

Contribution to the Knowledge of the Amphipoda 150. One new species of genus *Niphargus* (Gammaridea, Niphargidae) from France, *Niphargus renei* n.sp.

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Keywords : Gammaridea, Niphargidae, new species, subterranean waters, Rhône, France.

One new species of the family Niphargidae (Amphipoda, Gammaridea), *Niphargus renei* n. sp. is described from the subterranean waters of Rhône river near Lyon, France. This species is closely allied to the *Niphargus orcinus* — group of species.

Contribution à la connaissance des Amphipoda 150. Une nouvelle espèce du genre *Niphargus* (Gammaridea, Niphargidae) de France, *Niphargus renei* n. sp.

Mots-clés : Gammaridea, Niphargidae, nouvelle espèce, eaux souterraines, Rhône, France.

Une nouvelle espèce de la famille des Niphargidae (Amphipoda, Gammaridea), *Niphargus renei*, n. sp. souterraines du Rhône, près de Lyon, France. Cette espèce est très proche des espèces du Groupe *Niphargus orcinus*.

Introduction

The study of the subterranean members of Amphipoda in France has been provided by numerous scientists (Chevreux 1896, 1901, 1906; Schellenberg 1935, 1937, 1950, 1951; Coineau 1962, 1963, 1967, 1968; Balazuc 1954; Ginet 1962, 1982, 1985; Ginet & Aellen, 1985; Ruffo 1954; Ruffo & Delamare-Deboutteville 1952; G. Karaman 1970, 1979, 1980, 1982; Barbe 1961, 1963, 1965; Bou 1965, 1971; Platvoet 1984, etc.), and numerous species were discovered and described. Among these genera, the genus *Niphargus* is presented with highest number of taxa (over 20); some of these taxa are endemic for France, other one are with larger distribution in Europe.

Dr. René Ginet from the University of Lyon-Villeurbanne realized numerous investigations of the subterranean fauna in France during many years. He gave us kindly at disposition for study two samples of *Niphargus* from the subterranean waters

of Rhône river near Lyon, described here as a new species, *Niphargus renei*, n. sp., as well as detailed informations about previous citations of existence of *N. renei* in french scientific papers and photography of this species made by Jacques Mathieu.

Niphargus renei n. sp.

Description

Body length of ovigerous females up to 10 mm. Body stout; metasomesgments 1-3 each with 2-4 short dorsoposterior setae. Urosome not laterally compressed, urosomite 1 on each side with 1, rarely 2 spines; urosomite 2 on each side with 2 spines (*fig. III, 7*), urosomite 3 smooth.

Head normal, lateral cephalic lobes short, subrounded, rostrum short (*fig. I, 7*).

Antenna 1 reaching or hardly exceeding half of the body-length; peduncular segment 2 hardly shorter than ped. segment 1 (*fig. I, 3*), peduncular segment 3 slender, slightly exceeding half of second peduncular segment (*fig. I, 3*); main flagellum consisting

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of up to 24 articles bearing one aesthetasc each (*fig. I, 3*); accessory flagellum 2-segmented, short, second segment exceeding half of first segment (*fig. I, 4*).

Antenna 2 slender, peduncular segments 4-5 poorly setose, peduncular segment 4 with several short dorsal spines also (*fig. I, 5*); flagellum slender, consisting of up to 9 articles; antennal gland cone short (*fig. I, 5*).

Labrum broader than long, entire, convex, epistome prominent (*fig. II, 7*), subrounded distoanteriorly. Labium with well developed inner lobes (*fig. II, 9*).

Left mandible: incisor with 5 teeth, lacinia mobilis with 4 strong teeth, between incisor and molar appears a row of plumose setae. Right mandible: incisor with 4 teeth, lacinia mobilis feeble, bicuspidate, pluritoothed. Mandibular palp strong, with first segment smooth (*fig. I, 6*); second palp segment with nearly 8 strong spine-like setae; third segment remarkably longer than second segment, subfalci-form, bearing on outer face 1 group of A-setae, on inner face 4 groups of B-setae, at posterior margin up to 26 D-setae and up to 6 E-setae (*fig. I, 6*).

Maxilla 1: inner plate with 1-2 setae, outer plate with 7 spines (5-6 spines with one tooth, 1-2 spines with 3-4 teeth each), palp 2-segmented not exceeding basis of spines of outer plate, bearing 3-4 distal long setae (*fig. IV, 7-8*).

Both plates of maxilla 2 with numerous distal setae only (*fig. II, 8*).

Maxilliped: inner plate very short, reaching only basis of first palp segment (*fig. I, 1*), bearing 2 distal spines and several setae; outer plate almost reaching half of second palp segment (inner margin) (*fig. I, 1*), bearing a row of distolateral spines; palp 4-segmented, large, nail shorter than the remaining part of article 4; palp article 4 with one seta at outer margin and one bunch of 2 setae at inner margin near basis of nail (*fig. I, 1*).

Coxae 1-4 distinctly longer than broad, with short marginal setae (*fig. II, 1, 4*; *III, 1, 3*), coxa 1 with subangular ventroanterior corner (*fig. II, 1*), coxa 4 poorly lobed ventroposteriorly (*fig. III, 3*), coxa 5 shorter than 4.

Gnathopods 1-2 large, gnathopod 2 slightly larger than 1. Gnathopod 1: segment 2 distally dilated, with concave anterior margin (*fig. II, 1*); segments

3-4 short, each with one group of setae at posterior margin; segment 5 shorter than 6, narrow (*fig. II, 1*); segment 6 ovoid, with strongly inclined convex palm defined on outer face by one strong corner spine accompanied laterally by 3, rarely only 2 short strong corner spines and 2 facial setae (*fig. II, 2, 3*), on inner face by one short subcorner spine (*fig. II, 3*); dactyl long and slender, with poorly marked inferior tooth near basis of nail, and bearing 3, rarely only 2 short setae at outer margin; nail long and slender (*fig. II, 2*).

Gnathopod 2: segment 2 narrower and not dilated distally (*fig. II, 4*); segments 3-4 short, with one group of setae at posterior margin; segment 5 narrow and long, but shorter than segment 6 (*fig. II, 4*); segment 6 like that of gnathopod 1, but larger; palm strongly inclined, defined on outer face by one long corner spine accompanied by one shorter spine sitting partially behind long spine (*fig. II, 5, 6*) and 2 facial setae; on inner face by one shorter subcorner spine (*fig. II, 6*); dactyl like that of gnathopod 1.

Pereopods 3-4 slender and linear, segment 2 with concave anterior margin bearing short distolateral spines (*fig. II, 1, 3*); dactyl short, with one slender spine at inner margin and with one plumose seta at outer margin; nail shorter than the remaining part of dactyl (*fig. III, 1-4*).

Pereopods 5-7 moderately long, pereopod 5 slightly shorter than pereopods 6 and 7; segment 2 of pereopods 5-7 broad, dilated proximally, with short setae at posterior margin and with poorly developed but marked ventroposterior lobe (*fig. IV, 1, 3, 5*); sometimes occurs one spine at posterior margin of segment 2 of pereopod 7 (*fig. IV, 5*); segments 3-6 with bunches of spines at both margins; dactyls short, with one spine at inner margin and with one plumose seta at outer margin; nail shorter than the remaining part of dactyl (*fig. IV, 2, 4, 6*).

Pleopods with 2 retinacula each. Anterior surface of peduncle of pleopods 1-2 with 2 short setae; peduncle of pleopod 3 at posterior surface with several setae including 2 distal setae.

Epimeral plates 1-3 angular, with straight or concave posterior margin (*fig. III, 5*), ventral margin of epimeral plates 2-3 with several spines each.

Urosomite 1 near basis of peduncle of uropod 1 with one strong short spine (*fig. III, 7*). Uropod 1: peduncle with dorsal outer row of spines and dorsal

inner row of setae (plus 1 distal spine); rami subequal long or inner ramus slightly longer than outer one (fig. III, 7), both rami with marginal and distal short spines.

Uropod 2: peduncle with mid-dorsal spine (fig. III, 7), inner ramus distinctly longer than outer one, both rami with marginal and distal spines. Uropod 3 short, but distinctly exceeding tip of uropods 1-2; inner ramus scale-like, short; outer ramus 2-segmented, short, second segment short (fig. III, 6).

Telson short, only poorly exceeding tip of peduncle of uropod 3, deeply incised, longer than broad (fig. 1, 2); each lobe with 3 distal and 0-1 distolateral spines, dorsal spines absent. A pair of long plumose setae appears near the middle of each lobe.

Coxal gills occur on pereon-segments 2-6. Oostegites occur on pereon-segments 2-5, setose (fig. III, 3).

Males like females in gnathopods, coxae, epimeral plates, maxilla 1, uropods 1-3, telson (fig. 1, 8-10; IV, 8) (two available males up to 7.5 mm long each).

VARIABILITY: Inner plate of maxilla 1 with 1-2 setae, often second seta is short or very short (fig. IV, 7, 8).

Material examined

France: By manual pumping upper level of phreatic water in the alluvial valley of the Rhône river, about 20 km to the east of Lyon, at 800 meters of the right bank of the Rhône river; departement of Rhône, municipality of Balan. I.G.N. card 1/25,000 of Montluel No. 1/2; X: 2 095,45; 816,425; altitude: 184 m (= « station 6 » in Gibert & al. 1977), 18 May 1976 (4 spec., Rh 52) and 20 Oct. 1976 (3 spec., Rh 73).

HOLOTYPE: Ovigerous female of 10 mm length from Rh 52. Holotype and paratypes (Rh 52) are deposited in the Museum of Natural History in Verona, Italy. One paratype is deposited in Karaman's Collection in Titograd (Yugoslavia).

Ecology

Freshwater subterranean species, it was found by several authors in the interstitial waters of the alluvial plain of Rhône river in the region of Lyon, up to 800 meters far from the river itself, accompanied by numerous other subterranean animals, including amphipods: *Niphargus rhenorhodanensis* Schell,

N. kochianus Bate, *Crangonyx* sp., *Niphargopsis caspary* (Pratz) (Ginet 1982), *Salentinella* spp., etc. (Seyed-Reihani & al. 1982; Dole 1983).

Remarks and Affinities

Niphargus renei has been cited from Rhône river in some works previous to this description, under the denomination of « *Niphargus nova species* » or « *Niphargus*, espèce nouvelle ». These mentions must be substitute for « *Niphargus renei* » in the following publications: Gibert & al. 1979, Seyed-Reihani 1980, Gibert & al. 1981, Ginet 1982, Reygrobellet & Dole 1982, Seyed-Reihani & al. 1982, Dole 1983 a, Dole 1983 b.

Niphargus renei is allied to the species belonging to the *Niphargus jovanovici*-group by several characters (short uropod 3 in males, poorly developed sexual dimorphic characters, large gnathopods 1-2 with elevated number of corner spine on palm, by shape of mandibular palp, etc.). *N. jovanovici*-group of species differs from *N. renei* by presence of only one seta at outer margin of dactyl in gnathopods 1-2.

On the other hand, *N. renei* is similar also to the *Niphargus orcinus*-group of species (sensu S. Karaman 1950, G. Karaman 1972, 1984), by presence of several setae on outer margin of dactyl in gnathopods 1-2, short uropod 3 in males, large gnathopods 1-2, etc.

Niphargus gallicus Schell. 1935, known from Sète, Montpellier and Nice (France) (Chevreux 1901, Chevreux & Fage 1925, Schell. 1935) and later from Romania (Dancau 1963) is provided with large oblique segment 6 of gnathopods 1-2, but this species differs from *N. renei* by elongated second segment of uropod 3 in males, by presence of only one seta at outer margin of dactyl in gnathopods 1-2, etc.

Graf and Straškraba described (1967) a new subspecies *N. jovanovici burgundus* n. ssp. from Dijon (France); this taxon was later removed by G. Karaman (1980) to the specific rank. *N. burgundus* belongs to the *N. jovanovici*-group of species, having only one seta at outer margin of dactyl in gnathopods 1-2, telson with several very long plumose setae and dactyl of pereopods 3-7 with several spines along inner margin.

Dancau described (1964) *Niphargus dobrogicus* n. sp. from the subterranean waters of Romania near Black Sea coast; this species is very allied to

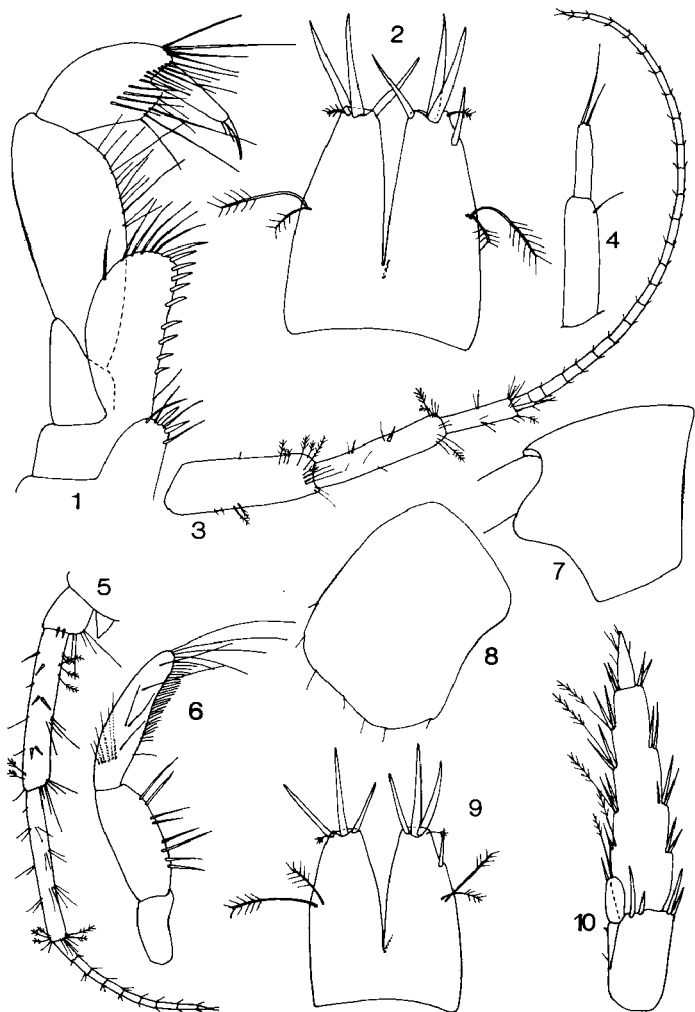


Figure I. — *Niphargus renei*, n. sp., Rhône river, Lyon (Rh 52), female 10 mm.
 1: maxilliped; 2: telson; 3: antenna 1; 4: accessory flagellum; 5: antenna 2; 6: mandibular palp; 7: head; 8: coxa
 4, male 7,5 mm; 9: telson, male 7,5 mm; 10: uropod 3, male 7,5 mm.

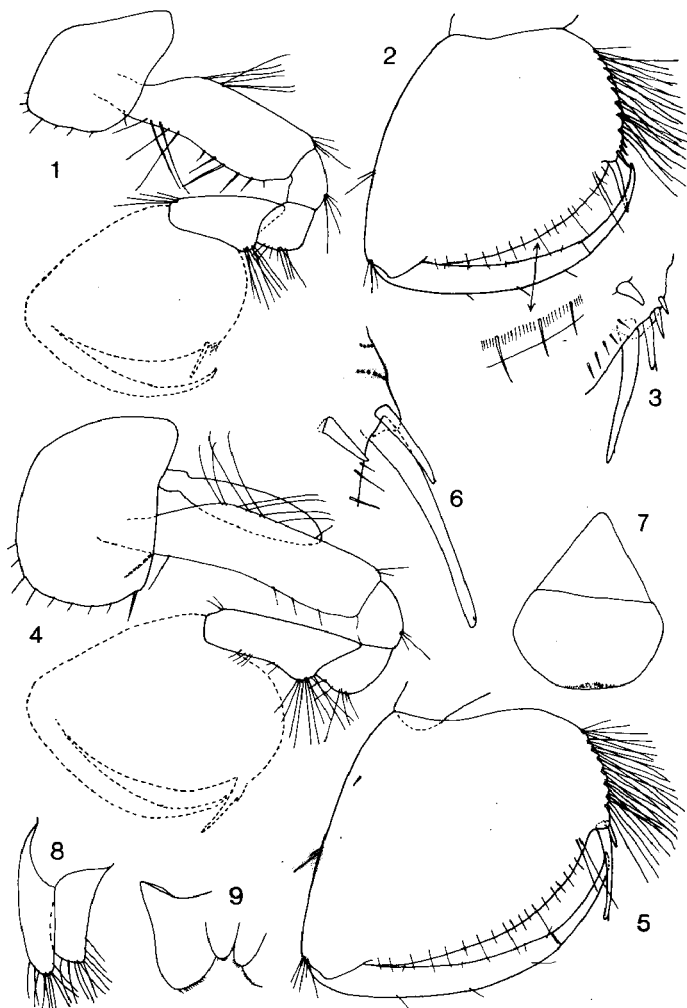


Figure II. — *Niphargus renei*, n. sp., Rhône river, Lyon (Rh 52), female 10 mm.
 1-3: gnathopod 1; 4-6: gnathopod 2; 7: labrum; 8: maxilla 2; 9: labium.



Figure III. — *Niphargus renei*, n. sp., Rhône river, Lyon (Rh 52), female 10 mm.
 1-2 : pereopod 3 ; 3-4 : pereopod 4 ; 5 : epimeral plates 1-3 ; 6 : uropod 3 ; 7 : urosome with uropods 1-2.

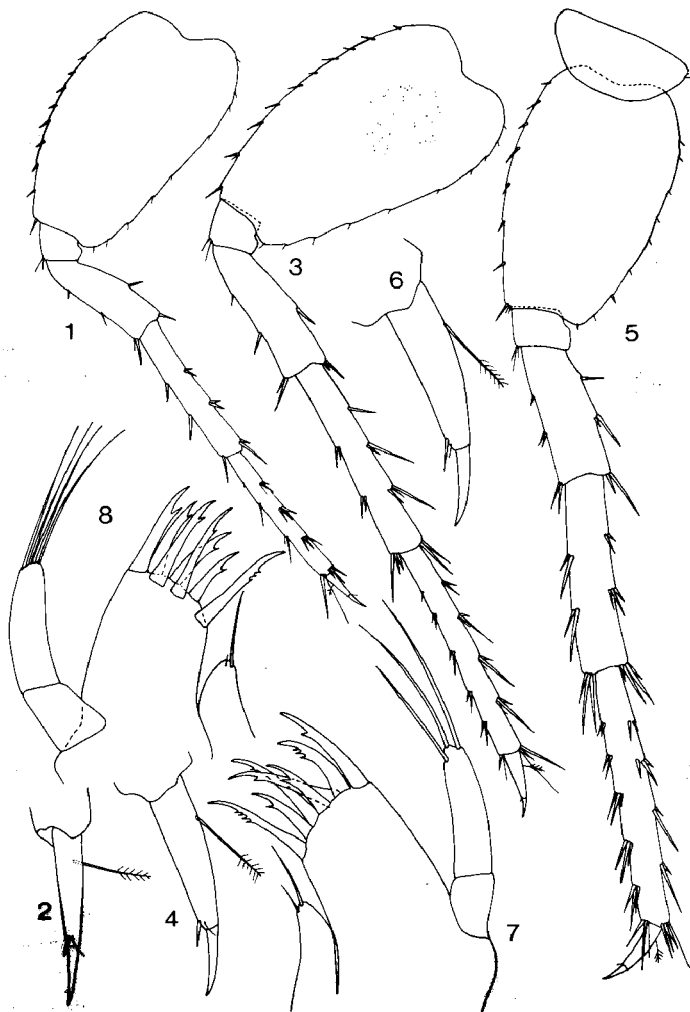


Figure IV. — *Niphargus renei*, n. sp., Rhône river, Lyon (Rh 52), female 10 mm.
1-2 : pereopod 5 ; 3-4 : pereopod 6 ; 5-6 : pereopod 7 ; 8 : maxilla 1, male 7,5 mm.

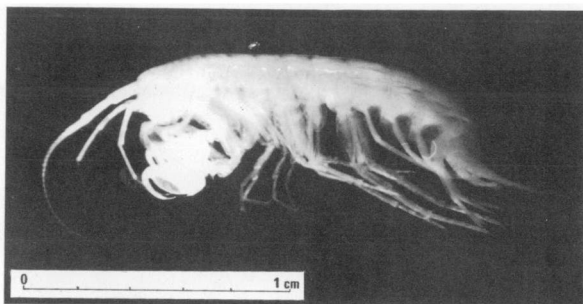


Figure V. — *Niphargus renei*, n. sp. Rhône river, Lyon : entire animal (cliché J. Mathieu).

N. renei, but differs from later by telson bearing long subdistal plumose setae and pleopods with 8-9 retinacula each.

Dershavin described (1945) *Niphargus kurdus*, n. sp. from the subterranean waters of bassin of Akeri river (Transcaucasus, USSR), one species with large ovoid gnathopods 1-2 bearing several setae at outer margin of dactyl, by short uropod 3, short plumose setae on telson, etc. *N. renei* differs from it by larger segment 2 of pereopods 5-7, by broader telson, etc.

ETYMOLOGY: The specific name is proposed in honour of Prof. René Ginét, from the University Claude-Bernard in Lyon-Villeurbanne (France) for his numerous contributions to the knowledge of the subterranean fauna of France.

CONCLUSIONS

The discovery of new species of subterranean amphipods from the interstitial waters of Rhône river in region of Lyon showed the high richness of the subterranean fauna of Amphipoda in France, indicating the probability of discovery of other new taxa of the same genus in France. *Niphargus renei* is very allied to *Niphargus orcinus*-group of species and *N. jovanovici*-group of species, known mainly from southern part of Europe.

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