

Karaman, G.S. (2024): New member of the family hadziidae s. Karaman, 1932 from Albania, *Fingerhadzia zorae*, gen. Nov., sp. Nov. (contribution to the knowledge of the amphipoda 334). *Agriculture and Forestry*, 70 (1): 257-279. <https://doi.org/10.17707/AgricultForest.70.1.18>

DOI: 10.17707/AgricultForest. 70.1.18

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**NEW MEMBER OF THE FAMILY HADZIIDAE S. KARAMAN, 1932  
FROM ALBANIA, FINGERHADZIA ZORAE, GEN. NOV., SP. NOV.  
(CONTRIBUTION TO THE KNOWLEDGE OF THE AMPHIPODA 334)**

**SUMMARY**

The new genus and species of the family Hadziidae, *Fingerhadzia zorae*, gen. and spec. nov., is described and figured from the subterranean waters of the river Shushica, tributary of Vjosa River, S. Albania (Adriatic Sea drainage system). The problem of recognition of genera within “Hadziid” Group of genera is discussed, and genus *Fingerhadzia* differs from other “Hadziid” genera by partially reduced palpus of left maxilla 1, dilated conus excretorius near antenna 2 and very short inner ramus of uropod 3.

**Keywords:** Amphipoda, Hadziidae, *Fingerhadzia*, *zorae*, taxonomy, new genus, new species, subterranean, Albania.

**INTRODUCTION**

The subterranean Amphipoda fauna of Albania is still only partially known. Stanko Karaman described (1929) first subterranean amphipod from Ohrid Lake (divided between N. Macedonia and Albania), *Niphargus ohridanus*, sp. nov. (Fam. Niphargidae) from N. Macedonian part of Ohrid Lake (up to 100 m depth), later cited several times from the same lake [Karaman, S., 1937; 1943; 1960; Schellenberg, 1943; Karaman, G., 1963; 1972; 1974]. G. Karaman (2011) described second new subterranean *Niphargus* species from Albania, *N. tomori* from Tomor Mts.

Thanks to Prof. Christian Griebler from the University of Wien, Austria, I have a possibility to study the subterranean amphipods collected in Albania in 2021 and 2023 during the realization of the APPEAR project VjoSusDev, of the Austrian Development Cooperation implemented by the OeAD, and a part of these studies is presented in this work.

**METHODS AND MATERIAL**

The material of this study was collected in the subterranean waters in southern Albania during the realization of the APPEAR project VjoSusDev

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Notes: The author declares that he has no conflicts of interest. Authorship Form signed online.

Received: 21/01/2024

Accepted: 15/03/2024

(2021, 2023), and sent me at disposition for study. APPEAR is a program of the Austrian Development Cooperation implemented by the OeAD.

The studied material was preserved in 70-95% ethanol. Specimens were dissected using a WILD M20 microscope and drawn using a camera lucida attachment. All appendages were temporarily submersed in a mixture of glycerin and water for study. All illustrations were inked manually. After the end of the study, the dissected body-parts were fixed in Liquid of Faure and covered by cover glass as permanent slides. Some setal formulae follow G. Karaman's terminology (Karaman, G., 1969b) for the third mandibular palpus article [A= A-setae on outer face; B= B-setae on inner face; C= additional C-setae on outer face; D= lateral marginal D-setae; E= distal long E-setae].

The terms "setae" and "spines" are used based on their shape, not origin. The investigations are provided based on morphological, ecological and zoogeographical studies.

In References are mentioned the presence and number of figures in various papers, what is very important and helpful in taxonomical determination of this species.

## TAXONOMICAL PART

### Order AMPHIPODA

#### Suborder SENTICAUDATA Lowry & Myers, 2013

#### Infraorder HADZIIDA S. Karaman, 1932

#### Family HADZIIDAE S. Karaman, 1943

#### GENUS *FINGERHADZIA* gen. nov.

**DIAGNOSIS:** Body *Metahadzia*-like, epimeral plates pointed. Urosomal segment 1 with ventroposterior strong spine near basis of uropod 1-peduncle. Antenna 1: peduncular articles 1-3 progressively shorter, main flagellum with numerous articles, accessory flagellum 2-articulated; conus excretorius ovoid, broad. Labrum broader than long. Labium without inner lobes. Mandible incisors and lacinia mobilis left and right asymmetric, toothed, palpus 3-articulated, article 3 much longer than articles 1 and 2, bearing lateral D- and distal E-setae only. Left and right maxilla 1 with inner and outer plate symmetric; inner plate pointed distally, along mesial margin with row of setae, outer plate with distal toothed spines. Left maxillar palpus weak, 2-articulated, partially reduced, with 1-3 distal setae; right palpus 2-articulated, strong, with distomesial strong spine-like teeth. Maxilla 2 both plates bearing distal group of setae, inner plate with oblique row of facial setae. Maxilliped: both plates and palpus well developed.

Coxae 1-4 relatively short, coxa 4 unlobed, coxa 5 nearly as long as coxa 4. Gnathopods 1-2 nearly *Metahadzia*-like, article 5 without lateral dilatation, dactylus of gnathopods with one median seta at outer margin. Pereopod 7 article 2

without distinct lobe, dactylus with short nail and mesial seta near basis of the nail. Pleopods 1-3 well developed, with 3 retinacula, pleopod 3 modified in males. Uropod 1 peduncle with ventrolateral median strong spine. Uropod 3 inner ramus very short, outer ramus 2-articulated, spinose, second article very short. Telson incised nearly to the basis, with distal spines only. Coxal gills with long peduncle (stalk), appear on gnathopod 2 to pereopod 6; oostegites narrow, setose, appear on gnathopod 2 to pereopod 5.

Differing from *Hadzia*, *Metahadzia*, *Liagoceradocus* and *Metaniphargus* distinctly by different left maxilla 1, conus excretorius and uropod 3.

**Typus generis:** *Fingerhadzia zorae*, sp. nov.

**Taxa:** monotypic.

### **FINGERHADZIA ZORAE, SP. NOV.**

Figures 1-9

#### **MATERIAL EXAMINED: ALBANIA:**

AL 5 (Vjo 003-Shus 17): left bank of the Shushica River between the new and old bridge of Gjorm (Ura e Gjormit), 2.5 km north of the city of Gjorm, Latitude 40.3384000249207, Longitude 19.6387849655002, one female and 5-6 body fragments; mixed with one juv. exp. of *Niphargus* sp., June 2021, (leg.: C. Karwautz, G. Rasch & C. Griebler).

AL 7 (Vjo 020- Shus 19): right bank of the Shushica River at Himare, 3 km southeast of the village Kallarat. Latitude 40.19856075724803, Longitude 19.773140649349333, (leg.: C. Karwautz, G. Rasch & C. Griebler), two gnathopods only.

AL 23 (Vjosa Shus 23): Shushica River, 26.4.2023 (leg. C. Griebler et al.) 1 exp. mixed with *Niphargus* sp.

AL 28 (Vjosa Shus 24), Shushica River, 26.4.2023 (leg. C. Griebler et al.), 1 exp.

AL 27 (Vjosa Shus 26), Shushica River, 26.4.2023 (leg. C. Griebler et al.), 1 exp. male 4.0 mm, mixed with *Salentinella angelieri* and *Niphargus* sp.

AL 26 (Vjosa Shus 27), Shushica River, 26.4.2023 (leg. C. Griebler et al.); 5 exp. very damaged;

AL 24 (Vjosa Shus 28), Shushica River, 26.4.2023 (leg. C. Griebler et al.) 1 exp. mixed with *Niphargus* sp.

**DIAGNOSIS:** With the characters of the genus; males differs from females by modified pleopod 3 and shape of gnathopods 1-2.

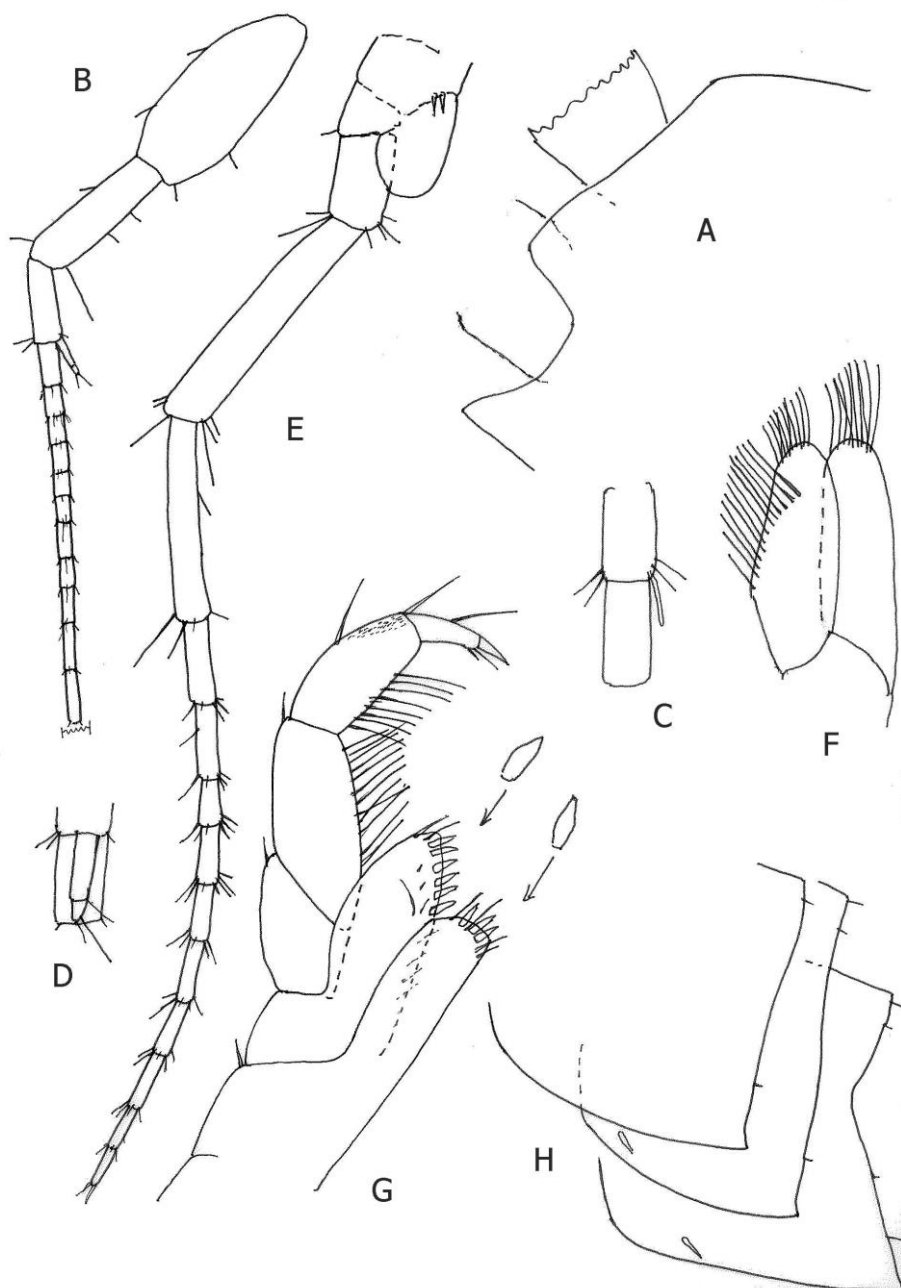


Fig. 1. *Fingerhadzia zorae*, gen. nov. sp. nov., AL 5 (Vjo 003 = Shus 17): left bank of the Shushica River; Gjorm, Albania, female 4.9 mm: A= head; B= antenna 1; C= aesthetasc; D= accessory flagellum; E= antenna 2; F= maxilla 2; G= maxilliped; H= epimeral plates 1-3.

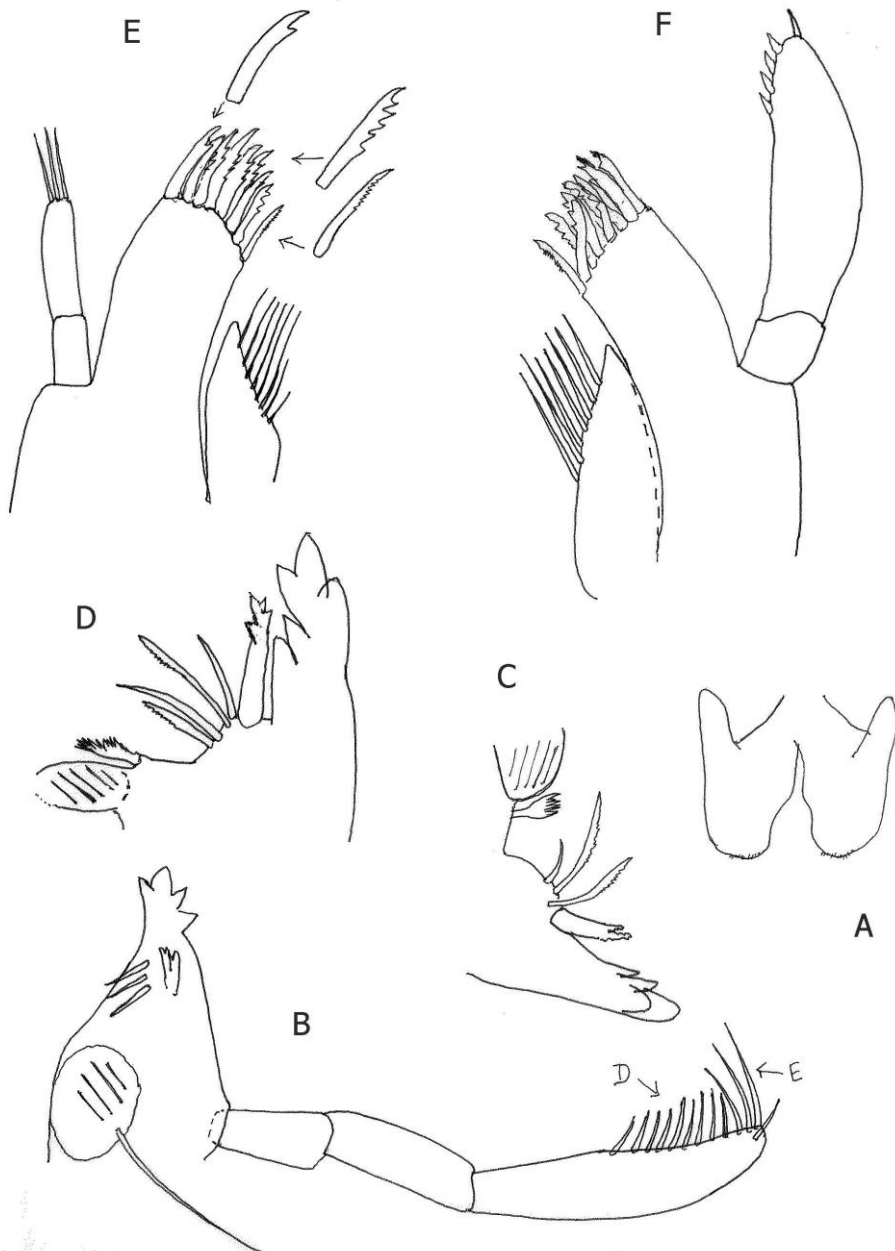


Fig. 2. *Fingerhadzia zorae*, gen. nov. sp. nov., AL 5 (Vjo 003 = Shus 17): left bank of the Shushica River, Gjorm, Albania, female 4.9 mm: A= labium; B= right mandible with molar; C= tip of right mandible with incisor, lacinia mobilis and rakers; D= tip of left mandible with lacinia mobilis and rakers; E= left maxilla 1; F= maxilla 2.



Fig. 3. *Fingerhadzia zorae*, gen. nov. sp. nov., AL 5 (Vjo 003 = Shus 17): left bank of the Shushica River; Gjorm, Albania, female 4.9 mm.: A= gnathopod 1; B= distal part of gnathopod 1-propodus; C= gnathopod 2; D= distal part of gnathopod 2-propodus.

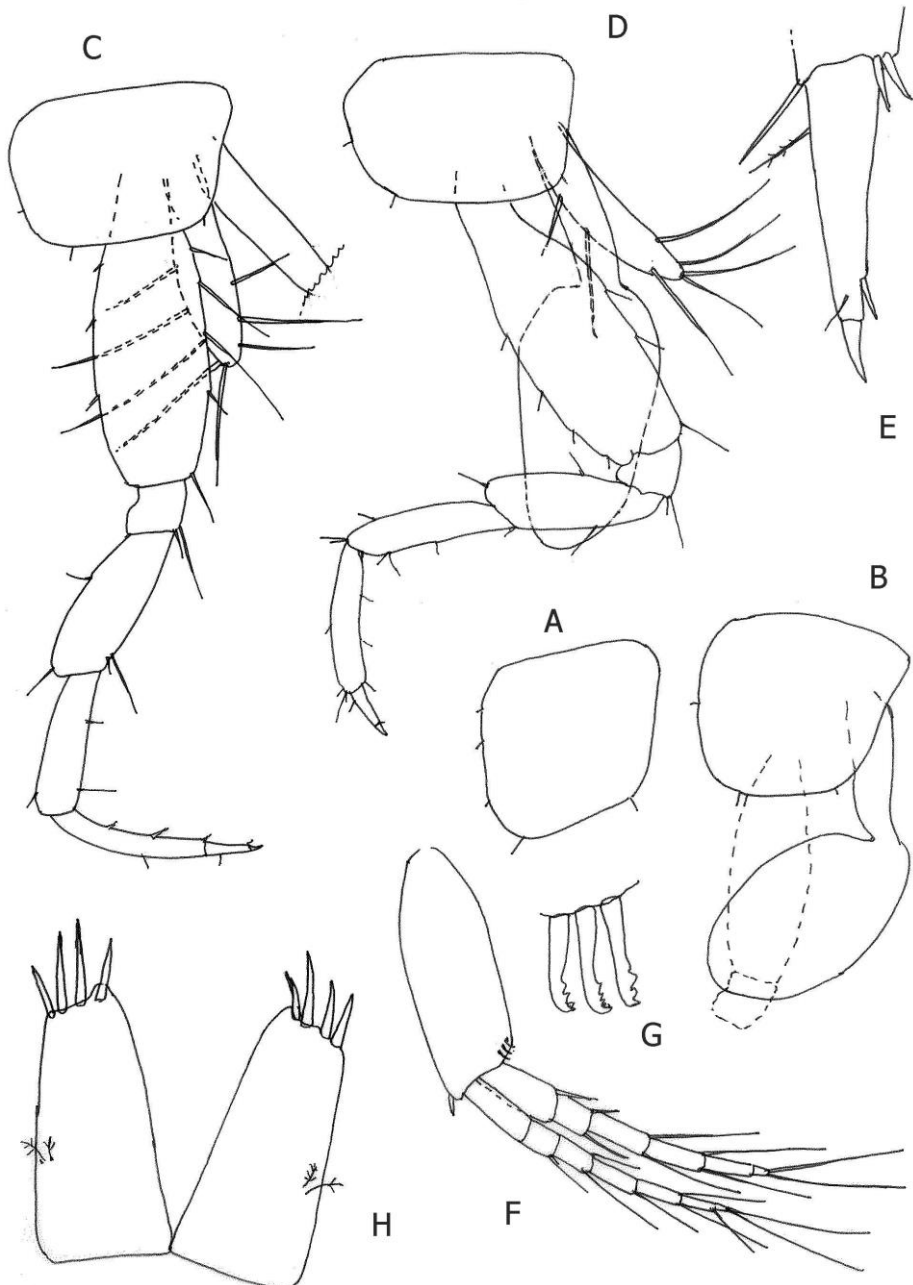


Fig. 4. *Fingerhadzia zorae*, gen. nov. sp. nov., AL 5 (Vjo 003 = Shus 17): left bank of the Shushica River; Gjorm, Albania, female 4.9 mm: A= coxa 1; B= coxa 2 with coxal gill; C= pereopod 3; D= pereopod 4; E= pereopod 4-dactylus; F= pleopod 3; G= retinacula.; H= telson.

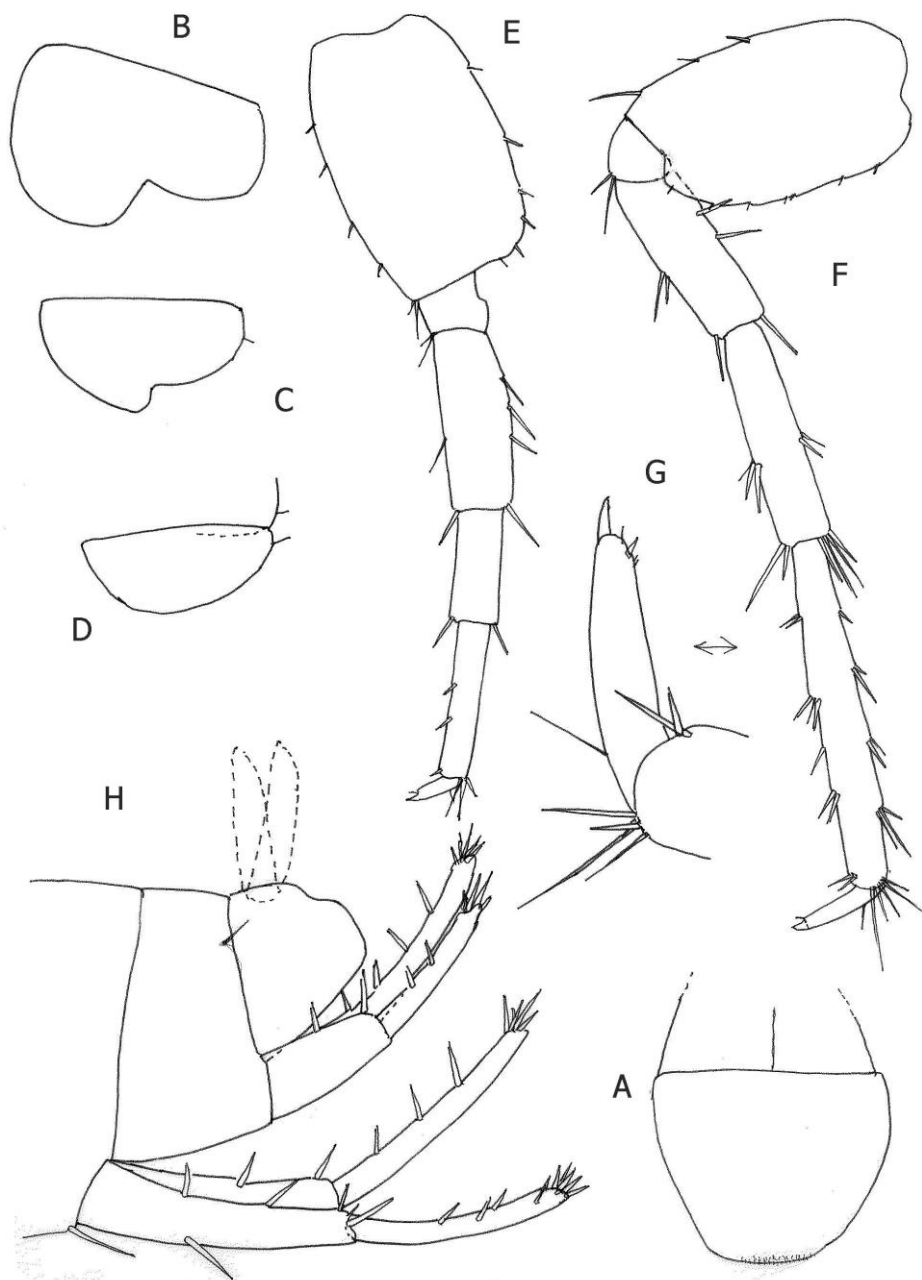


Fig. 5. *Fingerhadzia zorae*, gen. nov. sp. nov., AL 5 (Vjo 003 = Shus 17): left bank of the Shushica River; Gjorm, Albania, female 4.9 mm: A= labrum; B= coxa 5; C= coxa 6; D= coxa 7; E= pereopod 6; F= pereopod 7; G= pereopod 7 dactylus. H= urosome with uropods 1-2.



**DESCRIPTION: Female with setose oostegites 4.9 mm (Vjo 003-Shus 17, holotype):** Body moderately slender, mesosomal segments naked, metasomal segments with 3-4 posterior dorsomarginal setae (fig. 1H); urosomal segment 1 naked dorsally, but with one strong ventroposterior spine near basis of uropod 1-peduncle (fig. 5H); urosomal segment 2 on each dorsolateral side with one stronger seta, urosomal segment 3 naked. Epimeral plates 1-2 with ventroposterior pointed tip, epimeral plate 3 distinctly acute (fig. 1H). Epimeral plates 2 and 3 with one submarginal ventral spine.

Head with short, nearly angular lateral cephalic lobes, eyes absent (fig. 1A).

Antenna 1 remarkably exceeding half of body, peduncle consisting of 3 articles gradually shorter (ratio: 56:38:23) covered with several mainly short setae each; first article twice wider than second one (fig. 1B); main flagellum consisting of 11+ articles (missing distal part) scarcely setose, some articles with one aesthetasc (fig. 1C). Accessory flagellum 2-articulated, reaching nearly half of last peduncular article-length (fig. 1D), second article short but distinct.

Antenna 2 shorter than antenna 1, peduncular article 3 slightly longer than broad, with 4-6 distal setae; peduncular articles 4-5 narrow; article 4 longer than 5 (ratio: 69:55) with several distal setae; article 5 more narrow than article 4, with one lateral and 3-4 distal setae. Flagellum moderately slender, rather longer than peduncular articles 4-5 combined, composed of 11 articles bearing several short setae each (fig. 1E). Conus excretorius broad, rounded (fig. 1E).

Mouthparts well developed. Labrum rather broader than long, distally rather convex (fig. 5A), with carinate epistome. Labium rather broader than long, outer lobes broad, subrounded distally, inner lobes absent (fig. 2A).

Mandibles with triturative molar; on right mandible with long distolateral seta (like these in *Gammarus*), and incisor with nearly 4 teeth and 3 pectinate rakers; lacinia mobilis toothed; near basis of molar appear one small serrate lamella (fig. 2B).

Left mandible: molar without long distal plumose seta, on basis with small serrate lamella, incisor with 5 (?) teeth and 4 pectinate rakers; lacinia mobilis serrate (fig. 2D).

Mandibular palpus similar in left and right mandible, 3-articulated, articles of different length (ratio: 32:40:80); first and second article naked; third article rather subfalciform, with 9 D-setae and 4 distal E-setae, A and B setae absent (fig. 2B).

Right maxilla 1: inner plate triangular, with row of 7 strong lateral setae (fig. 2F); outer plate with 9 distal spines in two rows, bearing 1-5 lateral teeth each (the number of lateral teeth increasing from outer margin towards inner (mesial) margin of maxilla). Palpus 2-articulated, strong and rather dilated, exceeding distal tip of outer plate-spines; first article short, naked, second article bearing 4 distomesial teeth and one distal narrowed spine-like tooth (fig. 2F).

Left maxilla 1: inner and outer plate like these in right maxilla, but palpus weak, 2-articulated: not dilated, almost reaching basis of outer plate-spines; first

article rather exceeding half of distal article (ratio: 20:32), naked, second (distal) article with 3 distal setae (fig. 2E).

Maxilla 2 longer than broad; inner and outer plate of the similar length, with numerous distal setae; inner plate provided with oblique row of facial setae (fig. 1F).

Maxilliped relatively long; inner plate nearly reaching outer tip of first palpus article, bearing 3 distal pointed spines mixed with 3-4 setae; outer plate relatively short, tapering distally, bearing 6 distomesial marginal spines and 3-4 distal setae, along mesial side with several very small submarginal spine-like setae. Palpus 4-articulated, article 2 with row of longer setae at mesial margin; article 3 with row of setae at inner (mesial) margin and 2 setae at outer margin; a field of very small dense setulae present in distal part of article itself. Article 4 with short nail and 2 ventral setae near basis of the nail, along outer margin with one long median seta (fig. 1G).

Coxae relatively short. Coxa 1 nearly as long as broad, quadrate, with subrounded ventroanterior corner and 4-5 marginal short setae (fig. 4A).

Coxa 2 rather broader than long (ratio: 55:49), with 4-5 marginal short setae (fig. 4B). Coxa 3 broader than long (ratio: 59:41), with 3 marginal short setae (fig. 4C). Coxa 4 broader than long (ratio: 60:40), with 3 short marginal setae, ventroposterior lobe not developed (fig. 4D).

Coxa 5 bilobed, broader than long (ratio: 68:46), anterior lobe nearly as long as coxa 4 (fig. 5B). Coxa 6 bilobed, smaller than coxa 5, broader than long (ratio: 55:30), with one posterior short seta (fig. 5C). Coxa 7 entire, much broader than long (ratio: 51:23), with one posterior marginal seta (fig. 5D).

Gnathopods 1-2 dissimilar to each other. Gnathopod 1: article 2 inflated medially, with 3 short setae at anterior side, 5-6 long setae at posterior margin; article 3 short, with distoposterior bunch of 3 short setae (fig. 3A); article 4 with distoposterior bunch of setae and 2 spine-like setae at inner margin. Article 5 triangular, narrow, not dilated, at posterior margin with 2 transverse rows of setae, at anterior margin with one short median seta and distal row of longer setae (fig. 3A). Propodus almost ovoid, longer than broad (ratio: 73:38), as broad as article 5, at posterior margin with 3 setae; palm very inclined, convex, reaching almost to the half of propodus-length, bearing 5-6 submarginal spines mixed with several setae (fig. 3B). Dactylus rather exceeding half of propodus-length, at inner margin with distoventral small tooth and short seta near basis of the nail, at outer margin with one median seta.

Gnathopod 2 rather longer than gnathopod 1; article 2 inflated medially, with 3 short anterior marginal setae, at posterior margin with nearly 10 long setae; article 3 short, with distoposterior bunch of setae; article 4 rather smaller than that of gnathopod 1, with distoposterior bunch of setae (fig. 3C); article 5 narrow, elongated, but without distoposterior lobe; along anterior margin with one bunch of setae, along posterior margin with nearly 7 bunches of long setae. Propodus almost as long as article 5, longer than broad (ratio: 85:31), but rather more narrow than article 5, at anterior margin with 4 groups of spines and spine-

like setae, along posterior margin with 3 groups of setae (fig. 3D). Palm very inclined, rather shorter than half of propodus-length, with 5 spines and several long strong setae. Dactylus much shorter than half of propodus-length, at inner (mesial) margin with distoventral tooth near basis of the nail, at outer margin with one median seta.

Pereopods 3-4 rather similar to each other. Pereopod 3: article 2 elongated, inflated in the middle, with 3-4 short setae along anterior margin and 5 longer setae along posterior margin; article 3 short, with long distoposterior seta. Articles 4-6 of different length (ratio: 46:39:40); bearing single setae at both margins, article 6 with 3 single spines at posterior margin (fig. 4C). Dactylus much shorter than article 6 (ratio: 15:40), tapering distally, with one spine near basis of the nail, at outer margin with one median plumose seta; nail strong, much shorter than pedestal.

Pereopod 4 similar to pereopod 3; articles 4-6 of different length (ratio: 40:40:39) (fig. 4D); pilosity and dactylus like these in pereopod 3; nail shorter than pedestal (ratio: 17:70) (fig. 4E).

Pereopod 5 missing.

Pereopod 6 (?aberrant): Article 2 dilated, but not distinctly lobed, longer than broad (ratio: 73:45), along anterior margin with 6 spine-like setae, along posterior slightly convex margin with 6 setae (fig. 5E). Articles 4-6 of different length (ratio: 47:32:42), along both margins with single spines or setae; dactylus remarkably shorter than article 6 (ratio: 15:42), at inner margin with short spine-like seta near basis of the nail, at outer margin with one median plumose seta; nail short.

Pereopod 7: article 2 elongated, ovoid, longer than broad (ratio: 75:44) with developed ventroposterior lobe, anterior margin with 3 spine-like setae, posterior convex margin with 6 short setae (fig. 5F); article 3 short, with distoanterior group of setae. Articles 4-6 of different length (ratio: 47:60:94), articles at both margins with single or groups of spines or spine-like setae. Dactylus much shorter than article 6 (ratio: 26:94), with spine and 3 minute setae at inner margin near basis of the nail, at outer margin with one median seta; nail strong and shorter than diameter of dactylus itself (fig. 5G).

Pleopods 1-3: peduncles almost naked, with 3 retinacula each (fig. 4G), rami well developed. Pleopod 3 inner ramus with 6 articles, outer ramus with 7 articles (fig. 4F).

Uropod 1: peduncle with dorsoexternal and dorsointernal row of strong spines, as well as with one median lateral spine at outer margin (fig. 5H). Inner ramus nearly as long as peduncle, with row of 3 lateral and 5 unequal distal spines; outer ramus rather shorter than inner ramus, with 4 lateral and 5 distal spines.

Uropod 2: peduncle short, with dorsal spines; inner ramus distinctly longer than peduncle, bearing 3-4 lateral and 5 distal spines; outer ramus rather shorter than inner ramus, with 2-3 lateral and 4 distal spines (fig. 5H).

Uropod 3 (female 3.1 mm) biramous, inner ramus short, scale-like, with distal spine; outer ramus 2-articulated, second article very short; first article elongated, with spine-like setae along both margins, long plumose setae absent (fig. 6D).

Telson nearly as long as broad, lobes incised to the bottom; each lobe with 4 distal short spines; a pair of short plumose setae attached near the middle of each lobe (fig. 4H).

Coxal gills attached on gnathopod 2 till pereopod 6, consisting of long narrow peduncle almost as long as ovoid dilated part of gill (fig. 4B, C, D). Oostegites attached on gnathopod 2 till pereopod 5, bearing long plumose marginal setae (fig. 4C, D).

#### **MALE 4.0 mm, paratype (Shus 26):**

Rather similar to the females. Metasomal segments 1-3 with 2 dorsomarginal setae (fig. 7E), urosomal segments 1-2 like these in females (fig. 8E), including strong ventroposterior curved spine near basis of uropod 1 peduncle. Epimeral plates acute, like these in females but without subventral spines (fig. 7E).

Antenna 1 rather shorter than body-length, main flagellum with 27 articles, some of them with aesthetascs almost as long as article itself. Flagellum of antenna 2 with 10 articles, conus excretorius like that in female.

Mouthparts like these in female. Mandibular palpus article 2 naked, article 3 with 7 D setae and 3-4 distal E-setae, A and B setae absent.

Maxilla 1 inner plate triangular, with 6 marginal setae, outer plate with 8-9 serrate spines. Left palpus similar to that in female, weak, 2-articulated, not reaching basis of outer plate-spines, and bearing only one distal seta (fig. 7F). Right maxilla 1 like that in female.

Maxilliped inner plate with 3 distal spines mixed with setae, outer plate ovoid, reaching half of palpus article 2, along mesial margin with 8 spines; palpus article 4 with one seta at inner margin near basis of the nail.

Coxae short, Coxa 1 broader than long (ratio: 44:38), with subrounded margins bearing 4-5 marginal setae (fig. 7A). Coxa 2 rather broader than long, (ratio: 45:39), subrounded margin with 2-3 setae (fig. 7C). Coxa 3 more broader than long (ratio: 45:35), with 3 short marginal setae (fig. 6E). Coxa 4 remarkably broader than long (ratio: 50:30), with 3 marginal setae, ventroposterior lobe absent (fig. 6F).

Coxa 5 bilobed, nearly as long as coxa 4, broader than long (ratio: 57:35), anterior lobe rather shallow, with 2 marginal setae (fig. 6G). Coxa 6 rather smaller than coxa 5, broader than long (ratio: 34:19), anterior lobe very shallow (fig. 8A). Coxa 7 entire, much broader than long (ratio: 37:15), with one posterior seta (fig. 8B).

Gnathopod 1 rather shorter than gnathopod 2, article 2 along posterior margin with 2 median and one distal seta, anterior margin nearly naked; article 3 with 3 distoposterior setae; article 4 with 2 distoposterior strong setae; article 5 triangular, poorly longer than broad, without posterior dilatation, bearing distoanterior numerous marginal setae and distoposterior bunch of setae (fig. 7A).

Propodus (article 6) rather longer than article 5 (ratio: 40:36), nearly ovoid, longer than broad (ratio: 93:50), along posterior margin with 3 setae; at anterior margin with 3 distal setae; palm convex, exceeding half of propodus length, with nearly 9 unequal spines and 2 setae (fig. 7B). Dactylus slender, remarkably longer than diameter of propodus, at outer margin with one short plumose seta, inner (mesial) margin naked (fig. 7B).

Gnathopod 2: article 2 at anterior margin with one short distal seta, along posterior margin with numerous setae; article 3 with one distoposterior seta; article 4 with 3 distoposterior setae (fig. 7C); article 5 elongated, triangular, without posterior dilatation, along posterior margin with 5 groups of setae, along anterior margin with one distal group of setae. Propodus rather elongated, longer than article 5 (ratio: 51:46), much longer than broad (ratio: 100:44), at anterior margin with one mediodistal group of setae, along posterior margin with 3 group of long setae. Palm very oblique, slightly convex, rather shorter than half of propodus-length, with nearly 5 short palmar spines and 2 setae, at palmar corner with one stronger spine (fig. 7D). Dactylus exceeding half of propodus-length, at outer margin with one median short plumose seta, inner (mesial) margin naked (fig. 7C).

Pereopods 3-4 like these in female (fig. 6E). Pereopod 5 missing.

Pereopod 6 elongated (fig. 8A). Article 2 much longer than broad (ratio: 60:35), with only rather convex margins; along anterior margin with 5-6 stronger setae, along posterior margin with only 5 short setae, ventroposterior lobe not distinctly developed. Articles 4-7 of different length (ratio: 50:53:75:25); articles 4-6 along margins with single or pair of spines of various length. Article 2 is shorter than article 6 (ratio: 60:75). Dactylus slender, at inner margin with one seta, at outer margin with one median short plumose seta, nail short and strong (fig. 8A).

Pereopod 7 rather shorter than pereopod 6 (fig. 8B); article 2 rather similar to that of pereopod 6, longer than broad (ratio: 61:35), along anterior margin with 5 stronger setae, along posterior rather convex margin with 5 short setae, ventroposterior lobe not distinctly developed. Articles 4-7 of different length (ratio: 40:50:78:23). Articles 4-6 along both margins with single or pairs of spines. Article 2 is shorter than article 6 (ratio: 61:78). Dactylus slender, at inner margin with one stronger seta near basis of the nail, at outer margin with one median short plumose seta, nail short and strong (fig. 8C).

Peduncle of pleopods 1-3 with 3 retinacula each. Pleopods 1-2 biramous with rami consisting of several articles like these in female. Pleopod 3 modified: outer ramus well developed, with 7 articles bearing long setae; inner ramus modified into curved protrusion, probably in function of reproduction (fig. 8D).

Uropod 1: peduncle with dorsointernal median and distal spine and with dorsoexternal row of spines; at ventroexternal margin with one strong median curved spine (fig. 8E).

Uropod 2 like that in female. Uropod 3 missing.

Telson nearly as long as broad, incised nearly to the basis, lobes pointed distally, provided with 3-4 short distal spines each (fig. 8F).

Coxal gills with long peduncle like these in female (figs 6E, F, G; 7C).

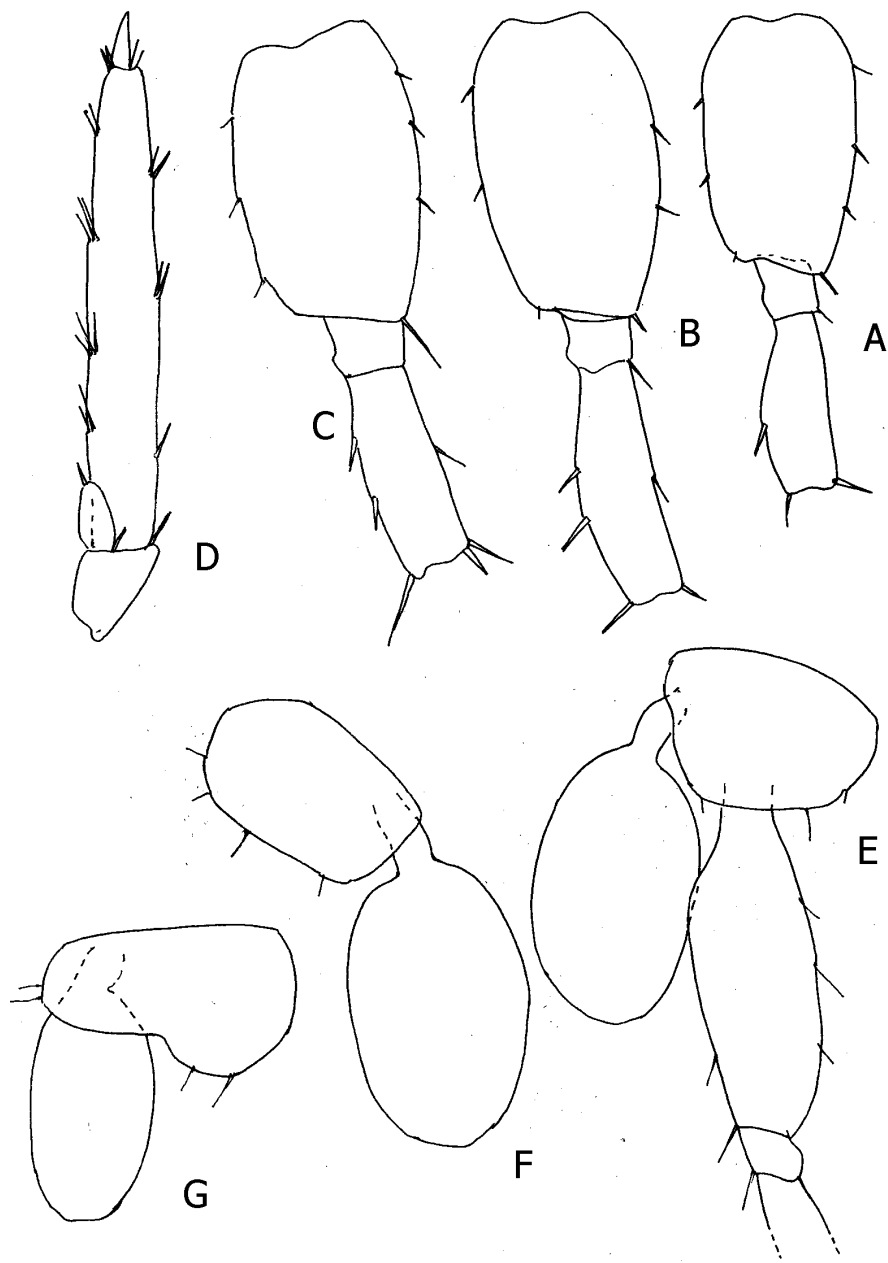


Fig. 6. *Fingerhadzia zorae*, gen. nov. sp. nov., AL 23 (Vjosa Shus 23), Shushica River, female 3.1 mm: A= pereopod 5' B= pereopod 6; C= pereopod 7; D= uropod 3.

**Male 4.0 mm:** AL 27 (Vjosa Shus 26), Shushica River: E= pereopod 3; F= pereopod 4; G= pereopod 5.

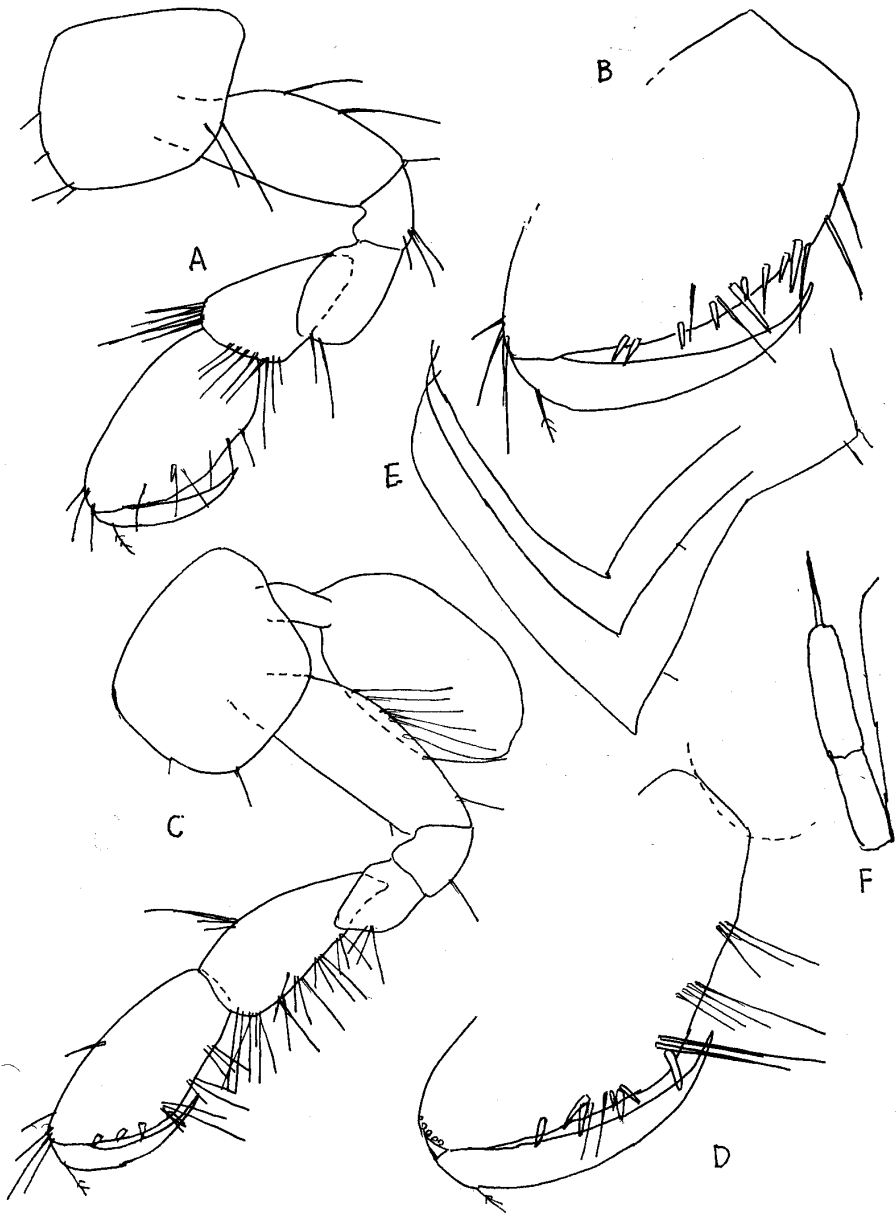


Fig. 7= *Fingerhazdia zorae*, gen. nov., sp. nov., AL 27 (Vjosa Shus 26), Shushica River, male 4.0 mm: A-B= gnathopod 1; C-D= gnathopod 2; E= epimeral plates 1-3; F= palpus of left maxilla 1.

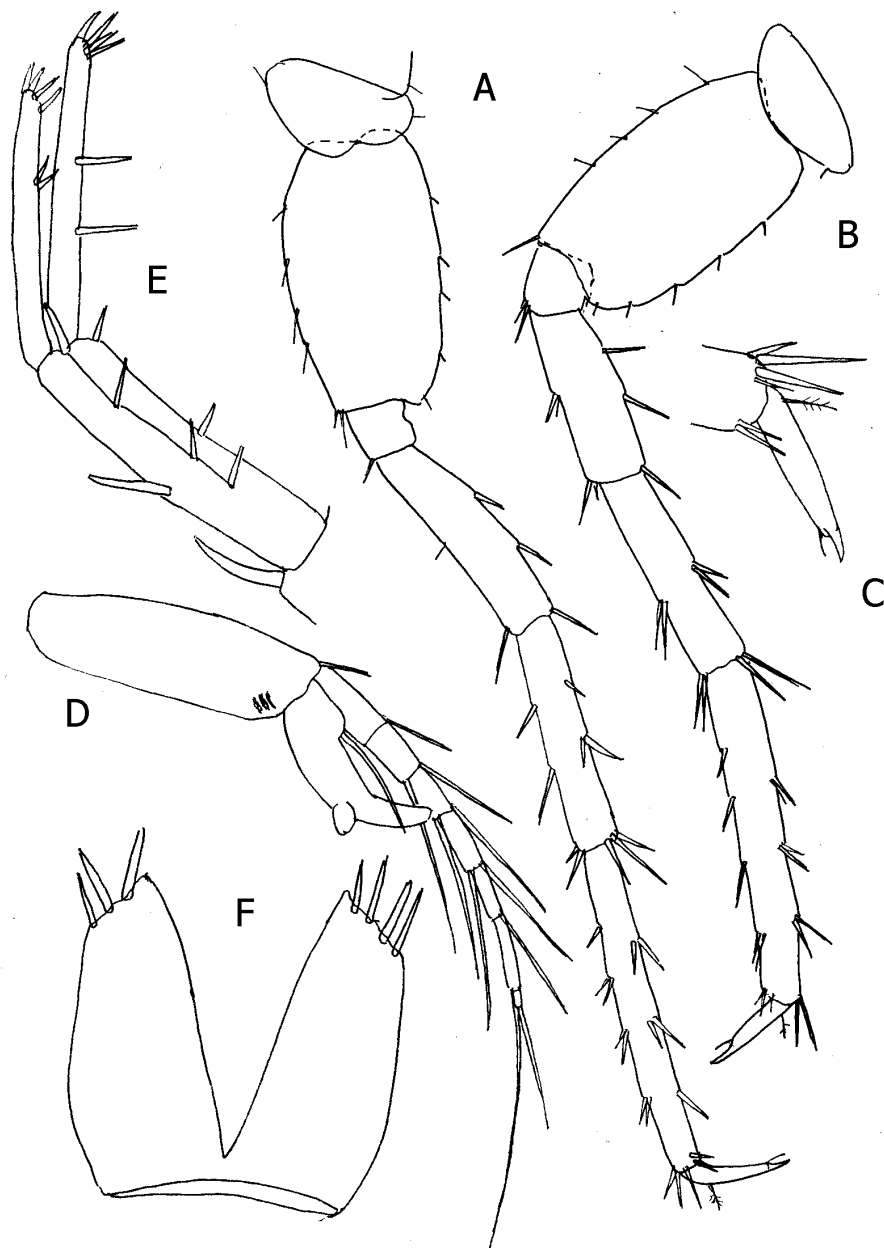


Fig. 8= *Fingerhazdia zorae*, gen. nov., sp. nov., AL 27 (Vjosa Shus 26), Shushica river, male 4.0 mm: A= pereopod 6; B= pereopod 7; C= dactylus of pereopod 7; D= pleopod 3; E= uropod 1; F= telson.



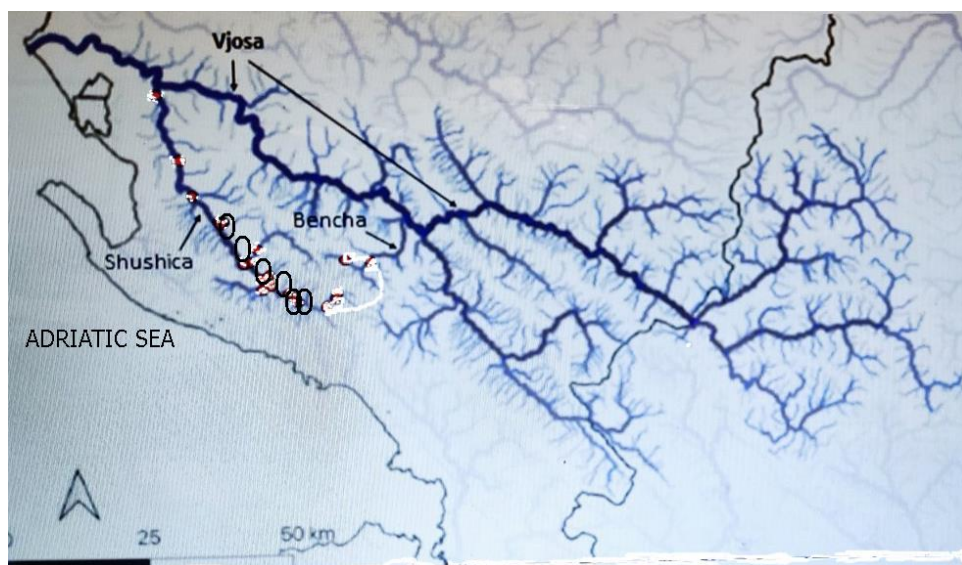


Fig. 9. Distribution of *Fingerhadzia zorae*, gen. nov. sp. nov. in Albania [0=collecting localities].

**VABIABILITY.** Pereopod 5 is missing in male and females, except in female 3.1 mm from AL 23 (Vjosa Shus 23) where pereopods 5-7 was partially broken (fig. 6A, B, C). Uropod 3 in male missing. Palpus of left maxilla 1 weak, with 1-3 distal setae.

The pereopod 6 of holotype female is maybe aberrant (based on figured pereopod 6 of male).

**HOLOTYPE:** Female 4.9 mm (Vjo 003-Shus 17) with setose oostegites, and paratype male 4.0 mm (Shus 26) are deposited in Museum of Natural History in Wien, Austria.

**LOCUS TYPICUS:** Subterranean waters of the river Shushica, tributary of Vjosa River, S. Albania.

**DERIVATIO NOMINIS:** This taxon is dedicated to my deceased mother **Prof. Dr Zora Karaman**, entomologist, from the University of Skopje, Northern Macedonia.

The name *Fingerhadzia* derived from the reminding of maxilla 1 left palpus to the finger.

#### REMARKS AND AFFINITIES

The new taxon *Fingerhadzia zorae*, gen. nov., spec. nov., rather belongs to the Hadziid group of taxa within the family Hadziidae S. Karaman, 1943 [typus familiae: *Hadzia* S. Karaman, 1932], but differs from all species of this family by

reduced palpus of left maxilla 1 and broad conus excretorius; uropod 3 like that in *Melita* species.

It is very interesting that almost all Hadziid species are with 2 retinacula on pleopods [*H. acuta* (Andres, 1978) is with 2-3 retinacula; *Fingerhadzia* 3 retinacula].

*Fingerhadzia zorae* is rather close to genus *Metahadzia* by narrow article 5 of gnathopod 2 bearing numerous setae at posterior margin, but differs from this genus by reduced palpus of left maxilla 1, dilated conus excretorius and very short inner ramus of uropod 3. From the morphological point of view, established differences are of generic level, conducting us to create a new genus *Fingerhadzia* [see diagnosis above].

Within the family Hadziidae there are recognized nearly 27 genera (World Amphipoda Database, 2024). In Europe there are recognized genera: *Hadzia* S. Karaman, 1932, *Metahadzia* Stock, 1977 and *Liagoceradocus* Barnard, J.L., 1965.

The genus *Liagoceradocus* Barnard, J.L.1965 [typus generis: *Liagoceradocus pusillus* Barnard, J.L., 1965], was submersed into genus *Hadzia* as synonym (Vigna-Taglianti, 1988, etc.), or recognized as a distinct genus (Ronde-Broekhuizen & Stock, 1987, etc.).

Genus *Metahadzia* [typus generis: *Hadzia tavaresi* Mateus, A. & Mateus, E., 1972] seems to be limited on north-central and western region of Mediterranean Sea (Italy, Greece, Spain, Portugal). consisting in Europe of 5 species: *M. helladis* Pesce, 1980 [loc. typ.: Assos, Cephalonia Island, Greece]; *M. minuta* (Ruffo, 1947) [loc. typ.: cave L'Abisso, Castromarina, Lecce, S. Italy]; *M. adriatica* Pesce, 1979 [loc. typ.: Mola di Bari, Italy]; *M. tavaresi* (Mateus, A. & Mateus, E., 1972) [loc. typ.: wells in Tavira, Aljavre, SE Portugal] and *M. uncispina* Notenboom, 1988 [loc. typ.: Sevilla, Los Pajares, Cantillana, S. Spain].

Genus *Hadzia* [typus generis: *Hadzia gjorgjevici* S. Karaman, 1932] is consisting of nearly 20 known taxa, presented in Europe by 6 taxa: *H. gjorgjevici* S. Karaman, 1932 [loc. typ.: Skopje (=Skoplje), Northern Macedonia]; *H. fragilis fragilis* S. Karaman, 1932 [loc. typ.: Vjetrenica Cave, Bosnia & Herzegovina]; *H. fragilis stochi* G. Karaman, 1989 [loc. typ.: cave near La Peschiera del Timavo, NE Italy]; *H. crispata* G. Karaman, 1969a [loc. typ.: Podgorica (= Titograd), Montenegro]; *H. drinensis* G. Karaman, 1984 [loc. typ.: Drina River near Brod na Drini, Bosnia & Herzegovina], and (?) *H. acuta* (Andres, 1978) [loc. typ.: Canary Islands (Lanzarote, Jameos del Agua, Spain); [some of them with unknown male].

All these taxa settled area near Adriatic and Ionian Seas, except one in Atlantic (Lanzarote island, Spain). Outside this region is known *Hadzia pachypoda* Ruffo, 1982, from Somalia [loc. typ.: Uadi Nogal, N. Somalia], as well as several species from western Pacific region till Hawaii (Sawicki, Holsinger & Iliffe, 2004, etc.).

Discovery of genus *Metaniphargus* Stephensen, 1933 (typus generis: *Metaniphargus curasavicus* Stephensen, 1931) from Curacao Island in Caribbean

Sea, Atlantic, and numerous different species later discovered in adjacent regions of West India, made the problem of recognition of various genera and subgenera rather problematic, especially because *Metaniphargus* was rather similar to genus *Metahadzia* differing mainly by the length of inner ramus of uropod 3 [*Metahadzia curasavicus* Stephensen, 1933 with uropod 3 inner ramus reaching 1/3 of outer ramus]

Just because of not quite clear differences between species and combination of taxonomic characters of genera *Hadzia*, *Metahadzia*, *Liagoceradocus* and *Metaniphargus*, various authors mentioned different status of these genera and corresponding species in it.

Stock and Nijssen (1965) and G. Karaman (1969a) considered genus *Metaniphargus* as synonym of genus *Hadzia*. Later Stock (1977; 1983) considered *Metaniphargus* as a valid genus, and established (1977) a new genus *Metahadzia*.

Andres described (1978) *Liagoceradocus acutus*, sp. nov. [loc. typ.: Jameos de Agua, Lanzarote, Canarian islands, Atlantic, Spain].

Pesce (1979) considered *Metahadzia* as a good genus and proposed (1980) a new diagnosis of this genus.

Ruffo (1982) and G. Karaman (1984) considered *Metahadzia* and *Liagoceradocus* as synonyms of genus *Hadzia*.

Barnard, J.L & Barnard, C.M. (1983) mentioned that *Metahadzia* differs from *Hadzia* and *Metaniphargus* by various characters.

Stock (1983) based on certain cladogram, considered *Liagoceradocus* as a distinct genus, as well as genera *Metaniphargus*, *Hadzia* and *Metahadzia*, with unclear position of *Hadzia pachypoda*.

Ronde-Broekhuizen & Stock (1987) recognized genera *Metahadzia* and *Liagoceradocus* as distinct genera.

Vigna-Taglianti (1988) consider genera *Liagoceradocus* and *Metahadzia* as synonyms of *Hadzia*, describing a new genus and species *Parhadzia sbordonii*, gen. et spec. nov. from Turkey [Mustan Ini Cave, S. Anadolia], rather similar to *Metahadzia* by gnathopod 2, but characterized by uropods 1-2 covered with plumose setae, modified uropod 2 in males, extremely long pereopods 5-7, coxa 4 with well developed posterior lobe.

Notenboom (1988) consider *Metahadzia* as a distinct genus, as well as *Hadzia* and *Metaniphargus*, but regarding genus *Liagoceradocus* he remains questionable.

Bradbury, J.H. & Williams, W.D. (1996) mentioned *Liagoceradocus* as distinct genus, describing two new species from Western Australia [*L. subthalassicus* n. sp. (Barrow Isl.) and *L. branchialis* n. sp. (Northwest Cape), both from anchialine habitats].

Sawicki, Holsinger & Iliffe (2004) revised genus *Hadzia* (sensu lato), put *Liagoceradocus* as synonym of genus *Hadzia*, and preserved genera *Hadzia*, *Metahadzia* and *Metaniphargus* as distinct genera. They mentioned that "these three genera are derived from a recent common ancestor, probably very similar to

the *Hadzia*". Describing several new species of the genus *Hadzia* from western Pacific, they concluded that—*Hadzia* is with remarkably broader distribution, probably reached the Hawaiian Islands from other part of the Pacific, while the distribution area of genus *Metaniphargus* is mainly on West Indian region and Hawaii, where species of both genera are present, proposing also alternative possibility that *Metaniphargus* evolved "independently in the Pacific from the putative ancestor common to *Hadzia* and *Metaniphargus*".

Vonk (1991) suggested possibility that *Metaniphargus* have expanded their distribution from Caribbean westward into the eastern Pacific prior to the closing of the Isthmians corridor in the late Miocene, following opinion of Rosen (1985) that the closing of the Isthmian corridor in the late Miocene, trigger separation and isolation of tropical Atlantic and tropical Pacific marine organisms.

The so large variability of the recognition of genera of Hadziid-group in Europe indicates the necessity of detailed revision of all known taxa of these genera from Europe and another part of the World. On the other hands, there are not clear taxonomical characters differing Hadziids from Melitids.

#### KEY TO THE MENTIONED HADZIID TAXA

1. Maxilla 1 left palpus much shorter and partially reduced (pleopods with 3 retinacula, male pleopod 3 modified; uropod 3 inner ramus scale-like)
  - Maxilla 1 left palpus as long as right palpus .....2
  - 2. Uropods 1-2 covered with plumose setae (coxa 4 with well developed ventroposterior lobe) .....*PARHADZIA SBORDONII*
  - Uropods 1-2 without plumose setae .....3
  - 3. Article 5 of gnathopod 2 lobed posteriorly, bearing submarginal (facial) setae.....4
  - Article 2 of gnathopod 2 not lobed posteriorly, bearing marginal setae only.....10
  - 4. Mandibular palpus article 3 with 2 distal setae only (telson with distal, mesial marginal and outer marginal spines)..... *HADZIA PACHIPODA*
  - Mandibular palpus article 3 with distal E and lateral D-setae (telson with or without spines at outer margins).....5
  - 5. Gnathopod 2 propodus in female with excavated palm.....6
  - Gnathopod 2 propodus in female with convex entire palm.....7
  - 6. Uropod 3 with broader rami; mandibular palpus article 2 without setae; pleopod 3 peduncle without posterior marginal setae.....*HADZIA GJORGJEVICI*
  - Uropod 3 with narrow rami; mandibular palpus article 2 with 1 seta; pleopod 3 peduncle with 2 posterior marginal setae.....*HADZIA. CRISPATA*
  - 7. Dactylus of pereopod 7 with several setae along outer margin (accessory flagellum 2-articulated).....*HADZIA ACUTA*
  - Dactylus of pereopod 7 with one median seta at outer margin (accessory flagellum 1-articulated or indistinctly 2-articulated).....8

8. Lobes of telson with one distal spine (accessory flagellum 2-articulated, peduncle of pleopods with 2 retinacula without one spiniform seta)..... *HADZIA FRAGILIS STOCHI*  
 ---Lobes of telson with 2 -4 distal spines (accessory flagellum 1-2 articulated).....9
9. All pereopods and antennae very long and slender; dactylus of pereopods 5-7 long and slender, lobes of telson with 2, occasionally 3 distal spines; accessory flagellum indistinctly or more distinctly 2-articulated).....  
*HADZIA. FRAGILIS FRAGILIS*  
 ---All pereopods and antennae shorter and stouter. Dactylus of pereopods 5-7 shorter and stouter, lobes of telson with 3-4 distal spines (exceptionally one left lobe with one outer marginal spine); accessory flagellum 1-articulated.....  
*HADZIA DRINENSIS*
10. Telson with mesial marginal spines.....11  
 ---Telson with outer marginal spines.....12
11. Palm of gnathopod 2 in females excavated. Peduncle of uropod 2 in males with distal processus..... *METAHADZIA TAVARESI*  
 ---Palm of gnathopod 2 in females not excavated. Peduncle of uropod 2 in males without distal processus..... *METAHADZIA. MINUTA*
12. Lobes of telson with 5-6 spines at mesial margin.*METAHADZIA ADRIATICA*  
 ---Lobes of telson with 2-3 spines at mesial margin.....13
13. Lobes of telson long and narrow, 2.5 times longer than broad, bearing 4-5 mesial spines.....*METAHADZIA HELLADIS*  
 ---Lobes of telson shorter and broader, 2 times longer than broad, bearing 2 mesial spines.....*METAHADZIA UNCISPINA*

### ACKNOWLEDGEMENTS

I thank the Prof. Dr. Christian Griebler from the University of Vienna and his colleagues C. Karwautz and G. Rasch, for collecting and put me at disposition for study, the material used in this study. Samples were collected in the frame of the APPEAR project VjoSusDev., 2021, 2023. APPEAR is a program of the Austrian Development Cooperation implemented by the OeAD.

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