

Gordan S. Karaman*

TWO INTERESTING NIPHARGUS SPECIES FROM ITALY, NIPHARGUS
CATALOGUS, N. SP. AND N. AMBULATOR G. KARAMAN, 1975
(FAM. NIPHARGIDAE)

(Contribution to the Knowledge of the Amphipoda 218)

DVIJE INTERESANTNE VRSTE RODA NIPHARGUS IZ ITALIJE,
NIPHARGUS CATALOGUS, N. SP. I N. AMBULATOR G. KARAMAN,
1975 (FAM. NIPHARGIDAE)

(218. prilog poznavanju Amphipoda)

ABSTRACT

One new species of the genus *Niphargus* Schiödte, 1849 (*Amphipoda Gammaridea*, fam. *Niphargidae*), *Niphargus catalogus*, n. sp., is described from the subterranean waters of the torrent Merula near Andora (Liguria, Italy) and its taxonomic relationships are discussed.

New locality of the species *Niphargus ambulator* G. Karaman, 1975 from Italy is discovered and the variability of this species is given.

Key words: zoology, taxonomy, Amphipoda, *Niphargus*.

IZVOD

Iz podzemnih voda potoka Merula kod Andore u Liguriji (Italija) opisana je jedna nova vrsta iz roda *Niphargus* Schiödte 1849 (*Amphipoda Gammaridea*, fam. *Niphargidae*), *Niphargus catalogus*, n. sp., i analiziran je njen taksonomski položaj.

Vrsta *Niphargus ambulator* G. Karaman, 1975 je nađena na novom lokalitetu u Italiji, i dat je varijabilitet nekih taksonomskih karaktera ove vrste.

Ključne riječi: zoologija, taksonomija, Amphipoda, *Niphargus*.

INTRODUCTION

The subterranean fauna of the Amphipoda in Italy has been studied intensively during last twenty years by various authors (S. Ruffo, G. Pesce, A. Vigna-Taglianti, G. Karaman, B. Sket) and numerous new and known taxa have been discovered and described from this country, especially these of the genus *Niphargus* Schiödte 1849 (*Amphipoda*, fam. *Niphargidae*).

Genus *Niphargus* in Italy is presented by nearly 50 taxa, among them numerous species endemic for the Italy (*ambulator* G. Kar. 1975, *armatus* G. Kar. 1986, *bodoni* G. Karaman 1985, *canui* G. Karaman 1976, *duplus* G. Karaman 1976, *galvagnii* Ruffo 1953,

* Gordan S. Karaman, Ph.D., Prirodno-matematički fakultet, Podgorica.

galvagnii similis G. Kar. & Ruffo 1989, *ictus* G. Karaman 1986, *italicus* G. Karaman 1976, *messanai* G. Karaman 1990, *parenzani* Ruffo & Vigna-Tagl. 1968, *pasquinii* Vigna-Tagl. 1966, *pasquinii sodalis* G. Karaman 1984, *patrizii* Ruffo & Vigna-Tagl. 1968, *pescei* G. Karaman 1984, *poianoii* G. Karaman 1988, *ruffoi* G. Karaman 1976, *spoeckeri sibilinianus* G. Karaman 1984, *stefanellii* Ruffo & Vigna-Tagl. 1967, *stochi* G. Karaman 1994, *strouhali alpinus* G. Karaman & Ruffo 1989, *tamaninii* Ruffo 1953, *tamaninii barbatus* G. Karaman 1985, *transitivus* Sket 1971, *transitivus dissonus* G. Karaman 1984, as well as *N. stygius* - complex of poorly known taxa (*apuanus* Ruffo 1937, *brixianus* Ruffo 1937, *costozzae* Schellenberg 1935, *unisetosa* S. Karaman 1954, *d'anconae* S. Karaman 1954, *dolenianensis* Lorenzi 1898, *pedemontanus* Ruffo 1937, *romuleus* Vigna-Tagl. 1967, *speziae* Schellenberg 1936).

On the other hands, some species, considered recently as endemic Italian taxa, has been discovered in other countries also (*Niphargus danconai* Benedetti 1942 found in Austria) (G. Karaman, 1992).

Our recent studies on various samples of genus *Niphargus* from Italy, showed the presence of one new species in the subterranean waters in Liguria, *Niphargus catalogus*, n.sp.

NIPHARGUS CATALOGUS, N.SP.

Figs. I-VI; VII, 1-3

MATERIAL EXAMINED: ITALY: Andora, torrent Merula, Savona region (western part of Liguria), April 3, 1955, 8 exp. (leg. Sanfilippo) (Coll. Mus. Nat. Hist. Verona).

DESCRIPTION: MALE 9 mm: Body relatively slender, metasomal segments 1-3 with 4 longer dorsoposterior setae each (fig. IV, 5). Urosomite 1 on each side with 1 spine; urosomite 2 on each side with 3 spines, urosomite 3 smooth (fig. I,6). Urosomite 1 with 1 very strong ventroposterior spine (fig. I,6).

Head with poorly convex dorsal surface (in lateral projection) (fig. I,1), lateral cephalic lobes short and subrounded, eyes absent (fig. I,1).

Antenna 1 reaching nearly half of body-length; peduncular segments 1-3 progressively shorter, poorly setose, segment 1 with 2 small spines (fig. I,2), segment 3 hardly exceeding half of segment 2; main flagellum consisting of 24 articles (most of them with 1 aesthetasc each); accessory flagellum short, 2-segmented, not exceeding half of peduncular segment 3 (fig. I,2).

Antenna 2 slender, peduncular segment 4 with 2 ventral bunches of setae (fig. I,3); segment 5 slightly shorter than 4, with 4 ventral bunches of setae (the longest setae exceeding diameter of article itself); flagellum shorter than last peduncular segment, consisting of 12 slender articles (fig. I,3); antennal gland cone short (fig. I,3).

Mouthparts normal. Labrum with entire convex distal margin; labium with well developed inner lobes and with entire outer lobes (fig. II,2).

Mandible with well developed triturate molar. Left mandible: incisor with 5 teeth, lacinia mobilis with 4 teeth accompanied by 7 rakers. Right mandible: incisor with 4 teeth, lacinia mobilis bifurcate, pluritoothed, accompanied by 6 rakers. Mandibular palp 3-segmented: first segment smooth; second segment with 15 setae; palp segment 3 nearly as long as 2, bearing one group of 5 A setae, 5 groups of B setae (1-1-2-2-2), 27 D setae and 5 E setae (C setae absent) (fig. II,4).

Maxilla 1: inner plate short, with 3 distal setae; outer plate with 7 distal spines (6 spines with 1 lateral tooth each, one spine with 2 lateral teeth), palp 2-segmented, short, not reaching tip of spines of outer plate and bearing 10 distal setae (fig. II, 1).

Maxilla 2: both plates normal, with marginal setae only.

Maxilliped: inner plate short, not reaching outer tip of first palp segment and bearing 4 distal smooth spines (fig. II,3); outer plate reaching nearly half of second palp segment and provided with distolateral row of smooth spines (fig. II,3); palp 4-segmented, with nail shorter than pedestal.

Coxae 1,3 and 4 broader than long (figs. III,1; IV,1,3), coxa 2 nearly as long as broad (fig. III,4); coxa 1 with subrounded ventroanterior corner (fig. III,1), coxa 4 without distinct ventroposterior lobe (fig. IV,3); coxae 5-6 short, with longer anterior lobe, posterior lobe with 2 marginal spines and single setae (fig. V, 1, 3); coxa 7 entire (fig. V,5).

Gnathopods 1-2 of the moderate size, but their segment 6 larger than corresponding coxa (fig. III, 1,4). Gnathopod 1 is slightly smaller than 2, its segment 3 with one posterior group of setae; segment 5 shorter than segment 6 (fig. III,1); segment 6 trapezoid, nearly as long as broad, with 9 posterior transverse groups of setae; palm oblique almost to the half of posterior margin of segment 6, slightly convex, defined on outer face by 1 strong corner spine accompanied laterally by 3 slender toothed spines and 3 facial setae, on inner face by 1 short subcorner spine (fig. III, 2,3); dactyl reaching posterior margin of segment 6, along outer margin with row of single setae and one pair of 2 setae (fig. III,2).

Gnathopod 2: segment 3 with one group of posterior setae (fig. III,4); segment 5 shorter than 6; segment 6 trapezoid, as long as broad, with 11-12 transverse groups of setae along posterior margin; palm convex, oblique to the half of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied laterally by 3 slender toothed spines and 3 facial setae, on inner face by 1 short subcorner spine (fig. III,5,6); dactyl reaching posterior margin of segment 6, with row of several single setae along outer margin (fig. III,6).

Pereopods 3-4 strong but not elongated, segments 2-4 along posterior margin with setae only, segments 5-6 with setae and spines along posterior margin (fig. IV,1,3); dactyl short and stout, with one spine at inner margin, nail slender, longer than pedestal (fig. IV,2,4).

Pereopods 5-7 moderately slender, strong (fig. V,1,3,5); segment 2 less than twice as long as broad, narrowed ventrally, without ventroposterior lobe; anterior margin of segment 2 with row of spines; posterior margin of segment 2 in pereopod 5 with up to 10 short setae (fig. V,1), that of pereopods 6-7 with single spines intermixed with single short setae (fig. V,3,5); segments 3-6 mainly spinose. Dactyl of pereopods 5-7 short and strong, progressively longer towards pereopod 7, bearing one spine at inner margin and one plumose seta at outer margin; nail shorter than pedestal (fig. V,2,4,6).

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopod 1 along anterior margin with 2 short setae (fig. I,4), that of pleopod 2 smooth; peduncle of pleopod 3 along posterior margin with 4 short setae, facial setae absent (fig. I,5).

Epimeral plates 1-2 angular, with well marked ventroposterior corner and convex posterior margin (fig. IV,5); epimeral plate 3 slightly acute, with poorly sinusoid posterior margin; plates 2-3 with single subventral spines each (one spine on second plate, 3 spines on third plate) (fig. IV,5).

Uropods 1-2 short and strong. Uropod 1: peduncle not longer than rami, with dorsointernal and dorsoexternal row of strong spines (fig. I,6), distal spine short; rami nearly subequal (with tendency towards elongation of outer ramus), both rami with lateral and distal short and strong spines (fig. I,6).

Uropod 2: inner ramus poorly longer than outer one, both rami with lateral and distal short spines (fig. I,6).

Uropod 3 elongated, peduncle short; inner ramus scale-like, short (fig. I,7); outer ramus 2-segmented; first segment along both margins with bunches of spines accompanied along inner margin of segment with single plumose setae (fig. I,7); second segment almost

reaching half of first segment, with setae along both margins (fig. I,7).

Telson short, poorly longer than broad, incised almost 3/4 of its length; each lobe with 3 distal and 1 inner marginal spine, facial spines absent; a pair of short plumose setae appears slightly over half of each lobe (fig. II,5).

Coxal gills relatively short, ovoid, appear on mesosomal segments 2-6 and never exceeding tip of segment 2 of the corresponding leg (figs. III,2; IV,1,3; V,1).

FEMALE: 8.5 mm with setose oostegites: Like males, metasomal segments 1-3 with 3-4 dorsoposterior marginal setae each (fig. II,7). Urosomite 1 on each side with 1 spine, urosomite 2 with 2-3 spines each (fig. VII,3). Urosomite 1 with very strong ventroposterior spine (fig. VII,3).

Main flagellum of antenna 1 with 25-26 articles; flagellum of antenna 2 consisting of 9-12 articles. Maxilla 1: inner plate with 2 setae, outer plate with 7 spines bearing mostly 1-2 lateral teeth each (formula: 4-2-1-1-1-1-2, or: 3-1-2-1-1-2-1) (fig. II,6), palp like that in males.

Inner plate of maxilliped with 3-4 distal smooth spines, outer plate and palp like these in males.

Coxae 1-4 slightly longer than these in males, coxae 1 and 4 slightly longer than broad (fig. VI,3,6), coxae 2 and 3 as long as broad (fig. VI,4,5); coxae 5-7 like these in males (fig. VII,1).

Gnathopod 1: segment 6 trapezoid, longer than broad, with 6 transverse posterior groups of setae (fig. VI,1); palm oblique slightly less than half of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied laterally by 3 slender spines and 3 facial setae (fig. I,6), on inner face by 1 short subcorner spine; dactyl like that in male.

Gnathopod 2: segment 6 trapezoid, nearly as long as broad, with 9 posterior transverse groups of setae (fig. VI, 2); palm oblique nearly 1/3 of posterior margin of segment 6, defined on outer face by 1 strong corner spine accompanied laterally by 2 slender toothed spines and 3 facial setae (fig. VI,2), on inner face by 1 short spine; dactyl like that in male.

Pereopods 3-7 like these in males; segment 2 of pereopods 6-7 along posterior margin with single spines intermixed with setae, ventroposterior lobe absent (fig. VII,1,2).

Pleopods 1-3 with 2 retinacula each. Peduncle of pleopod 1 with 3 anterior marginal setae; that of pleopod 2 with 1 posterior short seta; peduncle of pleopod 3 with 3 posterior marginal setae.

Epimeral plates 1-3 like these in males, plates 2-3 with 2 and 3 subventral spines respectively (fig. II,7).

Uropods 1-2 short and strong, like these in males (fig. VII,3). Uropod 1: peduncle with dorsointernal and dorsoexternal row of strong spines; outer ramus hardly longer than inner one or almost subequal; rami of uropod 2 subequal or inner ramus hardly longer than outer one (fig. VII,3).

Uropod 3: Peduncle and inner ramus short (fig. IV,6); first segment of outer ramus with spines along both margins, accompanied by single plumose setae along inner margin of segment itself; second segment short, reaching less than 1/4 of first segment (fig. IV,6).

Telson poorly longer than broad, deeply incised; each lobe with 3 distal spines only; a pair of short plumose setae appears near the middle of each lobe (fig. VI,7).

Coxal gills short, ovoid, like these in males. Oostegites appear on mesosomal segments 2-5, broad, with long marginal setae.

VARIABILITY: Number of retinacula is elevated, but rather variable. The number of lateral teeth on spines of outer plate in maxilla 1 is also rather variable (fig. II,1,6), inner

plate of maxilla 1 with 2-3 setae.

HOLOTYPE: Male 9 mm. Holotype and paratypes are deposited in the Museum of Natural History in Verona. Two paratypes are deposited in KARAMAN's Collection in Podgorica (=Titograd), Yugoslavia.

LOC. TYP.: Merula, Andora (Liguria, Italy).

DISTRIBUTION: Known only from type locality.

REMARKS AND AFFINITIES. *Niphargus catalogus*, n. sp. is very allied to the taxa of the *Niphargus stygius* - complex from Italy and France (*gineti*, *stygius*, *speziae*, *pedemontanus*, *forelii*, *romuleus*, *brixianus*, etc.) by general shape of the body and the gnathopods, uropod 3 and telson, pleopods, etc.

But, *N. catalogus* differs from all these taxa by presence of dorsointernal row of spines on peduncle of uropod 1 in males and females like that in *N. armatus* G. Karaman 1986, known from various localities of Liguria.

Niphargus gineti Bou, 1965, described from various localities in southern France (loc. typ.: Cordes, Tarn) differs from *N. catalogus* also by absence of dorsolateral spine on urosomite 1, less spinose telson, presence of posterior setae on segment 2 of pereopods 6-7, elongated second segment of outer ramus in uropod 3 in males, etc.

Niphargus toplicensis Andreev, 1966, known from Bulgaria (loc. typ.: spring Toplitzata near Mussomischta) is also similar to our species (absence of outer marginal spines on telson, pleopods with 2 retinacula, gnathopods, dactyl of pereopods, etc.); but, it differs clearly from *N. catalogus* by elongated inner ramus of uropod 1, more pointed epimeral plates, elongated second segment of uropod 3 in males, armature of pereopods 5-7, etc.

The presence of very strong ventroposterior spine on urosomite 1 is present in several other taxa of genus *Niphargus* (*Niphargus pescei* G. Kar. 1984 known from Italy, *N. inopinatus* Schell. 1932 known from Austria, Germany, Poland and some other countries of central Europe, *Niphargus lattingerae* G. Karaman 1983 known from Croatia, etc., but all these taxa differ remarkably from *N. catalogus* by other characters (presence of only one seta along outer margin of dactyl in gnathopods 1-2, shape of gnathopods 1-2, pleopods, etc.).

NIPHARGUS AMBULATOR G. KARAMAN 1975

Fig. VII, 4-6

Syn.: *Niphargus ambulator* G. Karaman 1975: 26, figs. 7-9; G. Karaman & Ruffo 1986: 522; G. Karaman 1993:169, fig. 80

MATERIAL EXAMINED: ITALY: AMD/00753 - Bucone di Tremezzo-cave (2223 Lo/Co), com. Tremezzo, Como province, Sept. 8, 1995, 2 spec. (leg. Comotti, G.) (Coll. Museo Civico di Storia Naturale Verona).

REMARKS. The specimens of this locality agree mainly with these of other known localities of *N. ambulator* (see G. Karaman, 1975, 1993).

MALE 7.5 mm. Urosomite 1 on each side with 1 seta, urosomite 2 on each side with 1 spine, urosomite 3 smooth. Urosomite 1 with 1 weak ventroposterior small spine.

Maxilla 1: inner plate with 3 setae, outer plate with 7 spines (4 spines with 1 lateral tooth, 2 spines with 3 teeth, one spine is pluritoothed), palp 2-segmented, reaching tip of spines of outer plate and bearing 9 setae (fig. VII, 4-5).

Dactyl of pereopods 3-7 with 1 seta or spine-like seta at inner margin. Segment 2 of pereopods 5-7 relatively narrow, without distinct ventroposterior lobe. Epimeral plates 1-3 pointed like these in type specimens.

Pleopods 1-3 with 3-4 retinacula each. Peduncle of pleopod 1 with 2 anterior setae; that of pleopod 2 smooth; peduncle of pleopod 3 with 1-2 posterior stronger setae.

Uropod 1: peduncle with dorsointernal row of setae and dorsoexternal row of spines; rami subequal. Uropod 2 with nearly subequal rami.

Uropod 3 elongated, second segment of outer ramus reaching 2/5 of first segment, inner ramus scale-like.

Telson deeply incised, each lobe with 4 distal and 1-2 lateral spines (fig. VII,6).

FEMALE ovig. 7.3 mm: Urosomite 1 on each side with 1 seta, urosomite 2 with 1 spine on each side. Segment 2 of pereopods 5-7 slightly broader than that in males. Uropods 1-2 with subequal rami. Second segment of outer ramus in uropod 3 short. Telson likes that in male.

Niphargus ambulator is very close to the *Niphargus carpathicus*-complex of taxa known from Romania and Yugoslavia.

LOCALITIES CITED: ITALY: Tana del Falco-cave, Erba (Como region); El Fus-cave (2009 Lo), Como region; Buco del Piombo-cave (2208 Lo), Erba, Como region; Trona di Val di Biirc-cave (2008 Lo); Tanone cave (2156 Lo); Aqueduct of Valmadrera (G. Karaman, 1975; G. Karaman, 1993); Bucone di Tremezzo-cave (2223 Lo/Co) (present work).

LOC. TYP.: Tana del Falco-cave, Italy.

DISTRIBUTION: Endemic Italian species.

ECOLOGY: Found in the caves and the subterranean waters.

LITERATURE CITED

- Andreev, S. (1966): Eine neue Niphargus-Art (Gammaridae, Amphipoda) aus Bulgarien. - International Journal of Speleology, 2: 283-286.
- Benedetti, G. B. (1942): Prime osservazioni sopra i Niphargus della Venezia Euganea. - Mem. R. Accad. Sc. Let. Arti Padova (n. s.), 58: 175-186.
- Bou, C. (1965): Niphargus gineti, nouvel amphipode Gammaridae des eaux souterraines du sud-ouest de la France. - Annales de Speleologie, 20 (2): 271-288.
- Karaman, G. (1975): 73. Contribution to the Knowledge of the Amphipoda. Three Niphargus Species from Yugoslavia and Italy, *N. ambulator* n. sp., *N. pupetta* (Sket) and *N. transitivus* Sket (Fam. Gammaridae). - Poljoprivreda i šumarstvo, Titograd, 21 (4): 13-34.
- Karaman, G. (1976): Contribution to the Knowledge of the Amphipoda 72. Four new Niphargus Species from Italy, *N. duplus*, *N. stygocharis italicus*, *N. ruffoi* and *N. canui* (Gammaridae). - Vie Milleu, ser. C, 26 (1): 21-50.
- Karaman, G. (1983): Contribution to the Knowledge of the Amphipoda 128. A new subterranean Species from Yugoslavia, *Niphargus lattingerae*, n. sp. (Fam. Gammaridae). - Poljoprivreda i šumarstvo, Titograd, 29 (1): 37-46.
- Karaman, G. (1984): Description of several new Niphargus Species (Gammaridea, Niphargidae) from southern Europe (Contribution to the Knowledge of the Amphipoda 136). - Poljoprivreda i šumarstvo, Titograd, 30 (2-3): 39-64.
- Karaman, G. (1985): Contribution to the Knowledge of the Amphipoda 146. *Niphargus bodoni*,

- n. sp. and *N. pescei* G. Kar. in Italy (Fam. Niphargidae). - *Fragmenta Balcanica, Musei Macedonici Scientiarum Naturalium, Skopje*, 12 (8/269): 81-93.
- Karaman, G. (1985a):** Contribution to the Knowledge of the Amphipoda 147. *Niphargus tamaninii* Ruffo 1953 and Subspecies *N. t. barbatus* n. ssp. (Fam. Niphargidae) in Italy. - *Poljoprivreda i šumarstvo, Titograd*, 31 (1): 63-78.
- Karaman, G. (1986):** New data on the Genus *Niphargus* Schiodte (Fam. Niphargidae) in Italy and adjacent regions (Contribution to the Knowledge of the Amphipoda 138). - *Boll. Museo Civico Storia Naturale Verona*, 12: 209-228 (1985), 1986.
- Karaman, G. (1988):** The new Species of the Genus *Niphargus* Schiodte (Gammaridea, fam. Niphargidae) from Italy and Yugoslavia (Contribution to the Knowledge of the Amphipoda 177). - *Poljoprivreda i šumarstvo, Titograd*, 34 (2-3): 11-31.
- Karaman, G. (1990):** On two subterranean Gammaridean Species from Italy, *Niphargus messanai*, n. sp. and *Ilvanella inexpectata* V. T. 1972 (Contribution to the Knowledge of the Amphipoda 194). - *Acta biologica iugoslavica, Biosistemika, Beograd*, 15 (1): 55-70 (1989), 1990.
- Karaman, G. (1992):** New data on genus *Niphargus* Schiodte 1849 (fam. Niphargidae) in Austria (Contribution to the Knowledge of the Amphipoda 207). - *Crnogorska akademija nauka i umjetnosti, Glasnik odjeljenja prirodnih nauka, Titograd*, 8/9: 73-93.
- Karaman, G. (1993):** Crustacea Amphipoda di acqua dolce. - *Fauna d'Italia*, vol. XXXI: 1-337. Edizione Calderini Bologna, Italia.
- Karaman, G. (1994):** New and interesting species of the genus *Niphargus* Schiodte 1849 (Fam. Niphargidae) from Italy (Contribution to the Knowledge of the Amphipoda 212). - *Glasnik odjeljenja prirodnih nauka, Crnogorska akademija nauka i umjetnosti, Podgorica*, 10: 91-111.
- Karaman, G., Ruffo, S. (1986):** Amphipoda: *Niphargus*-Group (Niphargidae sensu Bousfield, 1982), in: Botosaneanu, L. (edit.): *Stygofauna Mundi, A Faunistic, Distributional, and Ecological Synthesis of the World Fauna inhabiting Subterranean Waters (including the Marine Interstitial)*. Leiden, E. J. Brill/ Dr. W. Backhuys, pp. 514-534.
- Karaman, G., Ruffo, S. (1989):** Two new taxa of *Niphargus* Schiodte from the Italian Alps (Amphipoda, Niphargidae). - *Studi Trentini di Scienze Naturali, Acta Biologica*, 65 (1): 123-136 (1988), 1989.
- Karaman, S. (1954):** Die Niphargiden des slovenischen Karstes, Istriens sowie des benachb. Italiens. - *Acta, Musei Macedonici Scientiarum Naturalium, Skopje*, 2 (8): 159-180, figs. 1-48.
- Lorenzi, A. (1898):** Prime osservazioni zoologiche sulle acque freatiche del Friuli. - *Alto, Cronaca bimestrale della Soc. alpina friulana*, 9 (4): 35-37.
- Ruffo, S. (1937):** Studi sui Crostacei Anfipodi IV. Su alcune specie italiane del genere *Niphargus*. - *Bol. Istituto Entomologia R. Univ. Bologna*, 9: 153-183.
- Ruffo, S. (1953):** Studi sui crostacei Anfipodi XXXVIII. Nuovi *Niphargus* (Amphipoda Gammaridae) della Venezia Tridentina. - *Studi Tr. di Sc. Nat.*, 30: 115-127.
- Ruffo, S., Vigna-Taglianti, A. (1968):** Alcuni *Niphargus* delle acque sotterranee dell'Italia centro-meridionale e considerazioni sulla sistematica del gruppo *orcinus* (Amphipoda, Gammaridae). - *Memorie Museo Civico Storia Naturale Verona*, 16:1-29.
- Schellenberg, A. (1932):** Deutsche subterrane Amphipoden. - *Zool. Anzeiger*, 99 (11-12): 311-323.
- Schellenberg, A. (1935):** Schlüssel der Amphipodengattung *Niphargus* mit Fundortangaben und mehreren neuen Formen. - *Zool. Anzeiger*, III (7-8): 204-211.
- Schellenberg, A. (1936):** Bemerkungen zu meinem *Niphargus*-Schlüssel und zur Verbreitung und Variabilität der Arten, nebst Beschreibung neuer *Niphargus*-Formen. - *Mit. Zool. Museum Berlin*, 22 (1): 1-30.
- Sket, B. (1971):** Vier neue aberrante *Niphargus*-Arten (Amphipoda, Gammaridae) und einige Bemerkungen zur Taxonomie der *Niphargus*-ähnlichen Gruppen. - *Razprave, Slov. Akad.*

Znan. Umet. Ljubljana, 14 (1): 1-25.

Vigna-Taglianti, A. (1966): Sulla presenza di *Niphargus* del gruppo *elegans* nell'Italia appenninica (*Amphipoda*, *Gammaridae*). -Archivio Zoologico Italiano, Torino, 51:863-876.

Vigna-Taglianti, A. (1967): Un nuovo *Niphargus* (*Amphipoda* *Gammaridae*) delle acque sotterranee di Roma e considerazioni sulla sistematica e biogeografia del *Niphargus* italiani. -Archivio Zoologico Italiano, Torino, 52: 331-343.

ACKNOWLEDGEMENTS. I am indebted to Prof. dr. Sandro Ruffo from the Museum of Natural History in Verona and to dr. Fabio Stoch from the Museum of Natural History in Trieste (Italy) for the loan of part of material used in this study.

REZIME

DVIJE INTERESANTNE VRSTE RODA NIPHARGUS IZ ITALIJE, NIPHARGUS CATALOGUS, N. SP. I N. AMBULATOR G. KARAMAN, 1975 (FAM. NIPHARGIDAE)

Gordan S. Karaman

Fauna *Amphipoda* (*Crustacea Malacostraca*) podzemnih voda Italije je dosta intenzivno proučavana tokom posljednjih dvadesetak godina od strane više autora (S. Ruffo, G. Pesce, A. Vigna-Taglianti, G. Karaman, B. Sket) i veliki broj novih ili poznatih vrsta *Amphipoda* bili su pronađeni u toj zemlji, naročito onih iz roda *Niphargus* Schiödte 1849 (*Amphipoda*, fam. *Niphargidae*).

Rod *Niphargus* je predstavljen u Italiji sa oko 50 poznatih vrsta, od kojih su većina endemične za područje Italije. Nastavljajući naša istraživanja ovog roda u Italiji, utvrdili smo postojanje jedne vrste nove za nauku, *Niphargus catalogus*, n. sp. iz podzemnih voda potoka Merule u Andori (Savona reg.).

Ova vrsta se odlikuje prisustvom trnova na lednom unutrašnjem rubu drške prvog uropoda, jako razvijenim ventralnim posteriornim trnom na prvoj urozomi, razvijenim trnovima na ledno-lateralnoj površini prvog i drugog urozomalnog segmenta kod mužjaka i kod ženki, podjednako dugim granama prvog uropoda kod mužjaka, odsustvom facijalnih trnova na telzonu, razvijenim nizom dlaka po vanjskom rubu daktilusa prvog i drugog gnatopoda, prisustvom samo 2 retinakule na svim pleopodima, kao i relativno uskim drugim segmentom šestog i sedmog pereopoda koji nose na stražnjem rubu pojedinačne dlake i trnove, dok ventralni stražnji lobus nije razvijen na pereopodima 5-7.

Niphargus catalogus je donekle blizak *Niphargus stygius*-kompleksu vrsta.

Vrsta *Niphargus ambulator* G. Karaman 1975, opisana i poznata iz samo nekoliko lokaliteta sjeverne Italije, nađena je sada u podzemnim vodama pećine Bucone di Tremezzo u regionu Koma na sjeveru Italije. Ova vrsta je bliska *Niphargus carpathicus*-kompleksu vrsta. Daljna proučavanja podzemnih voda Italije će vjerovatno otkriti i druge, još nepoznate vrste *Amphipoda*.

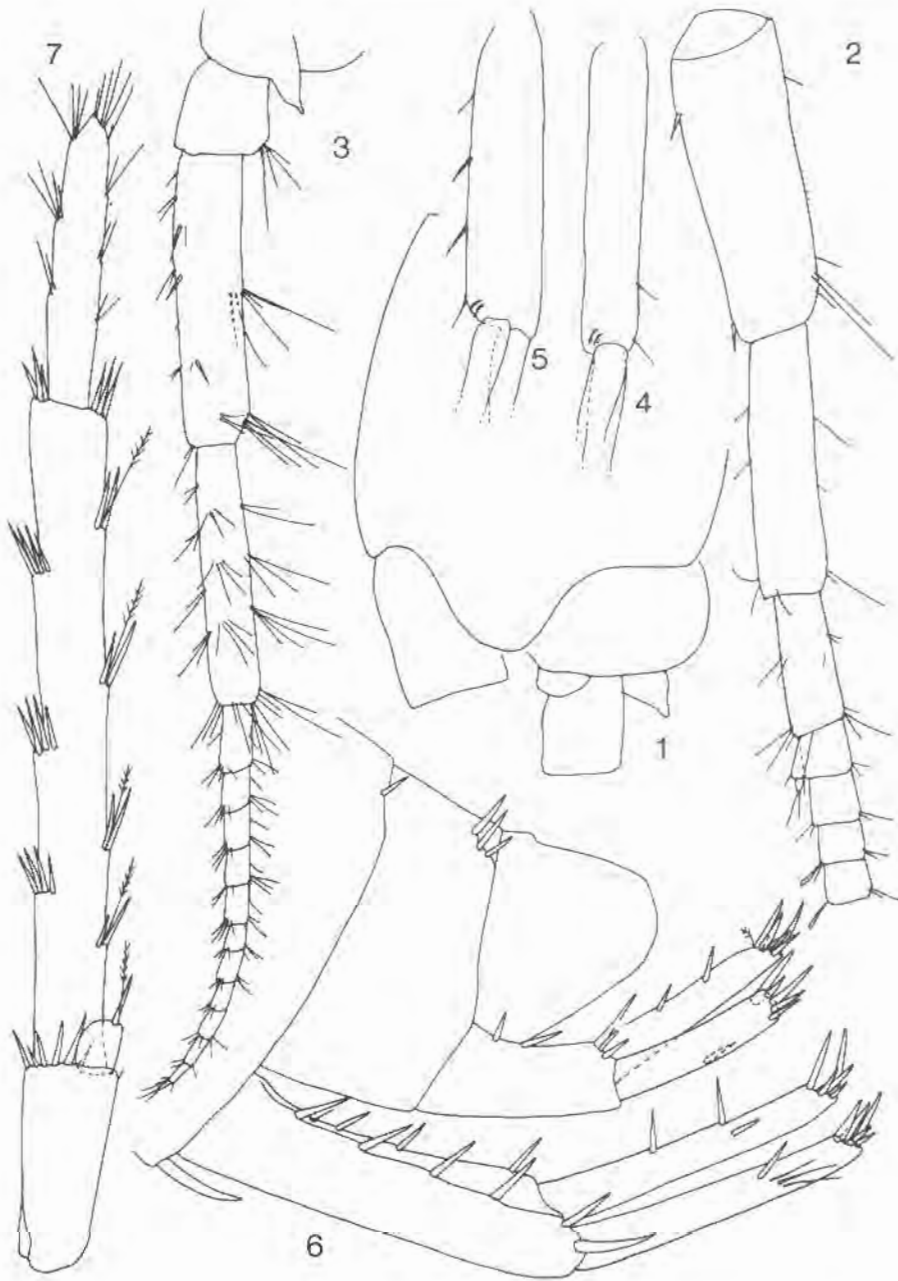


Fig. 1. *Niphargus catalogus*, n.sp., Merula, Andora (Italy), male 9 mm: 1 = head; 2 = antenna 1; 3 = antenna 2; 4 = pleopod 1; 5 = pleopod 3; 6 = urosome with uropods 1-2; 7 = uropod 3.

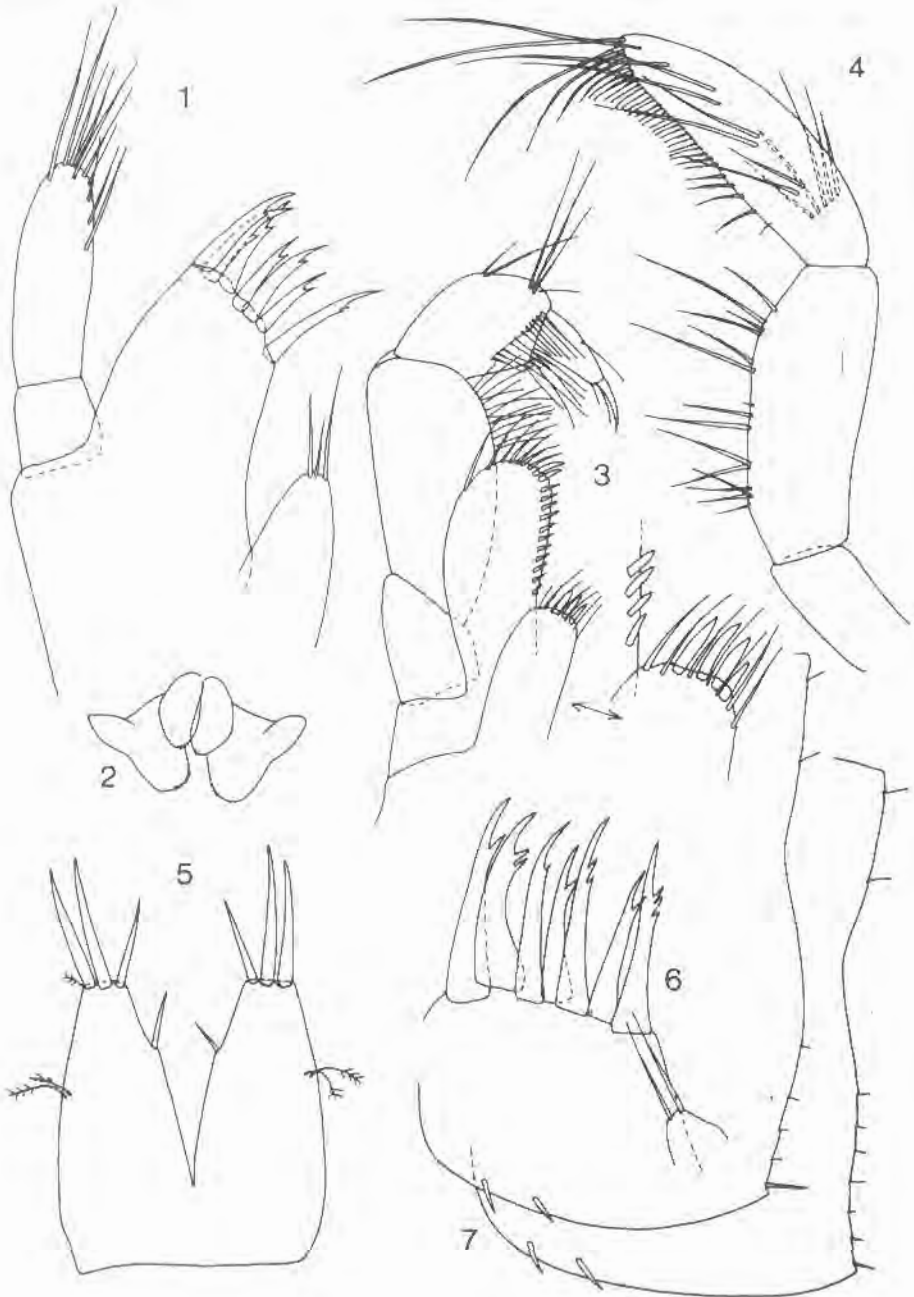


Fig. II. *Niphargus catalogus*, n. sp., Merula, Andora (Italy), male 9 mm: 1 = maxilla 1; 2 = labium; 3 = maxilliped; 4 = mandibular palp; 5 = telson; 6 = maxilla 1, female 8.5 mm; 7 = epimeral plates 2-3, female 8.5 mm.

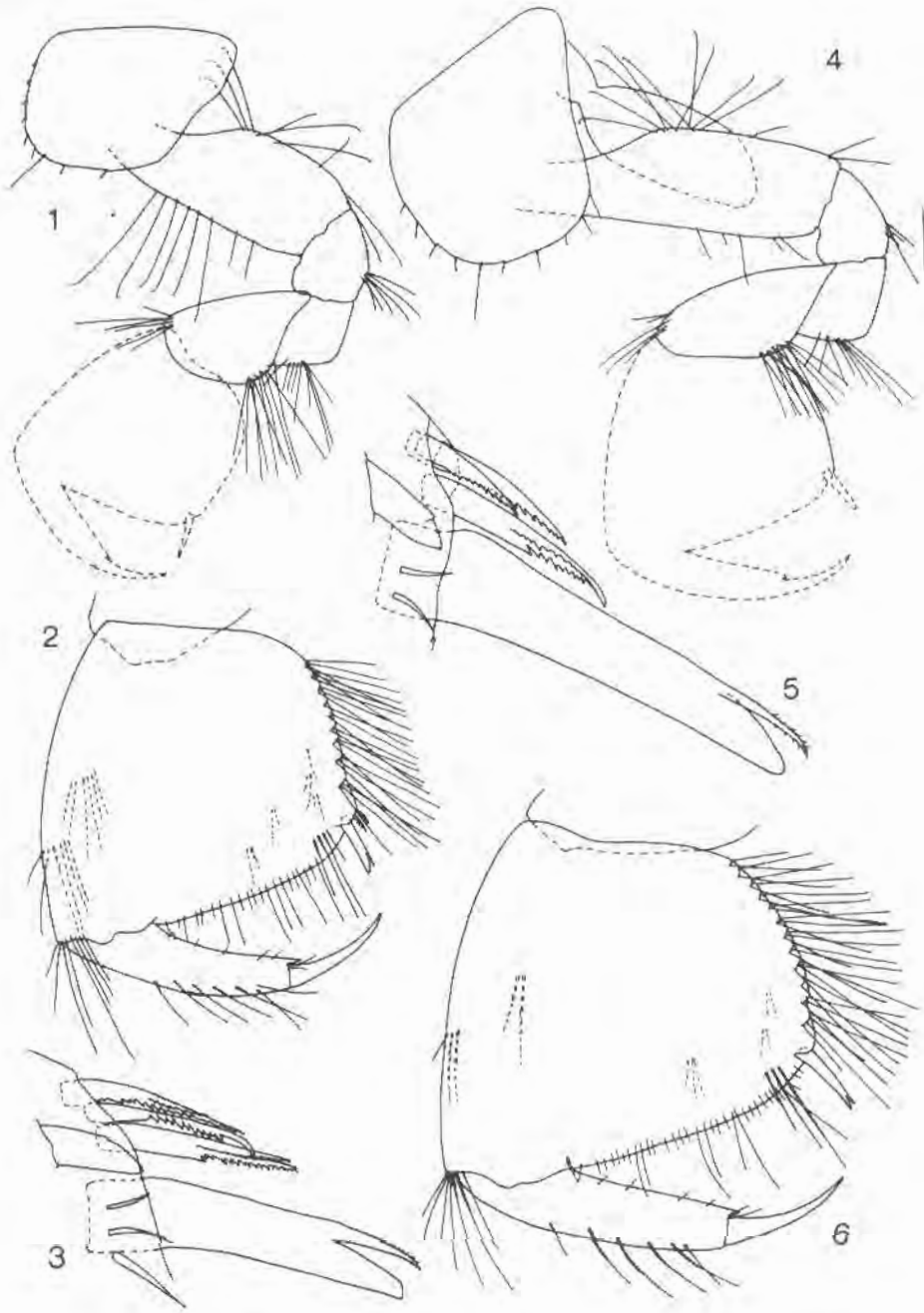


Fig. III. *Niphargus catalogus*, n. sp., Merula, Andora (Italy), male 9 mm: 1-3 = gnathopod 1; 4-6 = gnathopod 2.

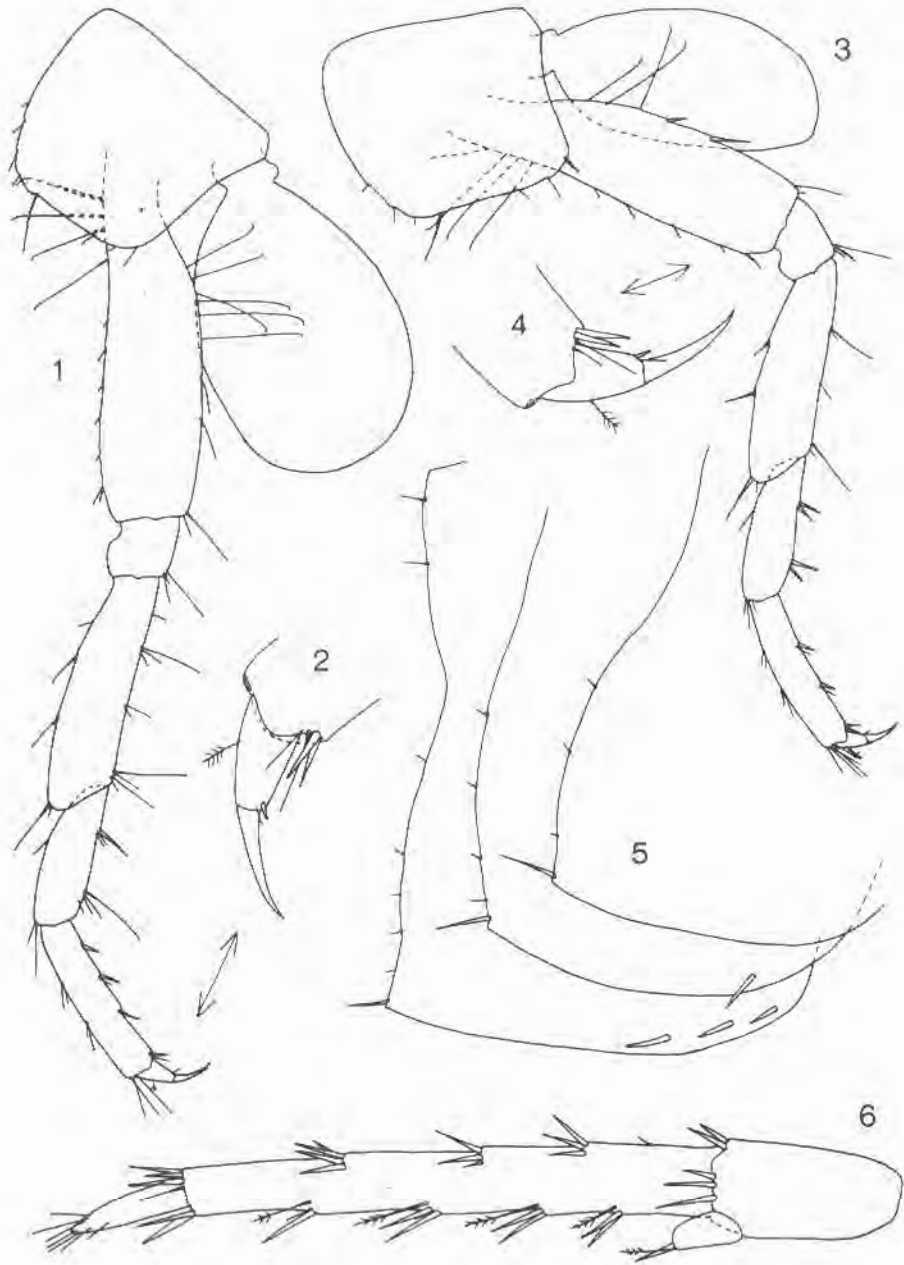


Fig. IV. *Niphargus catalogus*, n. sp., Merula, Andora (Italy), male 9 mm: 1-2 = pereopod 3; 3-4 = pereopod 4; 5 = epimeral plates 1-3; 6 = uropod 3, female 8.5 mm.

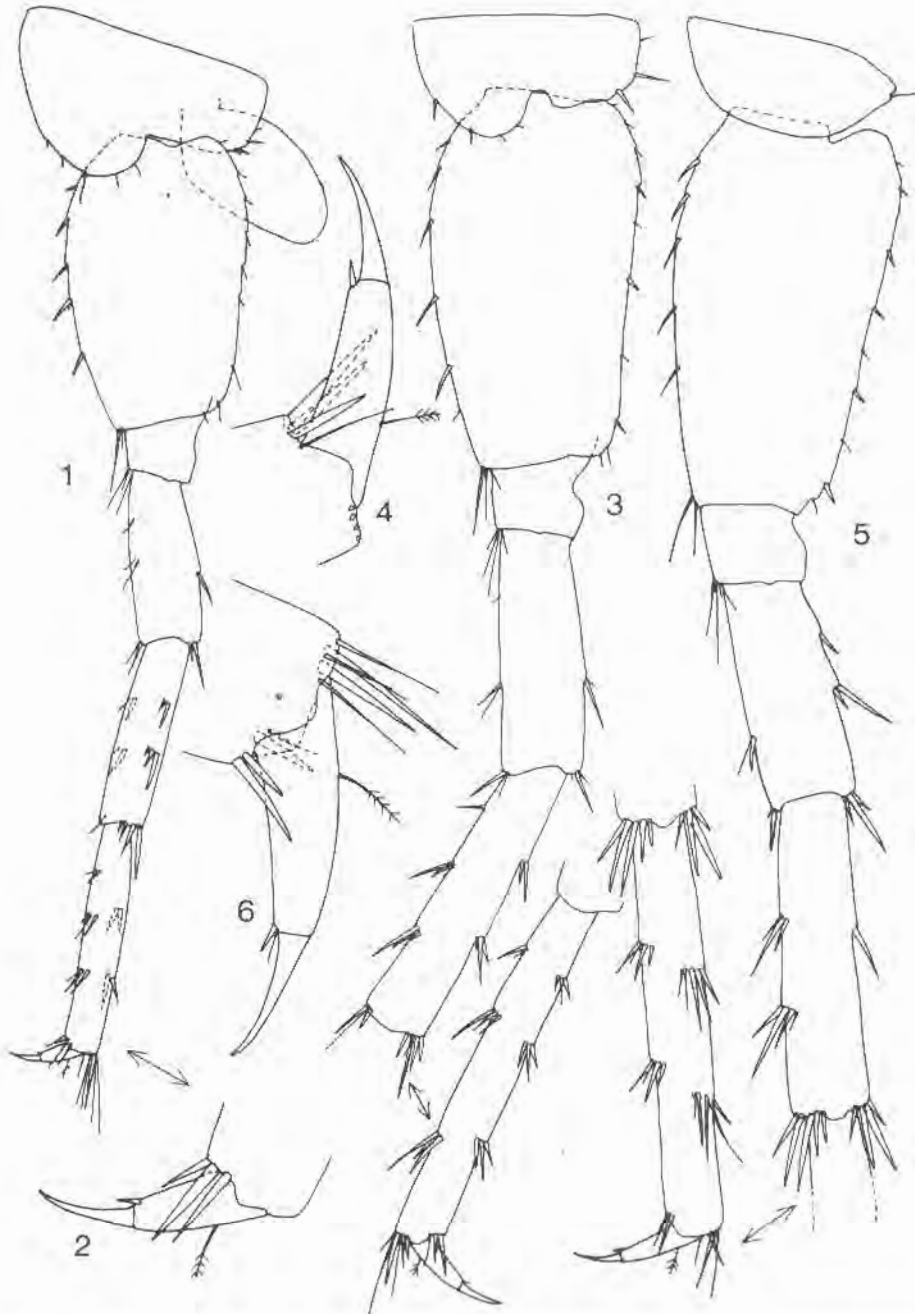


Fig. V. *Niphargus catalogus*, n. sp., Merula, Andora (Italy), male 9 mm: 1-2 = pereopod 5; 3-4 = pereopod 6; 5-6 = pereopod 7.

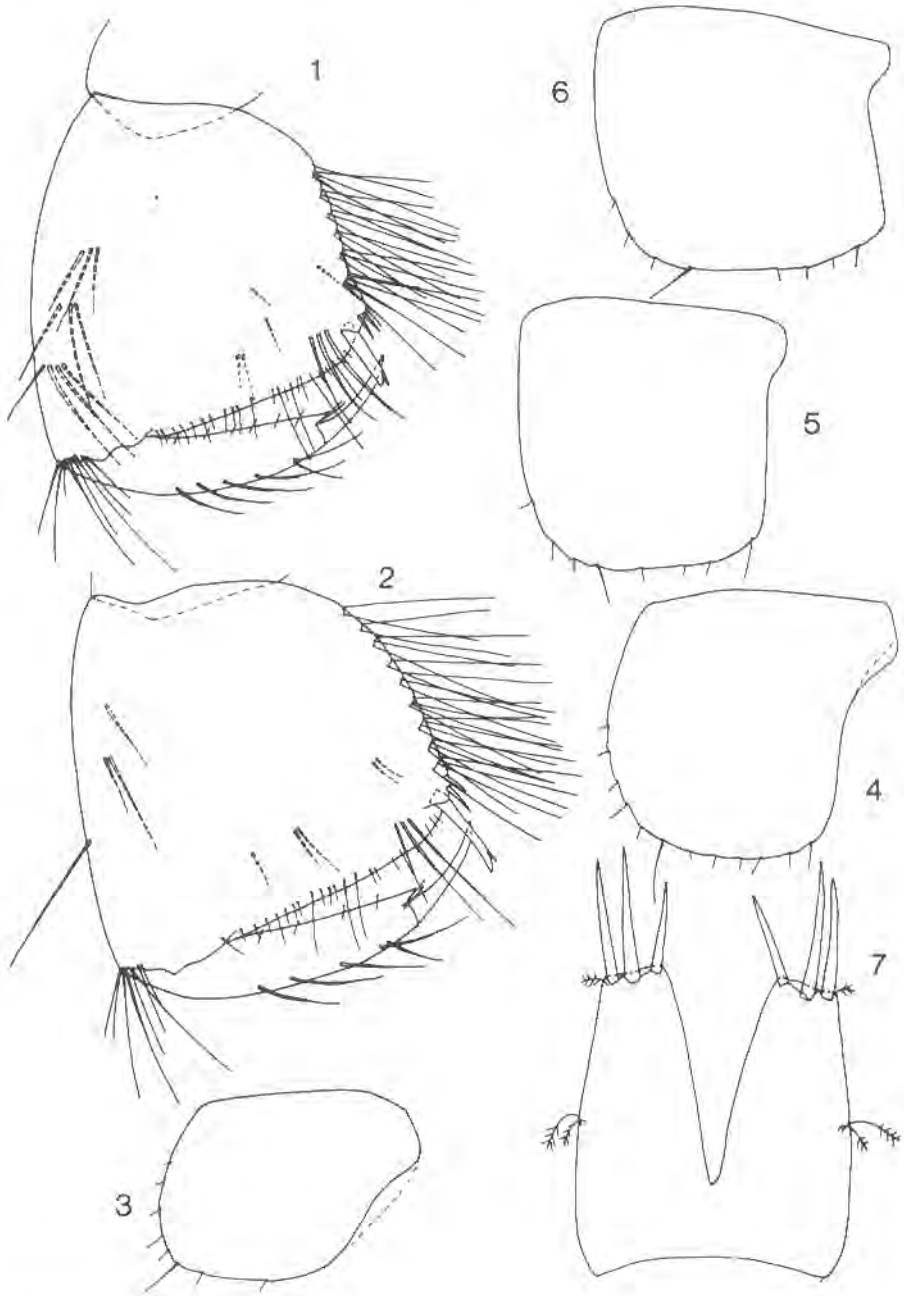


Fig. VI. *Niphargus catalogus*, n. sp., Merula, Andora (Italy), female 8.5 mm: 1 = gnathopod 1; 2 = gnathopod 2; 3 = coxa 1; 4 = coxa 2; 5 = coxa 3; 6 = coxa 4; 7 = telson.

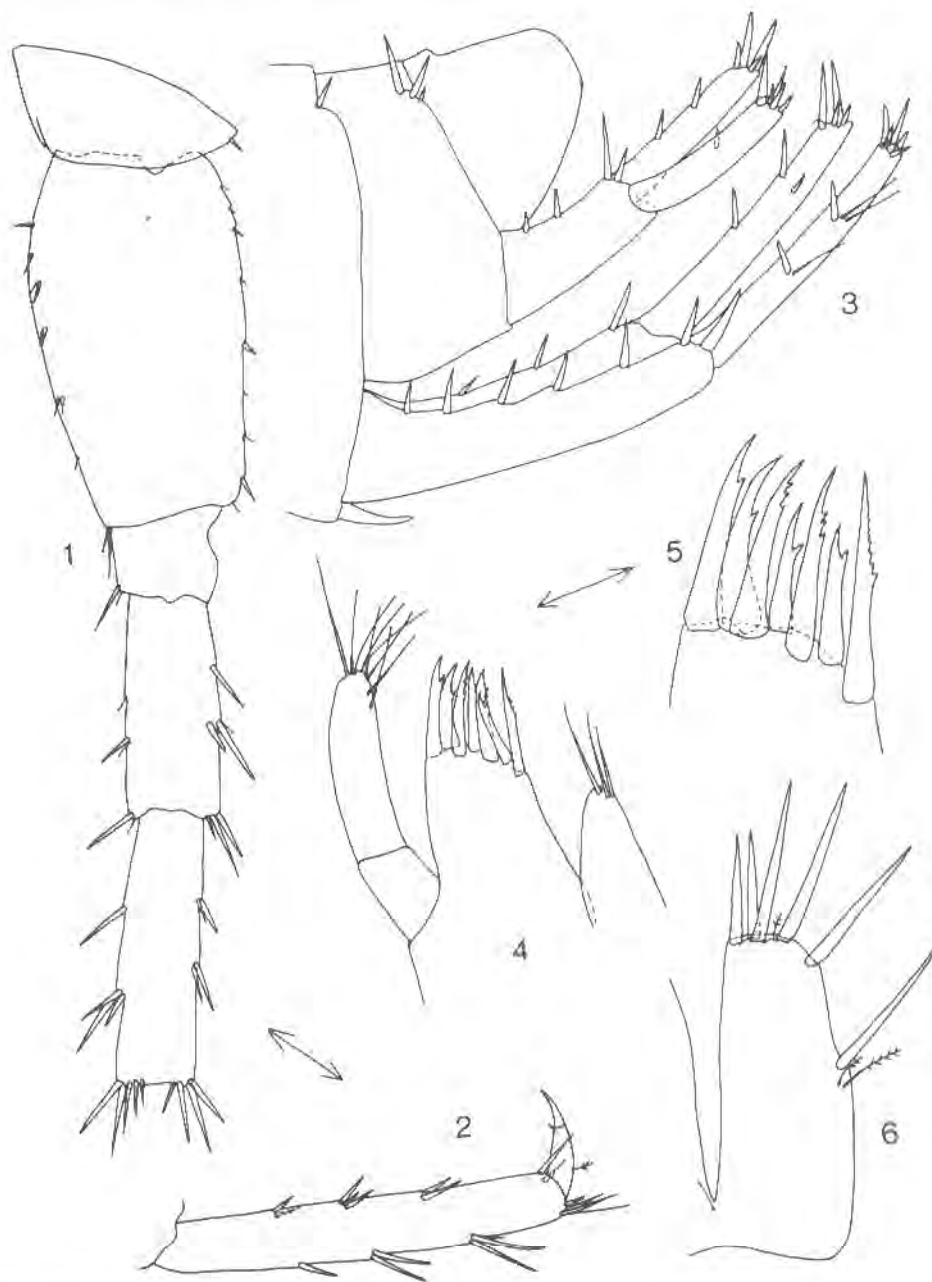


Fig. VII. *Niphargus catalagus*, n. sp., Merula, Andora (Italy), female 8.5 mm; 1-2 = pereopod 7; 3 = urosome with uropods 1-2.

Niphargus ambulator G. Karaman 1975, Buccone di Tremezzo (Italy), male 7.5 mm; 4-5 = maxilla 1; 6 = telson.

