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ONE RARE SPECIES OF THE GENUS *NIPHARGUS* SCHIÖDTE, 1849 (AMPHIPODA: GAMMARIDEA: FAM. NIPHARGIDAE) IN ITALY, *N. ABERRANS* SKET, 1972.

Abstract

One rare member of the family Niphargidae, *Niphargus aberrans* Sket, 1972 (Amphipoda, Gammaridea) is described and figured at the first time from Italy based on two collected samples from province of Gorizia. The species was known from Slovenia, and previously only reported for the Italian fauna in the database on CD-ROM only, by Ruffo & Stoch (2005), based on the material described and figured for the first time in the present paper.

The variability of some taxonomic characters of specimens from Slovenia and Italy are mentioned and the taxonomical position of this species within the genus *Niphargus* is discussed.

Key words: Amphipoda, *Niphargus aberrans*, taxonomy, Italy, description

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JEDNA RIJETKA VRSTA RODA *NIPHARGUS* SCHIÖDTE, 1849 (AMPHIPODA: GAMMARIDEA: FAM. NIPHARGIDAE) IZ ITALIJE, *N. ABERRANS* SKET, 1972.

Sažetak

Jedna rijetka vrsta iz familije Niphargidae, *Niphargus aberrans* Sket, 1972 (Amphipoda, Gammaridea) opisana je i nacrtana po prvi put iz Italije na osnovu primjeraka iz dva lokaliteta u provinciji Gorizia. Vrsta je bila poznata iz Slovenije i do sada bila samo citirana za italijansku faunu u bazi podataka na CD-ROM-u od strane Ruffo & Stoch (2005), na osnovu materijala opisanog i nacrtanog po prvi put u ovom radu. Naveden je varijabilitet nekih taksonomskih karaktera italijanskih i slovenačkih primjeraka ove vrste. Razmatran je taksonomski položaj ove vrste, u okviru roda *Niphargus*.

Ključne riječi: Amphipoda, *Niphargus aberrans*, taksonomija italija, opis

INTRODUCTION

The subterranean species *Niphargus aberrans* (Amphipoda: Gammaridea: Niphargidae) has been discovered and described by Sket (1972) from the subterranean waters of Ptuj (adult female and 3 juv. specimens) and Stožice near Ljubljana (3 juv. specimens).

The species was reported by Ruffo & Stoch (2005) (data reported in the database on CD-ROM, not published) for the Italian fauna based on the material described for the first time in the present paper. We redescribed and figured this species based on material from Italy (two localities from Gorizia province) to see if there are any remarkably differences between specimens from Slovenia and these from Italy.

MATERIAL AND METHODS

The material was collected by hand-nets in the various subterranean waters, and preserved in 70% ethanol. The specimens were dissected using a WILD M20 microscope and drawn using camera lucida attachment. All dissected appendages have been transferred later permanently into a liquid of Faure. The body-length of examined specimens were measured by tracing individual's mid-trunk lengths (from tip of head to end of tel-

son) using camera lucida. All illustrations were inked manually. The samples with all data regarding the collection and determination, are deposited in scientific collections.

The used terminology for some main spines and setae on propodus of gnathopods 1–2 is sensu Karaman, G. (1969; 1993; 2012).

RESULTS AND DISCUSSION

NIPHARGUS ABERRANS Sket, 1972
Figs.: I-V

Niphargus aberrans Sket, 1972: 21, figs. 65–81, 109; Karaman, G., 1974: 15; Karaman, G., 1980: 6; Barnard & Barnard, 1983: 589; Karaman, G. & Ruffo, 1986: 521;

MATERIAL EXAMINED: (codes beginning with AMD refer to F. Stoch's collection): ITALY:

AMD/00269- Well in Gabria Superiore (com. Savogna d`Isonzo, prov. Gorizia), June 29, 1990, one spec. (leg. S. Dolce & F. Stoch).

AMD/00950- Alluvial spring on the right bank of River Isonzo, where Isonzo and Torre stream are close together, com. Villesse, prov. Gorizia, April 5, 1996, 3 spec. intermixed with *Niphargus grandii* Ruffo, 1937 (leg. S. Cianfanelli).

DESCRIPTION: **FEMALE** 11.9 mm with setose oostegites: Body relatively slender, metasomal segments 1–3 with 3–4 dorsoposterior short setae each (fig. III, 8).

Epimeral plates 1–3 distinctly angular, almost quadrate, with well marked ventroposterior corner and slightly convex posterior margin bearing several setae; epimeral plates 2–3 with 1 subventral spine each (fig. III, 8).

Urosomites 1–2 on each dorsolateral side bearing 1 seta (fig. I, 3); urosomite 1 on each ventroposterior side with short slender spine near basis of uropod 1 peduncle (fig. I, 3).

Head with short rostrum and short subrounded, slightly downwards recurved lateral cephalic lobes (fig. IV, 10).

Antenna 1 exceeding half of body; peduncular articles 1–3 progressively shorter (ratio: 60: 44: 24); main flagellum with 27 articles bearing

usually 2 short aesthetascs each (fig. III, 5, 6); accessory flagellum 2-articulated, shorter than last peduncular article (fig. III, 5).

Antenna 2 slender (fig. III, 7), peduncular article 5 hardly shorter than 4 (ratio: 51: 48); flagellum slender, much longer than peduncular article 5 of antenna 2 and consisting of 12 articles; antennal gland cone short (fig. III, 7).

Mouthparts normal. Labrum broader than long, with convex anterior margin (fig. IV, 5). Labium with well developed inner lobes (fig. IV, 6).

Mandible with triturative molar bearing long seta on right mandible. Right mandible: incisor with 4 teeth, lacinia mobilis bifurcate, pluritoothed, accompanied by 7 rakers (fig. IV, 2). Left mandible: incisor with 5 teeth, lacinia mobilis strong, with 4 teeth accompanied by 10 rakers (fig. IV, 1). Mandibular palpus slender and long, article 1 naked; article 2 with 8 setae (fig. IV, 3); palp article 3 longer than 2 (ratio: 54: 45), on outer face with one group of 5 A setae, on inner face with 3 single B setae, at margin with 22 D setae and 5 E setae (fig. IV, 3).

Maxilla 1: inner plate short, with 1 distal seta; outer plate with 7 spines (5 spines with 1 lateral tooth, 1 spine with 2 teeth, 1 spine with 7–9 teeth); palpus reaching tip of spines of outer plate, with 4–5 distal setae (fig. I, 2).

Maxilla 2: both plates with marginal setae only (fig. IV, 4).

Maxilliped: inner plate short, not reaching outer tip of first palpus article, provided with 2 smooth lanceolate distal spines (fig. I, 1); outer plate short, nearly reaching half of second palpus article, bearing a row of distointernal marginal smooth lanceolate spines (fig. I, 1); palpus article 3 along outer margin with one median and one distal grup of setae (fig. I, 1); article 4 long, with 2–3 setae along inner margin and one median seta at outer margin; nail much shorter than pedestal (ratio: 14: 35).

Coxae 1–4 shallow, distinctly broader than long (= high) : coxa 1 (ratio: 53:31); coxa 2 (ratio: 59: 40); coxa 3 (ratio: 55: 41); coxaa 4 (ratio: 54:40). Ventral margin of coxae 1 and 2 is straight or slightly convex (fig. II, 1, 4), ventral margin of coxae 3 and 4 is concave (fig. III, 1, 3). Coxae 5–7 shallow, much broader than long (=high): coxa 5 (ratio: 53: 31) (fig. V, 1); coxa 6 (ratio: 44: 24) (fig. V, 3); coxa 7 (ratio: 45:20) (fig. V, 5). Anterior lobe of coxa 6 is broad, that of coxa 6 is narrow; coxa 7 is unlobed (fig. V, 1, 3, 5).

Gnathopods 1–2 large. Gnathopod 1: article 2 with numerous long setae along both margins; articles 3–4 short (fig. II, 1); article 3 along posterior margin with one distal group of setae. Article 5 (carpus) much shorter

than article 6 (ratio: 31:70). Article 6 strong, ovoid, longer than broad (ratio: 90:61), with nearly 13 transverse rows of setae along posterior margin (fig. II, 2); palm slightly convex, inclined almost to the half of posterior margin of article 6, defined on outer face by 2 strong corner S-spines, 2 week serrate L-spines and 3 facial M-setae, on inner face by 2 short subcorner R-spines (fig. II, 2, 3). Dactylus reaching posterior margin of article 6, bearing one median seta at outer margin (fig. II, 2).

Gnathopod 2 remarkably larger than 1, its article 2 with short setae along anterior margin, and long setae along posterior margin (fig. II, 4); article 3 along posterior margin with one group of setae. Article 5 much shorter than article 6 (ratio: 35: 92). Article 6 almost ovoid, much longer than broad (ratio: 125: 80), with nearly 16 transversal rows of setae along posterior margin (fig. II, 5). Palm convex, oblique nearly to the half of posterior margin of article 6. Propodus palm of left gnathopod 1 defined on outer face by 3 strong corner S-spines and 5 facial M-setae (serrate L-spines absent), on inner face by 1 longer subcorner R- spine (fig. II, 5, 6). Propodus palm of right gnathopod 2 defined on outer face by 2 corner strong S-spines , 2 serrate L-spines and 5 facial M-setae, on inner face by 1 strong subcorner R-spine (fig. II, 7). Dactylus not reaching posterior margin of article 6, bearing 1 median seta at outer margin (fig. II, 5).

Pereopods 3–4 similar to each other, relatively slender, article 2 along anterior margin with shorter setae, along posterior margin with longer setae (fig. III, 1, 3). Pereopod 3: articles 4–6 of unequal length (ratio: 86: 56: 58), posterior margin of articles 4–5 with short setae, posterior margin of article 6 with 4 bunches of short setae; dactylus short and strong (fig. III, 2), much shorter than article 6 (ratio: 21: 60), along inner margin with strong spine near basis of the nail; nail shorter than pedestal (ratio: 17: 24).

Pereopod 4 hardly shorter than pereopod 3, not reaching half of article 6, articles 4–6 of unequal length (ratio: 74: 56: 57), posterior setae on article 4 are shorter than these in pereopod 3 (fig. III, 3). Dactylus short and strong, along inner margin with one strong spine near basis of the nail (fig. III, 4), nail shorter than pedestal (ratio: 17: 21).

Pereopods 5–7 progressively longer, pereopod 7 is much longer than 5 (fig. V, 1, 3, 5).

Pereopod 5: article 2 narrow, linear, much longer than broad (ratio: 69: 29), without ventroposterior lobe and with row of posterior marginal short setae (fig. V, 1); along anterior margin with slender spine or spine-

like setae. Articles 4–6 of unequal length (ratio: 46: 45: 50), along both margins with short slender spines and setae. Dactylus short and strong, much shorter than article 6 (ratio: 19: 50), along inner margin with one spine like seta near basis of the nail (fig. V, 2) and one median plumose seta along outer margin; nail shorter than pedestal (ratio: 13: 27).

Pereopod 6 is longer than 5; article 2 linear, more than twice as long as broad (ratio: 78: 32), with slightly concave posterior margin provided with short spines and setae (fig. V, 3), along anterior margin with several slender spines (fig. V, 3. Articles 4–6 elongated, of unequal length (ratio: 66: 64: 85), along both margins with slender spines and setae (fig. V, 3); dactylus strong, much shorter than article 6 (ratio: 28: 86), with one spine-like seta along inner margin near basis of the nail, and 2 setae (one plumose and one simple seta) along outer margin (fig. V, 4); nail much shorter than pedestal (ratio: 17: 47).

Pereopod 7 very long; article 2 linear, much longer than broad (ratio: 90: 35), with concave posterior margin provided with several slender spines and setae, anterior margin with 5–6 spines; ventroposterior lobe absent. Articles 4–6 of unequal length (ratio: 71: 90: 116), along both margins with long slender spines and single setae (fig. V, 5). Dactylus strong, much shorter than article 6 (ratio: 35: 115), along inner margin with one slender spine near basis of the nail, along outer margin with one plumose and 3 simple median setae (fig. V, 6); nail short and strong, much shorter than pedestal (ratio: 69: 19) (fig. V, 6).

Pleopods 1–3 with elevated number of retinacula (4–5-4 or 4–4-5). Peduncle of pleopod 1 with 5 short setae and naked posterior margin (fig. IV, 7); peduncle of pleopod 2 along anterior margin with 2 short setae and naked posterior margin (fig. IV, 8); peduncle of pleopod 3 with 2 short setae along anterior margin and with one strong seta at posterior margin (fig. IV, 9).

Uropod 1: peduncle with dorsointernal and dorsoexternal row of spines; rami remarkably shorter than peduncle; outer ramus poorly longer than inner one, both rami with numerous lateral and distal spines (fig. I, 3, 4), on outer ramus accompanied by 2 median bunches of short setae (fig. I, 3, 4).

Uropod 2: inner ramus remarkably longer than outer one, both rami with lateral and distal spines (fig. I, 3, 5).

Uropod 3 short: peduncle short, poorly longer than broad (ratio: 38: 28), bearing several distal short spines (fig. IV, 11); inner ramus shorter than peduncle, scale-like, bearing one lateral and 2 distal spines (fig. IV, 11). Outer ramus 2-articulated: first article of outer ramus at both margins

with 5 bunches of long lateral spines, along inner margin of article 1 these bunches of spines are intermixed with single long plumose setae (fig. IV, 11). Second article of outer ramus much shorter than first article (ratio: 160: 22), with 3 short distal setae only.

Telson short, hardly broader than long (ratio: 68: 64), incised less than 2/3 of its length; lobes are slightly gapping; each lobe with 3 short distal spines and 0–1 small spine and 1 short simple seta at outer margin, as well as 0–1 short facial seta (fig. I, 6); 3 long plumose setae are attached near the middle of each lobe (fig. I, 6).

Coxal gills on gnathopod 2 are short, ovoid (fig. II, 4), on pereopods 3–6 are longer, but not reaching ventral tip of pereopod article 2 (figs. III, 1, 3; V, 1, 3).

Oostegites broad, appear on pereonites 2–5 and provided with long marginal setae.

MALE: unknown.

VARIABILITY.

S k e t (1972) described *N. aberrans* based on one adult female of 8 mm with setose oostegites, collected from Ptuj, Slovenia. Our female from Italy mainly agree with that from Slovenia, but the female from Slovenia (Ptuj) has some small differences probably within the range of variability of the species itself: Epimeral plate 2 without subventral spine; urosomite 2 on ech dorsolateral side with one slender spine; main flagellum of antenna 1 with 24 articles only; flagellum of antenna 2 with 9 articles; outer plate of maxilla 1 with 6 spines bearing one lateral tooth, one spine with 6 lateral teeth; propodus palm of gnathopod 2 with 2 facial M-setae; posterior margin of gnathopod 2 propodus with 12 transverse rows of setae; dactylus of pereopod 7 along outer margin with one median plumose seta only, lobes of telson with 2–3 long plumose setae in the middle, lateral marginal spines absent.

As only very scarce number of adult females of this species are known (2) and the male of this species is unknown, the limits of the variability of this species are unknown.

LOC. TYP.: Ptuj (Slovenia).

DISTRIBUTION: Slovenia, NE. Italy.

REMARKS AND AFFINITIES.

Stanko Karaman (1960) established a subgenus *Niphargus* (*Jovaniphargus*), n. sbg., with the type species *Niphargus jovanovici* S. Kara-

man, 1931, and the final splitting of the genus *Niphargus* in various new entities is still in the process.

Niphargus aberrans belongs to the *Niphargus jovanovici* group of taxa (shape of gnathopods, pereopods, mouthparts, uropod 3, telson), especially to the species *N. bajuvaricus* Schellenberg, 1932, *N. grandii* Ruffo, 1937 and *N. microcerberus* Sket, 1972, but differs from all these taxa by numerous distinct characters.

N. bajuvaricus and *N. grandii* differ from *N. aberrans* by shape of gnathopods 1–2, by presence of 3 long plumose setae on each lobe of telson, etc.

N. microcerberus differs from *N. aberrans* by more ovoid article 6 of gnathopods 1–2, by presence of only 2 long plumose setae sitting in upper half of each lobe of telson, by presence of 2 retinacula on pleopods, etc.

ECOLOGY: S k e t mentioned (1972) this species for the wells, accompanied by *Niphargus multipennatus* Sket 1956 (Stožice). In Italy, this species was found in the well also, accompanied by *Niphargus grandii* Ruffo, 1937 (present work).

CONCLUSION

The species *Niphargus aberrans* was described from Slovenia by Sket (1972), later discovered in Italy and described in this work.

N. aberrans Sket, 1972 is well defined species allied to the *Niphargus jovanovici*- Group of taxa. We prepared the first more detailed description of this species from Italy. As the male of *N. aberrans* is unknown, the exact relations between this species and some other members of *N. jovanovici*-Group of taxa is not possible to establish.

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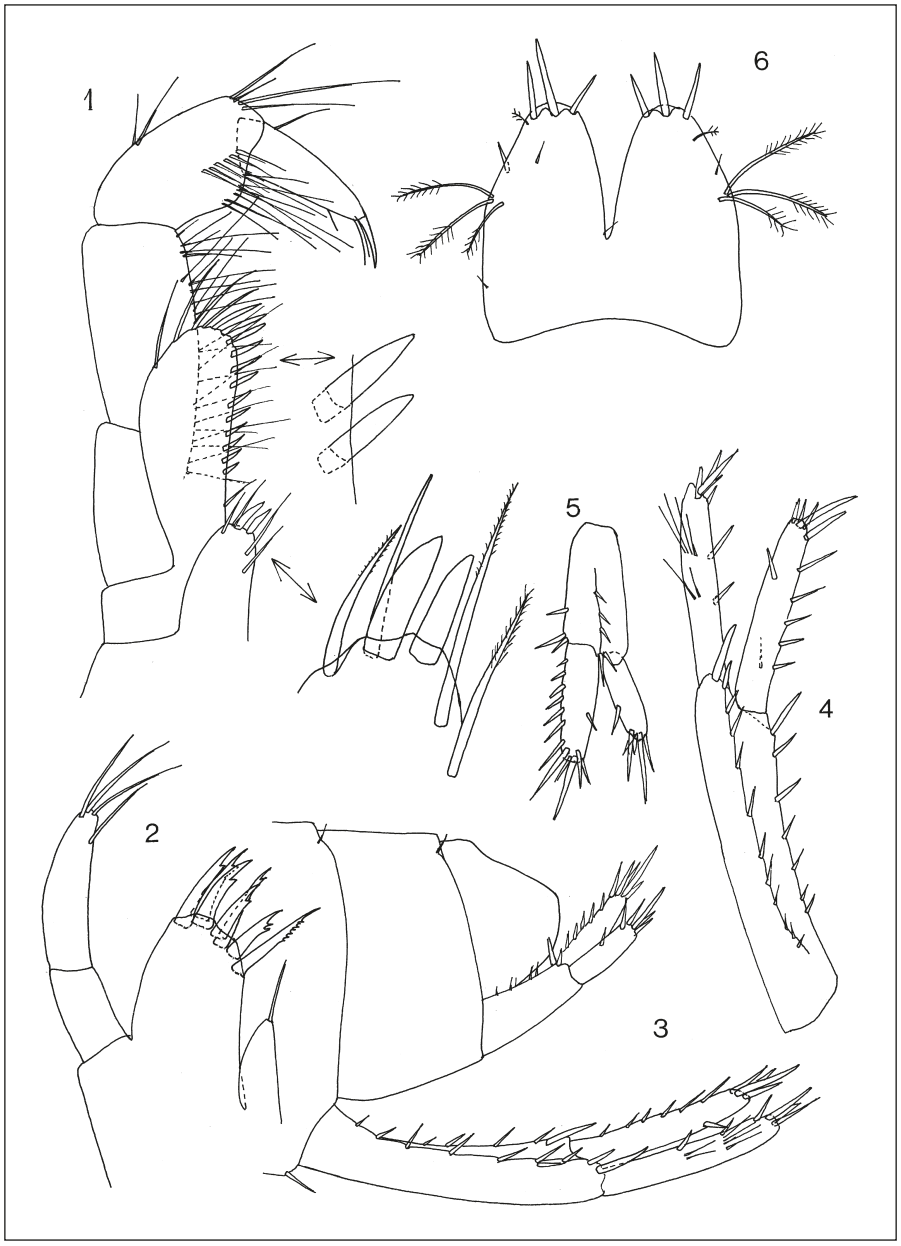

Fig. I. *Niphargus aberrans* Sket, 1972, female 11.9 mm, Gabria Superiore, Italy: 1= maxilliped; 2= maxilla 1; 3= urosome with uropods 1–2; 4= uropod 1; 5= uropod 2; 6= telson.

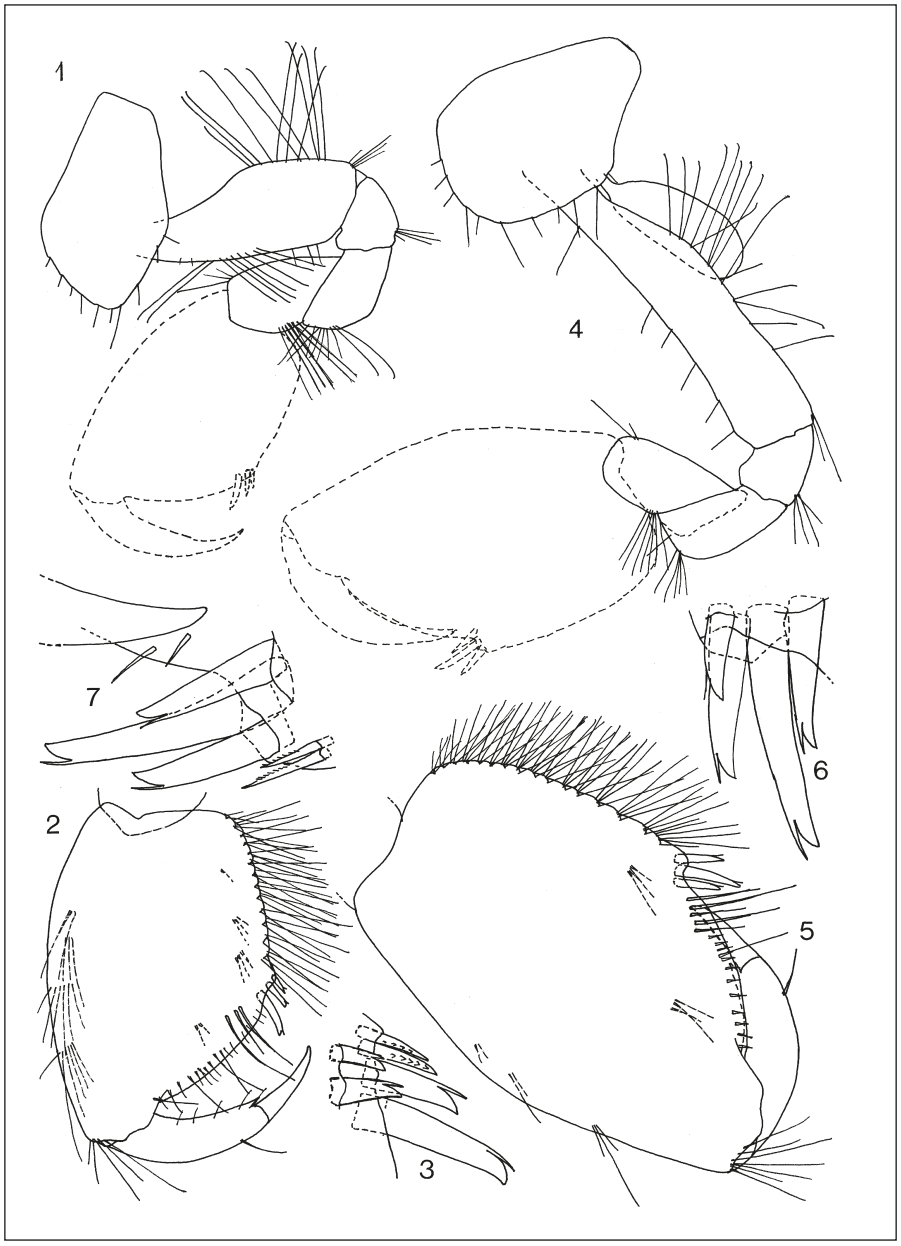

Fig. II. *Niphargus aberrans* Sket, 1972, female 11.9 mm,
Gabria Superiore, Italy: 1–3= gnathopod 1; 4–6= left gnathopod
2; 7= corner of prododus of right gnathopod 2.

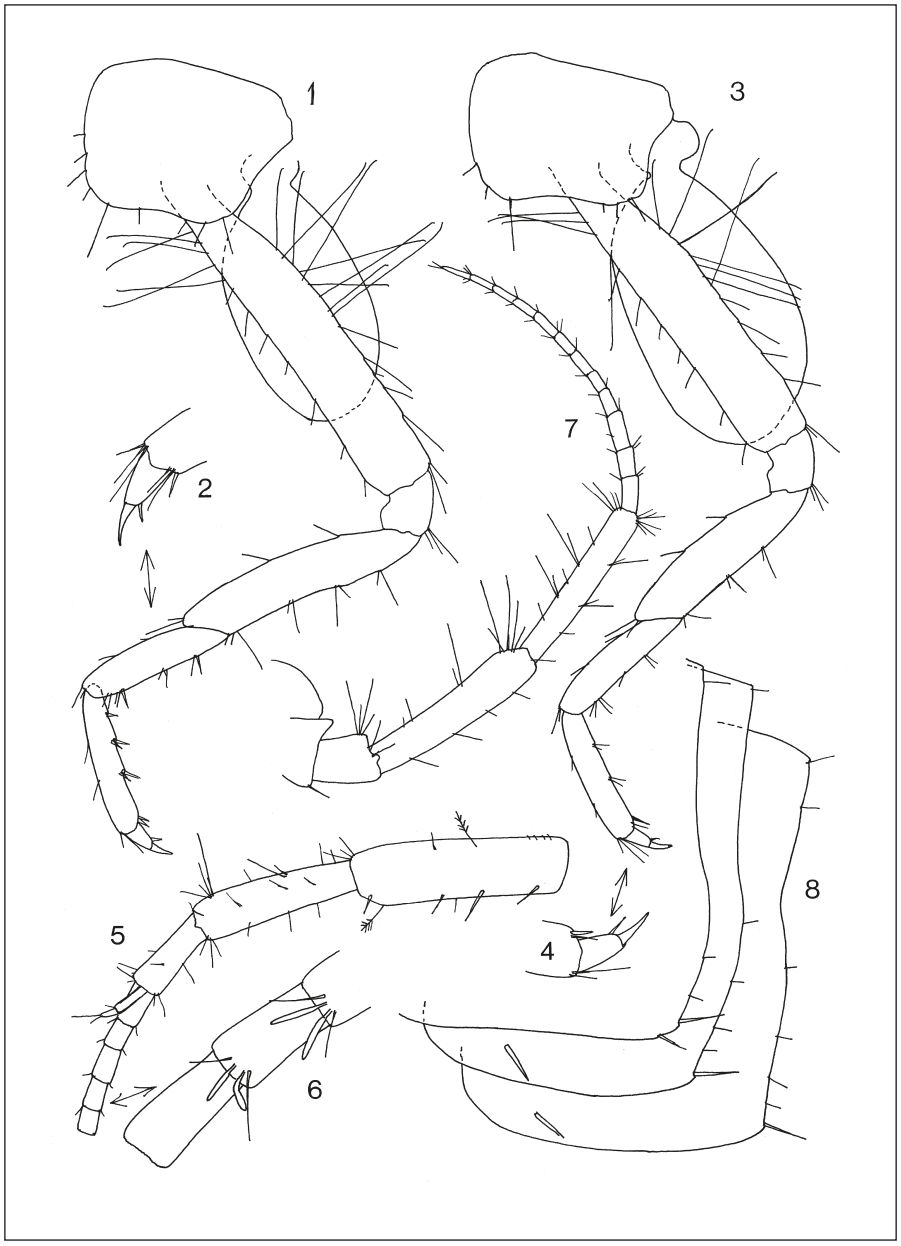

Fig. III. *Niphargus aberrans* Sket, 1972, female 11.9 mm, Gabria Superiore, Italy: 1–2= pereopod 3; 3–4= pereopod 4; 5–6= antenna 1; 7= antenna 2; 8= epimeral plates 1–3.

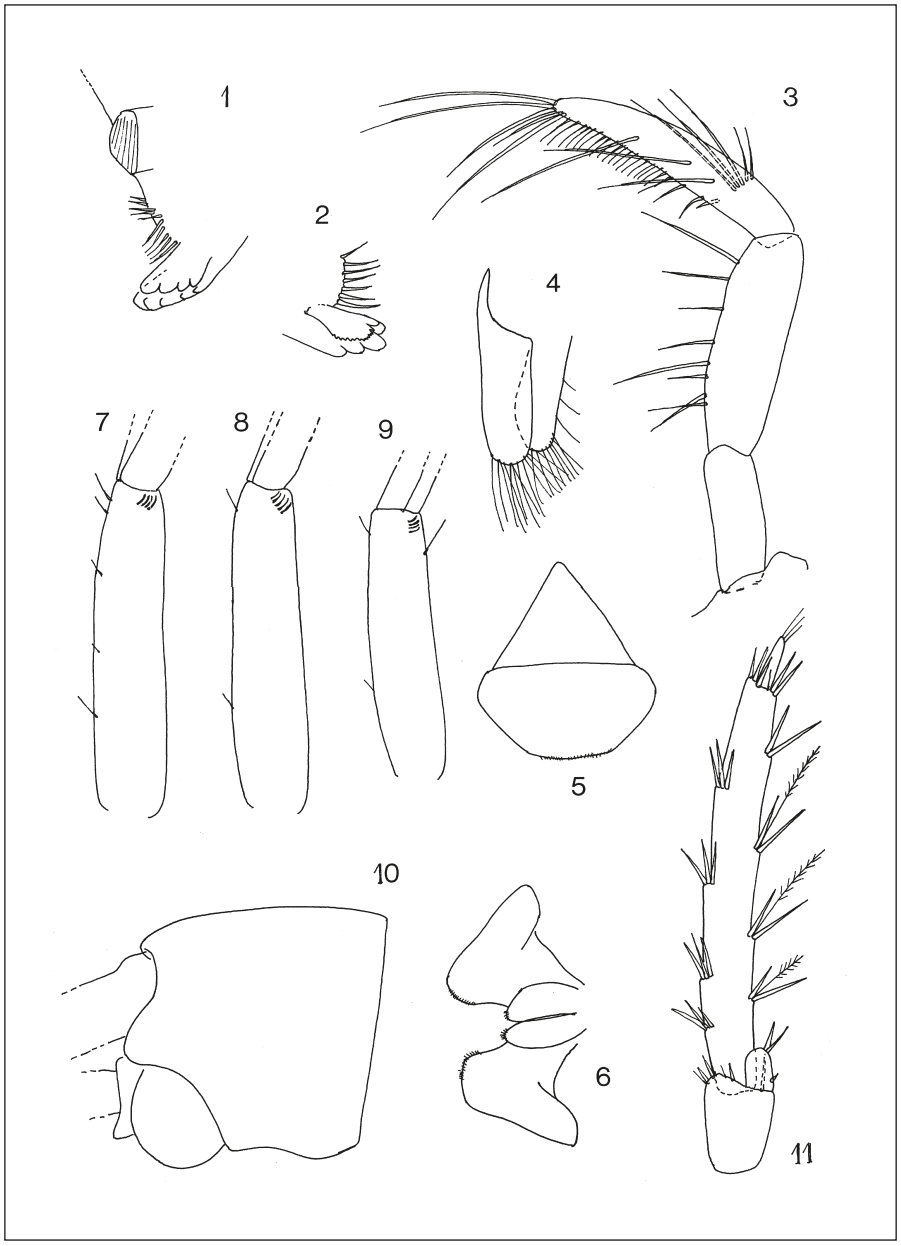

Fig. IV. *Niphargus aberrans* Sket, 1972, female 11.9 mm, Gabria Superiore, Italy: 1= tip of left mandible; 2= tip of right mandible; 3= mandible palp, inner face; 4= maxilla 2; 5= labrum; 6= labium; 7–9= peduncle of pleopods 1–3; 10= head; 11= uropod 3.

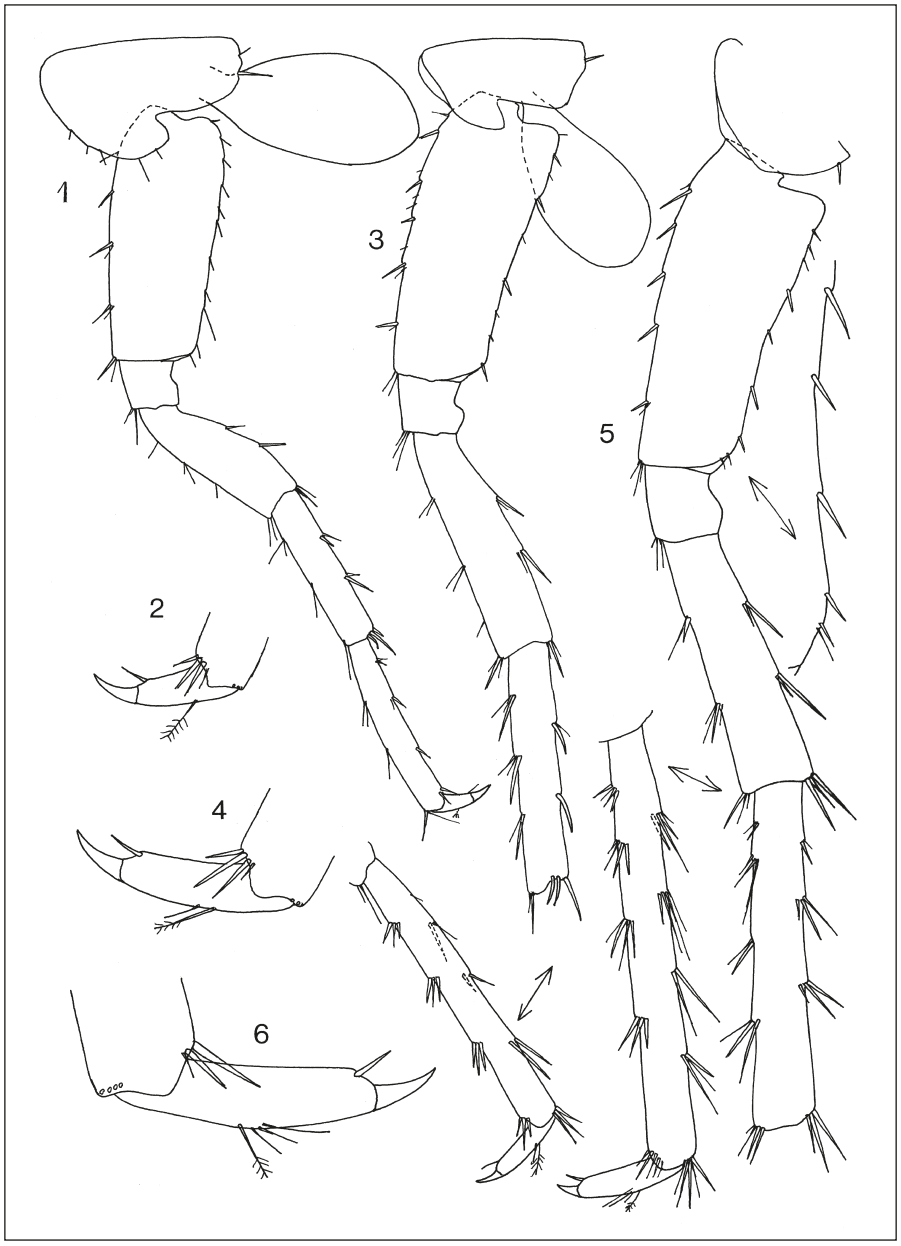

Fig. V. *Niphargus aberrans* Sket, 1972, female 11.9 mm, Gabria Superiore, Italy: 1–2= perepod 5; 3–4= pereopod 6; 5–6= pereopod 7.