinacula each, but differs remarkably by short broad telson not deeply incised and bearing distal spines only, elongated pereopods 5-7, strong dactylus of pereopods 3-7 with one strong spine at inner margin, angular epimeral plates, elongated uropod 3 distal article of outer ramus in males, etc.

For this reason at the actual stage of knowledge of taxonomical characters, it was not possible to identify the specimens from Navotinska pećina Cave neiter N. vjetrenicensis kusceri nor N. vjetrenicensis vjetrenicensis, and we establish the specimens of cave Navotinska pećina as a distinct new species.

The permanemt presence of additional spines on dactylus of some pereopods in Orniphargus group is observed in several taxa: Niphargus rejici Sket, 1958 [loc. typ.: Podkraj near Tomišelj, Slovenia], N. rejici jadranko Sket & G. Karaman, 1990 [loc. typ.: Ponikve, Krk Island, Kvarner, Adriatic Sea], N. sertaci Fišer, Çamur-Elipek & Özbek, 2009 [loc. typ.: Izmir; W. Anatolia, Turkey], N. altagahizi Alouf, 1973 [loc. typ.: cave Ras Chekka, nearly 20 km from Dalu Al` Ayn in Lebanon], etc., but they differ from N. navotinus by many distinct different characters, including stable presence of additional spines on dactyls.

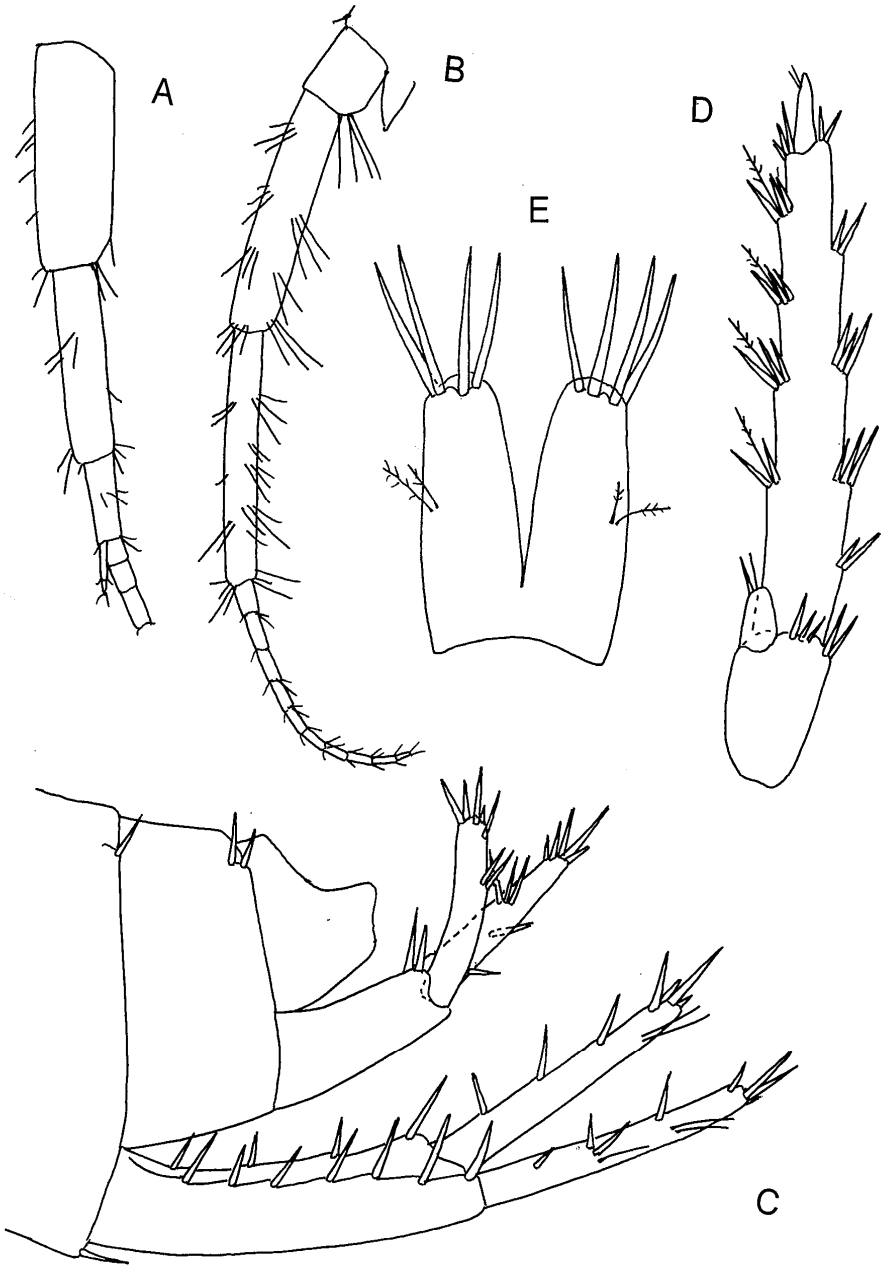


Fig. 8. *Niphargus navotinus*, sp. n., male 10.0 mm (paratype), Navotinska pećina Cave: A= antenna 1; B= antenna 2; C= urosome with uropods 1-2; D= uropod 3; E= telson, male 8.6 mm

NIPHARGUS JURINACI S. Karaman, 1950

Niphargus tauri jurinaci S. Karaman, 1950: 88, figs. 1-10; S. Karaman; 1959: 174; G. Karaman, 1972: 6; G. Karaman, 1974: 27; Barnard & Barnard, 1983: 696; G. Karaman & Ruffo, 1986: 533;

Niphargus jurinaci G. Karaman, 2013b: 215, figs. 7-12.

MATERIAL EXAMINED: CROATIA:

R-7= Lokvarka Cave, Lokve, Gorski Kotar, Croatia, 4.10. 2011, 2 exp. (leg. H. Cvitanović); R-9= ibid., 29.9.2012, 2 exp, (leg. R. Ozimec); R-12= ibid., 4.10.2011, 6 exp. (leg. R. Ozimec); R-14= ibid., 18.3.2011, 2 exp. (leg. R. Ozimec); R-17= ibid., 17.1.2007, 3 exp. (leg. H. Cvitanović); R-29= ibid., 18.3.2007, 1 exp. (leg. G. Polič); R-47= ibid., 17.3. 2007, 3 exp. (leg. R. Ozimec).

REMARKS.

Niphargus jurinaci has been described and known from several springs only (see Localities cited), and known male of this species (holotype) was 5.0 mm long.

The male from cave Lokvarka is 8.0 mm long and mainly agree with description of this species from Crni Lug described by S. Karaman (1950) and G. Karaman (2013b).

Epimeral plates 1-3 distinctly subrounded. Urosomite 1 and urosomite 2 on each dorsolateral side with 1 seta, urosomite 3 naked.

Main flagellum articles of antenna 1 with one aesthetasc reaching 1/3 to ½ of article length.

Maxilla 1 inner plate with one seta, spines of outer plate with one lateral tooth each.

Mandibular palpus article 1 naked, article 2 with 8 setae; palpus article 3 on outer face one group of 3 A-setae, on inner face with 3 B-setae, along margin with nearly 18 D-setae and 5 long distal E-setae.

Gnathopod 1: propodus trapezoid, along posterior margin with 4 transverse groups of setae; palm inclined ½ of propodus length, defined on outer face by one strong corner S-spine and 2 slender L-spines, as well as 3 facial median setae, on inner face by one short subcorner R-spine, dactylus reaching posterior margin of propodus, with one median seta along outer margin.

Gnathopod 2 propodus trapezoid, as long as broad, with 6 transverse groups of setae along posterior margin; palm inclined nearly half of propodus length, corner and subcorner spines and setae like these in gnathopod 1; dactylus like that in gnathopod 1.

Pereopods 3-7 with slender dactylus bearing at inner margin one short slender seta, nail long. Basipodit of pereopod 7 narrow, twice longer than broad, with almost straight posterior margin bearing 10 short setae, ventroposterior lobe not distinct.

Pleopods 1-3 with 4 retinacula each. Peduncle of pleopod 1 with 2 median setae along anterior margin; peduncle of pleopod 2 naked; peduncle of pleopod 3 along posterior margin with 2 median strong setae.

Uropod 1: peduncle with dorsointernal row of setae and dorsoexternal row of spines, rami of equal length.

Uropod 2: rami of equal length. Uropod 3 long and slender, peduncle reaching the distal tip of telson, second article of outer ramus reaching only slightly shorter than first article (ratio: 50: 62).

Telson lobes with 4 long distal spines each.

LOCALITIES CITED: CROATIA: Tomac Jarak, spring, Crni Lug (W. of Ogulin); Spring near village Razlog, Crni Lug (W. of Ogulin); Spring of Bugarnica, Crni Lug (W. of Ogulin); Spring of Kupa, Biljevine, Razlog (Svrakovo) (S. Karaman, 1950; G. Karaman, 2013b); Cave Lokvarka, Lokve, Gorski Kotar (present work).

LOC. TYP.: Spring in Crni Lug, W of Ogulin, Croatia. Holotype and paratype are deposited in KARAMAN`s Collection in Podgorica, Crna Gora.

GENERAL DISTRIBUTION: endemic to Croatia.

**Family Typhlogammaridae**

*TYPHLOGAMMARUS MRAZEKI* (Schäferna, 1906)

*Gammarus* (*Typhlogammarus*) *mrazeki* Schäferna, 1906: 1-4, fig. I, pl. I, figs. 1-35;

*Typhlogammarus mrazeki* Schäferna, 1922: 89 (other synonyms omitted).

MATERIAL EXAMINED: CROATIA:

R-98= Cave Miljacka 4, HE Miljacka, 6.1.2005, 1 exp. 10.6 mm (leg. Jana Bedek);

HERZEGOVINA:

R-90= Vjetrenica Cave, Zavala, Absolon canals, 18.8.2004, 1 exp. 15.0 mm (leg. D. Basara);

R-129= Vjetrenica Cave, Zavala, Bijeli Saljev, 17.8.2004, 2 exp. (leg. M. Pavlek); OR-30= ibid., 17.8.2004, 2 exp. (leg. H. Bilandžija); OR-1= ibid., 17.8.2004, 3 exp. (leg. M. Lukić);

R-53= Vjetrenica Cave, Zavala, Viseća jezera-Lakes, 24.8.2006, 2 exp. (leg. R. Ozimec); OR-7= ibid., 17.8.2004, 2 exp. (leg. R. Ozimec);

CRNA GORA (Montenegro):

S-7214= Njegoševa pećina Cave in Njeguši, May, 2013, 1 exp. 22.5 mm (leg. M.

Pavičević).

REMARKS. The locality Miljacka 4 Cave is within the National Park Krka (Croatia) and represents one of the five caves in this region with subterranean waters connected with Zrmanja River.

The specimens of all cited localities agree with general description of this species.

LOCUS TYPICUS: Lipska pećina Cave (Montenegro).

GENERAL DISTRIBUTION: Croatia, Herzegovina, Crna Gora (Montenegro); endemic to Dinarids in western Balkan.

**Family Talitridae**

*ORCHESTIA STEPHENSENI* Cecchini, 1928

*Orchestia Stephenseni* Cecchini, 1928: 7, pl. 2, fig. 3; Cecchini, 1929: 11.

*Orchestia stephenseni* Karaman, G., 1973: 138, figs. I-III; Bellan-Santini, 1993: 752, fig. 515; Ruffo, 1995: 43; Zavodnik & Kovačić, 2000: 338; Fišer, 2002: 38; Karaman, G., 2011: 190. [synonymy restricted]

MATERIAL EXAMINED:

R-102= Cave in the Bay of Bjejajka, Soline, island Mljet, Croatia, Adriatic Sea, 3 exp. 18.6.2001 (leg. R. Ozimec).

REMARKS: This species can be easily confused with *Cryptorchestia cavimana* Heller, 1865 or *C. garbinii* Ruffo et al., 2014, by similar external habitus, and therefore overlooked in various localities.

The specimen from Mljet Island (male 15.0 mm) agree completely with known taxonomic characters of this species, although taxonomic differences of females of *O. stephenseni* regarding females of other *Orchestia* species are not yet well studied.

LOC. TYP.; La Spezia, Italy.

DISTRIBUTION:

This species was cited in the Adriatic Sea from a few localities along the coasts only:

S. Adriatic coast of Italy (Costa, A., 1867; Ruffo, 1995); Krk Island (G. Karaman, 1973; Bellan- Santini, 1993); Rijeka Bay (Zavodnik & Kovačić, 2000), NW Istra (Fišer, 2002), Ulcinj (G. Karaman, 2011), Otranto (Costa, A., 1857; Heller, 1865; G. Karaman, 1970b).

This species prefers slightly brackish waters at the sea coast under stones and gravel in marine caves, subcaves or only darker places. But, this species

never penetrate far from the sea, in contrast to *Cryptorchestia cavimana* Heller, 1865 and *C. garbinii* Ruffo et al., 2014.

## Family Crangonyctidae

### *SYNURELLA AMBULANS* (F. Müller, 1846)

*Gammarus ambulans* F. Müller, 1846: 296, figs. A-C;
*Gammarus recurvus* Grube, 1861: 137 (loc. typ.: Vrana Lake on Cres Island, Adriatic Sea, Croatia);
*Synurella ambulans ambulans* S. Karaman, 1952: 93, pl. III, figs. 11, 12 (other synonymies omitted).

MATERIAL EXAMINED: CROATIA:
R-111= Studenac, Drežničko Polje (lower), Drežnica, Jezerane, 30.6.2004, one ovigerous female (leg. J. Bedek);
R-8= Spring Cave, Šuljica, 15.9.2012, 5 exp. (leg. M. Šumanović & J. Marković);
R-83= Spring /abyss near Njivice, Medvednica, 28.5.2005, 10 exp. Intermixed with *Gammarus fossarum* Koch, 1836 and *Niphargus* sp. juv. (leg. R. Ozimec).

REMARKS. All collected specimens, males and females, were with well developed eyes of various size. Adult males are always smaller than females.
LOCUS TYPICUS: Greifswald, Germany.
GENERAL DISTRIBUTION: Central and SE Europe, Asia Minor.

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## REFERENCES

ALOUF, N.J. 1973. Biotope et description de Niphargus altagahizi n. sp., Amphipode Gammaride souterrain du Liban. - International Journal of Speleology. 5: 49-61.

BARNARD, J.L & BARNARD, C.M. 1983. Freshwater amphipods of the World. I. Evolutionary patterns. II. Handbook and bibliography.- Hayfield Associates: Mt. Vernon, Virginia, 1983, pp. XIX +849 pages, 50 figs., 7 graphs, 98 maps, 12 tables.

BELLAN-SANTINI, D. 1993. Family Talitridae. Genera: Macarorchestia: 738-739, fig. 506; Orchestia: 742-753, figs. 508-753; Talitrus: 760, fig. 520; Talorchestia: 760- 768, figs. 521-525. In: Rufo, S. [ed.] The Amphipoda of the Mediterranean, Part. 3. Gammaridea (Melphidippidae to Talitridae), Ingolfiellidea and Caprellidea. – Memoires de l`Institut Oceanographique,

fondation Albert Ier, prince de Monaco, 13 (3): XXI-XXVI + 577-813, figs. 397-553.

CECCHINI, C. 1928. Contributo alla conoscenza degli Anfipodi. – Reale Comitato Talassografico Italiano; Istituto di Zoologia, Anatomia e Fisiologia Comparata della R. Universita di Siena, Memoria, Venezia, 142: 1-10, 2 pls.

CECCHINI, C. 1929. Gli Anfipodi del R. Museo Zoologico di Firenze. Fam. Talitridae. – Istituto di Zoologia, Anatomia e Fisiologia Comparata della R. Universita di Siena, ser. 10, 3 (5-7): 4-17 (?611-625).

COSTA, A. 1857. Ricerche sui crostacei anfipodi del Regno di Napoli. – Memorie della Reale Accademia delle Scienze di Napoli, 1: 165-235, pls. 1-4 (1856).

COSTA, A. 1867. Saggio della Collezione de` Crostacei del Mediterraneo del Museo Zoologico della Universita di Napoli, spedito alla Esposizione di Parigi del 1867. – Annuario del Museo Zoologico della Reale Universita di Napoli, 4: 1-13 [36-48], pls.1-2. (stamperia di Antonio Cons., Napoli).

FIŠER, C., ÇAMUR-ELIPEK, B. & ÖZBEK, M. 2009. The subterranean genus Niphargus (Crustacea, Amphipoda) in the Middle East: A faunistic overview with descriptions of two new species.- Zoologischer Anzeiger, 248: 137-150.

FIŠER, C. 2002. A contribution to the knowledge of amphipods of the group Gammaridea (Amphipoda, Gammaridea) on the slovene coast. – Natura Sloveniae, 4 (1): 33-39.

FIŠER, C., SKET, B. & STOCH, F. 2006. Distribution of four narrowly endemic Niphargus species (Crustacea: Amphipoda) in the western Dinaric region with description of a new species.- Science Direct, Zoologischer Anzeiger 245: 77-94, 7 figs.

GRUBE, A. E. 1861. Ein Ausflug nach Triest und dem Quarnero. Beiträge zur Kenntnis der Thierwelt dieses Gebietes. – Nicolaische Verlagsbuchhandlung, Berlin, pp. 1-175, 5 pls. (Amphipoda: 125-126, 135-138).

HELLER, C. 1865. Kleine Beiträge zur Kenntnis der Süsswasser-Amphipoden. – Verhan-dlungen der Kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien, 15: 979-984, pl. 17.

KARAMAN, G. 1969. XXVII Beitrag zur Kenntnis der Amphipoden. Arten der Genera Echinogammarus Stebb. und Chaetogammarus Mart. aus der jugoslawischer Adriaküste.- Glasnik Republičkog zavoda za zaštitu prirode i Prirodnjačke zbirke u Titogradu, 2: 59-84.

KARAMAN, G. 1970a. XXV. Beitrag zur Kenntnis der Amphipoden. Kritische Bemerkungen über Echinogammarus acarinatus (S. Kar., 1931) und Echinogammarus stocki n. sp.- Poljoprivreda i šumarstvo, Titograd, 16 (1-2): 45- 66.

KARAMAN, G. 1970b. XXIX. Beitrag zur Kenntnis der Amphipoden. Genus Orchestia (Talitridae) in Adriatischem Meer. – Glasnik Republičkog zavoda za zaštitu prirode- Prirodnjačkog muzeja u Titogradu, 3: 5-36.

KARAMAN, G. 1972. Le probleme du Genre Niphargus en Yougoslavie. - Actes du Ier Colloque International sur le genre Niphargus-Verona, 15-19 Aprile 1969, Museo Civico di Storia Naturale, Verona, Memorie fuori serie, 5: 1-10.

KARAMAN, G. 1973. XLV. Contribution to the Knowledge of the Amphipoda. Orchestia stephenseni Cecchini 1928, one new species for Adriatic fauna

(Gammaridea: Talitridae). - Fragmenta Balcanica, Musei Macedonici Scientiarum Naturalium, Skopje, 9 (14/214): 137-145.

KARAMAN, G. 1974. Catalogus Faunae Jugoslaviae, Crustacea Amphipoda (Contribution to the Knowledge of the Amphipoda 60). - Consilium Academiarum Scientiarum Rei Publicae Socialisticae Foederativae Jugoslaviae, Academia Scientiarum et Artium Slovenica, Ljubljana, 3 (3): 1-44.

KARAMAN, G. & RUFFO, S. 1986. Amphipoda: Niphargus-Group (Niphargidae sensu Bousfield, 1982), in: Botosaneanu, L. (edit.): Stygofauna Mundi, A Faunistic, Distributional, and Ecological Synthesis of the World Fauna inhabiting Subterranean Waters (including the Marine Interstitial), Leiden, E. J. Brill/ Dr. W. Backhuys, pp. 514-534.

KARAMAN, G. 2011. Catalogue: Fauna of Gammaridean Amphipoda (Crustacea, Malacostraca) of the Adriatic Sea (Contribution to the Knowledge of the Amphipoda 252). -The Montenegrin Academy of Sciences and Arts, Catalogue 2. The Section of Natural Sciences, 1: 1-288.

KARAMAN, G. 2012. Further investigations of the subterranean genus Niphargus Schiödte, 1849 (fam. Niphargidae) in Serbia. (Contribution to the Knowledge of the Amphipoda 264). Agriculture and Forestry, Podgorica, 58 (2): 45-64.

KARAMAN, G. 2013a. Discovery of new subterranean member of the family Niphargidae from Serbia, Niphargus luka, sp. n. [Contribution to the Knowledge of the Amphipoda 267].- Biologia Serbica, Novi Sad in press.

KARAMAN, G. 2013b. On two members of the genus Niphargus Schiodte, 1849 (Crustacea: Niphargidae) from Balkan Peninsula, N. deelemanae grex, ssp. n. and N. jurinaci S. Kar. 1950 (Contribution to the Knowledge of the Amphipoda 271).-Acta Entomologica Serbica Beograd 18 (1/2): 207-235.

KARAMAN, S. 1932. 5. Beitrag zur Kenntnis der Süsswasser-Amphipoden (Amphipoden unterirdischer Gewässer).- Prirodoslovne razprave, Ljubljana, 2: 179-232.

KARAMAN, S., 1950a. Über die kleinen Niphargus-Arten Jugoslaviens. Srpska akademija nauka, Posebna 158, Odeljenje Prirodno-matematičkih nauka, Beograd, 2: 87-99.

KARAMAN, S. 1950b. Podrod Orniphargus u Jugoslaviji. I. Deo. (=Das Subgenus Orniphargus in Jugoslavien, Teil I.).- Srpska Akademija Nauka, Posebna Izdanja knj. 158, Odelenje Prirodno-matematičkih nauka, Beograd, 2: 119-136, 145-156, 160-167, figs. 1-61.

KARAMAN, S. 1952. Amfipoda i Izopoda Vranskog jezera na ostrvu Cresu [Die Amphipoden und Isopoden des Vrana-Sees auf der Insel Cres (Cherso)]. - Prirodoslovna istraživanja, Odjel za prirodne i medicinske nauke, Jugoslavenska Akademija znanosti i umjetnosti Zagreb, 25: 87-95, 3 pls., figs. 1-12.

KARAMAN, S. 1959. Über eine neue Unterart von Niphargus tauri (Schellenberg), n. ssp. osogovensis aus Jugoslawien.- Hidrobiologi, Istanbul Universitesi Fen Fakültesi, Seri B, 4 ( 4): 170-175, figs. 1-12.

MÜLLER, Fr. 1846. Über Gammarus ambulans, neue Art. - Archiv für Naturgeschichte, 12 (1): 296-300.

RUFFO, S. 1995. Amphipoda, in: Crustacea Malacostraca II. (Tanadacea, Isopoda, Amphipoda, Euphausiacea). – Checklist delle specie della Fauna Italiana, 30: 28-52.

RUFFO, S.†, TAROCCO, M. & LATELLA, L. 2014. Cryptorchestia garbinii n. sp. (Amphipoda: Talitridae) from Lake Garda (Northern Italy), previously referred to as Orchestia cavimana Heller, 1865, and notes on the distribution of the two species.- Italian Journal of Zoology, 2014, 91–98.

SCHÄFERNA, K. 1906: O Novém Slepém Blešivci, Typhlogammarus n. sbg. - Vestnik Královské České společnosti nauk, Praha 26: 1-25.

SCHÄFERNA, K. 1922. Amphipoda balcanica, with notes about other freshwater Amphipoda. - Vestnik Královské. české Společnosti nauk, trida matematičko-prirodovedecká, Praha, 1921-1922, 2: 1-111, 31 figs., 2 pls.

SKET, B. 1958. Prispevek k poznavanju nasih amfipodov. - Biološki Vestnik, Ljubljana, 6: 66-75, figs. 1-13.

SKET, B. & KARAMAN, G. 1990. Niphargus rejici (Amphipoda), its relatives in the Adriatic islands, and its possible relations to S.W. Asian taxa. - Stygologia, The Hague, 5 (3): 153-172.

ZAVODNIK, D. & KOVAČIĆ, B. M. 2000. Index of marine fauna in Rijeka Bay (Adriatic Sea, Croatia). – Natura Croatica, Croatian Natural History Museum, Zagreb, 9 (4): 255-379.

*Gordan S. KARAMAN*

## O NEKIM GAMARIDNIM AMFIPODIMA IZ ZAPADNOG BALKANA (275. PRILOG POZNAVANJU AMPHIPODA)

**SAŽETAK**

Iz Navotinske pećine kod Berana, Crna Gora, opisana je jedna nova vrsta iz familije Niphargidae (Amphipoda, Gammaridea), Niphargus navotinus, sp. n. i njen odnos prema drugim vrstama tog roda je razmatran.

Dati su novi lokaliteti i podaci o vrstama Niphargus jurinaci S. Karaman, 1950 iz Hrvatske, Typhlogammarus mrazeki (Schäferna, 1906) (fam. Typhlogammaridae) iz Hrvatske, Hercegovine i Crne Gore, Orchestia stephenseni Cecchini, 1928 (fam. Talitridae) kao i vrste Synurella ambulans (F. Müller, 1846) (fam. Crangonyctidae) iz Hrvatske.

**Ključne riječi**: Niphargidae, Amphipoda, Zapadni Balkan