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Original paper

New data on the family Niphargidae from Albania. *Niphargus lepushensis* sp. nov. (Amphipoda Gammaridea) (Contribution to the knowledge of the Amphipoda 340)

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Summary. A new member of the subterranean family Niphargidae (Crustacea: Amphipoda: Senticaudata), N*iphargus lepushensis* sp. nov., from a spring on the banks of the Shushica River in southern Albania, is described. This taxon is similar to the species *Niphargus impexus* G. Karaman, 2016 and *Niphargus zarosiensis* Zettler M.L. & Zettler A., 2017, both from the island of Crete, Greece, as well as to *Niphargus rhodi* S. Karaman, 1950 from Rhodos Island, Greece. It is the fourth species of the genus *Niphargus* registered so far in the fauna of Albania.

Keywords: Albania, Amphipoda, new taxon, *Niphargus lepushensis*, Shushica River, subterranean waters, taxonomy.

INTRODUCTION

The Amphipoda Fauna from subterranean waters in Albania is still only partially known. So far, 8 species from 5 genera and 5 families have been mentioned by various authors (Ndoc 1959; Karaman G 1972, 2003, 2016, 2023b, 2024a; Dhora 2010; Sket 1981; Barnard JL and Barnard CM 1983; Karaman G and Ruffo 1986; Ruffo 1995).

From Albania, Ruffo (1995) described a new genus and species *Albanogammarus inguscioi* (Fam. Gammaridae) from the cave Shpella e Shutresi, a genus very similar to or maybe identic with the genus *Gammarus* Fabricius 1775. Karaman G (2024b) described a new genus and species *Fingerhadzia zorae* (Fam. Hadziidae) from the subterranean waters of Shushica River. The species *Salentinella angelieri* Delamare Deboutteville & Ruffo, 1952 (Fam. Salentinellidae) was mentioned by Karaman G (2024a) from several localities of Shushica River, and *Ingolfiella petkovskii* S. Karaman, 1957 (Ingolfiellidea: Ingolfiellidae) mentioned from subterranean waters of the left bank of Shushica River near Kallarat (Karaman G 2023b), mixed with *Salentinella angelieri*.

Regarding the family Niphargidae, four species from Albania are known: *Niphargus ohridanus* S. Karaman, 1929 from the deep zone of Ohrid Lake, *Niphargus tomori* G. Karaman, 2016 from Tomori region, *Niphargus griebleri* G. Karaman, 2023a) from several localities of Shushica River and a new species *Niphargus lepushensis* from Lepusha Spring at the bank of Shushica River, presented in this work.

The Ohrid Lake is divided between Northern Macedonia and Albania, and from the coastal springs of the Northern Macedonian part of the Lake several subterranean species are also known: *Gammarus sketi* G. Karaman, 1989 (Loc.

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typ.: Biljanini Izvori-Springs [= Strudenčišće] near Ohrid Town); *Niphargus fontophilus* S. Karaman, 1943 (Loc. typ.: spring at the St. Jovan Monastery in Ohrid Town), *Niphargus sanctinaumi* S. Karaman, 1943 (Loc. typ.: springs near the St. Naum Monastery on the western coast of the Lake near the N. Macedonian-Albania border); *N. maximus* S. Karaman, 1929 (Loc. typ.: Šum Spring near Struga), *N. maximus petkovskii* G. Karaman, 1963 (Loc. typ.: Biljanini Izvori-Springs [= Strudenčišće] near Ohrid Town) and *N. lowryi* G. Karaman, 2023 (Loc. typ.: springs near the St. Naum Monastery on Ohrid Lake). As no other subterranean coastal species are known from the Albanian coast of Ohrid Lake, we do not know if some of taxa from the N. Macedonian side are present there.

Further study of the fauna of subterranean waters in Albania will lead to discovery of some known or new taxa.

MATERIAL AND METHODS

Thanks to Prof. Christian Griebler from the University of Wien, Austria, I have had the possibility to study subterranean amphipods collected in Albania in 2021 and 2024 during the realization of the APPEAR project VjoSusDev, of the Austrian Development Cooperation implemented by the OeAD. A part of these studies is presented in this work.

The specimens, preserved in 70% ethanol, were dissected and examined in a mixture of glycerin and water for study, using a Wild M 20 stereomicroscope. The dissected studied body-parts were transferred later in Faure liquid as permanent slides. The body parts of examined specimens were drawn using a camera lucida attachment and inked manually.

Some morphological terminology and setal formulae follow G. Karaman's terminology (Karaman G 1969) regarding the distal mandibular palpus article (A = A-setae on outer face; B = B-setae on inner face; D = lateral marginal D-setae; E = distal long E-setae), and later (Karaman G 2012) regarding propodus of gnathopods 1 and 2 (S = corner S-spine; L = lateral slender serrate L-spines; M = facial corner M-setae; R = subcorner R-spine on inner face).

Terms "setae" and "spines" are used based on the shape, not origin. Our studies are based on the morphological, ecological and zoogeographical investigations.

In the REFERENCES we also cited the number of figures in each cited paper, because the figures are very important for the determination of species.

TAXONOMICAL PART

Order Amphipoda
Suborder Senticaudata
Family Niphargidae

Genus *Niphargus* Schiődte, 1849
***Niphargus* Schiődte, 1849: 26**
Typus generis: *Gammarus stygius* Schiődte, 1847

***Niphargus lepushensis* sp. nov.**
Figs 1-8

Material examined

Albania:

Alb-1 = Lepusha spring at Shushica River (The Lepusha Spring is located between the sampling stations SHUS1 and SHUS2), 25.5.2024, 1 exp., leg. Ch. Griebler; **Alb-2** = Lep-Shus 32 = Lepusha spring 20.5.2024, several exp. leg. Ch. Griebler; **Alb-3** = Shus 33 = Shushica spring, 23.5.2024, several exp., leg. Ch. Griebler;

Al. 2 = Shushica River, Oh. Kuc, small spring, 31.5.2021, 1 exp., leg. Ch. Griebler.

Diagnosis

Rather similar to *Niphargus impexus* G. Karaman, 2016 from Crete Island (Greece). Known body-size less than 10 mm, urosomal segment 1 on each dorsolateral side with setae, urosomal segment 2 with 0-1 spine and setae on each dorsolateral side. Epimeral plate 3 slightly pointed or sharply angular.

Mandibular palpus article 1 naked, article 3 with A, B, D and E-setae. Maxilla 1 inner plate with 2-3 setae, outer plate-spines mainly with one lateral tooth, palpus not reaching distal tip of outer plate-spines. Maxilliped inner plate with 3-4 spines.

Coxae relatively short, coxa 4 without ventroposterior lobe. Gnathopods 1-2: propodus nearly as broad as corresponding coxa, trapezoid, palm inclined, with 1-3 lateral L-spines and 3 corner facial M-setae, dactylus with row of

Fig. 1. *Niphargus lepushensis*, sp. nov., holotype female, Lepusha Spring (photo: Christian Griebler).

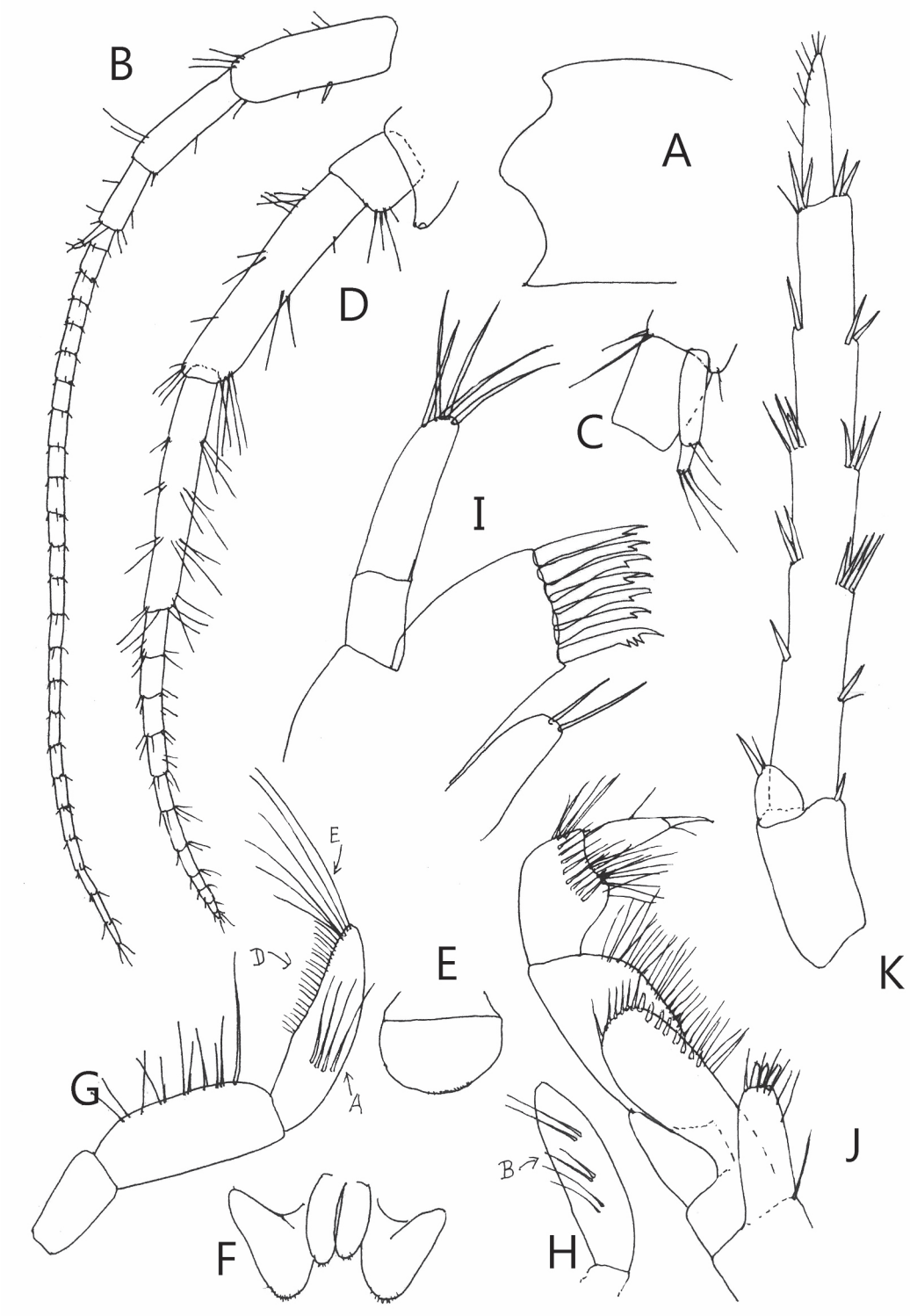

Fig. 2. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, female 8.1 mm (holotype). **A**, head; **B**, antenna 1; **C**, accessory flagellum; **D**, antenna 2; **E**, labrum; **F**, labium; **G**, mandibular palpus, outer face (A, facial A-setae; D, marginal D-setae; E, distal E-setae); **H**, distal mandibular palpus article (B, facial B-setae); **I**, maxilla 1; **J**, maxilliped; **K**, uropod 3.

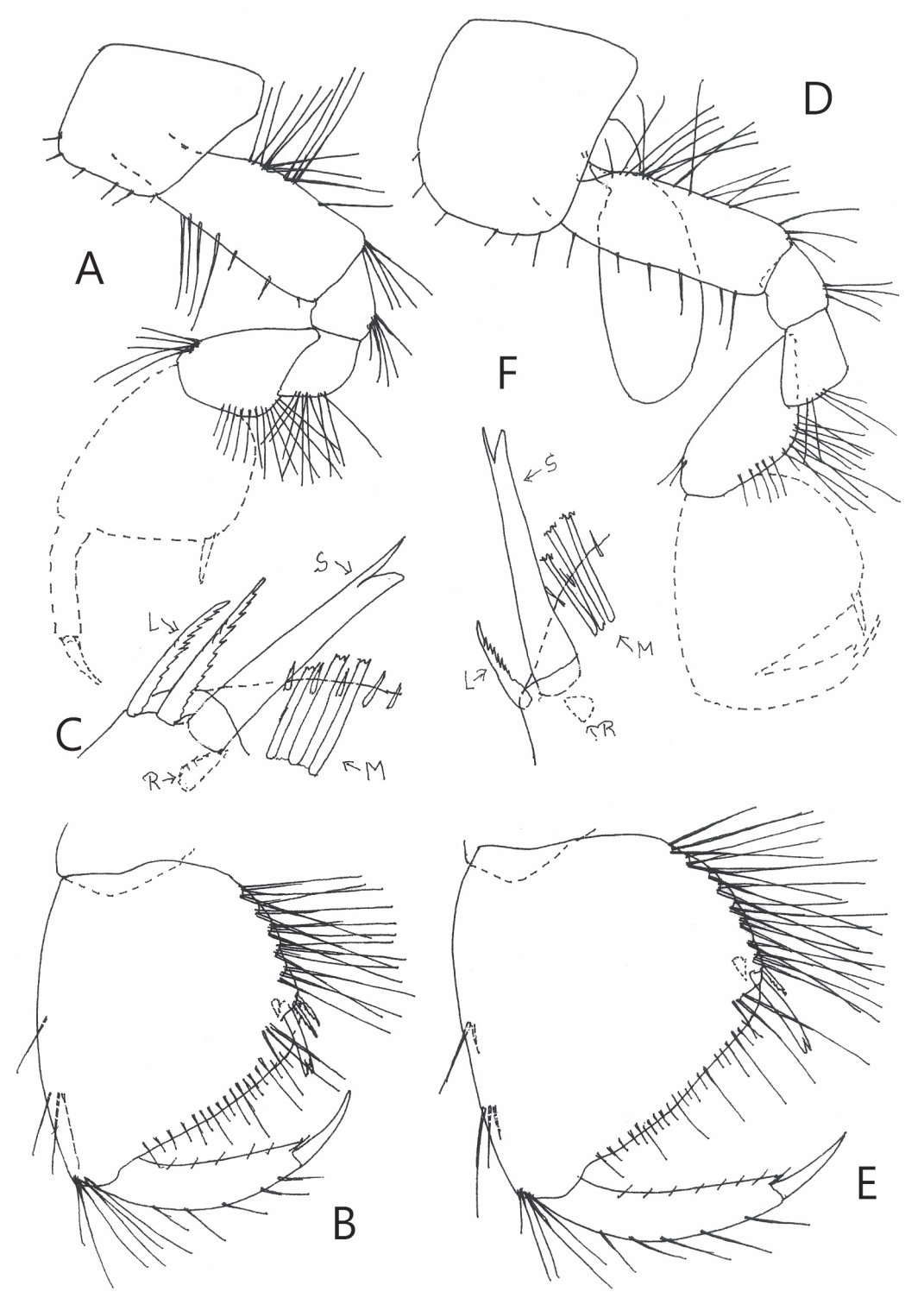

Fig. 3. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, female 8.1 mm (holotype). **A-B**, gnathopod 1, outer face; **C**, distal corner of gnathopod 1-propodus, outer face (S, corner S-spine; L, lateral L-spines; M, facial corner M-setae; R, subcorner R-spine, inner face); **D-E**, gnathopod 2; **F**, distal corner of gnathopod 2-propodus, outer face (S, corner S-spine; L, lateral L-spine; M, facial corner M-setae; R, subcorner R-spine, inner face).

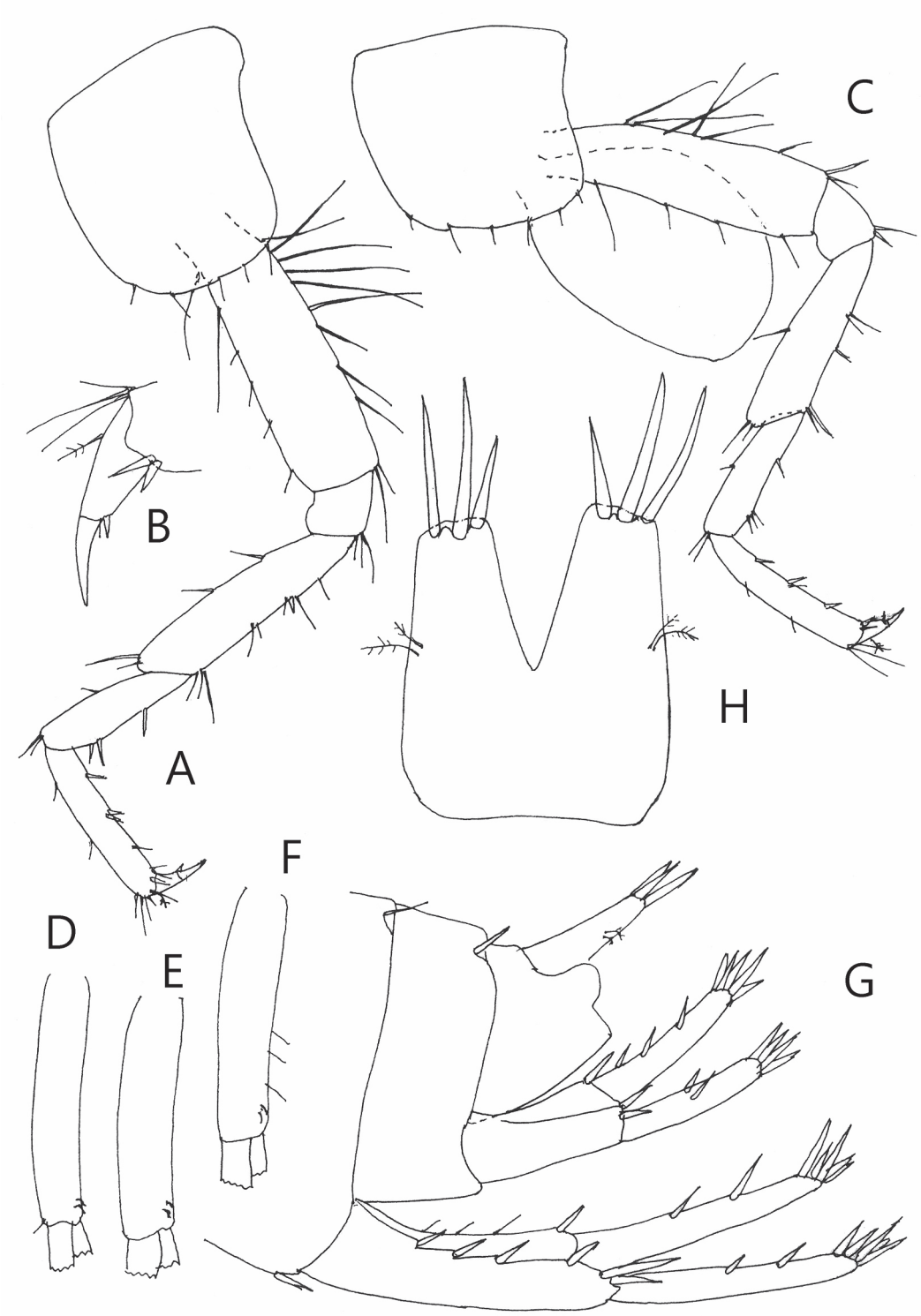

Fig. 4. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, female 8.1 mm (holotype). **A**-**B**, pereopod 3; **C**, pereopod 4; **D**, peduncle of pleopod 1; **E**, peduncle of pleopod 2; **F**, peduncle of pleopod 3; **G**, urosome with uropods 1-2; **H**, telson.

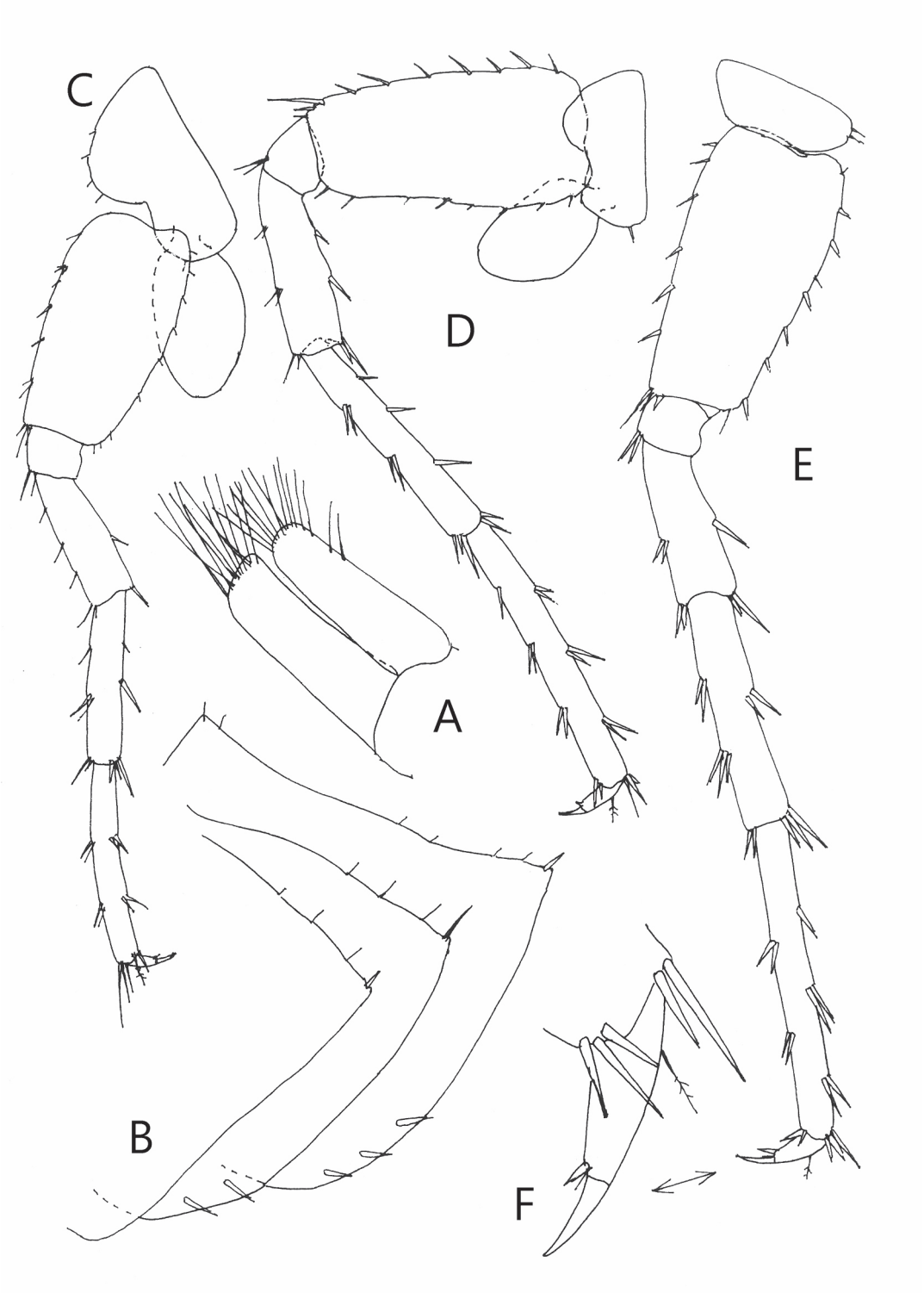

Fig. 5. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, female 8.1 mm (holotype). **A**, maxilla 2; **B**, epimeral plates; **C**, pereopod 5; **D**, pereopod 6; **E-F**, pereopod 7.

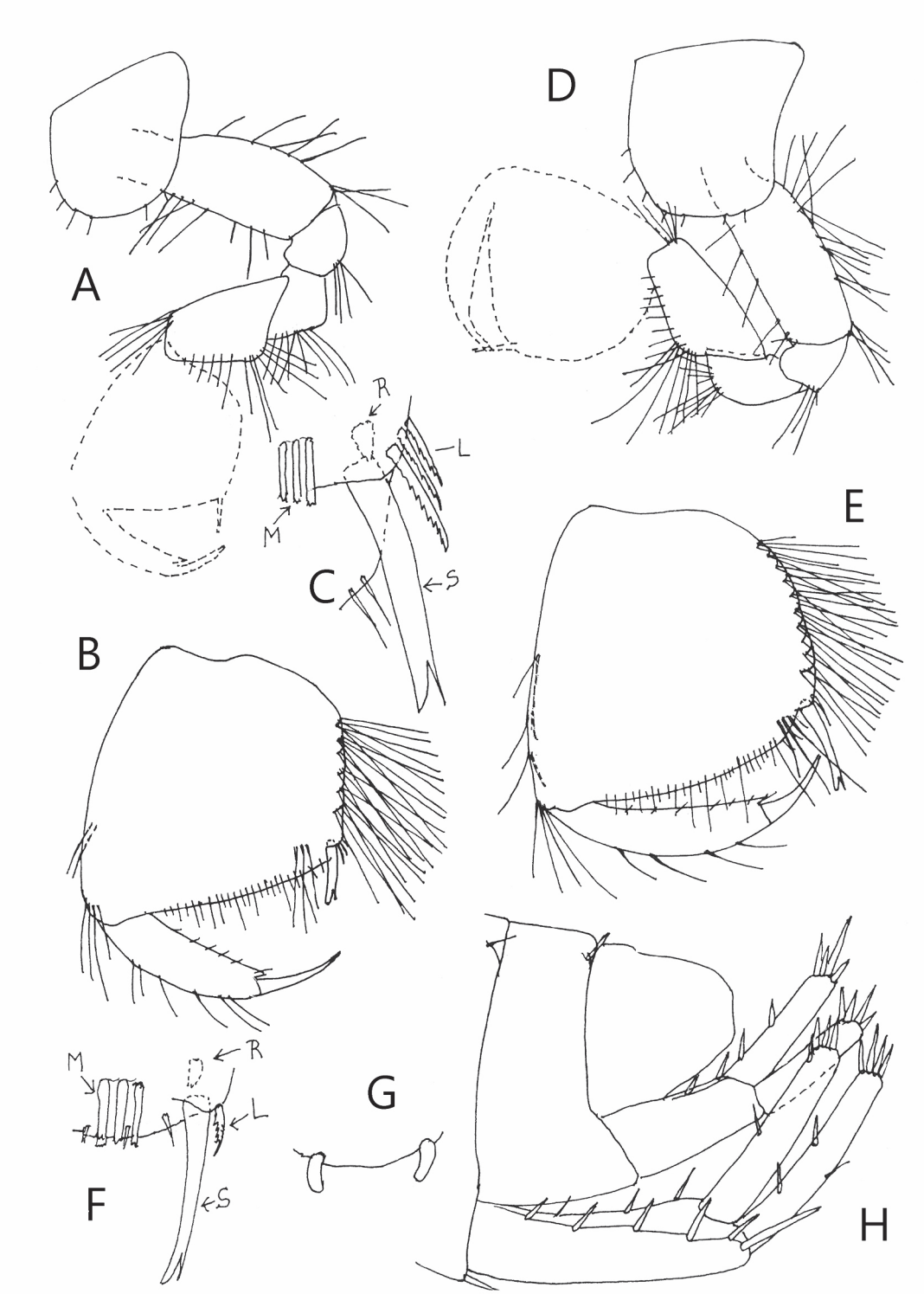

Fig. 6. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, male 7.0 mm (paratype). **A-B**, gnathopod 1, outer face; **C**, distal corner of gnathopod 1-propodus, outer face (S, corner S-spine; L, lateral L-spines; M, distal corner facial M-setae; R, subcorner R-spine, inner face); **D-E**, gnathopod 2, outer face; **F**, distal corner of gnathopod 2-propodus, outer face (S, corner S-spine; L, lateral L-spine; M, distal corner facial M-setae; R, subcorner R-spine, inner face); **G**, copulatory tubercles on last mesosomal segment; **H**, urosome with uropods 1-2.

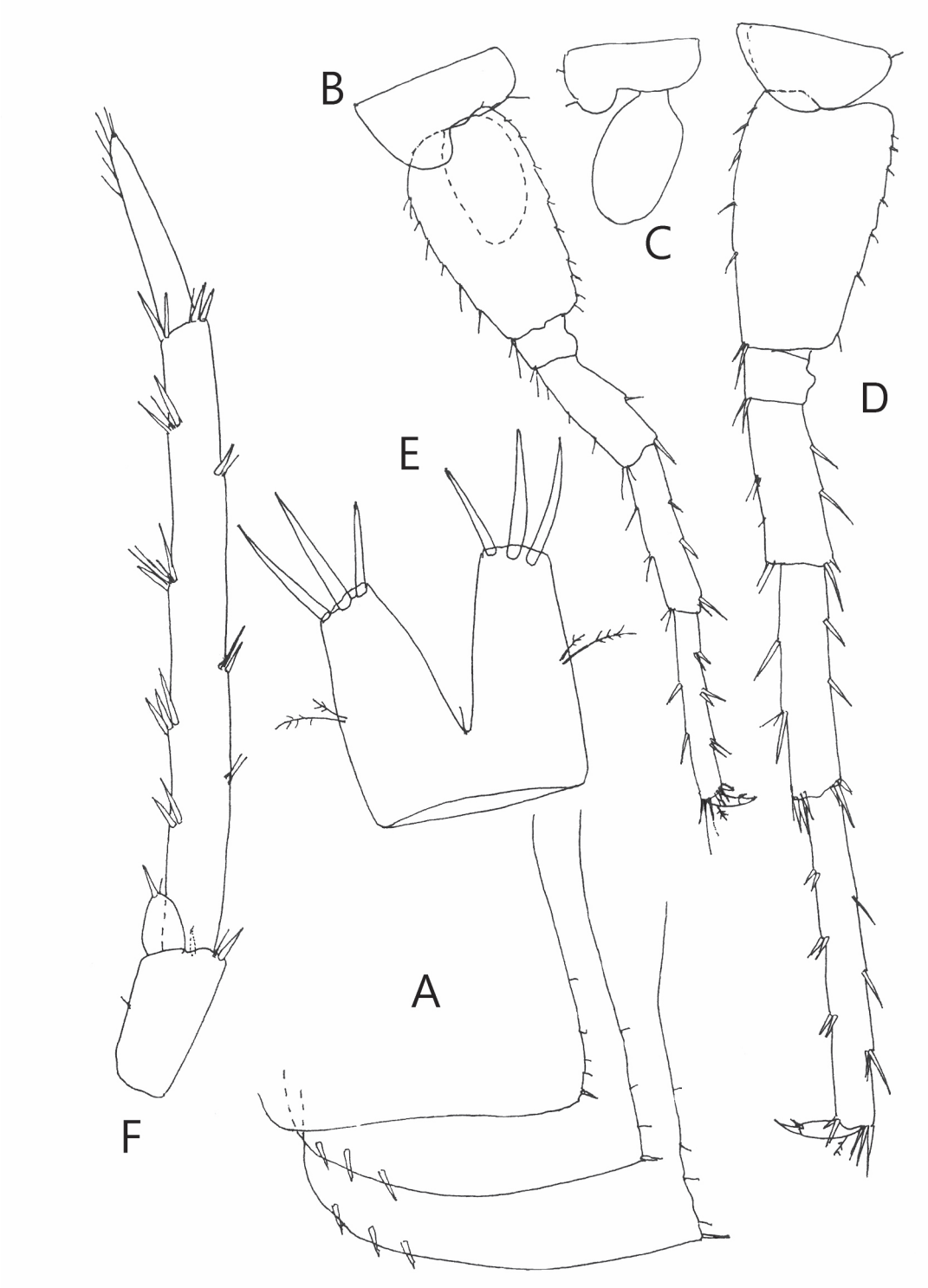

Fig. 7. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, male 7.0 mm (paratype). **A**, epimeral plates; **B**, pereopod 5; **C**, pereopod 6, coxa and gill; **D**, pereopod 7; **E**, telson; **F**, uropod 3.

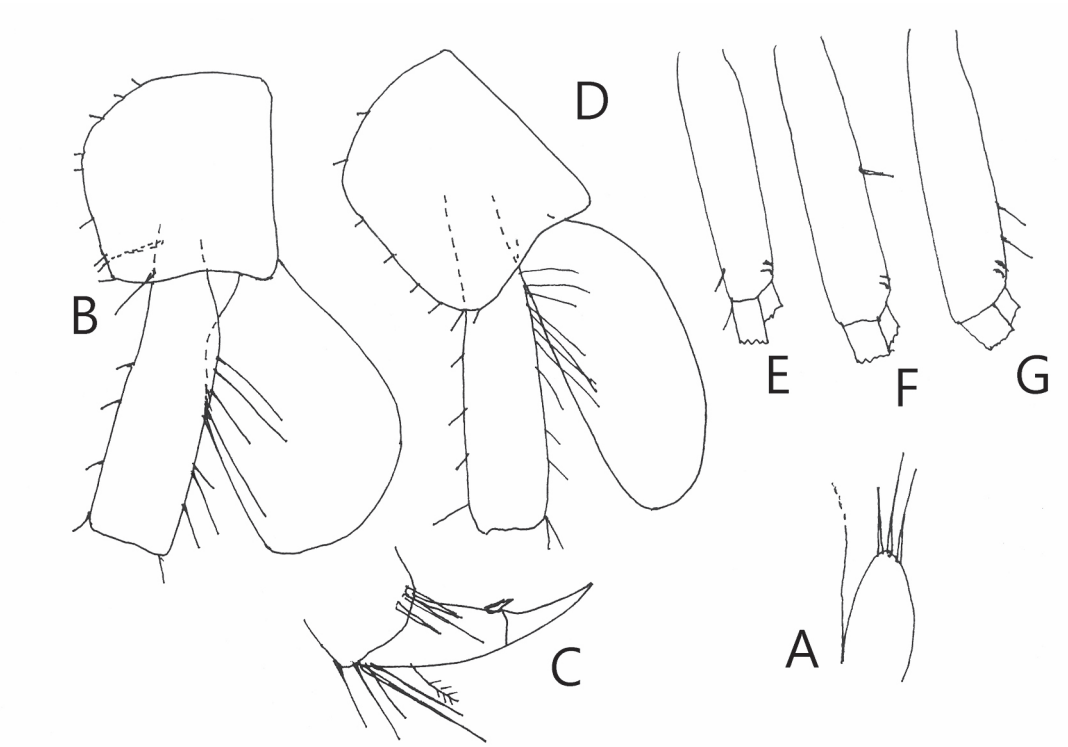

Fig. 8. *Niphargus lepushensis*, sp. nov., Lepusha Spring, Shushica River, male 7.0 mm (paratype). **A**, maxilla 1 inner plate; **B-C**, pereopod 3; **D**, pereopod 4; **E**, pleopod 1-peduncle; **F**, pleopod 2-peduncle; **G**, pleopod 3-peduncle.

median single setae along outer margin.

Dactylus of pereopods 3-7 short and strong, with one spine at inner margin. Article 2 of pereopods 5-7 narrowed, that of pereopod 7 along posterior margin with single short spines. Pleopods with 2 retinacula, peduncles scarcely setose. Uropod 1 with both rami of equal length. Uropod 3 with rather elongated second article of outer ramus, plumose setae are not observed. Telson gaping, incised up to 2/3 of telson-length, lobes with 3 distal spines only, lateral and facial spines absent.

Description

Female 8.1 mm body length, with setose oostegites **(holotype)** (Alb-2): Body moderately slender (Fig. 1), metasomal segments with only several dorsoposterior marginal setae (Fig. 5B). Urosomal segment 1 on each dorsolateral side with one seta; urosomal segment 2 on each dorsolateral side with one spine, urosomal segment 3 naked (Fig. 4G). Urosomal segment 1 on each ventroposterior corner with one spine near basis of uropod 1-peduncle (Fig. 4G).

Epimeral plate 1 obtusely angular, epimeral plate 2 poorly subpointed, with poorly inclined posterior margin bearing 2-3 ventral spines and several posterior marginal setae; epimeral plate 3 slightly pointed, with distinctly inclined posterior margin bearing several short setae and with 3 ventral spines (Fig. 5B).

Head with short rostrum and subrounded lateral cephalic lobes, ventroanterior sinus present, eyes absent (Fig. 2A).

Antenna 1 reaching nearly half of body; peduncular articles 1-3 moderately slender, progressively shorter toward article 3 (ratio: 46:36:20), peduncular articles scarcely setose, but single setae shorter to longer than diameter of articles themselves; main flagellum consisting of 24 articles scarcely setose, often with one aesthetasc (Fig. 2B). Accessory flagellum short, 2-articulated, distal short article with 3 distal setae (the longest seta only rather shorter than accessory flagellum) (Fig. 2C).

Antenna 2 moderately slender, peduncular article 3 with bunch of distoventral setae; article 4 at dorsal margin with one median spine and several short setae, at ventral margin with longer setae (some of them longer than diameter of article itself (Fig. 2D); article 5 scarcely shorter than 4 (ratio: 62:65), along dorsal margin with 4 groups of shorter setae, along ventral margin with 4 groups of longer setae (many of them longer than diameter of article itself). Flagellum longer than last peduncular article, consisting of 10 articles bearing short setae.

Mouthparts well developed. Labrum broader than long, with convex distal margin (Fig. 2E). Labium broader than

long, inner lobes well developed, outer lobes entire distally (Fig. 2F).

Mandible: molar triturative, left incisor with 5 teeth, lacinia mobilis with 4 teeth and several rakers. Right incisor with 4 teeth, lacinia mobilis serrate. Palpus 3-articulate: first article naked; second article with 11 setae; third article subfalciform, rather longer than second article (ratio: 55:49), with nearly 20 marginal D-setae and 6 distal long E-setae; on outer face with row of 4 facial A-setae (Fig. 2G), on inner face with 6 facial B-setae (2+2+2) (Fig. 2H).

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

Maxilla 2: both plates with numerous distal setae, inner plate with 2 lateral setae (Fig. 5A).

Maxilliped: inner plate short, with 3-4 distal spines mixed with single setae; outer plate reaching nearly half of outer margin of palpus article 2, bearing row of mesial spines and single setae; palpus article 4 at outer margin with median seta, at inner (mesial) margin with 1 seta near basis of the nail (Fig. 2J).

Coxae 1-4 relatively short. Coxa 1 rather broader than long (ratio: 50:40), ventroanterior corner subrounded, not produced, bearing 6 marginal setae (Fig. 3A). Coxa 2 slightly longer than broad (ratio: 57:52), on subrounded margin with 6 setae (Fig. 3D); coxa 3 rather longer than broad (ratio: 64:60), with 5 marginal setae (Fig. 4A). Coxa 4 slightly longer than broad (ratio: 59:54), with 6 marginal setae, ventroposterior lobe absent (Fig. 4C).

Coxa 5 much broader than long (ratio: 54:31), along margin with 5 setae (Fig. 5C). Coxa 6 rather smaller than coxa 5, broader than long (ratio: 42:23) (Fig. 5D). Coxa 7 shallow, not bilobed, broader than long (ratio: 42:22) (Fig. 5E).

Propodus of gnathopods 1-2 nearly as large as corresponding coxa. Gnathopod 1 only rather smaller than gnathopod 2, article 2 anterior margin with proximal long and distal shorter setae, along posterior margin with long setae; article 3 with distoposterior bunch of setae; article 5 rather shorter than propodus (ratio: 40:50), at anterior margin with distal bunch of setae (Fig. 3A). Propodus trapezoid, rather longer than broad (ratio: 85:73), along posterior margin with 5 transverse rows of setae (Fig. 3B); palm slightly convex, inclined nearly half of propodus-length, defined on outer face by corner S-spine, accompanied laterally by 2 strong serrate L-spines and 3 distal corner facial M-setae, on inner face by one subcorner R-spine (Fig. 3C). Dactylus along outer margin with 5 single median setae, along mesial margin with row of shot submarginal setae (Fig. 3B).

Gnathopod 2: article 2 along anterior margin with short setae, along posterior margin with row of long setae; article 3 with one distoposterior bunch of setae (Fig. 3D); article 5 with one distoanterior group of setae. Propodus trapezoid, rather longer than broad (ratio: 95:85), along posterior margin with 8 transverse rows of setae (Fig. 3E). Palm inclined nearly half of propodus-length, defined on outer face by corner S-spine accompanied laterally by one L-spine and 3 corner facial M-setae, on inner face by subcorner R-spine (Fig. 3F). Dactylus along outer margin with row of 5 median single setae, along mesial margin with several short setae (Fig. 3E).

Pereopod 3: article 2 along posterior margin with row of long setae, along anterior margin mainly with several short setae. Articles 4-7 of different length (ratio: 60:38:46:18); article 4 with 3-4 anterior single spine-like setae, along posterior margin with 4 groups of short setae; article 5 at posterior margin with one median and 2 distal short spines; article 6 along posterior margin with short spines, along anterior margin with simple setae (Fig. 4A). Dactylus strong and short, at inner margin with one strong spine near basis of the nail, at outer margin with one median plumose seta (Fig. 4B).

Pereopod 4 nearly like pereopod 3 in shape and pilosity. Articles 4-7 of different length (ratio: 50:35:48:17); dactylus short, with one spine at inner margin near basis of the nail and one median plumose seta at outer margin, nail shorter than pedestal (Fig. 4C)

Pereopods 5-7 moderately elongated, slender. Pereopod 5 shorter than pereopods 6 and 7, article 2 narrowed, much longer than broad (ratio: 62:35), at anterior poorly convex margin with 6 single spines and distal short setae, along posterior poorly convex margin with 10 short setae, ventroposterior lobe absent (Fig. 5C). Articles 4-7 of different length (ratio: 35:44:55:15); article 4 with anterior marginal setae and posterior 2 marginal spines; articles 5 and 6 along both margins with single or pairs of spines. Article 2 longer than article 6 (ratio: 62:55). Dactylus short and strong, with spine at inner margin near basis of the nail and with one median plumose seta at outer margin.

Pereopod 6: article 2 narrowed, tapering ventrally, much longer than broad (ratio: 76:38), along anterior almost straight margin with 8 single spines, along posterior margin with 9 short setae, ventroposterior lobe absent (Fig. 5D). Articles 4-7 of different length (ratio: 46:67:80:21), article 4 at anterior margin with setae, at posterior margin with spines; articles 5-6 along both margins with spines sometimes accompanied by single seta. Article 2 is rather shorter than article 6 (ratio: 76:80). Article 7 short, with one spine at inner margin near basis of the nail, and one median plumose seta at outer margin, nail shorter than pedestal.

Pereopod 7: article 2 slender, tapering ventrally, much longer than broad (ratio: 75:41), along anterior margin with 7-8 single spines, along posterior, nearly straight mar-

gin, with 5 short spines and 4 short setae, ventroposterior lobe absent (Fig. 5E). Articles 4-7 of different length (ratio: 46:64:88:25). Article 4 with 2 anterior groups of spines and 3 posterior groups or single spines. Articles 5-6 along anterior and posterior margin with several groups of spines. Article 2 shorter than article 6 (ratio: 75:88). Dactylus short and strong, at inner margin with one spine near basis of the nail and one median plumose seta at outer margin (Fig. 5F).

Pleopods 1-3 scarcely setose, with 2 retinacula. Pleopod 1-peduncle at anterior margin with one seta (Fig. 4D), peduncle of pleopod 2 naked (Fig. 4E), peduncle of pleopod 3 with 3 posterior marginal setae (Fig. 4F).

Uropod 1: peduncle with dorsoexternal row of spines and dorsointernal row of setae (except distal spine) (Fig. 4G); both rami shorter than peduncle and of the same length, both rami with 2 lateral and 5 distal spines.

Uropod 2: peduncle with distal spine; inner ramus with 3 lateral and 5 distal spines, outer ramus slightly shorter than inner one, provided with 2-3 lateral and 5 distal spines (Fig. 4G).

Uropod 3: peduncle rather longer than broad, with single distal spines; inner ramus scale-like, very short, with distal spine and short seta; outer ramus elongated, 2-articulated: first article elongated, along outer and mesial (inner) margin with 5 groups of spines mixed sometimes with single simple seta (Fig. 2K); second article much shorter than first one (ratio: 40:160), along mesial margin and tip with several short simple setae; plumose setae are not observed.

Telson slightly longer than broad (ratio: 82:72), incised only rather than half of telson-length, lobes provided with 3 long distal unequal spines only (the longest spines rather exceeding half of telson-length), lateral and facial spines absent (Fig. 4H).

Coxal gills ovoid, not elongated (Figs 3D, 4C, 5C, D), appear on pereopods 2-6.

Oostegites broad, with long marginal setae.

Male 7.0 mm (paratype) (Alb-2): Body like that of female but poorly more slender. Epimeral plate 1 subangular, with slightly convex posterior margin bearing several marginal setae; epimeral plate 2 strongly angular to almost acute, with slightly inclined posterior margin bearing several setae; epimeral plate 3 slightly pointed, with posterior marginal setae, plates 2 and 3 with 3 subventral spines each (Fig. 7A).

Sexual tubercles present on ventral side of last mesosomal segment (Fig. 6G). Urosomal segment 1 on both dorsolateral sides with one seta, urosomal segment 2 with 2 setae on both dorsolateral sides, urosomal segment 3 naked (Fig. 6H).

Urosomal segment 1 with on spine at ventroposterior corner near peduncle of each uropod 1 (Fig. 6H).

Head and antennae like these in female. Mouthparts like these in female, but maxilla 1 inner plate with 3 distal setae (Fig. 8A), palpus not reaching distal tip of outer plate-spines.

Coxae are relatively short. Coxa 1 rather broader than long (ratio: 40:35) (Fig. 6A); coxa 2 nearly as long as broad, along convex margin with 8 short setae (Fig. 6D), coxa 3 almost as long as broad (ratio: 47:45), at margin with 8 short setae (Fig. 8B). Coxa 4 broader than long (ratio: 50:43), with 8 short marginal setae (Fig. 8D).

Coxa 5 much broader than long (ratio: 44:24) (Fig. 7B); coxa 6 smaller than coxa 5, broader than long (ratio: 38:20) (Fig. 7C); coxa 7 entire, much broader than long (ratio: 45:20) (Fig. 7D).

Propodus of gnathopods 1-2 nearly as large as corresponding coxa. Gnathopod 1: article 3 with distoposterior bunch of setae; article 5 rather shorter than propodus (ratio: 36:46), with distoanterior group of setae (Fig. 6A). Propodus trapezoid, nearly as long as broad, along posterior margin with 6 transverse rows of setae (Fig. 6B). Palm poorly convex, inclined nearly half of propodus-length, defined on outer face by corner S-spine accompanied laterally by 3 L-spines and 3 corner facial M-setae, on inner face by one subcorner R-spine (Fig. 6C). Dactylus with row of 6 median setae at outer margin and several short setae along inner (mesial) margin (Fig. 6B).

Gnathopod 2 only rather larger than gnathopod 1. Article 2 with numerous long setae along posterior margin and a smaller number of setae along anterior margin. Article 3 with one bunch of setae at posterior margin (Fig. 6D). Article 5 rather shorter than propodus (ratio: 40:49), with one bunch of setae at anterior tip. Propodus trapezoid, poorly longer than broad (ratio: 83:78), along posterior margin with 10 transverse rows of setae (Fig. 6E). Palm inclined almost to the half of propodus-length, slightly convex, defined on outer face by corner S-spine accompanied laterally by one L-spine and 1 facial corner M-seta, at inner face by one subcorner R-spine (Fig. 6F). Dactylus reaching posterior margin of propodus, along outer margin with 4 median longer setae, along inner (mesial) margin with several single short setae (Fig. 6E).

Pereopods 3-4 like these in female, with dactylus short and strong, at inner margin with spine near basis of the nail, at outer margin with one median plumose seta (Figs 8B, C, D), nail shorter than pedestal.

Pereopod 5 remarkably shorter than pereopod 7, with article 2 elongated, longer than broad (ratio: 60:35), along anterior slightly convex margin with 7 single spine-like setae, along posterior almost straight margin with 11 short setae, ventroposterior lobe absent (Fig. 7B). Articles 4-7 of different length (ratio: 35:45:51:15); article 4 along both margins with single short setae; articles 5 and 6 along both margins with

single or pairs of spines, article 6 with distal setae. Article 2 is longer than article 6 (ratio: 60:51). Dactylus with one spine at inner margin near basis of the nail and one median plumose seta at outer margin.

Pereopod 6 missing.

Pereopod 7: article 2 much longer than broad (ratio: 70:41), at anterior slightly convex margin with 5 median single and distal pair of spine-like setae, along posterior almost straight margin with 7 single setae or spine-like setae, ventroposterior lobe absent (Fig. 7D). Articles 4-7 of different length (ratio: 45:63:92:25), article 4 at anterior margin with 3 groups of setae, at posterior margin with 3 single spines. Articles 5 and 6 along margins with single or groups of spines. Dactylus like that in female, with spine at inner margin near basis of the nail and one median plumose seta at outer margin, nail shorter than pedestal.

Pleopods with 2 retinacula, peduncles with very scarce pilosity. Pleopod 1-peduncle with 2 distoanterior short setae (Fig. 8E), pleopod 2-peduncle with one median posterior marginal spine-like seta (Fig. 8F); pleopod 3-peduncle with 2 distoposterior short setae (Fig. 8G).

Uropod 1 with dorsoexternal row of spines and dorsointernal row of setae and spine-like setae (Fig. 6H); rami of equal length, shorter than peduncle, with 1-2 lateral and 4-5 distal short spines.

Uropod 2 peduncle with lateral and distal spines; inner ramus poorly longer than outer one, both rami with 1-2 single lateral and 4 distal short spines (Fig. 6H).

Uropod 3 elongated; peduncle nearly twice longer than broad, with distal spines; inner ramus very short, scale-like, with distal spine and simple seta; outer ramus with elongated first article bearing spines along outer margin, sometimes mixed with single simple setae, along inner (mesial) margin with 5 groups of spines (Fig. 7F); second article elongated but remarkably shorter than first one (ratio: 55:169), bearing several short simple setae along inner margin and tip; plumose setae are not observed.

Telson rather gaping, nearly as long as broad (ratio: 68:65), incised nearly 2/3 of telson-length; each lobe with 3 distal strong spines (the longest spine poorly exceeding half of telson-length (Fig. 7E); a pair of short plumose setae is attached near the middle of outer margin of lobe; marginal and facial spines absent.

Coxal gills ovoid, nearly reaching ventral tip of article 2 on gnathopod 2, pereopods 3 and 4 (Fig. 8B, D), on pereopods 5 and 6 smaller (Fig. 7B, C).

Variability. Maxilla 1 inner plate with 2-3 setae; telson more or less incised. Probably the here described male is not of maximal length (article 2 of uropod 3 outer ramus, article 2 of pereopods 5-7).

Derivatio nominis. The specific name "Lepushensis" has its origin in the name of the geographic locality "spring Lepusha" at Shushica River in southern Albania.

Locus typicus: Lepusha spring at Shushica River, located between the sampling stations SHUS1 and SHUS2, southern Albania (Fig. 9).

Holotype female 8.1 mm and **paratype** male 7.0 mm are deposited in the Museum of Natural History in Wien, Austria.

Remarks and affinities

The specimens from Lepusha spring seem to be rather similar to the species *Niphargus impexus* G. Karaman, 2016, known from Crete Island (Greece) (Loc. typ.: Heraklion [= Irakleio], well 1 km after Panagio-Nigaditos). But it clearly differs from *N. impexus* by more slender legs, narrowed article 2 of pereopods 5-7, presence of posterior marginal small spines along article 2 of pereopod 7, by pointed epimeral plate 3, by absence of mesial marginal spines on telson, less

Fig. 9. Known locality of *Niphargus lepushensis*, sp. nov. (red sign). **AL**-Albania; **GR**-Greece.

number of L-spines on propodus of gnathopod 2.

The male, probably not quite adult, is with distal article of uropod 3 outer ramus rather longer than that in female, but probably shorter than in adult males.

Based on all characters of specimens in hand mentioned above, and absence of other males, it was not possible to consider specimens from Albania identic with those of *N. impexus* from Crete Island, and we recognized the specimens from Lepusha as distinct species, *Niphargus lepushensis*, sp. nov. As both species *impexus* and *lepushensis* are known from locus typicus only, the real variability of morphological characters of both taxa remains unknown.

The second species, *Niphargus zarosiensis* Zettler, M. L. & Zettler, A. 2017 (Loc. typ.: Lake Zaros [Limni Votomos], Crete, Greece) is rather similar to *N. lepushensis* by narrowed article 2 of pereopod 7, armament of urosomal segments, pleopods, equal rami of uropod 1, maxilla 1, maxilliped, dactylus of pereopods 3-7, etc. *Niphargus lepushensis* differs from *N. zarosiensis* by absence of lateral spines on lobes of telson, rather less inclined palm of propodus in gnathopods 1-2 in male, presence of posterior marginal short spines on article 2 of pereopod 7, absence of dorsointernal row of spines on peduncle of uropod 1 in female, rather more pointed epimeral plates, less setose mesial margin of maxilla 2 inner plate, etc. The establishment of further morphological differences is limited because of unknown senior males of *N. lepushensis*.

The similar presence of small spines along posterior margin of article 2 on pereopod 7, absence of facial spines on telson and rather shorter second article of uropod 3 outer ramus, are present also in males (probably subadult) of *Niphargus rhodi* S. Karaman, 1950 (loc. typ.: Monte Propheta, spring Nimpha, Rhodos Island, Greece), but N. *lepushensis* differs from *N. rhodi* by absence of lateral spines on telson, rather lower number of spines on maxilliped inner plate, lobe on article 2 of pereopod 7 with developed ventroposterior (Karaman S 1950; Karaman G 2017b).

At the moment, all four species, *N. rhodi, N. zarosiensis, N. impexus* and *N. lepushensis* sp. nov. seem to be morphologically close, despite the fact that they settled mutually distant localities. Further studies of new material from new localities will resolve their relationships and taxonomical position.

Another very interesting species, *Niphargus lakusici* G. Karaman, 2017, is described from Crete Island, Greece, known only from the type locality (Crete Island: Pyrgos) based on males only. It is provided with one L-spine on propodus of gnathopod 2, 2 setae on inner plate of maxilla 1, short coxa 4 without ventroposterior lobe, pleopods with 2 retinacula. *Niphargus lepushensis* differs remarkably from this species by presence on several median setae on outer margin of dactylus in gnathopods 1-2, equal rami of uropod 1 in male, short telson, shape of epimeral plates, short palpus of maxilla 1.

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