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TWO NEW SPECIES OF GENUS BOGIDIELLA HERT. FROM SARDINIA AND FRANCE, WITH REMARKS TO B. VANDELI COINEAU 1968 (GAMMARIDEA, FAM. BOGIDIELLIDAE) (CONTRIBUTION TO THE KNOWLEDGE OF THE AMPHIPODA 180)

ABSTRACT

The subterranean freshwater species *Bogidiella vandeli* Coineau 1968 (*Amphipoda Gammaridea,* fam. *Bogidiellidae),* known from Sardinia (Italy) and established and described based on females and males of two different species, is restricted here to the females described by C o i n e a u (1968) from Rio di Quirra (Sardinia).

The new species *Bogidiella (Bogidiella) calicali,* n. sp. is described and figured from Castelsardo and from Rio di Quirra (Sardinia); this species was known in the past under the name of males of *Bogidiella vandeli* Coineau 1968 from Rio di Quirra.

The new species *Bogidiella (Bogidiella) nicolae,* n. sp. is established for the specimens from the subterranean waters of Tech (southern France), described by C o i n e a u (1968) under the name of *Bogidiella skopljensis* (S. Karaman 1933).

ABSTRAKT

Podzemna slatkovodna vrsta *Bogidiella vandeli* Coineau 1968 (*Amphipoda Gammaridea,* fam. *Bogidiellidae),* poznata iz Sardinije (Italija), a koja je bila opisana na osnovu ženki i mužjaka dvaju različitih vrsta, ograničena je ovdje na ženke opisane od strane C o i n e a u (1968) iz Rio di Quirra (Sardinia).

Nova vrsta *Bogidiella (Bogidiella) calicali,* n. sp. je opisana i nacrtana iz Castelsardo i iz Rio di Quirra na Sardiniji. Ova vrsta je bila do

sada poznata pod imenom mužjaka od vrste *Bogidiella vandeli Coineau* 1968 iz Rio di Quirra.

Nova vrsta *Bogidiella (Bogidiella) nicolae*, n. sp. je postavljena za primjerke iz podzemnih voda rijeke Tech u južnoj Francuskoj, koje je bila Coineau (1968) opisala pod imenom *Bogidiella skopljensis* S. Karaman (1933).

INTRODUCTION

Despite the numerous studies of the subterranean fauna of *Amphipoda* in Italy, realized during last 50 years by numerous scientists, the discovery of new species in this part of Europe is still continuing.

In the subterranean waters of Sardinia are known, so far, four species of the genus *Bogidiella* Hertzog 1933

First species was discovered by Coineau (1968) under the name *Bogidiella vandeli*, n. sp. from Rio di Quirra (Tartenia).

Later (1975), Ruffo and Vigna-Taglianti described second species from Sardinia, *Bogidiella ichnusae*, n. sp. from the subterranean waters of river Liscia (Sassari). In the same paper, they mentioned also the species *Bogidiella* cfr. *chappuisi* Ruffo 1952 from Rio Isalle near Orune (Nuoro), and this locality needs further confirmation.

Pesce described (1981) the new species *Bogidiella silverii*, n. sp. from Gonnosfanadiga (Cagliari).

Rather more to the north from Sardinia, in Corsica island, Hovenkamp, F. at all. (1983) described two new species of genus *Bogidiella: Bogidiella (Bogidiella) cyrnensis*, n. sp. and *Bogidiella (?Medigidiella)* paolii, n. sp.; last one very allied to *B. vandeli* Coineau 1968.

During our work on the fauna of freshwater Amphipoda from Italy, we reexamined some paratypes of *B. vandeli* from Rio di Quirra, sent us very kindly at disposition for study by Dr. Nicole Coineau from France, as well as one specimen (female) of the same species from Castelsardo (Sassari, Sicilia).

We established that *Bogidiella vandeli* Coineau from Rio di Quirra has been described and established based on females of one species and males of another different species. We selected the females of *B. vandeli* described by Coineau (1968) from Rio di Quirra as a real *B. vandeli* Coineau 1968, and the males from Rio di Quirra described and figured by Coineau under the name of *B. vandeli*, we removed to the other, new species *Bogidiella calicali*, n. sp. (see explanations sub *B. calicali*).

Coineau (1968) described and figured the specimens from the subterranean waters of river Tech in southern part of France near french-spanish border, unter the name of *Bogidiella skop-*

ljensis (S. Karaman 1933) known only from Balkan Peninsula: Macedonia (S. Karaman 1933; G. Karaman 1973), southern part of Serbia (G. Karaman 1981), Greece (Bou and Ruffo 1979) and maybe Roumania, though she recognized very strange distribution of this species regarding french locality.

One detailed analysis of taxonomic characters of *Bogidiella skopljensis* from numerous localities from Balkan peninsula, with descriptions and figures given by Coineau for specimens from Tech (S. France), showed a distinct differences between french population and these from Balkan peninsula; for this reason we removed the specimens from Tech to the new species *Bogidiella nicolae,* n. sp.

Acknowledgments: We are indebted to Dr. Nicole Coineau from the Laboratoire Arago in Banyuls-sur-Mer (France) and to Dr. Giuseppe L. Pesce from the University of L' Aquilla (Italy) for the loan of material used in this study.

Bogidiella vandeli Coineau 1968.

Syn.: *Bogidiella vandeli* (part, only females) Coineau 1968: 199, fig. 26 A, C, E, G, H; 27 B, D, E, I; 28.

Bogidiella (Bogidiella) vandeli (part.) G. Karaman 1981: 31.

Bogidiella (Medigidiella) vandeli (part.) G. Karaman 1982: 46.

Short diagnosis (based on descriptions and figures given by Coineau (1968: 201): Females 2.3-3.27 mm long. Peduncle of antenna 1 slender, peduncular articles 1-3 progressively shorter; peduncular segment 1 with 3 spines, peduncular segment 2 with setae only, ped. segment 3 slightly exceeding half of ped. segment 2, bearing distal setae only; main flagellum consisting of 9 articles (most of them with 1 easthetasc); accessory flagellum almost reaching half of third flagellar segment of main flagellum, 2-segmented, first segment long, second segment short, with distal aesthetasc.

Antenna 2 slender, peduncular segment 3 is 1.5 times as long as broad, with 1 spine; peduncular segment 4 slightly longer than 5, bearing 1 subdistal spine and short setae; segment 5 with setae only; flagellum consisting of 5 articles.

Mandible like that of *B. calicali,* palp segment 2 with 1 seta (2 setae on fig. 26 H), palp segment 3 with 4 long setae.

Maxilla 1: inner plate with 2 setae, outer plate with 7 spines, palp 2-segmented, with 3 distal setae.

Maxilla 2: inner plate with 7 distal setae accompanied by one strong plumose seta. Maxilliped like that of *B. calicali.*

Coxae 1-7 shallow. Gnathopod 1: segment 2 is 3 times longer than broad, at posterior margin with 1 long medial seta and 1 short distal seta; segment 5 lobed posteriorly; segment 6 pyriform, with 2 corner spines only.

Gnathopod 2: segment 2 is 4 times longer than broad, at posterior margin with 1 long medial and 1 short distal seta; segment 5 unlobed posteriorly, with 4 setae; segment 6 much longer than broad, dilated medially; palm convex, oblique nearly to the half of posterior margin of segment 6, bearing 2 corner spines and a row of weak palmar spines and setae; 2 setae are present at posterior margin of segment 6.

Pereopods 3-4 similar to each other, slender, segment 2 with 3 short setae at anterior and posterior margin; dactyl nearly reaching half of segment 6, with 1 seta at inner margin.

Pereopod 5 as long as pereopods 3-4, with short dactyl, segment 2 unlobed.

Pereopod 6 is only slightly longer than 5, but of the similar shape.

Pereopod 7 much longer than 5, with, unlobed segment 2, bearing spines at anterior and posterior margin, segment 6 with spines and setae, segment 7 (dactyl) with 1 seta at inner margin, nail short.

Hertzog's organ ovoid, crenellated, appears on segment 2 of pereopods 3-6 only.

Pleopods 1-3 uniramous, unmodified, peduncle smooth, with 2 retinacula each; outer ramus with 3 articles bearing 2 plumose setae each; inner ramus absent.

Epimeral plates 1-3 angular. Uropod 1 unmodified, slender and long; peduncle more than 5 times as long as broad, with 1 ventrofacial spine and 2 distal spies; outer ramus is slightly shorter than inner ramus, with 4 distal spines (the longest spine reaching 3/4 of ramus-length); inner ramus with 5 distal spines as long as these of outer ramus.

Uropod 2: unmodified, slender, peduncle with 2 distal spines; rami longer than peduncle, outer ramus slightly shorter than inner one, with 4 distal spines; inner ramus with 5 distal unequal spines.

Uropod 3 long, peduncle with 2 distal spines; rami subequal, with lateral and distal long spines.

Telson almost as long as broad, deeply excavated distally, each lobe with 2 long distal spines; a pair of plumose setae appears in distal part of each lobe.

Males: unknown; for this reason the subgeneric status of this species is still unknown.

Loc. typ.: nap phreatic of Rio di Quirra River, Sardinia.

Holotype: female figured by Coineau (1968) on fig. 26-27, page 201.

Distribution: Known only from type-locality.

Remarks and Affinities: Coineau (1968) based her description of *B. vandeli* on two different species: the females of one species and the males of another species, and we hesitated which species to select as real *B. vandeli.*

Hovenkamp, F. at all. (1983) described one very similar species, *Bogidiella paolii,* n. sp. from Corsica (based on females only), and our first intention was to consider *B. paolii* identic with females given by Coineau of *B. vandeli,* and to select the males of Coineau description as real *B. vandeli.*

But, Hovenkamp, F. at all. (1983) mentioned (p. 91) that they compared the females of B. *paolii* with these of B. *vandeli,* and they found the differences to create a new species, *B. paolii.* By this way, they »de facto« selected the females of *B. vandeli* (sensu Coineau) as real *B. vandeli.*

For this reason, we followed Hovenkamp's direction and decided to select the females of *B. vandeli* (sensu Coineau 1968) as real *B. vandeli.*

Bogidiella calicali, n. sp., known from the same locality as *B. vandeli* (Rio di Quirra), differs from B. *vandeli* by presence of 3 setae on inner plate of maxilla 1, by different shape of telson and different length of its spines, by 3-segmented accessory flagellum of antenna 1, by more slender peduncle of antennae 1-2, by presence of 3 long posterior setae on segment 2 in gnathopods 1-2, by slightly different shape and armature of segment 6 in gnathopods 1-2 and of uropods 1-2, as well as by absence of Hertzog's organ in all extremities.

Bogidiella aprutina Pesce 1980, known from Central Italy (Colleranesco, Giulianova) is rather similar to *B. vandeli* by deeply excavated telson bearing 4 long spines, by presence of only 2 setae on inner plate of maxilla 1, by absence of inner ramus of pleopods 1-3, by presence of Hertzog's organ, by presence of 1 posterior long seta on segment 2 of gnathopods 1-2; but, *B. aprutina* differs from *B. vandeli* by 3-segmented accessory flagellum, by presence of Hertzog's organ on segment 2 of pereopod 7, etc.

Bogidiella (Bogidiella) calicali, n. sp.

figs.: 1-4

Syn.: *Bogidiella vandeli* (part., males only) Coineau 1968: 169, fig. 26 B, D, F; 27 A, C, F, G, H; 28 A.

Bogidiella (Bogidiella) vandeli (part.) G. Karaman 1981: 31.

Bogidiella (Bogidiella) vandeli (part.) G. Karaman 1982: 46.

Material examined: ITALY: SARDINIA: — Castelsardo, Sassari (SA 12), Nov. 1, 1979, one female (leg. G. L. Pesce);

— Rio di Quirra, nap phreatic, 13 km from Tertenia (7 km from the sea), freshwater, 3 spec. (leg. N. Coineau).

Description: Female 2.5 mm with oostegyts (Castelsardo): Head with short subrounded lateral cephalic lobes, eyes absent (fig. 4 D). Antenna 1: peduncular segments 1-3 progressively shorter, segment 1 with 2 ventral spines (fig. 1 A), segments 2-3 with setae only); peduncular segment 3 exceeding half of peduncular segment 2; main flagellum consisting of 8 articles (most of them with one aesthetasc as long as or shorter than article itself); accessory flagellum is longer than last peduncular segment, consisting of 3 articles (fig. 1 A).

Antenna 2: peduncular segment 3 longer than broad, with 2 spines (fig. 1 B), peduncular segment 4 hardly longer than 5, both with setae only (fig. 1 B); flagellum consisting of 5 articles. Antennal gland cone short, not reaching tip of third peduncular segment (fig. 1 B).

Labrum emarginate distally (fig. 4 C). Mandible: left incisor with 5 teeth and lacinia mobilis consisting of 4 teeth (fig. 1 I), molar distinctly triturative (fig. 1 I) with short distolateral seta; palp 3-segmented, segment 2 with 2 setae, segment 3 with 4 distal setae (fig. 1 I).

Maxilla 1: inner plate with 3 setae, outer plate with 7 spines bearing 0-1 lateral tooth each; palp 2-segmented, not reaching tip of spines of outer plate, and bearing 3 distal setae (fig. 1 H).

Maxilliped: inner plate short, with 2-3 distal spines (fig. 3 E), outer plate short, with 3 distolateral spines, accompanied by setae; palp segment 4 with 2 ventral setae near basis of nail, nail short (fig. 3 E).

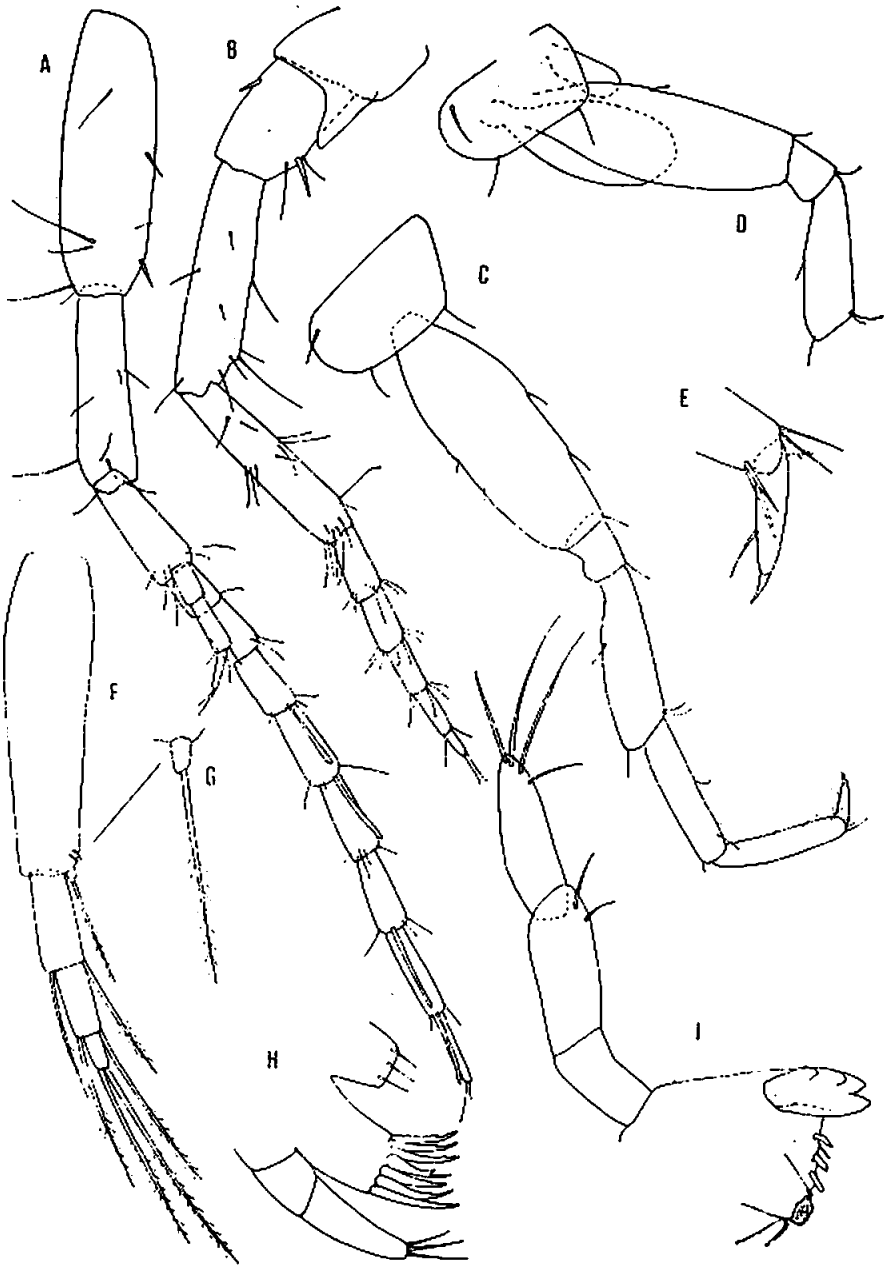

Fig. 1. *Bogidiella (Bogidiella) calicaii*, n. sp., Castelsardo, female 2.5 mm: A = antenna 1; B = antenna 2; C = pereopod 3; D-E = pereopod 4; F-G = pleopod 2; H = maxilla 1; I = mandible.

Coxae 1-7 shallow, broader than long (fig. 1 C, D; 2 C; 3 A, B, C).

Gnathopod 1 is larger than gnathopod 2, segment 2 of both gnathopods at posterior margin with 3 long medial setae and 1 short distal seta (fig. 2 A, C), at anterior margin with 1 short distal seta.

Gnathopod 1: segment 5 strongly lobed and produced posteriorly (fig. 2 A); segment 6 ovoid, palm oblique, reaching or slightly exceeding 1/2 of posterior margin of segment 6, bearing row of slender spine-like setae and defined on outer face by 1 corner spine, on inner face by 1 subcorner spine, accompanied below by one strong spine (fig. 2 A), dactyl with 2 teeth along inner margin and one medial seta at outer margin (fig. 2 A, B).

Gnathopod 2: segment 5 unlobed; segment 6 with almost parallel lateral margins (fig. 2 C, D), palm oblique, reaching nearly 2/5 of posterior margin of segment 6, bearing a row of several spine-like setae, and defined on outer face by one corner spine, on inner face by 1 subcorner spine (fig. 2 D), dactyl like that of gnathopod 1 (fig. 2 D).

Pereopods 3-4 slender, similar to each other; segment 2 slightly dilated, dactyl not reaching half of segment 6-length, bearing 1 seta at inner margin and 1 seta at outer margin, nail short (fig. 1 C, D, E).

Pereopods 5-7 progressively longer and pereopod 7 is nearly twice longer than pereopod 5 (fig. 3 A, B, C). Pereopod 5; segment 2 slightly dilated, unlobed, at posterior margin with 2 spines (fig. 3 A); dactyl short.

Pereopod 6: segment 2 at posterior margin with 4 spines and 1 seta (fig. 3 B), dactyl like that of pereopod 5.

Pereopod 7: segment 2 dilated but unlobed, at posterior margin with 4 spines (fig. 3 C); segment 6 with spines and single anterior long setae (fig. 3 C); dactyl nearly reaching half of segment 6, with one seta at inner margin and 1 plumose seta at outer margin (fig. 3 D), nail short.

Segment 2 of gnathopods 1-2 and pereopods 3-7 without any trace of Hertzog's organ (fig. 1 C, D; 2 A, 3 A, B, C).

Epimeral plates 1-3 with acute ventroposterior corner (fig. 3 F). Pleopods 1-3 unmodified, similar to each other, peduncle smooth, bearing 2 retinacula each; outer ramus 3-segmented, each segment with 2 plumose setae (fig. 1 F), inner ramus very small, bearing 1 long distal plumose seta (fig. 1 F, G).

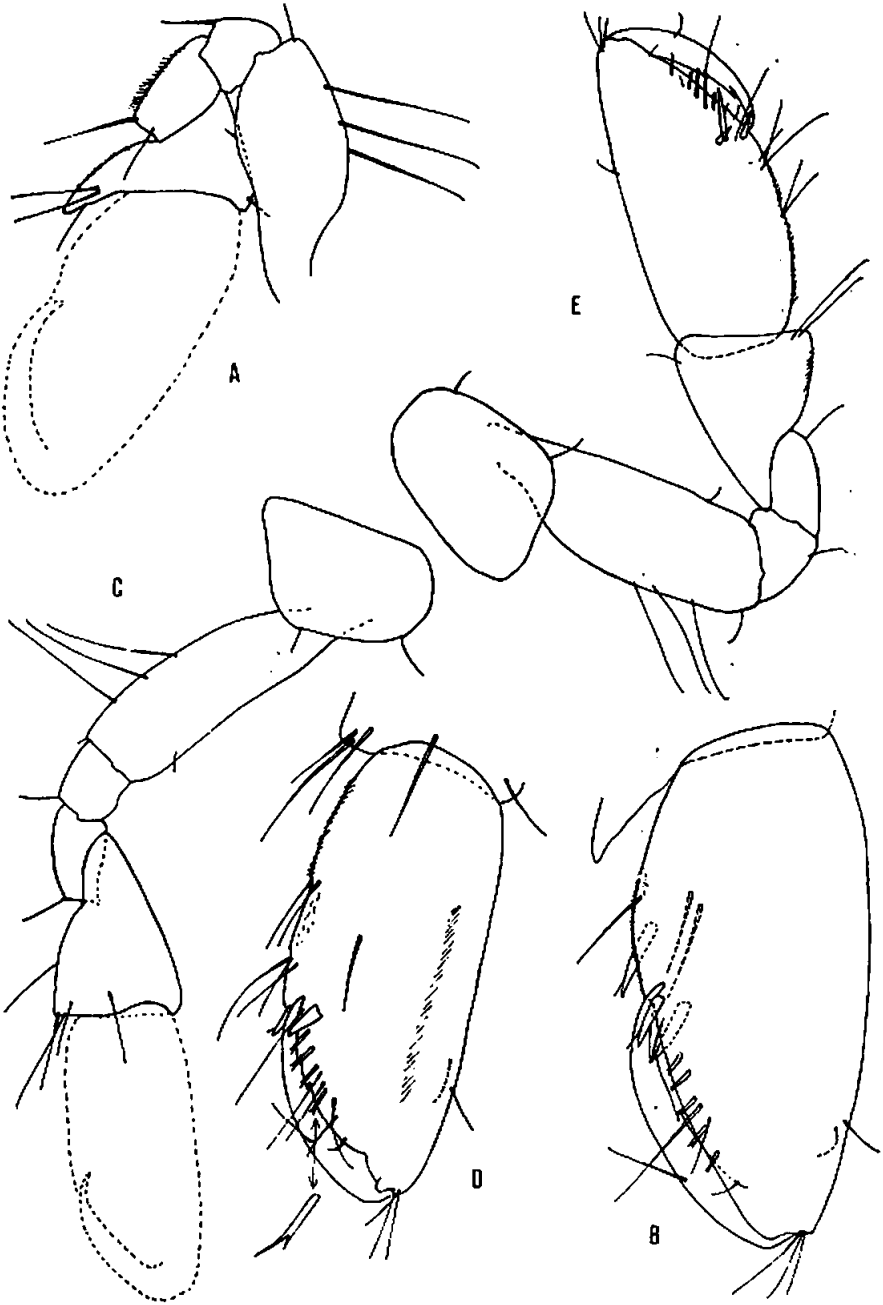

Fig. 2. *Bogidiella (Bogidiella) calicali*, n. sp., Castelsardo, female 2.5 mm: A-B = gnathopod 1; C-D = gnathopod 2; E = gnathopod 2, female 2.5 mm from Rio di Quirra.

Urosomite 1 near basis of peduncle of uropod 1 without spine (fig. 4 F). Uropod 1: unmodified, peduncle longer than rami, with 1 ventrofacial spine and 2 distal short spines (fig. 4 F); outer ramus is slightly shorter than inner ramus, both rami with 4 distal unequal spines each (the longest spine exceeding half of ramus-length) (fig. 4 F).

Uropod 2 unmodified, peduncle with distal spine, inner ramus is slightly longer than outer one, both rami with 4 distal spines (fig. 4 G).

Uropod 3 missing.

Telson broader than long, emarginate distally, bearing 2 long distal and 2 shorter subdistal spines (fig. 4 H).

Coxal gills occur on pereonites 4-6, bearing peduncle. Oostegyts occur on pereonites 2-5 (fig. 1 D).

Males in hands (from Rio di Quirra) like females including shape of pleopods, gnathopods, pereopods, uropods 1-2 and telson (fig. 3 G; 4 B, E).

Uropod 3 with nearly subequal rami, bearing lateral and distal long spines each (fig. 4 A).

Variability. The specimens from Rio di Quirra agree with holotype from Castelsardo, with small variability: Body dorsally covered by single short facial setae. Antenna 1: peduncular segment 2 with 1-2 ventral spines, main flagellum consisting of 8-9 articles bearing usually 1 aesthetasc each. Only in one male, article 3 of main flagellum of antenna 1 was with 2 easthetascs.

Antenna 2: peduncular segment 4 in one female with 1 ventromedian spine. Mandibular palp segment 3 with 3-4 distal setae.

Gnathopod 1: segment 2 only occasionally at posterior margin with 2 long setae only, all other specimens with 3 setae.

Segment 6 of gnathopod 1 at inner face with 2 subcorner spines and with 1 spine bellow it. Peduncle of uropod 1 with or without dorsal medial spine; rami of uropod 2 with 3-4 distal unmodified spines. Telson with 4 spines in males and females (fig. 4 E).

Holotype: female 2.5 mm from Castelsardo. Holotype is deposited in Karaman's Collection in Titograd (Yugoslavia).

Distribution: Sardinia: Castelsardo (present work); Rio di Quirra (Coineau 1968; present work).

Loc. typ.: Castelsardo, Sicilia.

Ecology: subterranean freshwater species, was found sometimes accompanied by *B. vandeli* (Rio di Quirra).

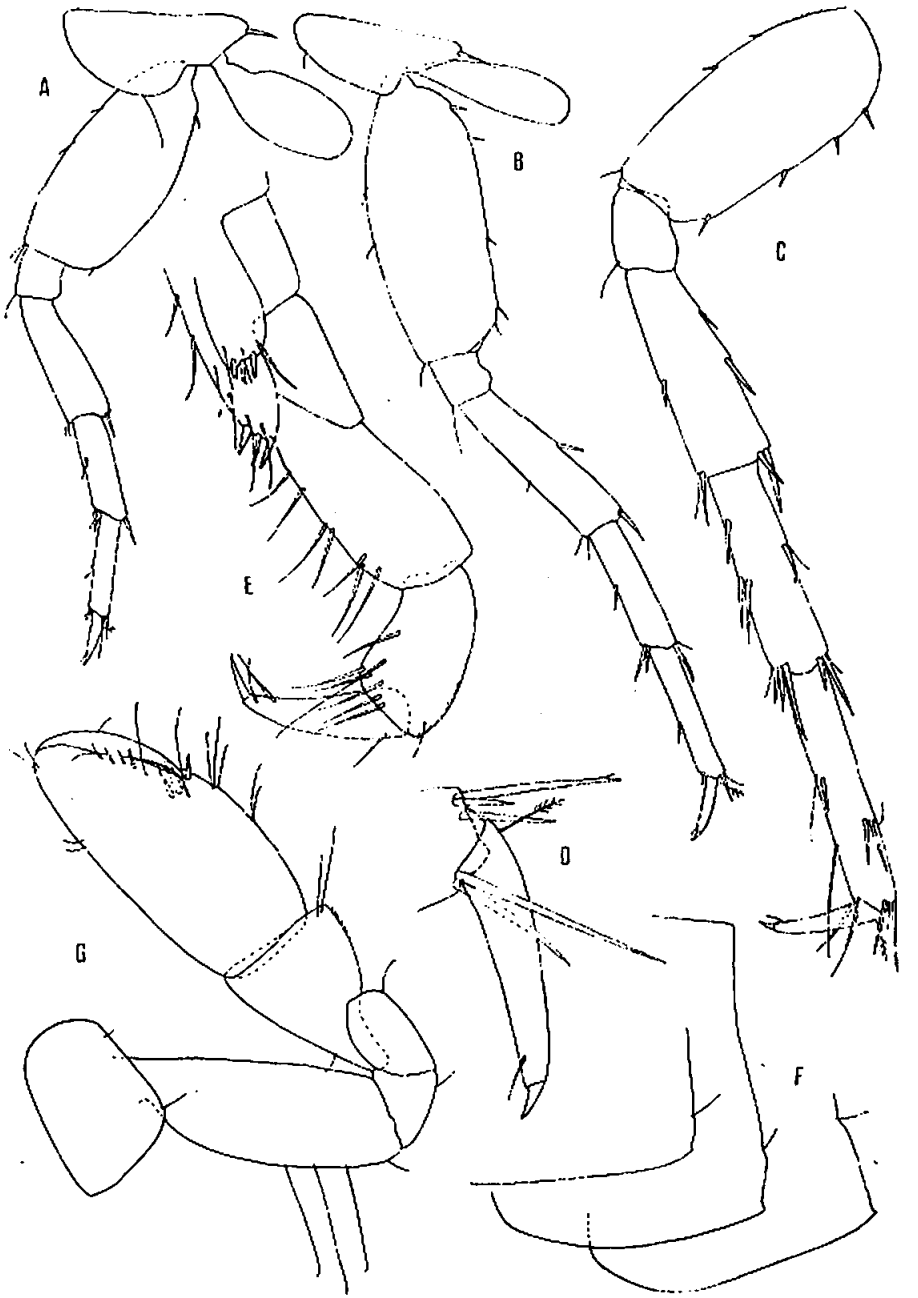

Fig. 3. *Bogidiella (Bogidiella) calicali*, n. sp., Castelsardo, female 2.5 mm: A = pereopod 5; B = pereopod 6; C-D = pereopod 7; E = maxilliped; F = epimeral plates 1-3; G = gnathopod 2, male 2.5 mm from Rio di Quirra.

Remarks and Affinities. *Bogidiella calicali*, n. sp. differs remarkably from other species of genus *Bogidiella*, known from Sardinia. So, *Bogidiella chappuisi* Ruffo 1952 differs from *B. calicali* by absence of inner ramus in pleopods 1-3, by presence of only 2 setae on inner plate of maxilla 1, etc.

Bogidiella ichnusae Ruffo and Vigna-Taglianti 1975, differs from our species by presence of 2 setae on inner plate of maxilla 1, by absence of inner ramus of pleopods 1-3, by telson provided with only 2 spines, etc.

Bogidiella silverii Pesce 1981 differs by presence of only 1 posterior long seta on segment 2 of gnathopods 1-2, by presence of only 2 setae on inner plate of maxilla 1, peduncle of uropods 1-2 provided with several spines, etc.

Bogidiella vandeli Coineau 1968 differs from *B. calicali* by numerous characters (see sub *B. calicali*).

Bogidiella (Bogidiella) nicolae, n. sp.*

Syn. *Bogidiella skopljensis* (nec S. Karaman) Coineau 1968: 195, fig. 24 C-J; 25 A-H.

Short diagnosis: Coineau presented (1968) relatively detailed description of this species, and we mentioned here only some of most significant characters.

Body-length of adult specimens up to 3.06 mm. Female: Antenna 1: main flagellum consisting of 8 articles bearing 1 aesthetasc each; accessory flagellum 3-segmented, longer than last peduncular segment.

Antenna 2 with flagellum consisting of 5 articles. Mandibular palp segment 2 with one seta, palp segment 3 with 4 setae.

Maxilla 1: inner plate with 2 setae, outer plate with 7 spines, palp 2-segmented, not reaching tip of spines of outer plate, bearing 3 distal setae.

Gnathopod 1: segment 2 without long seta at posterior margin, only with short distal dorsoposterior seta; segment 5 lobed; segment 6 narrow, pyriform, bearing 3 spines.

Gnathopod 2: segment 2 without long seta at posterior margin; segment 5 unlobed; segment 6 slightly smaller and narrower than that of gnathopod 1, pyriform also, and provided with 2 spines.

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* This species is dedicated to Dr. Nicole Coineau from University Pierre and Marie Curie, Laboratoire Arago in Banyuls- sur-Mer (France) for her significant contributions to the knowledge of the subterranean fauna of Isopoda and Amphipoda, as well as for her first description oi this species.

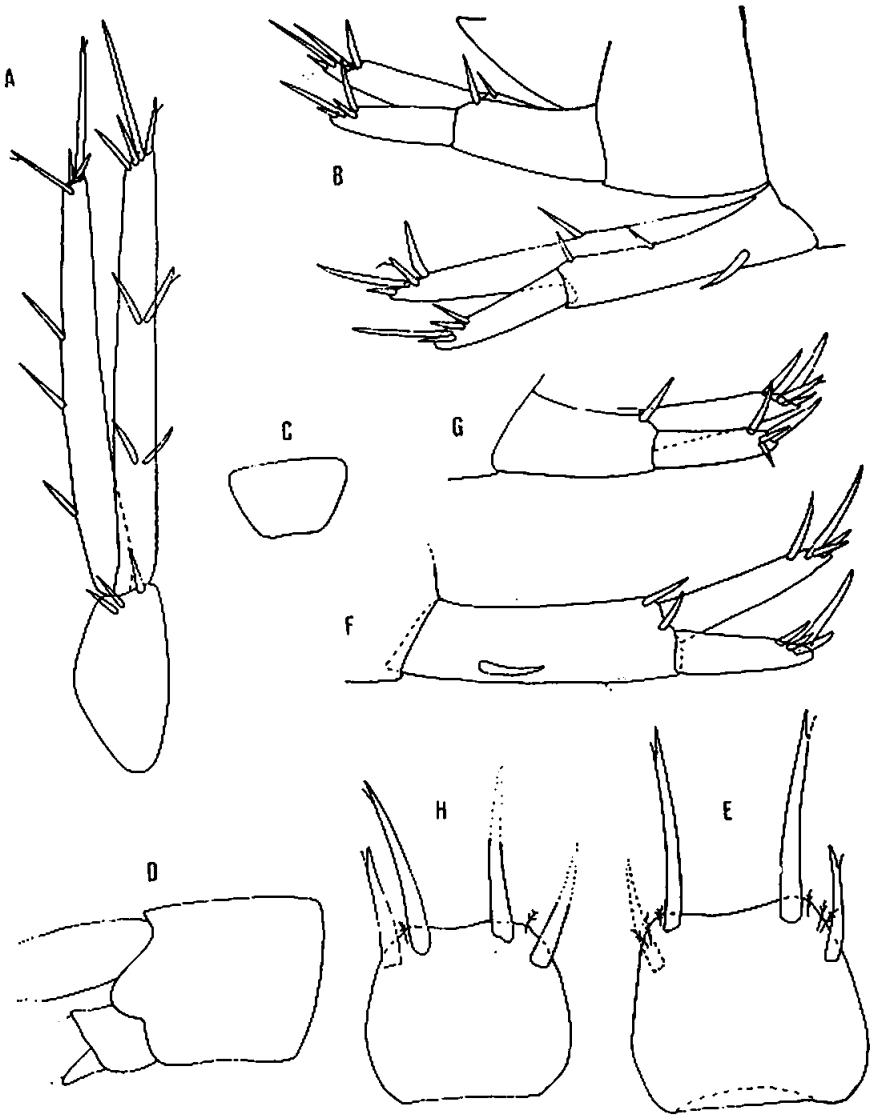

Fig. 4. *Bogidiella (Bogidiella) calicali*, n. sp., Rio di Quirra, male 2.5 mm: A = uropod 3; B = uropods 1-2; C = labrum; D = head, female 2.5 mm; E = telson, female 2.5 mm; F-G = uropods 1-2, female 2.5 mm from Castelsardo; H = telson, female 2.5 mm from Castelsardo.

Pereopods 3-4 slender, with short dactyl.

Pereopods 5-7 progressively longer, with relatively narrow segment 2 bearing setae only, along both margins. Segment 2 of pereopod 7 at posterior margin with 3 notches and short setae. Pereopod 7 is twice longer than pereopod 6. segment 6 of pereopod 7 with long setae, dactyl of pereopod 7 long, reaching 2/3 of segment 6, with short nail and 2 short setae at inner margin near basis of nail.

Hertzog's organ absent in all extremities.

Pleopods 1-3 with elongated peduncle bearing 2 retinacula each; outer ramus 3-segmented, unmodified, each segment with 2 plumose setae; inner ramus short, with 1 long distal seta.

Uropod 1 unmodified; peduncle with 2 distal spines, ventrofacial spines absent; rami hardly unequal, with 4 distal short spines each.

Uropod 2 unmodified, peduncle with 2 distal spines; rami subequal, each with 4 distal spines.

Uropod 3: rami subequal long, each with long lateral and distal spines.

Telson slightly broader than long, convex distally, bearing 2 distal spines as long as telson itself; on each side of telson appears one pair of short subdistal plumose setae.

Male: Coineau (1968) mentioned that the sexual dimorphic characters are the presence of one aesthetasc on each flagellar article of antenna 1 in females, and 2 aesthetascs in males; the longest distal spine on rami of uropod 3 is longer in males than in females.

Holotype: female figured by Coineau (1968) on fig. 25 (page 198).

Loc. typ.: subterranean waters (nap phreatic) of river Tech in southern France.

Distribution: known only from type-locality.

Remarks and Affinities. *Bogidiella nicolae*, n. sp. is very allied to the species *Bogidiella skopljensis* (S. Karaman 1933) known from Balkan peninsula, by presence of 2 setae on inner plate of maxilla 1, by presence of small unisegmented inner ramus in pleopods 1-3 in males and females, provided with long distal plumose seta, by absence of Hertzog's organ in all extremities and by telson provided with 2 distal spines.

But, *Bogidiella skopljensis* differs from *B. nicolae* by presence of one long posterior seta on segment 2 of gnathopods 1-2, by presence of one ventrofacial spine on peduncle of uropod 1, by segment 6 of gnathopod 2 only slightly smaller than that of

gnathopod 1, by non pyriform segment 6 of gnathopod 2, by stouter pereopod 7 having broader segment 2 without posterior marginal incisions, by broader segment 2 of pereopods 3-4, by distally excavated telson.

The specimens from Macedonia of *B. skopljensis* are with 2-segmented accessory flagellum, but specimens from Serbia and Romania are with 3-segmented accessory flagellum, like that of *B. nicolae*. Hertzog's organ in specimens of *B. skopljensis* is poorly visible or unvisible (see G. Karaman 1973; 1981).

As *Bogidiella nicolae* is known only from Tech river, the locality very close to the french- spanish border, we took into consideration the species of genus *Bogidiella* known from Iberian peninsula (7 known species). All these species are remarkably different than *B. nicolae*. Among these species, the species known from Spain, the most similar is *Bogidiella hispanica* Stock and Notenboom 1988 known from several localities (Rio Escabas; Rio de Arcos; El Moral) (telson with 2 spines, absence of Hertzog's organ, presence of 2-3 segmented accessory flagellum on antenna 1, presence of 2 setae on inner plate of maxilla 1, absence of basifacial spine on peduncle of uropod 1); but, *B. hispanica* differs from *B. nicolae* by absence of inner ramus on pleopods 1-3.

LITERATURE CITED

Bou, C., Ruffo, S. 1979. Contributo alla conoscenza delle Bogidiella di Grecia (Crustacea, Amphipoda, Gammaridae). — Natura, Soc. ital. Sci. nat. Mus. civ. storia naturale e Acquario civ. Milano, 70 (4): 295-309.

Coineau, N. 1968. Contribution á l'étude de la fauna interstitielle Isopodes et Amphipodes. — Mem. Mus. Nat. Hist. Naturelle, Paris, nouv. ser., serie A, 55 (3): 147-216.

Hertzog, L. 1933. Bogidiella albertimagni sp. nov., ein neuer Grundwasseramphipode aus der Rheinebene bei Strassburg. — Zool. Anzeniger, 102 (9-10): 225-227.

Hovenkamp, F., Hovenkamp, W., Van der Heide, J. 1983. Two new hyporheic Amphipods, Bogidiella (Bogidiella) cyrnensis n. sp. and Bogidiella (Medigidiella?) paolii n. sp., from Corsica. — Bijdragen tot de Dierkunde, 53 (1): 82-92.

Karaman, G. 1973. 54. Contribution to the Knowledge of the Amphipoda. On the Genus Bogidiella Hert. (fam. Gammaridae) in Yugoslavia. — Poljoprivreda i šumarstvo, Titograd, 19 (4): 21-53.

Karaman, G. 1979. Contribution to the Knowledge of the Amphipoda 92. Bogidiella chappuisi Ruffo 1952 and its variability with remarks to some other species (fam. Gammaridae). — Poljoprivreda i šumarstvo, Titograd, 25 (1): 17-30.

Karaman, G. 1981. Revision of Bogidiella-group of genera with description of some new taxa (fam. Gammaridae). (Contribution to the Knowledge of the Amphipoda 121). — Poljoprivreda i šumarstvo, Titograd, 27 (3): 23-44.

Karaman, G. 1982. Critical remarks to the recent revisions of Bogidiella-group of genera with study of some taxa (fam. Gammaridae). (Contribution to the Knowledge of the Amphipoda 126). — Poljoprivreda i šumarstvo, Titograd, 28 (3-4): 31-57.

Karaman, S. 1933. Über zwei neue Amphipoden, Balcanella und Jugocrangonyx aus dem Grundwasser von Skoplje. — Zool. Anzeiger, 103 (1-2): 41-47.

Karaman, S. 1943. Die Unterirdischen Amphipoden Südserbies. — Srp. Akad. Nauka, Pos. Izd. 135, Prir i Matem. spisi, 34 (4): 161-312.

Pesce, G. L. 1980. Bogidiella aprutina n. sp., a new subterranean amphipod from phreatic waters of central Italy. — Crustaceana, 38 (2): 139-144.

Pesce, G. L. 1981. A new phreatic Bogidiella from subterranean waters of Sardinia (Crustacea, Amphipoda, Gammaridae). — Revue Suisse Zool. 88 (1): 157-162, Geneve.

Ruffo, S., Delamare-Debouteville, C. 1952. Deux nouveaux Amphipodes souterraines de France, Salentinella angelieri n. sp. et Bogidiella chappuisi n. sp. — C. R. Acad. Sci. Paris, 234: 1636-1638.

Ruffo, S., Vigna-Taglianti, A., 1975. Una nuova Bogidiella della Sardegna. — Fragmenta entomologica, 11 (1): 73-82, Roma.

Stock, J. H., Notenboom, J. 1988. Five new bogidiellid Amphipoda from Spain- the first freshwater records in the Iberian Peninsula. — Hydrobiologia 164: 75-95 (1988).

Rezime

DVIJE NOVE VRSTE IZ RODA BOGIDIELLA HERT. IZ SARDINIJE I FRANCUSKE, SA OSVRTOM NA B. VANDELI COINEAU 1968 (GAMMARIDEA, FAM. BOGIDIELLIDAE) (180. PRILOG POZNAVANJU AMPHIPODA)

Podzemne vode Sardinije (Italija) su relativno bogate vrstama podzemnih *Amphipoda,* posebno vrstama iz roda *Bogidiella* Hertzog 1933 *(Amphipoda Gammaridea,* fam. *Bogidiellidae).*

Do sada su bile poznate 4 vrste roda *Bogidiella* iz Sardinije: *Bogidiella vandeli* Coineau 1968, opisana iz Rio di Quirra (Tartania), *Bogidiella ichnusae* Ruffo et Vigna-Taglianti 1975 iz podzemnih voda rijeke Liscia (Sassari), *Bogidiella chappuisi* Ruffo 1952 iz Rio Isalle kod Orune (Nuoro) (ovaj nalaz zahtijeva provjeru tačnosti determinacije vrste) i *Bogidiella silverii* Pesce 1981 iz Gonnosfanadiga (Cagliari).

Proučavajući podzemnu faunu Amphipoda Italije, utvrdili smo da je vrsta *Bogidiella vandeli* bila ustvari opisana na osnovu dvaju različitih vrsta (ženki od jedne vrste i mužjaka od druge vrste), pa smo samo ženke ove vrste odredili kao predstavnike vrste *Bogidiella vandeli* Coineau 1968, dok smo mužjake, koji su ustvari pripadali drugoj vrsti, zajedno sa primjercima iz Castelsardo (Sassari), prebacili u novu vrstu, *Bogidiella calicali,* n. sp.

Na taj način se je broj vrsta iz roda *Bogidiella* iz Sardinije popeo na pet.

Coineau (1968) je dala crteže i opis primjeraka amfipoda iz podzemnih voda rijeke Tech na jugu Francuske, na francusko-španjolskoj granici, pod nazivom *Bogidiella skopljensis* (S. Karaman 1933), vrste koja je do sada poznata samo sa Balkanskog poluostrva (Grčka, Makedonija, južna Srbija, Rumunija).

Detaljnom analizom taksonomskih karaktera primjeraka vrste *B. skopljensis* iz lokaliteta sa Balkanskog poluostrva, sa opisom i crtežima primjeraka iz Francuske, ustanovili smo da se primjerci iz Francuske jasno razlikuju od primjeraka sa Balkana i da pripadaju nekoj drugoj, do sada nepoznatoj vrsti, nazvanoj *Bogidiella nicolae*, n. sp.