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Revision of Bogidiella-group of genera with description of some new taxa (fam. Gammaridae). (Contribution to the Knowledge of the Amphipoda 121).

ABSTRACT

Revision of *Bogidiella*-group of genera (fam. *Gammaridae)* is made. New genus *Marinobogidiella*, n. gen. with a type-species *Bogidiella tyrrhenica* Schiecke 1979 is established. Genus *Bogidiella* Hertzog 1933 is divided into 2 subgenera, based on shape of palp of maxilla 1: subgenus *Bogidiella* Hertzog 1933 with a type-species *Bogidiella albertimagni* Hertzog 1933 (2-segmented palp of maxilla 1) and subgenus *Eobogidiella*, n. sbg. with a type-species *Bogidiella purmamarcensis* Grosso & Ringuelet 1979 (1-segmented palp of maxilla 1).

The species of subgenus *Bogidiella* Hertzog 1933 are divided into 4 groups regarding the modifications of pleopods and uropods in males: group A *(Bogidiella* s. str.) with unmodified uropods and unmodified pleopods 1-3 in males; group B with modified pleopods in males; group C with modified uropod 1 in males; group D with modified uropod 2 in males.

Two new species from Mexico are established: *Bogidiella (Bogidiella) mexicana*, n. sp. and *Bogidiella (Bogidiella) chitalensis*, n. sp. Diagnosis and key to the genera of *Bogidiella*-group of genera are presented, synonymy and distribution of all species of genera *Bollegidia, Afridiella, Paracrangonyx, Parabogidiella, Pseudingolfiella, Kergueleniola* and *Marinobogidiella* are given.

INTRODUCTION

During the analyse of taxonomic characters of various genera in the family *Gammaridae* (sensu lato), the *Bogidiella*-complex of genera was very interesting because of very large distribution of that complex over the World, especially the members of genus *Bogidiella*. However, some authors removed *Bogidiella*-group of genera into a different family *Bogidiellidae*. Because of existing of many transitive genera between this group of genera and other *Gammaridean* genera *(Spelaeogammarus,* etc.) the »family« *Bogidiellidae* is still not satisfactorily separated from other families and genera and we prefer to use a term »group of genera« more than a term »family« *Bogidiellidae.*

PROBLEM OF GENUS BOGIDIELLA (s. str.)

Genus *Bogidiella* was established by Hertzog (1933) for the species *Bogidiella albertimagni* Hertzog (1933) from Germany. Later, many other species of this genus were described from various parts of the World. Now is known over 30 species of this genus from Europe, Asia, North and South America and from various islands over the World.

The recent discovering of many new species of genus *Bogidiella* showed very large combination of taxonomic characters among different species but all attempts of division of all these species in distinct groups of species or genera was without success.

Very characteristic differences among various species of genus *Bogidiella* is on the level of maxilliped, maxilla 1, mandible, coxae, shape and armature of pleopods, uropods and telson.

G. Karaman and Barnard, J. L. established a new genus *Afridiella* (1979) for the species *Bogidiella somala* Ruffo 1970 from Somalia, based on different shape of coxae, mandible and mandibular palp.

The analyse of taxonomic characters in genus *Bogidiella* showed the discontinuity of many characters indicating the existence of more genera or groups of species within the recent genus *Bogidiella.*

Based on the shape of mandibular palp, we established a new genus *Marinobogidiella,* n. gen. with a type species *Bogidiella tyrrhenica* Schiecke 1979 from the sea near Napoli (Italy). This genus is characterited also by different shape of uropods 1-2, by 1--segmented palp of maxilla 1 and by modified pleopods 1-3 in males.

One other group of species we removed to the new subgenus *Eobogidiella,* n. sbg. with a type species *Bogidiella purmamarcensis* Grosso & Ringuelet 1979. This subgenus differs from subgenus *Bogidiella* (s. str.) by 1-segmented palp of maxilla 1.

Other species of subgenus *Bogidiella* (s. str.) show a large variability in the shape of maxilliped, gnathopods 1-2, pleopods, uropods and telson. Although some american *Bogidiella* species (from Mexico especially) are with very large palp of maxilliped *(B. michaelae, B. pasquinii, B. holsingeri, B. arganoi)*, some other species from the same region are with transitive or very narrow palp of maxilliped *(sbordonii, niphargoides, orchestipes)* so that division of these taxons in distinct groups based on this character was not possible.

The same problem was with shape of gnathopods 1-2: the largest number of *Bogidiella*-species has gnathopod 1 as long as or longer than gnathopod 2 (all europaean and some american species) but some american species from the same area have gnathopod 2 larger than gnathopod 1 in males *(B. holsingeri, B. orchestipes)*; at the same time, already the females of these species are with gnathopod 2 as long as gnathopod 1 *(B. orchestipes)*.

Telson is also very variable: from high, entire (in most american taxons) to low, emarginate or incised (in most european taxons).

Very interesting, but still unsatisfactorily studied characters are the number and position of coxal gills and oostegyts in various species of genus *Bogidiella*.

The highest number of known studied species have coxal gills on pereonites 4-6 (i. e. near pereopods 4-6) *(vomeroi, pasquinii, orchestipes, sbordonii, arganoi, holsingeri, michaelae, niphargoides, bredini, glacialis, dalmatina, albertimagni, semidenticulata, skopljensis, chappuisi, paraichnusae)*. Shoemaker (1959) mentioned the presence of coxal gills on pereonites 2-6 (i. e. near gnathopod 2 and pereopods 3-6), but Ruffo (1973) reexamined that species finding the existence of gills only on pereonites 4-6. The number of coxal gills in some species is unknown *(ruffoi, hebraea)*.

The highest number of *Bogidiella-species* is with oostegyts on pereonites 2-5 (i. e. near gnathopod 2 and pereopods 3-5) *(holsingeri, arganoi, orchestipes, pasquinii, vomeroi, niphargoides, michaelae, bredini, paraichnusae)*. But, some species are with oostegyts on pereonites 3-5 (i. e. near pereopods 3-5) *(sbordonii, silverii)*. As for many other species this character is still unknown, and on the other hand, the species *B. sbordonii* (from America) and *B. silverii* (from Europe) are geographically so far to each other, we didn't try to take this character as generic or subgeneric one, without one more detailed study of other *Bogidiella* species and variability of this character.

Other character, very interesting but still poorly known in many species of subgenus *Bogidiella* is the modification of pleopods 1-3 and uropods 1-2 in males in function of reproduction.

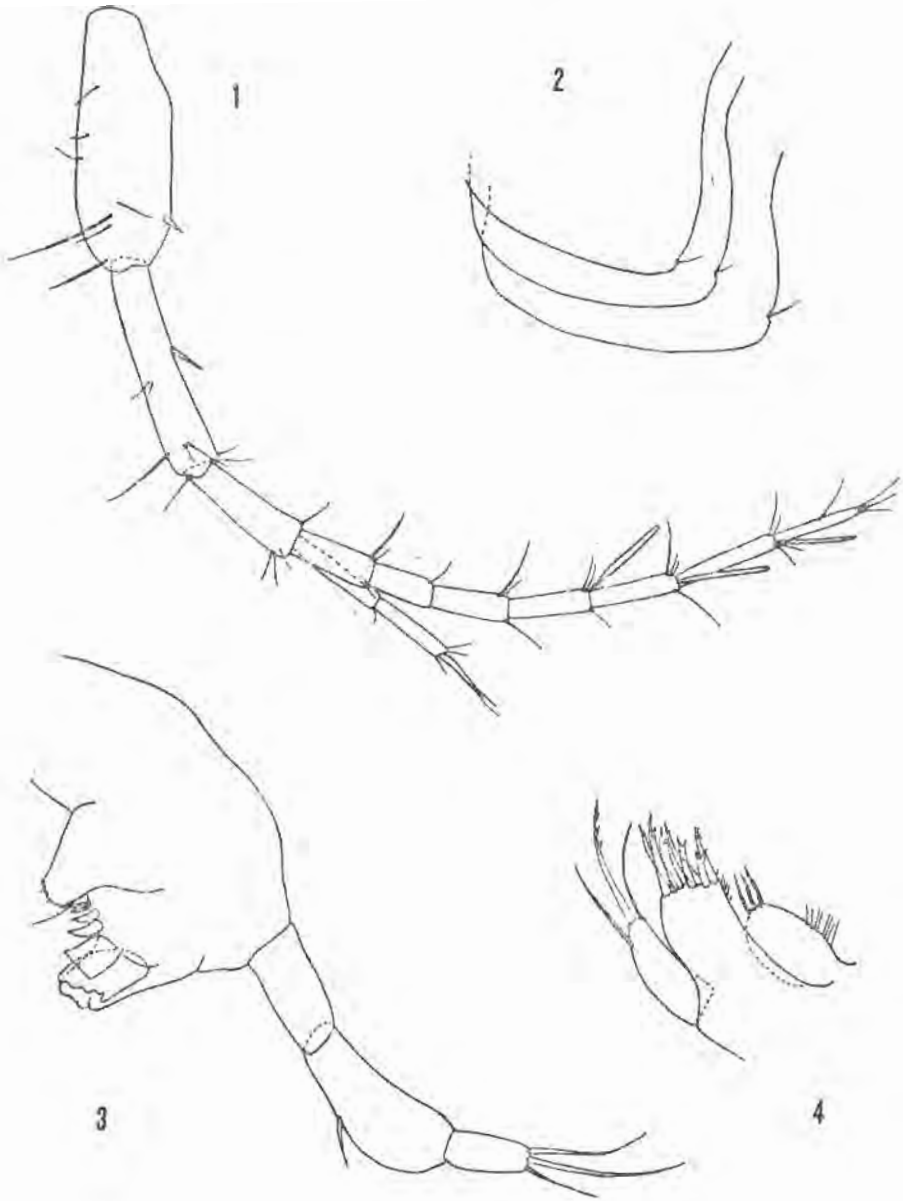

Fig. I. *Bogidiella (Bogidiella) skopljensis* (S. Kar. 1933), Bijeli Drim near Radovac, female 2 mm: 1 = antenna 1; 2 = epimeral plates 1-3.
Marinobogidiella tyrrhenica (Schiecke, 1979), Napoli, male 2 mm (after Schiecke, 1979): 3 = mandible; 4 = maxilla 1.

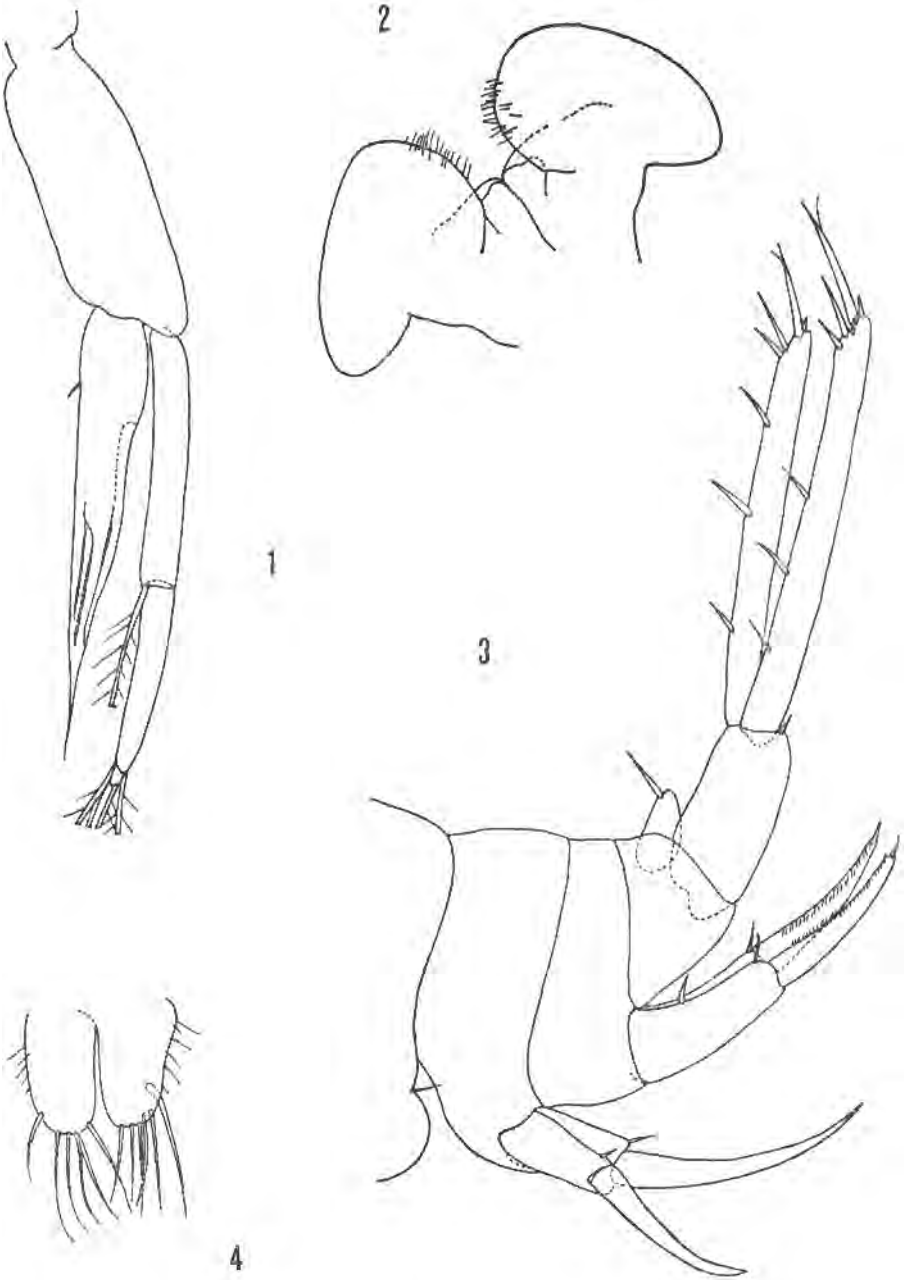

Fig. II. *Marinobogidiella tyrrhenica* (Schiecke 1979), Napoli, male 2 mm (after Schiecke, 1979): 1 = pleopod 2; 2 = labium; 3 = urosome with uropods 1-3; 4 = maxilla 2.

Within the subgenus *Bogidiella*, we observed four combinations of these characters: males having modified some parts of pleopods, males with modified outer ramus of uropod 1, males with modified inner ramus of uropod 2 and males with unmodified any of pleopods or uropods. Unfortunately, the ecology and biology of *Bogidiella* species is still unknown and the function of these modified parts of pleopods and uropods in males is unknown. We can only suppose that these modifications in males are in the function of reproduction, probably in the process of introduction of sperma in the marsupium of female for insemination of eggs.

On the other hand, in some species studied more in detail (*B. chappuisi*) we found variable shape of these modified spines on inner ramus of uropod 2 in males from various localities (K a r a m a n, G. 1979). Are these populations of *B. chappuisi* with different shape of uropod 2 in males reproductively isolated to each other or not (i. e. are they a different species or not), it must be resolved experimentally in the future.

In the first group (group A) belong the species with unmodified pleopods and uropods 1-2 in males. To this group belong the species: *albertimagni, longiflagellum, aprutina, ichnusae, martini, bredini, cooki, vomeroi, niphargoides, michaelae.*

In the second group (group B) belong the species with modified pleopods in males. To this group belong the species: *sbordonii, tabascensis, chitalensis, mexicana.*

In the third group (group C) belong the species with modified uropod 1 in males (outer ramus). To this group belong the species: *holsingeri, arganoi, orchestipes, pasquinii.*

In the fourth group (group D) belong the species with modified uropod 2 in males (inner ramus). To this group belong the species: *paraichnusae, chappuisi*, and probably some other europaean species.

In many *Bogidiella* species, all these characters are still unknown: *silverii, italica, hebraea, neotropica, helenae, lindbergi, ruffoi, michaelae, cooki, cerberus*, etc.

All these four groups (A-D) are without distinct geographical area of distribution. So the species with modified uropod 1 live in the same area with the species without any modified uropods as well as with these species with modified pleopods (in Mexico).

For the moment, we are considering these groups as a various steps or ways in the evolution regarding the reproduction. Which of these four groups is the most advanced or more advanced that other one, it is not possible to know now, but probably the most primitive group is that with unmodified pleopods and uropods 1-2 (group A). Another question is if these groups A-D we can consider

as a distinct evolutive subgenera of the genus *Bogidiella* or not, because the members of each group do not have one common ancestor and are not monophyletic.

TAXONOMIC PART

KEY TO THE BOGIDIELLA GROUP OF GENERA

1. Pleopods 1-3 with 3-segmented both rami PARABOGIDIELLA
— Pleopods 1-3 with at least inner ramus having less than 3 segments 2
2. Palp of maxilla 1 consisting of 2 segments 3
— Palp of maxilla 1 consisting of 1 segment 7
3. Pleopods 1-3 consisting of peduncle only. Uropod 3 is uniramous PSEUDINGOLFIELLA
— Pleopods 1-3 with outer ramus consisting of 1-4 segments, inner ramus consisting of 0-1 segment. Uropod 3 biramous . . 4
4. Palp segment 1 of mandible long, as long as segment 3. Coxae 1-4 distincly longer than broad AFRIDIELLA
— Palp segment 1 of mandible short, distinctly shorter than segment 3. Coxae 1-4 distinctly broader than long 5
5. Telson very short, deeply incised. Pleopods 1-3 with 1-segmented long subequal both rami KERGUELENIOLA
— Telson longer, entire or incised less than half of its length. Pleopods 1-3 with 3 or more segmented outer ramus 6
6. Outer ramus of pleopods 1-2 consisting of 5 or more segments. Inner ramus of uropod 3 short, scale-like, outer ramus 2-segmented PARACRANGONYX
— Outer ramus of pleopods 1-2 consisting of 3-4 segments only. Inner ramus of uropod 3 nearly as long as outer one, outer ramus 1-segmented BOGIDIELLA (BOGIDIELLA)
7. Palp segment 3 of mandible shorter than segment 1. Both rami of uropods 1-2 narrow, recurved, with 0-1 short distal spine only MARINOBOGIDIELLA
— Palp segment 3 of mandible distinctly longer than segment 1. At least some of uropods 1-2 with lateral spines 8
8. Uropod 1 consisting of 2 long rami. Inner lobe of maxilla 1 with strong distal setae BOGIDIELLA(EOBOGIDIELLA)
— Uropod 1 consisting of only 1 ramus. Inner lobe of maxilla 1 without strong distal setae BOLLEGIDIA

Remarks: Genus *Spelaeogammarus* Brun 1975 is with very long coxae and other characters very different from these of this group of genera and for this reason it was not included here in the key.

Genus AFRIDIELLA G. Karaman & Barnard, J.

Syn.: *Afridiella* Karaman, G. & Barnard, J. 1979: 158.

Type species: *Bogidiella somala* Ruffo 1970.

Diagnosis: Like *Bogidiella*, but coxae 1-4 longer than broad. Antenna 1 longer than antenna 2, accessory flagellum present. Labrum entire, labium with inner lobes fused together. Maxilla 1: inner lobe with distal setae, outer lobe with 7 spines, palp 2--segmented. Both lobes of maxilla 2 with distal setae, inner lobe with 1 lateral seta also. Maxilliped with short both lobes, palp 4--segmented. Mandible incisor toothed, connected to large excavate callus, molar concial. Mandibular palp 3-segmented, palp segment 1 as long as segment 3.

Gnathopod 1 hardly larger than gnathopod 2, segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed. Pereopods 3-4 normal. Segment 2 of pereopods 5-7 unlobed. Pleopods 1-3 with 3-segmented outer ramus, inner ramus vestigal. Uropods 1-2 normal, biramous. Uropod 3 normal, biramous, rami 1-segmented, subequal. Telson entire. Coxal gills on pereonites 4-6 (i. e. near pereopods 4-6), oostegyts on pereonites 2-5 (i. e. near gnathopod 2 and pereopods 3-5).

Taxons: *somala*.

AFRIDIELLA SOMALA (Ruffo)

Syn.: *Bogidiella somala* Ruffo 1970: 160, fig. I-IV.
Afridiella somala G. Karaman & J. Barnard 1979: 158.

Loc. typ.: well near El Gambole (Uebi Scebeli, Somalia).

Distribution: loc. typ.; well in Cot-Cot, NE of El Gambole (Ruffo 1970).

Genus BOGIDIELLA Hertzog

Syn.: *Bogidiella* Hertzog 1933: 226; Karaman, G. 1979: 27; Karaman, G. & Barnard, J. 1979: 159.
Jugocrangonyx Karaman, S. 1933: 45.

Type-species: *Bogidiella albertimagni* Hertzog 1933.

Diagnosis: Body laterally compressed, urosomites free, rostrum and eyes absent. Antenna 1 longer than antenna 2, accessory flagellum present. Coxae very short, distinctly broader than long, coxa 4 unlobed. Labrum entire, labium with small inner lobes, often partially fused. Maxilla 1: inner, lobe with distal setae, outer lobe with 7 spines, palp 1-2 segmented. Maxilla 2 with distal setae. Maxilliped with short inner and outer lobe, palp strong, 4-segmented. Mandible normal, incisor toothed, molar triturative, palp 3-segmented, palp segment 1 distinctly shorter than segment 3. Gnathopods 1-2 subequal, or gnathopod 1 larger or smaller than gnathopod 2. Segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed. Pereopods 3-7 normal, with or without Hertzog's organ. Pleopods partially reduced, outer ramus usually with 3-4 segments, inner ramus with 0-1 segment. Uropods 1-2 biramous, normal to partially reduced. Uropod 3 biramous, rami unisegmented. Telson short, entire to partially incised or excavated distally. Coxal gills on pereonites 4-6 (i. e. near pereopods 4-6). Oostegyts on pereonites 2-5 or 3-5 (i. e. near gnathopod 2 and pereopods 3-5, and pereopods 3-5, respectively).

Sexual dimorphism present or absent.

Subgenus BOGIDIELLA (BOGIDIELLA) Hertzog

Type - species: *Bogidiella albertimagni* Hertzog 1933.

Diagnosis: Diagnosis as sub genus *Bogidiella,* but palp of maxilla 1 consisting of 2-segments.

Taxons: *albertimagni* Hertzog 1933, *aprutina* Pesce 1980, *arganoi* Ruffo & Vigna-Tagl. 1973, *bredini* Shoemaker 1959, *cerberus* Bou & Ruffo 1979, *chappuisi* Ruffo 1952 (=*minotaurus* Ruffo & Schiecke 1976), *chitalensis* n. sp., *cooki* Grosso & Ring. 1979, *dalmatina* S. Karaman 1953, *glacialis* S. Karaman 1959, *hebraea* Ruffo 1963, *helenae* Mateus & Maciel 1967, *holsingeri* Ruffo & Vigna-Tagl. 1973, *ichnusae* Ruffo & Vigna-Tagl. 1975, *italica* G. Karaman 1979, *lindbergi* Ruffo 1958, *longiflagellum* S. Karaman 1959, *martini* Stock 1978, *mexicana* n. sp., *michaelae* Ruffo & Vigna-Tagl. 1977, *neotropica* Ruffo 1952, *niphargoides* Ruffo & Vigna-Tagl. 1977, *orchestipes* Ruffo & Vigna-Tagl. 1977, *paraichnusae* G. Karaman 1979, *pasquinii* Ruffo & Vigna-Tagl. 1977, *ruffoi* Birst. & Ljovuskin 1968, *semidenticulata* Meštrov 1961, *sbordonii* Ruffo & Vigna-Tagl. 1973, *silverii* Pesce 1981, *skopljensis* (S. Karaman 1933), *tabascensis* Villalobos 1961, *vandeli* Coineau 1968, *vomeroi* Ruffo & Vigna-Tagl. 1977.

BOGIDIELLA CHITALENSIS n. sp.

Syn.: *Bogidiella tabascensis* (nec. Villalobos 1961) Ruffo et Vigna-Taglianti 1977: 127, fig. 1a, b, d, e, g, i, l, o; Ruffo et Vigna-Taglianti 1973 (part.): 106, fig. 1d.

Loc. typ.: Cueva de Chital no. 2, meters 1390 over sea level (Chiapas, Ocosingo, Rancho, Chital, Mexico).

Diagnosis: Similar to *Bogidiella tabascensis*, but differs from it in several characters:

— pereopods 5-7 more slender, pereopod 7 with longer and more slender dactyl having only 1 seta along inferior margin (pereopod 7 more stout, dactyl shorter and stouter, with 2 setae along inferior margin in *B. tabascensis);*

— setae on outer ramus of pleopods 1-3 in female normal, straight (angularly recurved in *B. tabascensis);*

- - outer ramus of pleopod 1 in males with outer spine on second segment consisting of only 2 segments (3 segments in *B. tabascensis);* second spinal segment like flagellum, slender, tapering distally (third spinal segment lanceolate, serrate in *B. tabascensis);*

— outer ramus of pleopod 2 in males with outer spine on second segment not articulated, pointed distally (articulated, obtuse distally in *B. tabascensis);*

— living in subterranean waters on 1390-2275 meters over sea level (only 30 meters over sea level in *B. tabascensis).*

Holotype: male on slide 1922-1923, figured on fig. I, on page 129 in Ruffo & Vigna-Taglianti 1977.

Localities cited: Mexico: loc. typ. (Ruffo et Vigna-Taglianti 1977); San Cristobal de las Casa, Grutas de Rancho Nuevo, m. 2275, Chiapas (Ruffo et Vigna-Taglianti 1973).

BOGIDIELLA (BOGIDIELLA) MEXICANA n. sp.

Syn.: *Bogidiella sbordonii* (nec Ruffo & Vigna-Taglianti 1973) Ruffo et Vigna-Taglianti 1977: 131, fig. 2a-1.

Loc. typ.: Risorgenza de la Planta, no. 3, on m. 2180 over sea level (Chiapas, S. Cristobal, Las Piedrecitas, Mexico).

Diagnosis: Very similar to *Bogidiella (B.) sbordonii,* but differing from it in several characteristics: — segment 6 (propodit) of gnathopods 1-2 in males with palm more inclinated and less deffined (i. e. more pyriform) (less pyriform in *B. sbordonii);*

— segment 2 of gnathopod 2 in males and that of gnathopods 1-2 in females with 2 long setae along posterior margin each (only 1 seta in *B. sbordonii);*

— propodus (segment 6) of gnathopod 1 in males with 4 spines on outer, and 4 spines on inner margin of palm (3 spines on outer and 2 spines on inner margin of palm in *B. sbordonii);*

— peduncle of uropod 1 in males without ventrofacial spine (with spine in *B. sbordonii);*

— rami of uropods 1-2 with short distal spines (long spines in *B. sbordonii);*

— outer ramus of pleopod 1 in males with outer seta on second segment with distal segment linear, not tapering distally, bifurcate distally (second segment of seta tapering distally, finely serrate along margin in distal half of seta in *B. sbordonii);*

— Pleopod 2 in males without modified setae on outer ramus, distal outer seta on second segment of outer ramus normal but shorter than other setae (this seta is modified into lanceolate 2-segmented spine, pointed distally in *B. sbordonii).*

Already Ruffo & Vigna-Taglianti (1977) mentioned that the specimens from Risorgenza de la Plata and from Cueva de los Chivos represent probably a different species.

Holotype: male on slide no. 1512 figured by Ruffo & Vigna-Taglianti (1977) on fig. 2a-c.

Distribution: Mexico: loc. typ.; Cueva de los Chivos, m. 1400 over sea level (Chiapas, Altamirano, Nueva Santana (Ruffo et Vigna-Taglianti 1977).

BOGIDIELLA (BOGIDIELLA) SKOPLJENSIS (S. Karaman 1933) fig. I, 1-2

Syn.: *Jugocrangonyx skopljensis* S. Karaman 1933: 45, fig. 2.
Bogidiella skopljensis S. Karaman 1943: 181, fig. 1-19;
Carausu, Dobreanu, Manolache 1955: 355, fig. 1, 331-332; Coineau 1968: 195, fig. 24 c-j, 25; G. Karaman 1973: 45, fig. 12-14; G. Karaman, 1974: 6;
Bou et Ruffo 1979: 308; G. Karaman, 1979: 26.
nec *Bogidiella skopljensis* Dobreanu et Manolache 1951: 1056, fig. 4-6.

Loc. typ.: subterranean waters in Skoplje, Macedonia (Yugoslavia).

Material examined: bed of river Bijeli Drim in village Radovac near Peć (Serbia, Kosovo), November 18, 1978, 3 spec. intermixed with *Synurella ambulans (*leg. G. Karaman and Ž. Borovičanin).

Remarks: This is the first discovery of *B. skopljensis* in the rivers belonging to the Adriatic Sea drainage system.

The specimens from Bijeli Drim were 3 oovig. females up to 2.3 mm length. They agree with the description of *B. skopljensis*

given by S. Karaman (1933, 1943) and G. Karaman (1973) with some small differences: epimeral plates are almost subrounded (fig. I, 2) and accessory flagellum is consisting of 3 segments (fig. I, 1); all spines on uropods 1-3 are slightly longer than these in Macedonia. All these characteristics are very variable within all species of subgenus *Bogidiella*. Peduncle of uropod 1 with 1 ventrofacial spine (2 in specimens from Macedonia). Hertzog's organ completely invisible.

Already the specimens from Macedonia are with poorly visible Herzog's organ. The specimens of *B. skopljensis* from Roumania and France are also with 3-segmented accessory flagellum (2-segmented in macedonian specimens) but it is not important taxonomic character in this case, as I have already mentioned (1979: 27).

Localities cited: Macedonia (Yugoslavia): Skopje, Gostivar, Kumanovo (S. Karaman, 1933, 1943, 1959), Raduša near Skopje; Mađari (G. Karaman, 1973); Serbia (Kosovo): Radovac near Peć (present paper); Romania: Sighistel (reg. Oradea) (Carausu, Dobreanu, Manolache, 1955); France: subterranean waters of river Tech (Coineau 1968); Greece: island Eubea (wells near Keramou, Aghios Georghios) (Bou et Ruffo 1979).

Distribution: Southern France, Yugoslavia, Greece.

Subgenus BOGIDIELLA (EOBOGIDIELLA) n. sbg.

Type-species: *Bogidiella purmamarcensis* Grosso & Ringuelet 1979.

Diagnosis: like subgenus *Bogidiella* but palp of maxilla 1 consisting of 1 segment only.

Taxons: *purmamarcensis* Grosso et Ringuelet 1979, *brasiliensis* Siewing 1953.

BOGIDIELLA (EOBOGIDIELLA) BRASILIENSIS (Siewing)

Syn.: *Bogidiella brasiliensis* Siewing 1953: 243, fig. 1-9; G. Karaman 1979: 27.

Loc. typ.: San Salvador (Bahia).

Localities cited: San Salvador (Bahia); Ilhabela (atlantic coast of Brasil) (Siewing 1953).

Remarks: pleopods 1-3 modified in males, uropods 1-2 with partially reduced rami.

BOGIDIELLA (EOBOGIDIELLA) PURMAMARCENSIS Gr. & Ring.

Syn.: *Bogidiella purmamarcensis* Grosso & Ringuelet 1979: 385, fig. 19-36.

Loc. typ.: Rio Grande near Purmamarea, prov. Jujuy (Argentina).

Localities cited: only loc. typ. is known.

Genus BOLLEGIDIA Ruffo

Syn.: *Bollegidia* Ruffo 1974: 405; G. Karaman et J. Barnard 1979: 159.

Type-species: *Bollegidia capensis* Ruffo 1974.

Diagnosis: Body like *Bogidiella*, coxae 1-4 very short, broader than long. Antenna 1 longer than antenna 2, accessory flagellum present. Labrum unknown. Labium with partially fused inner lobes. Maxilla 1: inner lobe without distal setae, outer lobe with 7 spines, palp 1-segmented. Maxilla 2: both lobes free, with distal setae, inner lobe without dorsal oblique row of setae. Maxilliped: inner and outer lobe short, palp 4-segmented, strong. Mandible normal, incisor toothed, molar cylindric, triturative; palp 3-segmented.

Gnathopods 1-2 subchelate, gnathopod 1 larger than gnathopod 2, segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed. Pereopods 3-7 normal, with unlobed segment 2. Pleopods 1-3 very reduced, in males uniramous (1-2 segments only), in females with peduncles only (pleopods 1-2) or with unisegmented ramus (pleopod 3). Uropod 1 uniramous; uropod 2 biramous; uropod 3 biramous, rami unisegmented. Telson short, entire. Coxal gills present on pereonites 3-7, oostegyts on pereonites 3-4 *(capensis)* or 3-5 *(sootai)*, setose.

Taxons: *capensis* Ruffo 1974, *sootai* (Coineau et Chandrasekhara Rao 1972).

BOLLEGIDIA CAPENSIS Ruffo

Syn.: *Bollegidia capensis* Ruffo 1974: 405, fig. III-V.

Loc. typ.: Blaauwberg Beach, Table Bay, Cape Town (South Africa).

Distribution: known only from type-locality.

Remarks: males differs from females by narrow pleopods. Metasomsegments with 1 short dorsoposterior tooth each.

BOLLEGIDIA SOOTAI (Coineau & Rao)

Syn.: *Bogidiella sootai* Coineau & Rao 1972: 85, fig. 11-14.
Bollegidia sootai Ruffo 1974: 412.

Loc. typ.: Rangat Bay (Gulf of Bengal, India).

Localities cited: Gulf of Bengal (Ranget Bay, Ross Island, Cheriatapu, Mandur, Hut Bay, Sawai Bay, East Point (Coineau & Rao 1972).

Remarks: differing from *B. capensis* only by more pyriform segment 6 with more inclinated palm of gnathopod 1, by more slender gnathopod 2.

Genus KERGUELENIOLA Ruffo

Syn.: *Kerguelenella* Ruffo 1970: 45. (nom. preoc.).
Kergueleniola Ruffo 1974: 507; G. Karaman & J. Barnard 1979: 159.

Type-species: *Kerguelenella macra* Ruffo 1970.

Diagnosis: Coxae short, broader than long, antenna 1 longer than antenna 2, accessory flagellum present. Labrum unknown. Labium unknown. Maxilla 1: inner lobe with 1 distal seta, outer lobe with 6 spines, palp 2-segmented. Maxilla 2: both lobes with distal setae, inner lobe with one lateral seta also. Maxilliped: inner and outer lobe short, palp strong, 4-segmented. Mandible normal, incisor toothed, molar triturative, palp 3-segmented, first palpar segment short.

Gnathopods 1-2 subchelate, segment 5 of gnathopods 1-2 unlobed, pereopods 3-7 linear, segment 2 of pereopods 5-7 linear, unlobed. Pleopods biramous, each ramus 1-segmented. Uropods 1-2 biramous. Uropod 3 biramous, rami subequal, 1-segmented, long. Telson very short but very deeply incised. Coxal gills present on pereonites 2-6 (i. e. near gnathopod 2 and pereopods 3-6).

Sexual dimorphism unknown.

Taxons: *macra* (Ruffo 1970).

KERGUELENIOLA MACRA (Ruffo 1970)

Syn.: *Kerguelenella macra* Ruffo 1970: 45, fig. I-III.
Kergueleniola macra Ruffo 1974: 507.

Loc. typ.: Kerguelen Island, it was found in stomach of fish *Salvelinus fontanus*.

Distribution: known only from type-locality.

Remarks: probably subterranean freshwater animal eaten by fish occasionally.

Genus MARINOBOGIDIELLA n. gen.

Type-species: *Bogidiella tyrrhenica* Schiecke 1979.

Diagnosis: Body similar to genus *Bogidiella*. Urosomites free, coxae short, broader than long, coxa 4 unlobed. Eyes absent. Antenna 1 longer than antenna 2, accessory flagellum present. Labrum entire, labium with very short inner lobes. Maxilla 1: inner lobe with distal setae, outer lobe with 7 spines, palp 1-segmented. Maxilla 2: both lobes with distal setae, inner lobe with lateral seta also. Maxilliped: both lobes small, palp strong, 4-segmented. Mandible normal, incisor toothed, molar triturative, palp 3-segmented, palp segment 3 shorter distinctly than palp segment 1.

Gnathopods 1-2 subchelate, like these in genus *Bogidiella;* segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed.

Pereopods 3-4 normal. Segment 2 of pereopods 5-7 linear, unlobed. Pereopod 7 smaller than pereopod 6 (but maybe aberrant specimen). Pleopods in males modified, with 3-segmented outer ramus and long styliform 1-segmented inner ramus. Uropods 1-2 modified, biramous, rami very slender, without lateral spines, uropod 1 without distal spines also. Uropod 3 normal, biramous, both rami subequal, 1-segmented. Telson short, entire. Coxal gills on pereonites 3-6 (i. e. near pereopods 3-6).

Female unknown.

Taxons: *tyrrhenica.*

Remarks: differing from genus *Bogidiella* by shape of mandibular palp, uropods, pereopods and mouthparts (maxilla 1).

MARINOBOGIDIELLA TYRRHENICA (Schiecke 1979)
fig. I, 3-4; II, 1-4

Syn.: *Bogidiella tyrrhenica* Schiecke 1979: 355, fig. I-III; G. Karaman 1979: 27.

Loc. typ.: submarine cave near Lacco Ameno, Isle of Ischia near Napoli (Italy), on 6 meters depth in the sea on sandy bottom.

Distribution: known only from type-locality.

Remarks: Schiecke figured pereopod 7 smaller than pereopod 6. Maybe it is an aberrant pereopod (?).

Genus PARABOGIDIELLA Holsinger

Syn.: *Parabogidiella* Holsinger 1980: 31.

Type-species: *Parabogidiella americana* Holsinger 1980.

Diagnosis: Body similar to that of genus *Bogidiella*. Coxae 1-4 very short, broader than long, coxa 4 unlobed. Antenna 1 longer than antenna 2, accessory flagellum present. Labrum entire. Labium with well developed inner lobes. Maxilla 1: inner lobe without se-

tae, outer lobe with 7 spines, palp 1-segmented. Maxilla 2: both lobes partially fused, poorly setose. Maxilliped: inner and outer lobes short, palp strong, 4-segmented. Mandible conical (nontriturative?), incisor toothed; palp 3-segmented, first segment is shorter than second or third one.

Gnathopods 1-2 subchelate, gnathopod 1 larger than 2, segment 5 of gnathopods 1-2 lobed posteriorly. Pereopods 3-4 normal. Pereopod 7 twice longer than 6. Pleopods 1-3 biramous, each ramus 3-segmented, normal. Uropods 1-2 normal in both sexes, unmodified, rami 1-segmented. Uropod 3 short, rami short, subequal, 1-segmented. Telson short, slightly excavated distally. Coxal gills present on pereonites 2-6 (i. e. near gnathopod 2 and pereopods 3-6).

Females unknown.

Taxons: *americana* Holsinger 1980; one other sp. (Holsinger 1980).

PARABOGIDIELLA AMERICANA Holsinger

Syn.: *Parabogidiella americana* Holsinger 1980 (in: Holsinger & Longley, 1980): 33, fig. 16-18.

Loc. typ.: Artesian well in San Marcos, Texas, USA.

Distribution: Texas: loc. typ.; Bexar Country: O. R. Mitchel well no. 2 near Von Ormy; Verstraeten well no. 1 near Von Ormy (Holsinger 1980).

PARABOGIDIELLA SP. Holsinger

Syn.: *Parabogidiella* ? species Holsinger 1980: 37.

Loc. typ.: Texas: Hays Country: Artesian well in San Marcos.

Distribution: loc. typ.; Bexar Country: Verstraeten well no. 1 near Von Ormy.

Genus PARACRANGONYX Stebbing

Syn.: *Paracrangonyx* Stebbing 1899: 422; Stebbing 1906: 369; Schellenberg 1937: 33; G. Karaman & J. Barnard 1979: 159.

Type-species: *Crangonyx compactus* Chilton 1882.

Diagnosis: Body slender, coxae short, broader than long, coxa 5 not shorter than 4. Antenna 1 longer than antenna 2, accessory flagellum present. Eyes present, poorly developed (?). Labrum entire, labium with coalesced inner lobes. Maxilla 1: inner lobe with

setae, outer lobe with 7 spines, palp 2-segmented. Maxilla 2 normal, lobes with distal setae only. Maxilliped with both lobes short, palp strong, 4-segmented. Mandible normal, incisor toothed, molar triturative; palp 3-segmented, palpar segment 3 longer than segment 1.

Gnathopods 1-2 subchelate, *Bogidiella*-like, segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed. Pereopods 3-4 normal. Pereopods 5-7 normal, narrow. Pleopods 1-2 with outer ramus having more than 3 segments, pleopod 3 with 3-segmented outer ramus; inner ramus absent. Uropods 1-2 stout, biramous, spinose. Uropod 3 short, inner ramus short, outer ramus 2-segmented, short. Telson entire.

Taxons: *compactus* Chilton 1882.

PARACRANGONYX COMPACTUS (Chilton)

Syn.: *Crangonyx compactus* Chilton 1882: 177, pl. 10, fig. 13-19; Chilton 1894: 220, pl. 20, fig. 1-30; Della Valle 1893: 582, pl. 60, fig. 14.
Paracrangonyx compactus Stebbing 1899: 422; Stebbing 1906: 369; Chilton 1909: 56; Hurley 1975: 97.

Loc. typ.: Pump at Eyreton (North Canterbury, New Zealand).

Localities cited: New Zealand: loc. typ. (Chilton 1882); Leeston; Canterbury (Chilton 1894); St. Albans, Christianchurch (Chilton 1909).

Remarks: Genus *Paracrangonyx* is rather more different genus within *Bogidiella*-group of genera because of shape of uropod 3.

Genus PSEUDINGOLFIELLA Noodt

Syn.: *Pseudingolfiella* Noodt 1965: 27; G. Karaman & J. Barnard 1979: 159.
Ingolfiella (part.) Noodt 1959: 199; 1961: 7.

Type-species: *Ingolfiella chilensis* Noodt 1959.

Diagnosis: Body slender, antenna 1 longer than antenna 2, accessory flagellum present. Coxae very short, broader than long. Labrum entire, labium without inner lobes. Maxilla 1: inner lobe with or without setae, outer lobe with spines, palp 2-segmented. Maxilla 2 with both lobes partially fused (reduced), both lobes of maxilliped short, palp 4-segmented, strong. Mandible normal, incisor toothed, molar triturative, palp 3-segmented, palp segment 1 short.

Gnathopods 1-2 subchelate, similar to each other, with segment 5 unlobed (based on fig. only). Pereopods 3-7 normal, pereopods 5-7

with unlobed segment 2. Pleopods 1-3 reduced, consisting of 1 segment only (peduncle), smooth or with distal seta. Uropods 1-2 biramous, often modified in males. Uropod 3 uniramous, short, single ramus (outer?) consisting of 1-2 segments. Telson short; Oostegyts unknown, coxal gills on pereonites 2-6 (i. e. near gnathopod 2 and pereopods 3-6).

Taxons: *chilensis* (Noodt 1965), *soyeri* Coineau 1977.

PSEUDINGOLFIELLA CHILENSIS (Noodt 1959)

Syn.: *Ingolfiella chilensis* Noodt 1959: 200, fig. 1-31; Noodt 1961: 7; Siewing 1963: 83;

Pseudingolfiella chilensis Noodt 1965: 28, fig. 1B.

Loc. typ.: Chile: Quebrada de Cordoba en El Tabo (San Antonio, Central Chile).

Localities cited: loc. typ.: (Noodt 1959); South America: near Zapallar, N. part of Valparaiso, Chile (at N. of Playa Cachagua, near coast of the sea); near Valdivia / Niebla (Playa Grande, coastal subterranean waters); island Chiloe, W. part of Playa Mar Brava W. Ancud (Noodt 1965).

PSEUDINGOLFIELLA SOYERI Coineau

Syn.: *Pseudingolfiella soyeri* Coineau 1977: 288, fig. 1-4.

Loc. typ.: Kerguelen island, mouth of small torrent near vallee d'Olsen.

Distribution: Kergulen islands: loc. typ.; Baie de la Table; Plage des Lions marins; Plage noire (Coineau 1977).

Remarks: uropod 3 is 2-segmented, inner lobe of maxilla 1 with 4 setae; outer ramus of uropods 1-2 remarkably shorter than inner one.

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Rezime

REVIZIJA BOGIDIELLA — GRUPE RODOVA SA OPISOM NEKIH NOVIH TAKSONA (121. PRILOG POZNAVANJU AMPHIPODA)

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U radu je iznijeta revezija *Bogidiella*-grupe rodova iz familije *Gammaridae (Amphipoda)*. Iz roda *Bogidiella* Hertzog 1933, izdvojen je novi rod *Marinobogidiella* n. rod sa tipičnom vrstom *B. tyrrhenica* Schiecke 1979 iz obala mora kod Napulja, Italija. Dosadašnji rod *Bogidiella* je veoma heterogenog sastava, i tridesetak do sada poznatih vrsta ovog roda nađenih širom cijelog svijeta naseljavaju podzemne slatke, brakične i vjerovatno i slane vode (mora). Ovaj rod je razdjeljen u dva podroda, na osnovu građe palpusa prve maksile:

podrod *Bogidiella* Hertzog 1933, sa tipom podroda *B. albertimagni* Hertzog 1933, i podrod *Eobogidiella*, n. podrod, sa tipom podroda *B. purmamarcensis* Grosso & Ringuelet 1979.

Podrod *Bogidiella* je razdjeljen u 4 grupe vrsta na osnovu preobražaja pleopoda i uropoda u pomoćne organe za kopulaciju:

— **grupa A:** sa nepromjenjenim pleopodima i uropodima kod mužjaka i ženki. Ova grupa je i najprimitivnija grupa vrsta, i u nju dolaze vrste: *albertimagni, longiflagellum, aprutina, ichnusae, martini, bredini, cooki, vomeroi, niphargoides, michaelae.*

— **grupa B:** mužjaci u ovoj grupi imaju modificirane pleopode radi lakšeg unošenja sperme u marsupijum ženke. Ovoj grupi pripadaju vrste: *sbordonii, tabascensis, chitalensis* i *mexicana.*

— **grupa C:** mužjaci ove grupe imaju modificiranu vanjsku granu prvog uropoda. Ovoj grupi pripadaju vrste: *holsingeri, arganoi, orchestipes, pasquinii.*

— **grupa D:** ovoj grupi pripadaju vrste kod kojih mužjaci imaju modificiranu unutrašnju granu drugog uropoda. Ovoj grupi pripadaju vrste: *paraichnusae, chappuisi* i vjerovatno neke druge vrste iz Evrope.

U radu su opisane i dvije nove vrste podroda *Bogidiella: Bogidiella (Bogidiella) mexicana*, n. sp. i *Bogidiella (Bogidiella) chitalensis* n. sp. obje iz Meksika. Sastavljen je ključ za determinaciju svih rodova i podrodova *Bogidiella*-grupe rodova i date su dijagnoze, rasprostranjenje i sinonimika svih vrsta ove grupe (osim podroda *Bogidiella* zbog velikog broja vrsta i ograničenog prostora): *Bollegidia, Afridiella, Paracrangonyx, Parabogidiella, Pseudingolfiella, Kergueleniola, Marinobogidiella* i sbg. *Eobogidiella.*

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