

**REDESCRIPTION OF  
*NIPHARGUS ILLIDZENSIS PANNONICUS*  
S. KARAMAN, 1950 (CRUSTACEA: AMPHIPODA)  
FROM “GAURA CU MUSCĂ” CAVE  
IN SOUTH-WEST ROMANIA**

**Iorgu Petrescu**

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**Abstract:** *Niphargus illidzensis pannonicus* S. Karman, 1950 mentioned for the first time in Romania by Zincenco as met in „Gaura cu muscă” cave in 1968 was redescribed on this occasion from the same place adding the description of female.

**Keywords:** amphipoda, cave fauna, description, female, “Gaura cu muscă” cave

**Introduction:**

The subspecies *Niphargus illidzensis pannonicus* was described in 1950 by Stanko Karaman from Slovenia, a locality between Sava River and the Danube (Karaman 1950).

The species was mentioned for the first time in Romania by Doina Zincenco from „Gaura cu muscă” cave in 1968 based on a large material collected in 1961 and 1967; the author made a good study on the morphology of this species, a highly accurate analysis of the character’s variability. The species is also mentioned by Bleahu et al. (1976).

The species was found again in the same place 45 years later.

**Materials and methods:**

„Gaura cu muscă” cave is placed on the left side of river Danube, above the Orșova-Moldova Nouă route, 3 km downstream Coronini (Caraș-Severin county) (Fig. 1, Annexes). The material (5 ♂♂ and 10 ♀♀) was collected from the rivulet from the lower gallery laden with guano, by Iorgu Petrescu (29.10.2012, 5 ♂♂, 10 ♀♀) and Gabriel Chișamera (4.12.2012, 21 ♂♂, 18 ♀♀).

**Results and discussion:**

Description of male (Figs. 2-7, Annexes)

Size: 19-25.5 mm (Fig. 2, Annexes).

Antenna 1 main flagellum with 22 articles, accessory one with 2 articles, a little exceeding extremity of the main flagellum’s first article (Fig. 3 A; 3 B; 3 C, Annexes).

Antenna 2 flagellum with 11 segments (Fig. 3 A, Annexes).

Mandible, pars incisiva with three strong, short, teeth, large pars mobilis with

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**Iorgu Petrescu:**

“Grigore Antipa” National Museum of  
Natural History  
Sos. Kiseleff no. 1  
011341 București 1  
România  
e-mail: iorgup@antipa.ro

four terminal teeth, pars molaris, present. Its palpus, with three articles, 11 simple setae on medial margin of median article, five groups (11, 3, 5, 4 and 3 setae) of short setae on the surface of the apical article, five longer and 28 shorter setae on medial margin (Fig. 3 D, Annexes).

Maxilla 1 with six apical pectinate robust setae, exopod with two articles, the apical one with eight robust setae (Fig. 3 E, Annexes).

Maxilla 2, endopod with a large palpus with two articles and eight apical setae, endopod with 5 short robust pectinate setae on medial margin, exopod with three apical setae (Fig. 3 F, Annexes).

Maxilliped, basis with endite, five robust apical setae, 4 simple ones, ischium, longest article, with an endite, exceeding half of carpus, 16 short robust setae on medial margin, 11 simple, long ones on apical margin, short merus being 0.56 times ischium endite, six groups of setae on medial margin of carpus (4, 2, 3, 3, 7, 2 setae), carpus is twice the merus length, propodus is 0.72 times carpus length, two groups of short setae on medial margin, close to propodus-dactylus articulation, three groups on outer margin (2, 6 longer ones, 5 long ones), dactylus is 0.44 times propodus length, one seta on outer margin, robust strong apical claw (Fig. 3 F, Annexes).

Gnathopod 1, robust basis, 15 simple long setae on outer margin, 17 simple long setae on medial one; ischium with four medial setae; merus, slightly longer than ischium, with 15 setae on medial margin; carpus is 1.44 times merus length, with two groups of setae, 15 longer ones and other 14 shorter ones on medial margin, five ones on outer margin; propodus is 1.13 times longer than the width, 1.27 times carpus length, the same aspect, but smaller than on gnathopod 2, two groups of five setae each on medial margin, 13 groups of setae on outer margin, 1 strong robust seta (tooth) on top of medial margin, 28 setae, 14 short ones and 14 longer on palmar margin, dactylus is 0.76 times propodus width, 13 simple short setae on outer margin, strong medial-apical tooth,

strong robust apical seta barely exceeding the spine of the propodus (Fig. 4 A, Annexes).

Gnathopod 2, basis with 21 setae on medial margin, three median groups of 12 setae, four setae each, 17 setae on outer margin, ischium with 1 group of six setae on medial margin, merus 1.14 times ischium length, 13 setae on medial margin, carpus 1.22 times merus' length, two groups of medial setae (9, 8 setae), six outer setae, propodus being 1.27 times carpus length, rectangular, as in the previous pair, 0.9 times as long as it is wide, 17 groups of medial setae, strong medial-apical tooth, longer than in previous pair, 1 group of three setae close to outer margin, 2 groups of 5 setae each on outer margin, 28 setae (10 longer ones) on apical, palmar, margin, 1 group of five setae close to medial robust seta (teeth?); dactylus is 0.93 propodus width, 14 short simple setae on outer margin, short medial apical robust seta, terminal robust seta (spine?) slightly exceeding the medial spine of propodus (Fig. 4 B, Annexes).

Pereopod 1, basis, half of the rest of the articles' combined length, numerous setae on both margins; ischium with four setules medial margin; merus, second longest article is 3.71 ischium length, 13 setae on medial margin, nine setae on five groups on outer margin; carpus is 0.57 merus' length, 15 setae on five groups on medial margin, three setae on outer margin; propodus is as long as carpus, 14 short setae in five groups on medial margin, there is also the medial apical group of 1 robust and four short simple setae, seven setae on three groups on outer margin, outer apical group of 1 robust and seven simple short setae; dactylus is 0.22 times propodus' length, three short robust setae on medial margin, a simple one on outer margin, robust little curved apical claw (Fig. 5 A; 5 B, Annexes).

Pereopod 2, the basis is 0.54 times the rest of articles combined, 14 setae on medial margin, 16 setae on outer margin; three setae on medial margin of ischium; merus is 3.04 times ischium length, 14 setae in six groups on medial margin, six setae on three groups

and other four on distal outer corner; carpus is 0.64 times merus length, three robust setae and 12 other simple ones on medial margin, three setae in group and other three on distal apical corner; propodus as long as carpus, eight robust short setae and 10 simple short ones on seven groups on medial margin, eight simple setae on three groups and 10 outer distal ones in one group; dactylus is 0.22 times propodus length, three short robust setae on medial margin, 1 simple seta on outer margin, strong little curved apical claw (Fig. 5 C; 5 D, Annexes).

Pereopod 3, basis with rounded margins, 0.47 times rest of articles combined length, 1.59 times longer than large, 17 short setules on medial margin, 12 on outer one; five setae on outer distal corner of ischium; merus 2.4 times ischium length, 11 short setae on medial margin, 3 robust setae and other 10 simple ones on outer margin; carpus 0.87 times merus length, as long as propodus, seven setae on two groups on medial margin, 13 setae, 11 robust ones on outer margin; propodus with 12 setae, 6 robust ones on medial margin, 20 setae, 10 robust ones on outer margin; short dactylus, 0.14 times propodus length, one short robust seta on medial margin, short robust curved claw (Fig. 6 A; 6 B, Annexes).

Pereopod 4, the basis is 0.35 times the rest of articles combined length, almost rectangular, 15 simple setules on medial margin, 13 setules on outer margin; four apical setae on ischium; merus is 2.2 times ischium length, nine setae on four groups on medial margin, eight on four groups on outer margin; carpus is 1.26 times merus' length, 19 setae, 15 robust ones on medial margin, eight simple setae on five groups on outer margin; propodus is slightly longer than carpus, 20 setae, 15 robust ones on medial margin, 17 setae, 10 robust ones in four groups on outer margin; short dactylus, 0.07 times propodus length, 1 short robust seta on medial margin, one simple on outer margin, short curved claw (Fig. 6 C; 6 D, Annexes).

Pereopod 5, the longest pair, basis 0.39 times the rest of articles combined length, 1.78 times longer than large, 18 setules on

medial margin, 16 setules on outer margin; ischium with three outer distal setae; eight setae in four groups on medial margin, seven setae, 2 robust ones in four groups on outer margin; carpus is 1.22 times merus' length, 14 setae, 10 robust ones on medial margin, 12 setae, 10 robust ones in four groups on outer margin; 15 setae, 12 robust ones on medial margin, 24 setae, nine robust ones on outer margin; dactylus is 0.15 times propodus' length, four short robust setae on medial margin, terminal claw being 0.66 times dactylus length (Fig. 6 E; 6 F, Annexes).

Pleopods, three pairs (Fig. 7 A, Annexes).

Uropod 1, peduncle 0.88 times endopod length, exopod is 0.52 times endopod length, 19 setae, seven robust one and three terminal short robust ones, 26 setae, seven robust ones on medial margin, three robust short terminal setae (Fig. 7 B, Annexes).

Uropod 2, peduncle is little longer than its rami, 10 short setae on medial margin, exopod being 0.75 times endopod length, 2 short robust setae on medial margin, four subterminal and 1 terminal robust seta; five setae, four robust, on medial margin of endopod, 2 subterminal and 1 short robust terminal seta (Fig. 7 C, Annexes).

Uropod 3, peduncle with seven short setae on medial margin, six robust ones in two groups on outer margin, exopod is 2.8 times peduncle's length, four times endopod length, 21 short setae, 10 robust ones on medial margin, 29 short setae, 11 robust ones on outer margin, 1.62 times distal article length, 20 outer short setae, six subterminal and one terminal simple seta, endopod with five setae (2 robust ones) on medial margin, six (4 robust) on outer margin, 1 subterminal seta and 1 robust terminal one (Fig. 7 D, Annexes).

Telson, nine setae, seven robust on outer margin of left side, three simple setae on medial margin of left side, three terminal robust setae and one setule, nine setae, eight robust on outer margin of right side, two setules on medial margin, 1 setule and three robust terminal setae (Fig. 7 E, Annexes).

### Description of female (Figs 8-13, Annexes)

Size: 9-14.4 mm (Fig. 8, Annexes).

Pleonite 1 without any nude ventral margin, pleonite 2 with 3 ventral short spine-setae and pleonite 3 with 4.

Antenna 1 (Fig. 9, Annexes), main flagellum with 25 segments, accessory flagellum with 2 segments, apical segment reaches half of second article of main flagellum.

Antenna 2 with 13 segments, more setose than in male.

Gnathopod 1, 9 setae on medial margin of basis, 11 on outer one, a group of five setae on outer distal corner, six setae on outer distal corner of ischium, 14 on distal margin of merus, merus as long as ischium, carpus 1.5 times merus length, 10 setae on medial distal corner and six on outer margin, propodus 1.33 times carpus length, as long as wide, three groups of setae on medial margin, nine setae on distal medial corner, eight groups of setae on outer margin, numerous setules on palmar margin, five longer, 1 group of setae on palmar margin of propodus, towards outer extremity one robust sensory seta and four pectinate shorter setae on medio-outer corner; dactylus with seven setae on medial margin, its claw does not exceed robust seta of propodus (Fig. 10 A; 10 B, Annexes).

Gnathopod 2, 12 setae on medial margin of basis, 10 longer ones on outer margin, three on distal outer corner; merus is 1.38 times ischium length, 6 setae on distal outer corner of ischium, eight on outer corner of merus; carpus is 1.4 times merus length, 2 groups of setae on medial margin (2, 6); propodus is 1.34 times carpus length, 1.17 times wider than long, 2 groups with 13 setae on medial margin (6, 7), 11 on outer margin, 1 group of 5 setae on palmar outer corner, 24 palmar setae, 4 longer, 1 robust sensory seta and 3 pectinate smaller ones on outer distal corner; 2 setules on medial margin of dactylus, its robust terminal claw does not exceed distal robust seta of propodus (Fig. 10 C; 10 D, Annexes).

Pereopod 1, the basis 0.54 times the rest of articles combined length, 7 longer setae and 10 setules on medial margin, 12 setae on outer margin, other 3 on distal outer corner, 4 on distal outer corner of ischium; merus 2.9 times ischium length, 4 groups of setae on medial margin (3, 2, 2, 3 setae), 5 on outer margin (4, 4, 3, 3, 6 setae); carpus 0.57 times merus length, 7 setae (3, 4) on medial margin, 4 groups on outer margin (1, 2, 4, 7); propodus 1.19 times carpus length, 2 groups of setae (1 robust, 1 simple, 1 robust, 2 simple ones) on medial margin, 7 setae on distal medial corner, 5 groups of setae (1, 3, 3, 3, 2) on outer margin, 2 robust setae on distal outer corner and 3 distal setae; dactylus with 2 short robust setae on outer margin (Fig. 11 A; 11 B, Annexes).

Pereopod 2, the basis 0.6 times the rest of articles combined length, 13 setae (4 broken) on medial margin, 6 (three longer) on outer margin, 3 on distal outer corner; 3 setae on distal outer corner of ischium; 4 groups of setae (1, 2, 2, 4) on medial margin of merus, 5 on outer margin (2, 3, 2, 2, 5); propodus is 1.13 times carpus length, 2 groups of setae (4, 2), 9 setae on distal medial corner, 5 groups of setae (1, 2, 2, 2, 1) on outer margin, 5 simple ones and 2 robust setae on distal outer corner; dactylus with 3 short robust setae and a terminal strong seta (Fig. 11 C; 11 D, Annexes).

Pereopod 3, the basis is 0.45 times the rest of articles combined length, 1.5 times higher than the width, more robust setae on medial margin; merus is 3.6 times ischium's length, 4 groups of setae (2, 3, 3, 4) on medial margin, 3 on outer margin (1, 2, 2); carpus is slightly longer than merus, 4 groups of simple and robust setae (2, 3, 3, 3) on medial margin, other 3 on outer margin (4, 3, 4); propodus is 1.1 times carpus' length, robust and simple setae on both margins (2, 3, 3, 10; 3, 2, 2, 2); dactylus is 0.13 times propodus' length, 1 short spine-seta on medial margin, terminal robust short seta (Fig. 12 A; 12 B, Annexes).

Pereopod 4, the basis 0.42 times the rest of articles combined, 1.6 times higher than the width, right distal margin; merus 3.8

times ischium length, 5 distal setae on ischium, 4 groups of setae on both margins (1, 3, 5, 4; 1, 1, 2, 2); carpus is 1.27 times merus length, 19 setae; propodus is 1.4 times carpus' length; short dactylus, 0.15 times propodus length, 1 medial short robust seta (Fig. 12 C; 12 D, Annexes).

Pereopod 5, the basis 0.4 times the rest of articles combined length, 1.5 times higher than wide; merus 2.5 times ischium length, 3 groups of setae on both margins (2, 2, 2; 1, 2, 4); carpus is 1.4 times merus length, 4 groups of mainly robust setae on medial margin (2, 3, 4, 6) and 3 on outer margin (3, 3, 5); propodus is 1.3 times carpus length, 4 groups of setae on both margins (4, 5, 4, 6; 1, 1, 1, 4) (Fig. 12 E; 12 F, Annexes).

Uropod 3, short peduncle, 0.3 times exopod length, 7 setae on distal margin, exopod 5.8 times endopod length, proximal article 3.1 times distal one length, 4 groups of robust setae (2, 2, 2, 4) and a simple one on medial margin, other 4 on outer margin (2, 2, 2, 3); distal article with numerous setae on distal part; endopod with 1 short terminal setule and a short plumose seta (Fig. 13 A, Annexes).

Telson, 2 groups of lateral setae on left side (3 robust, one longer and a simple one, 1 robust long seta) and other 2 groups of 4 setae (3 robust, 1 simple) on right side; 3 robust long terminal setae on each side and one simple short seta on medial margin of each side (Fig. 13 B, Annexes).

## Conclusions:

The morphology of our specimens correspond with that one observed by Zincenco. The description of female is added with this occasion.

Cărauşu et al. (1955) mentioned only *Niphargus puteanus elegans* Garbini, 1894, collected from wells from Baia Mare (Băile Usturoi), Satu Mare and Orşova. Zincenco (1968) noted that there are some similarities of *N. i. pannonicus* with specimens of *N. elegans* described by Cărauşu et al. (1955).

Karaman and Ruffo (1986) mention *N. i. pannonicus* for Serbia and Romania.

## Rezumat:

REDESCRIEREA LUI  
*NIPHARGUS ILLIDZENSIS PANNONICUS*  
S. KARAMAN, 1950  
(CRUSTACEA: AMPHIPODA)  
DIN PEȘTERA "GAURA CU MUSCĂ"  
DIN SUD-VESTUL ROMÂNIEI

*Niphargus illidzensis pannonicus* S. Karman, 1950, menționat pentru prima oară în România de Zincenco în peștera „Gaura cu muscă” în 1968, a fost redescris cu această ocazie în același loc cu adăugarea descrierii femelei.

## Acknowledgments:

I am more than grateful to my colleague dr. Gabriel Chișamera for signalling me the amphipods from „Gaura cu muscă” cave and for collecting for me a part of the material; to dr. Eugen Nițu („Emil G. Racoviță” Speleological Institute) for the precious data about the research in the area; to my beloved wife, Angela, for all her care and love she embraced me with.

## References:

- BLEAHU M., DECU V., NEGREA ST., PLEȘA C., POVARĂ I., VIEHMANN I. (1976), Peșteri din România, Ed. Științifică și Enciclopedică, București, pp. 119-120.
- CĂRĂUȘU S., DOBREANU E., MANOLACHE C. (1955), Amphipoda, In: *Fauna R. P. Române, Crustacea*, 4 (4): 302-307.
- KARAMAN G.S., RUFFO S. (1986), Amphipoda: *Niphargus*- group (*Niphargidae sensu* Bousfield, 1982). In: *Stygofauna mundi* (Ed. Lazare Botosaneanu), 526, Brill E.J. /Dr. Backhuys W., Leiden.
- KARAMAN ST. (1950), Études sur les Amphipodes-Isopodes du Balkans, *Académie Serbe des Sciences. Monographie*. CLXIII (2): 80-85.



ZINCENCO D. (1968), Asupra variabilității caracterelor morfologice la *Niphargus puteanus pannonicus* (Karaman) (Amphipoda-Gammaridae), *Studii și*

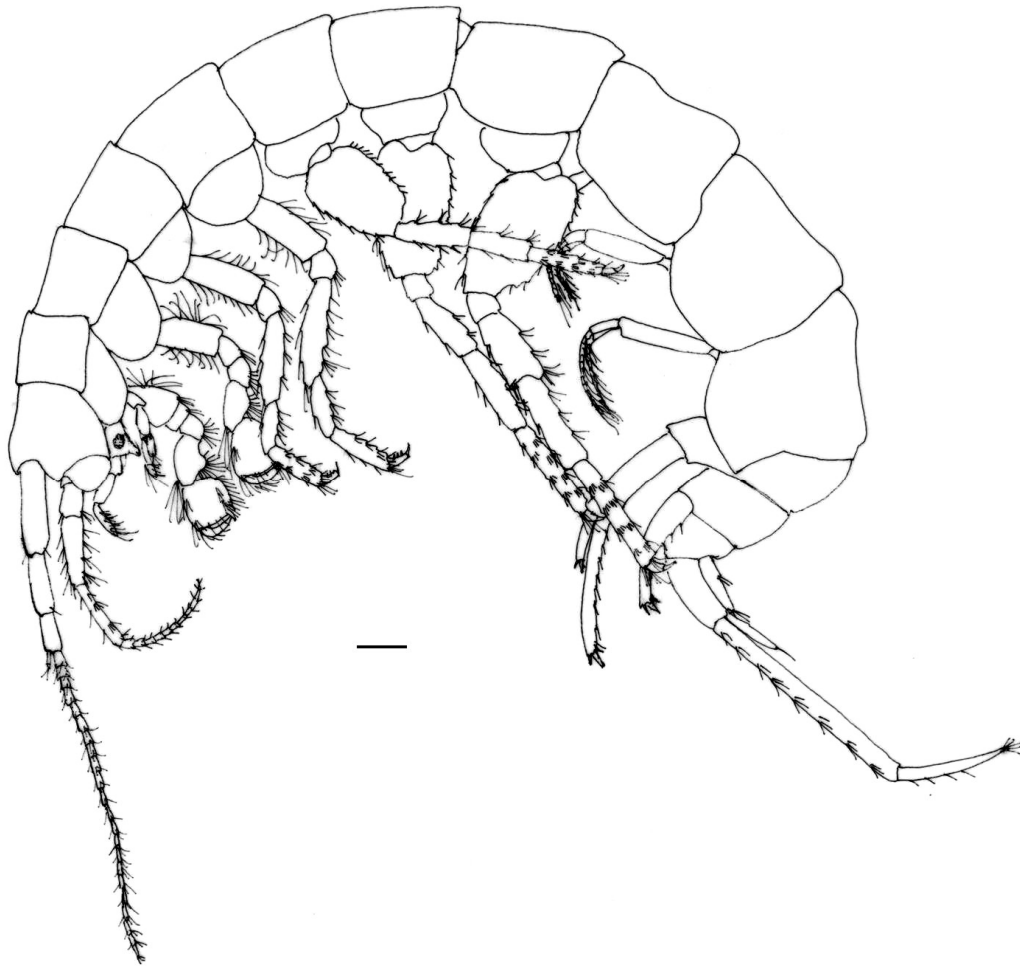
*cercetări de biologie, Série de zoologie*, 20 (4): 375-387.

## Annexes:

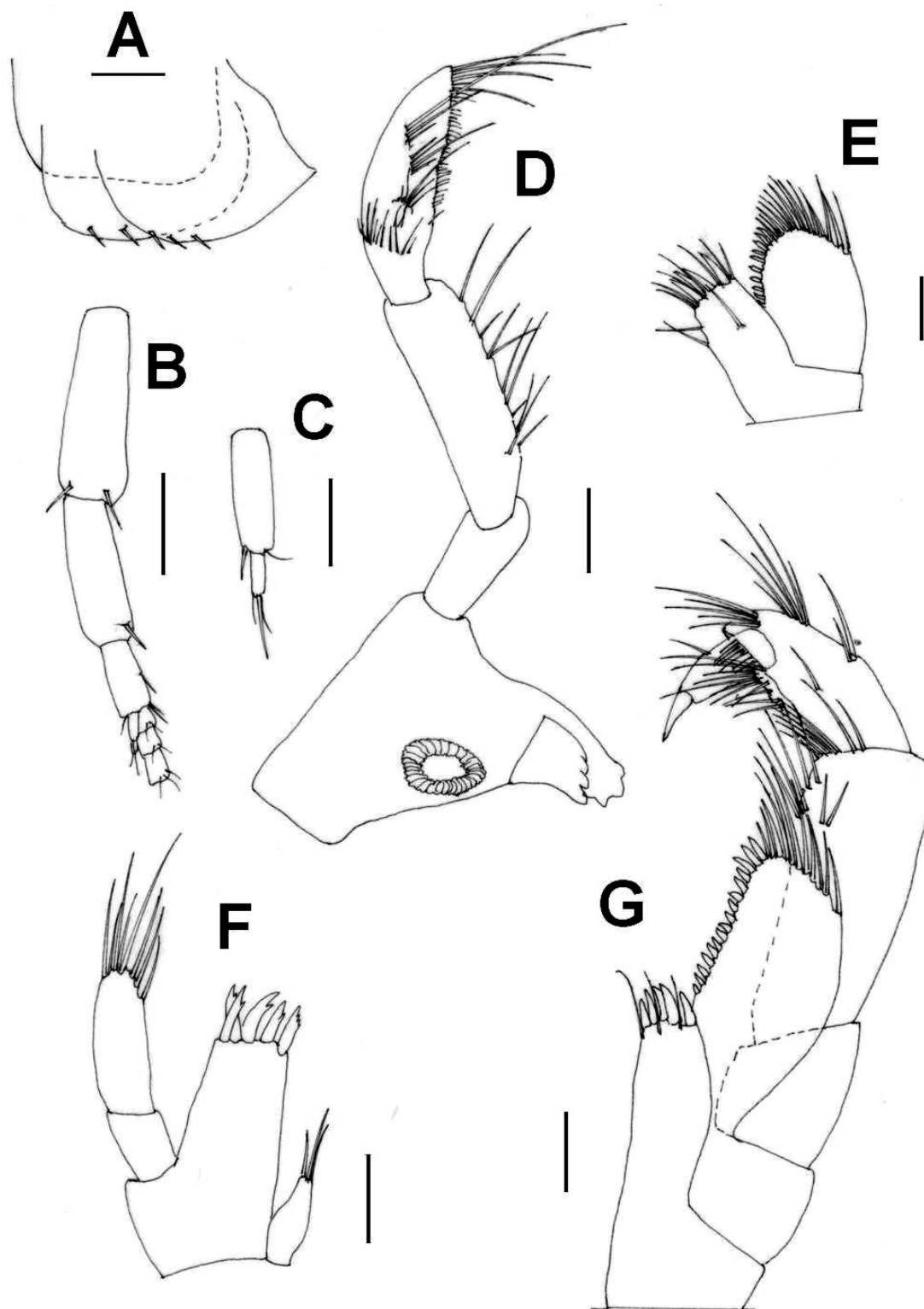
**Figure no. 1** Map with localization of cave “Gaura cu muscă”.



**Figure no. 2** *Niphargus illidzensis pannonicus* S. Karaman, 1950. Male body, lateral view. Scale in mm: 1.

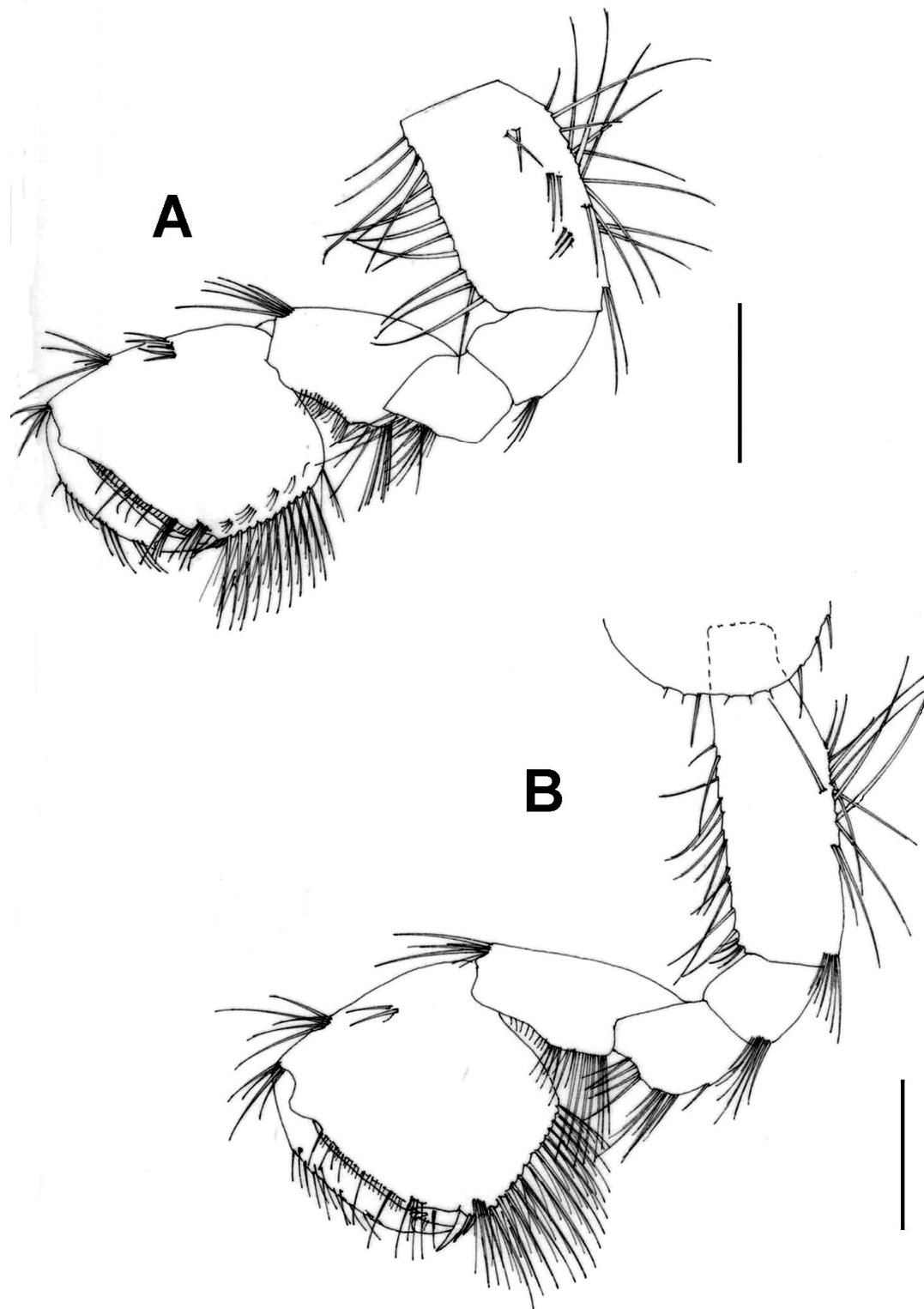


**Figure no. 3** *Niphargus illidzensis pannonicus* S. Karaman, 1950. Male: A, urosomites; B, antenna 2; C, its main flagellum, magnified; D, mandible; E, maxilla 1; F, maxilla 2; G, maxilliped. Scales in mm: A, B: 1; C, E, F, G: 0.2; D: 0.3.

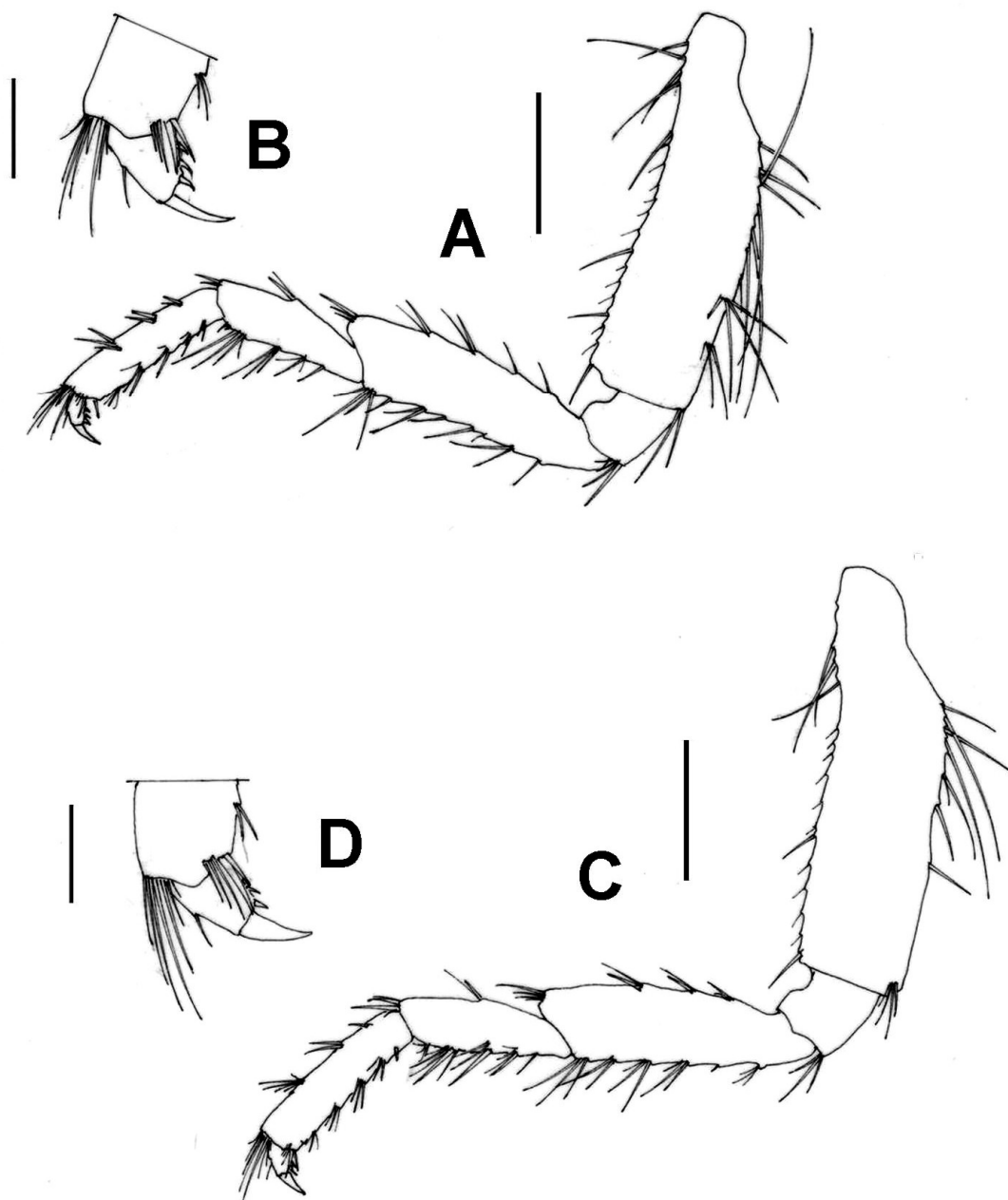




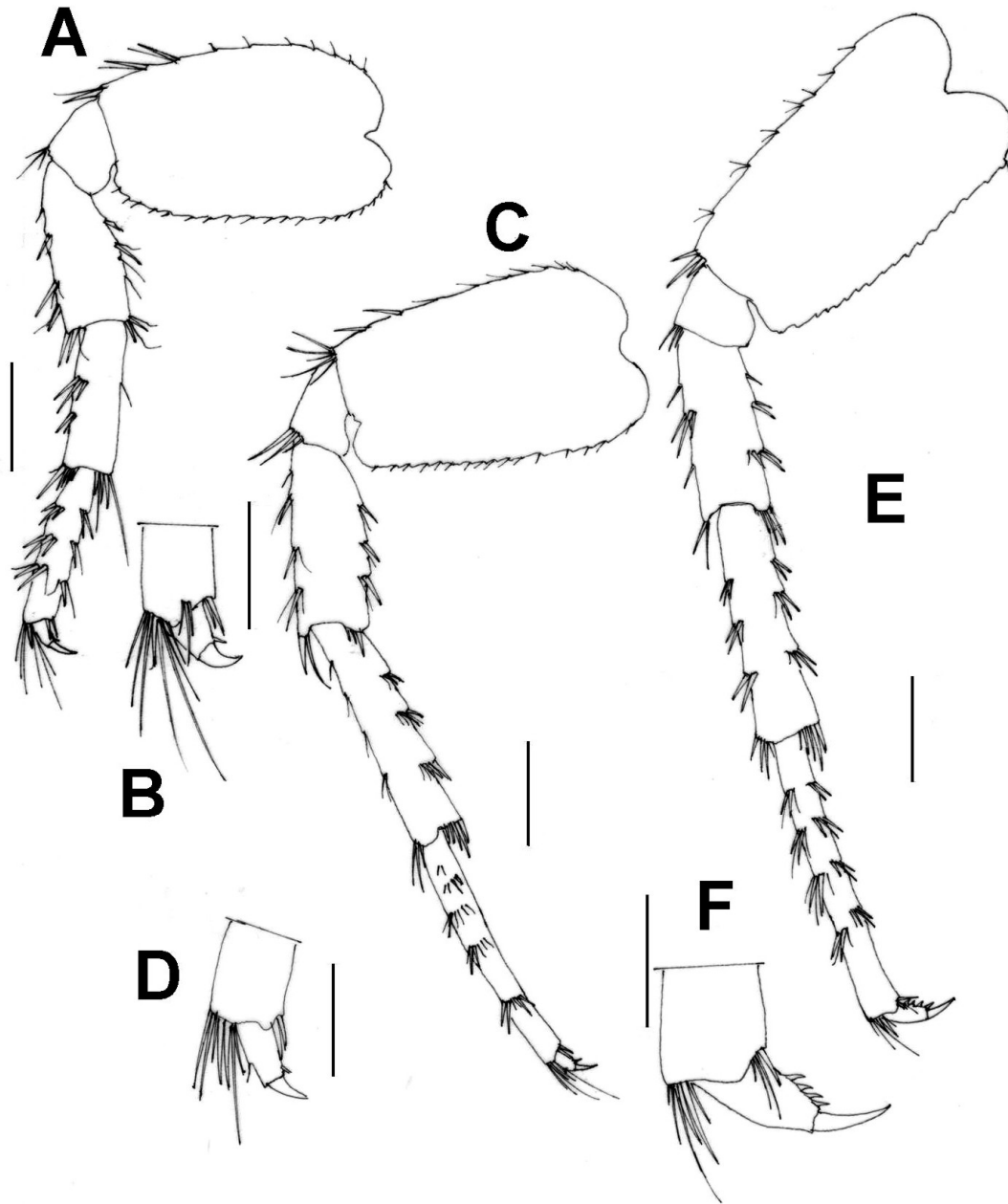
**Figure no. 4** *Niphargus illidzensis pannonicus* S. Karaman, 1950. Male: A, gnathopod 1; B, gnathopod 2. Scale in mm: A, B: 1.



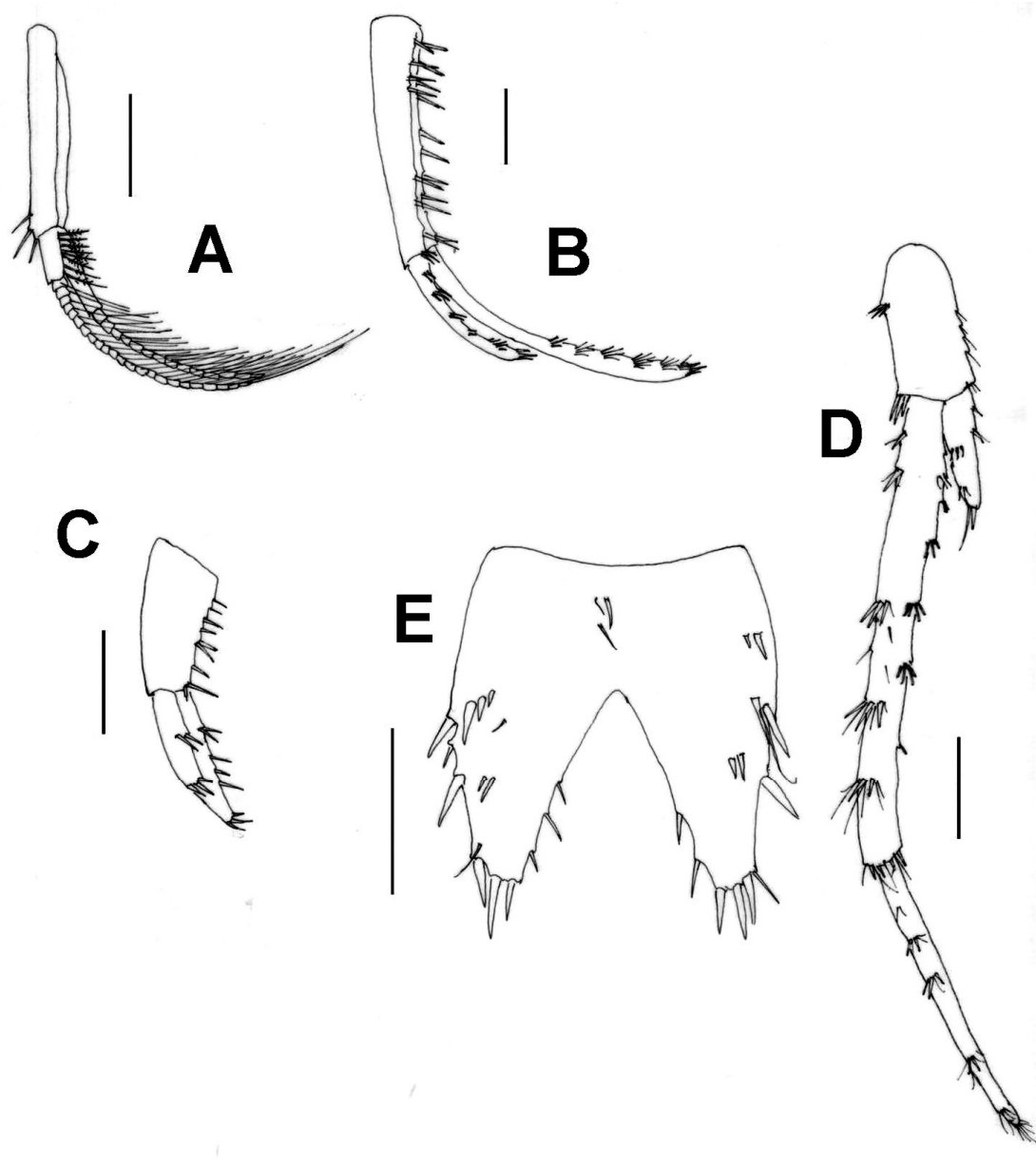
**Figure no. 5** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Male: A, pereopod 1; B, its dactylus, magnified; C, pereopod 2; D, its dactylus, magnified. Scales in mm: A, C: 1; B, D: 0.3.



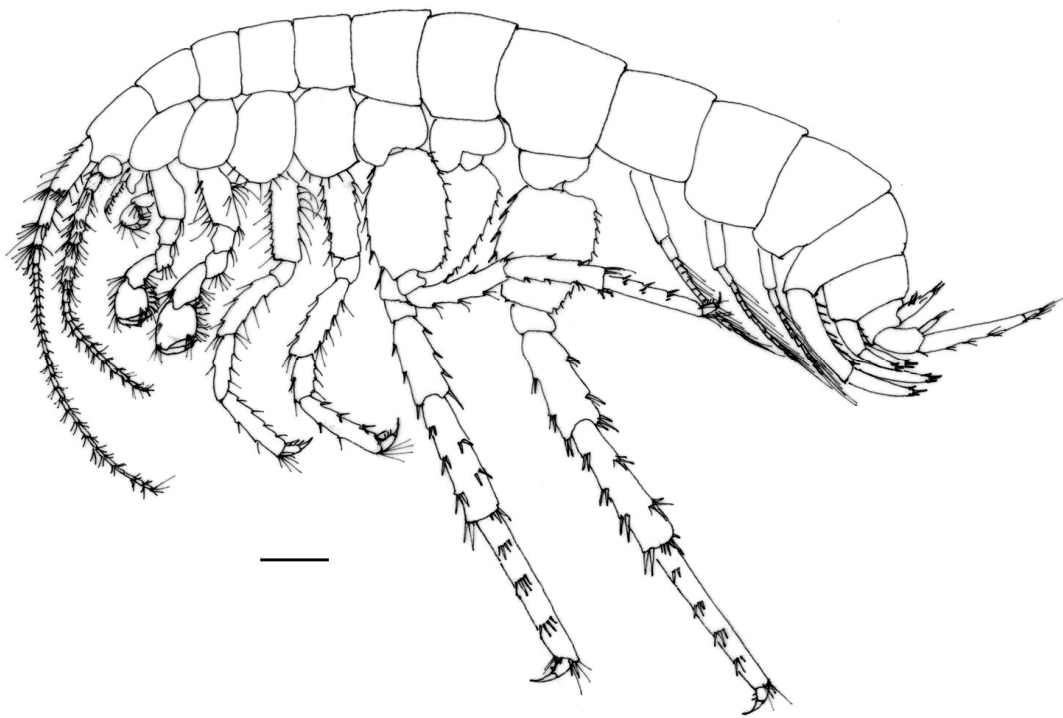
**Figure no. 6** *Niphargus illidzensis panonicus* S. Karaman, 1950 Male A, pereopod 3; B, its dactylus, magnified; C, pereopod 4; D, its dactylus, magnified; E, pereopod 5; F, its dactylus, magnified. Scales in mm: A, C, E: 1; B, D, F: 0.5.



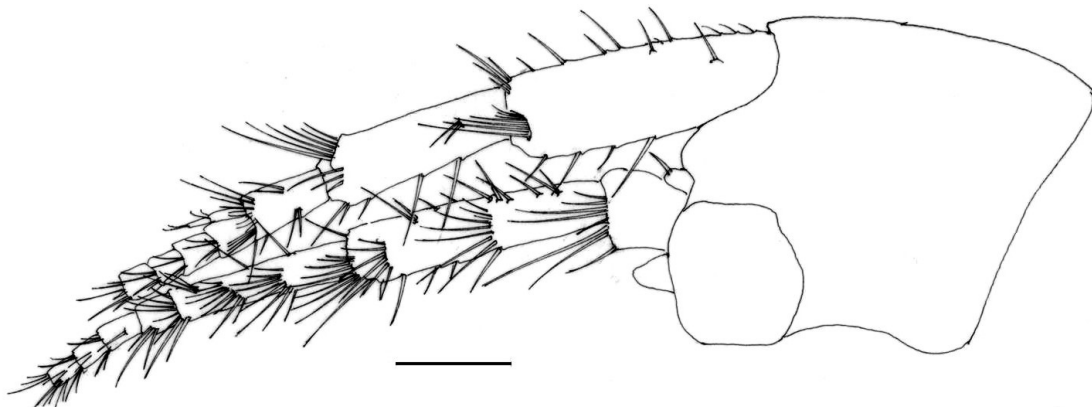
**Figure no. 7** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Male A, pleopod 3; B, uropod 1; C, uropod 2; D, uropod 3; E, telson. Scales in mm: A, B, C, D: 1; E: 0.5.



**Figure no. 8** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Female body. Scale in mm:1.

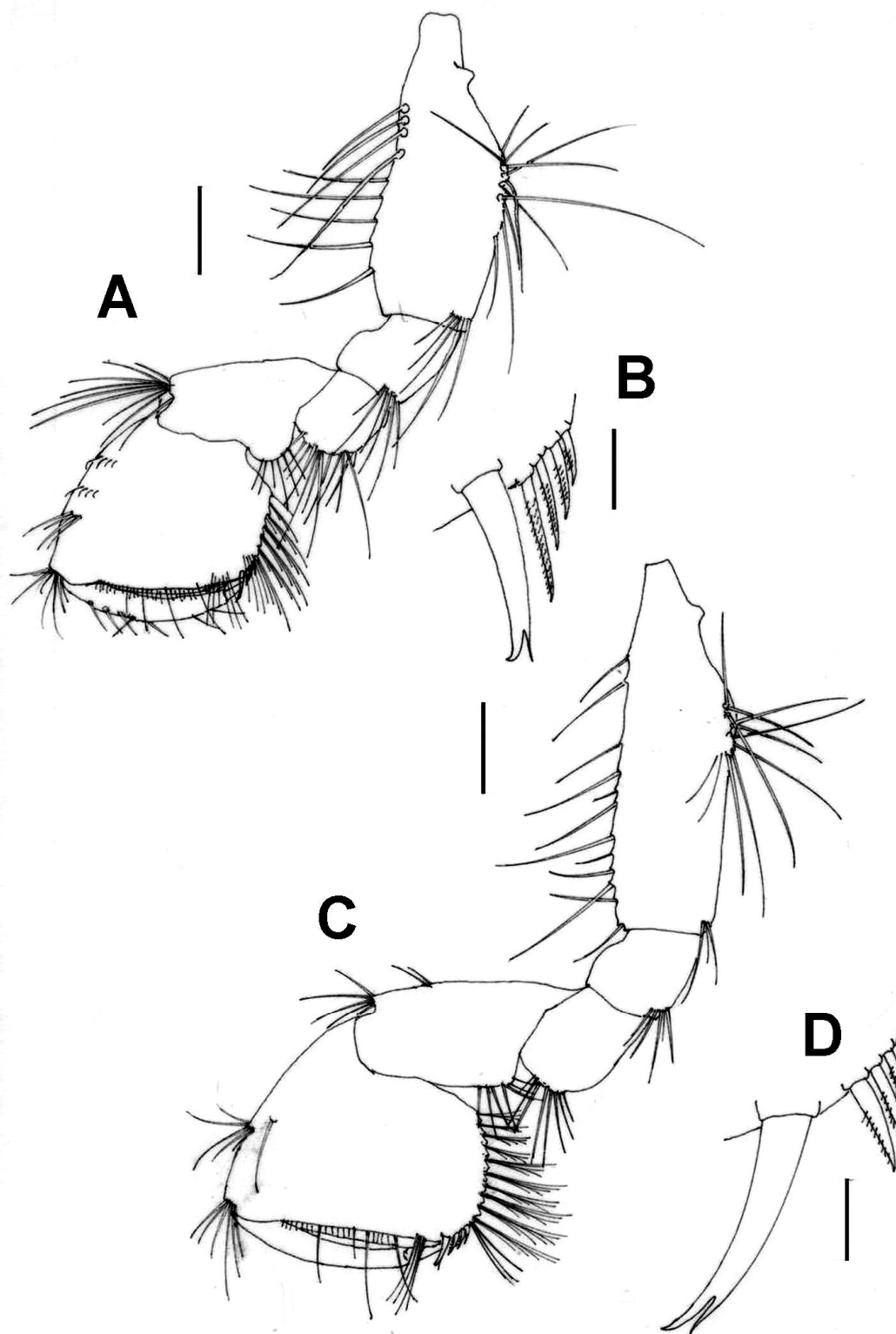


**Figure no. 9** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Female head and antennae. Scale in mm: 0.5.

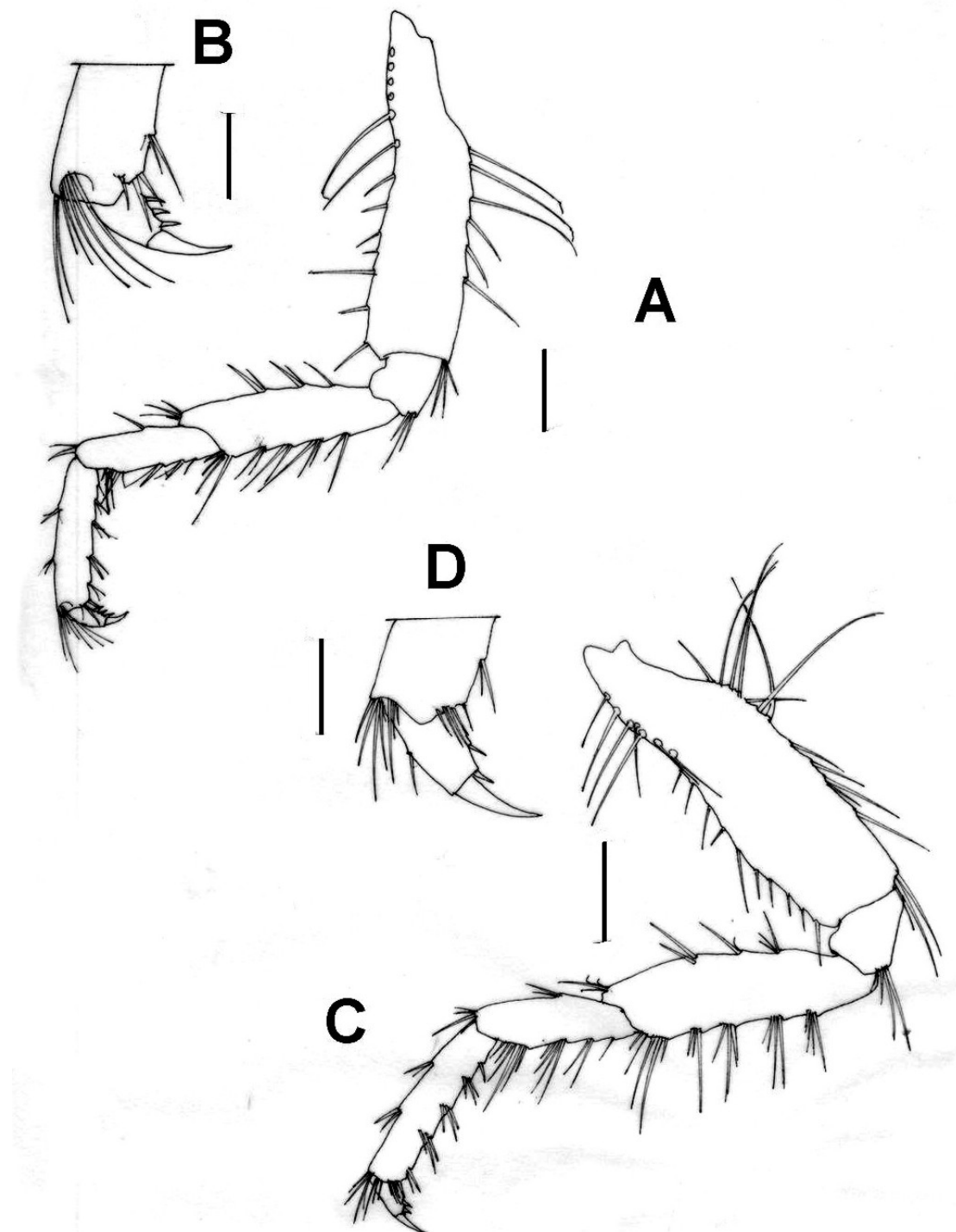




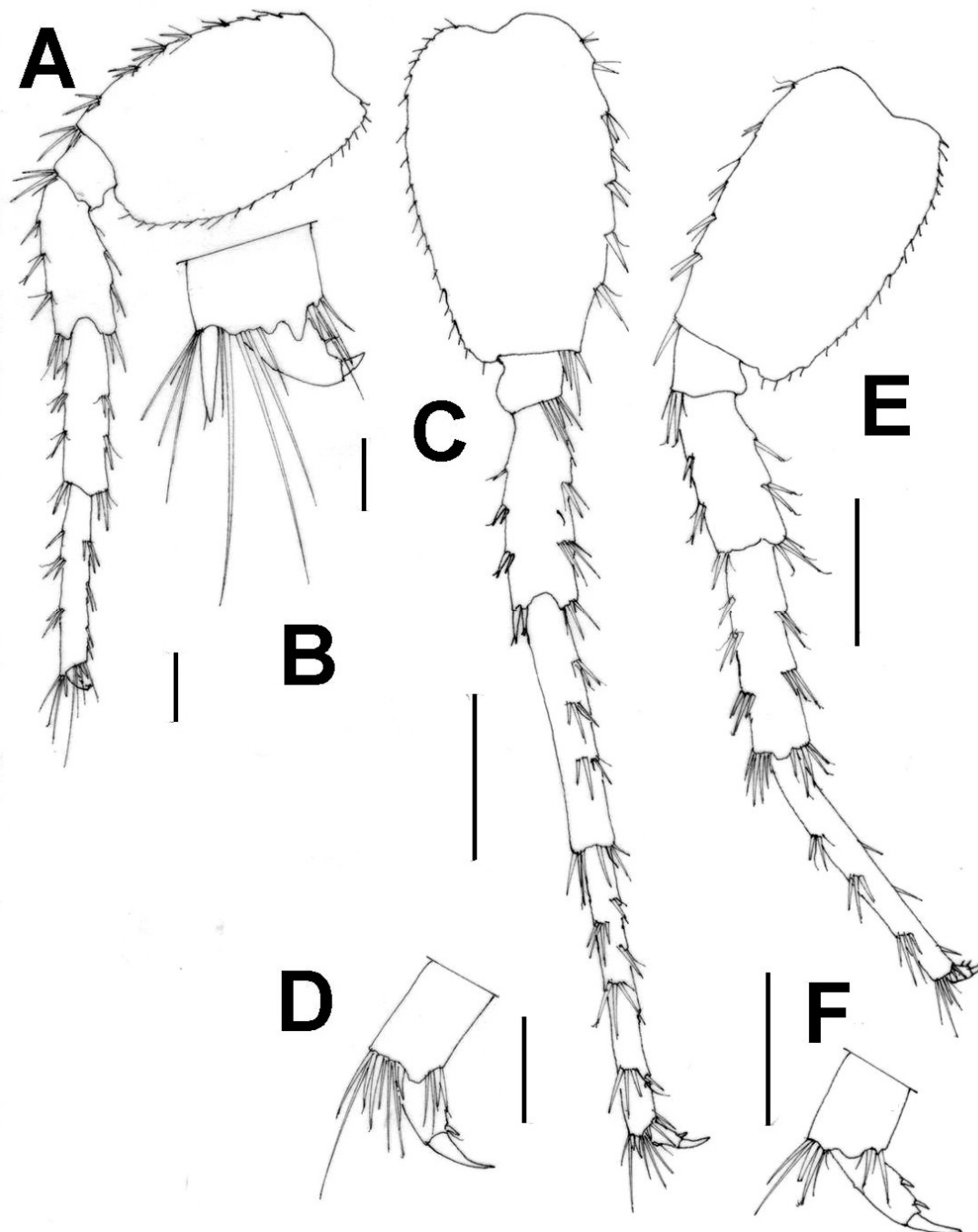
**Figure no. 10** *Niphargus illidzensis panonicus* S. Karaman, 1950 Female A, gnathopod 1; B, detail of propodus robust setae; C, gnathopod 2; D, detail of propodus robust setae. Scales in mm: A, C: 0.5; B, D: 0.1.



**Figure no. 11** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Female A, pereopod 1; B, its dactylus, magnified; C, pereopod 2; D, its dactylus, magnified. Scales in mm: A, C: 0.5; B, D: 0.2.



**Figure no. 12** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Female A, pereopod 3; B, its dactylus, magnified; C, pereopod 4; D, its dactylus magnified; E, pereopod 5; F, its dactylus, magnified. Scales in mm: A: 0.5; B: 0.1; C, E: 1; D, F: 0.3.



**Figure no. 13** *Niphargus illidzensis pannonicus* S. Karaman, 1950 Female A, uropod 3, B, telson. Scales in mm: A: 0.5; B: 0.5.

