

Gordan S. Karaman
Biological Institute, Titograd

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)

ABSTRACT

Critical remarks to the two recent attempts to the revision of *Bogidiella*-Group of genera (often mentioned also as Family *Bogidiellidae*) are given and the taxonomic characteristics used for division of different genera and subgenera are discussed.

Genus *Somagidiella* Stock 1981 is removed to the genus *Afri-diella* G. Karaman & J. Barnard 1979 as synonym. The subgenus *Eobogidiella* G. Karaman 1981 is removed to the generic level.

Bogidiella arganoi Ruffo & Vigna-Tagl. 1973 is removed to the subgenus *Guagidiella*. A new species, *Bogidiella (Guagidiella) arganoides*, n. sp. from well in Etna, Mexico, is established. Diagnosis of the subgenus *Medigidiella* Stock 1981 is modified and the key to the genera and subgenera of *Bogidiella*-Group of genera (=family *Bogidiellidae*) is composed. Diagnosis of many genera and subgenera of *Bogidiella*-Group of genera is given. *Bogidiella (Bogidiella) semidenticulata* Meštrov 1961 is partially redescribed and figured based on material from eastern Serbia, and distribution of this species is studied. New locality of *Bogidiella (Bogidiella) albertimagni* Hertzog is given.

INTRODUCTION

During the recent period several attempts to the division of genus *Bogidiella* (s. lato) were made by several authors (Karaman, Stock). This paper represents the continuation of our pre-

vious paper (work) published in 1981, modified now, based on new data and new opinions regarding this problem. Description of some taxa and their distributions are included in it. Short time after the publishing of our previous paper, (1981), it was published one paper by Stock regarding the same problem of division of *Bogidiella*-genus (1981), prepared evidently independently of our investigations, so that all interesting new data from both papers were studied and discussed here.

PROBLEM OF DIVISION OF BOGIDIELLA-GENUS (sensu lato)

First members of the genus *Bogidiella* were discovered and described in 1933 by Hertzog and S. Karaman from the subterranean freshwaters of Germany and Yugoslavia, respectively

Later, many other new taxa of this genus were discovered over the World: now are known about 50 species from Europe, Asia, North and South America, as well as from many islands in Oceans.

Some of these species were discovered in the fresh waters in the valleys, others in the small springs in the high mountains, or in the brackish waters near the sea shore; only a few of them are known from the sea water, but possibly also in these cases they are probably attached to the brackish waters or to submarine springs.

The discovering of so large number of different species with many very different characteristics, was the conditions for the attempt of division of all these taxa to the distinct genera and subgenera.

First division of some *Bogidiella* species into a distinct different genera was made by G. Karaman et J. Barnard (1979) establishing the new genus *Afridiella* for the species *Bogidiella somala* Ruffo 1970 from Somalia.

Next step in this direction was made by G. Karaman in 1981 through the using of the sexual dimorphic characters in males and females and the shape of maxilla 1. He established a new genus *Marinobogidiella*, n. g. with type-species *Bogidiella tyrrhenica* Schiecke 1973 from Napoli region, Italy. The genus *Bogidiella* was divided into 2 subgenera: sbg. *Bogidiella* Hertzog 1933 and sbg. *Eobogidiella* G. Karaman 1981, based on presence of unisegmented or 2-segmented palp of maxilla 1.

Subgenus *Bogidiella* was divided into 4 groups (A, B, C, D) based on the type and degree of modifications of pleopods and uropods in males and females:

Group A is consisting of species with unmodified pleopods and uropods 1-2 in males and females;

Group B is consisting of species with modified pleopods in males;

Group C is consisting of species with modified uropod 1 (outer ramus) in males;

Group D is consisting of species with modified uropod 2 in males (inner ramus). It was also proposed the question if these groups can be consider as a distinct subgenera or not (page 29), mentioning that probably the most primitive group is group A with unmodified pleopods and uropods.

A very short time later, Stock has split maximally (1981) all *Bogidiella* species into 4 new genera and 7 subgenera using the similar characteristics: sexual dimorphic characters in males and females regarding pleopods, uropods and other body-parts.

The differences between some of established subgenera are nearly minute causing suspicion in the validity of some of these subgenera (for example, subgenera *Stygogidiella* and *Mexigidiella* differ to each other only in the poorly modified or unmodified pleopod 1 in males). Often, it is very difficult to decide sometimes if one pleopod is nearly modified or not (*Bogidiella arganoi*).

Second problem is the shape of modified spines on pleopods and uropods in males: if the shape of these spines must be identic for each species or not? I suppose that probably the shape of these spines must be identic in all males of one species (serrate, pectinate, rasp-shape, clavate, smooth, etc.), because these spines have some rolle (still unknown) in the reproduction and removing the sperma to the marsupial cave of female.

Are the presence or absence of dimorphic characters between males and females of one species on the level of the shape of pereopod 7, uropod 3 and gnathopods 1-2 valid characters to divide one genus or subgenus into two ones?

Subgenus *Orchestigidiella* differs from subgenus *Medigidiella* based on these characters only. But already in many other *Bogidiella* species some differences between males and females were observed regarding the general size of the body, size of the gnathopods (smaller gnathopods in females), shape of gnathopods (*tabascensis*, *niphargoides*, *sbordonii*, etc.).

Our impression is that now the genus *Bogidiella* (s. auct.) is *oversplited* and that some of established genera and/or subgenera will be fused together in the future. For the moment, we decided to keep valid this division of genera and subgenera of *Bogidiella*-genus, untill the discovering of other new taxa and discovery of the males of many already known species to see the eventual overlapping of taxonomic characters between genera and subgenera of

this group. Only so should be possible to decide about the validity of these genera and subgenera.

Based on our present knowledge of the distribution of *Bogidiella*-group of genera over the World, it is clear that *Bogidiella* is one very old freshwater group of animals (of marine origin) which has later reinvaded the brackish waters near the sea. Only so it is possible to explain the absence of pure marine *Bogidiella* species and the presence of many taxa of this group in the fresh and brackish waters on the isolated numerous islands in Pacific, Atlantic etc.

TAXONOMIC PART

KEY TO THE BOGIDIELLA GROUP OF GENERA AND SUBGENERA

1. Left and right palp of maxilla 1 asymmetric to each other (left palp 1-segmented, right palp 2-segmented) (mandibular palp partially reduced, 2-segmented, inner ramus of uropod 3 short)

DUSSARTIELLA

- Left and right palp of maxilla 1 symmetric to each other . . . 2
- 2. Inner ramus of pleopods 1-3 consisting of 3 or more segments . . . 3
- Inner ramus of pleopods 1-3 consisting of 0-2 segments . . . 4
- 3. Coxae 1-7 very short, much broader than long, coxa 5 not larger than coxa 4 . . . PARABOGIDIELLA
- Coxae 1-6 progressively longer, coxa 5 much larger than coxa 4 . . .

ARTESIA

- 4. Palp of maxilla 1 consisting of 2 segments 5
- Palp of maxilla 1 consisting of 1 segment 17
- 5. Pleopods 1-3 consisting of peduncle only. Uropod 3 uniramous

PSEUDINGOLFIELLA

- Pleopods 1-3 with outer ramus consisting of 1-4 segments, inner ramus consisting of 0-1 segments. Uropod 3 biramous . . . 6
- 6. Coxae 1-4 distinctly longer than broad 7
- Coxae 1-4 broader than long 8
- 7. Mandibular palp segment 1 as long as segment 3. Mandibular incisor connected to large excavate callus. Outer ramus of pleopods consisting of 3 segments

AFRIDIELLA

- Mandibular palp segment 1 shorter than segment 3. Mandibular incisor without excavate callus. Outer ramus of pleopods consisting of 4 segments

SPELAEOGAMMARUS

8. Telson very, short, deeply incised. Both rami of pleopods 1-3 are unisegmented, long, almost subequal

KERGUELENIOLA

- Telson longer entire or incised less than half of its length.
Pleopods 1-3 with 3 or more segmented outer ramus 9
- 9. Outer ramus of pleopods 1-2 consisting of 5 or more segments.
Inner ramus of uropod 3 short, scale-like, outer ramus 2-seg-
mented PARACRANGONYX
- Outer ramus of pleopods 1-2 consisting of 3-4 segments only.
Inner ramus of uropod 3 nearly as long as outer ramus, outer
ramus 1-segmented 10
- 10. Uropods 1-2 unmodified in males and females 11
- Some of uropods modified in males or females 13
- 11. Pleopods 1-3 unmodified in males and females
BOGIDIELLA (BOGIDIELLA)
- Some of pleopods modified in males 12
- 12. Modified elements are present on pleopod 2 in males
BOGIDIELLA (STYGOGIDIELLA)
- Modified elements are present on pleopods 1-2 in males
BOGIDIELLA (MEXIGIDIELLA)
- 13. Modified uropod 1 is present in females (modified pleopod 2 is
present in males) BOGIDIELLA (ANTILLOGIDIELLA)
- Unmodified uropod 1 is present in females 14
- 14. Modified uropod 1 is present in males 15
- Modified uropod 2 is present in males (pleopods 1-2 unmodi-
fied in males) 16
- 15. Pleopods 1-2 are unmodified in males
BOGIDIELLA (GUAGIDIELLA)
- Pleopod 2 modified in males (Mandibular palp segment 2 in-
flated) ACTOGIDIELLA
- 16. Pereopod 7 and gnathopod 2 with distinct sexual dimorphism
in males BOGIDIELLA (ORCHESTIGIDIELLA)
- Pereopod 7 and gnathopod 2 without sexual dimorphism in
males BOGIDIELLA (MEDIGIDIELLA)
- 17. Palp segment 3 of mandible shorter than segment 1. Rami of
uropod 1 without lateral and distal spines (male)
MARINOBOGIDIELLA
- Palp segment 3 of mandible longer than segment 1. Rami of
uropod 1 at least with distal spines 18
- 18. Uropod 1 consisting of only one ramus. Inner plate of maxilla
1 without strong distal setae
BOLLEGIDIA

- Uropod 1 consisting of 2 long rami. Inner plate of maxilla 1 with strong distal setae 19
- 19. Pleopods 1-3 with 3-segmented outer ramus and short 1-segmented inner ramus. Peduncle of uropods 1-2 longer than rami, inner ramus of both uropods entire distally; telson distally emarginate **EOBOGIDIELLA**
- Pleopod 3 with 1-2 segmented outer ramus, inner ramus of pleopods 1-3 long, unisegmented. Peduncle of uropods 1-2 shorter than rami, inner ramus of both uropods bifurcate distally. Telson convex distally (female)

MARIGIDIELLA

Genus ACTOGIDIELLA Stock

Syn.: *Actogidiella* Stock 1981: 355

Type-species: *Actogidiella cultrifera* Stock 1981.

Diagnosis: Coxae 1-4 short, broader than long, coxa 5 not longer than 4. Accessory flagellum present. Labium with small, well developed inner plates. Mandibular incisor toothed, molar reduced, nontritulative, palp 3-segmented, first segment shorter than third one, second segment swollen. Maxilla 1: inner plate with distal setae, outer plate with 7 spines, palps symmetric to each other, 2-segmented. Maxilla 2: inner plate without dorsal oblique row of setae. Maxilliped: both plates small, spinose, palp strong, 4-segmented.

Gnathopods 1-2 nearly subequal; segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed posteriorly. Pereopods 3-7 normal, with unlobed segment 2. Pleopods 1-3 with 3-segmented outer ramus, inner ramus absent. Pleopod 2 and partially pleopod 1 modified in males. Uropods 1-2 biramous, with peduncle shorter than rami. Uropod 1 modified in males. Uropod 3 biramous, rami subequal long, 1-segmented, obtuse distally. Telson short, emarginate distally. Coxal gills occur on pereonites 4-6. Oostegites narrow.

Taxons: *cultrifera* Stock 1981.

ACTOGIDIELLA CULTRIFERA Stock

Syn.: *Actogidiella cultrifera* Stock 1981: 367, fig. 11-12.

Loc. typ.: Beef Island, Well Bay (18°26'39"N, 64°32'53"W), West Indian Islands, Tortola.

Localities cited: known only from type-locality (Stock 1981).

Genus AFRIDIELLA G. Karaman & J. Barnard

Syn.: *Afridiella* G. Karaman & J. Barnard 1979: 158; G. Karaman 1981: 30.

Somagidiella Stock 1981: 352.

Type - species: *Bogidiella somala* Ruffo 1970.

Diagnosis: see G. Karaman 1981: 30. This genus is characterized by long coxae 1-4, by presence of callus on mandible, mandibular palp segment 1 as long as segment 3, palp of maxilla 1 is 2-segmented; pleopods and uropods unmodified. Outer ramus of pleopods 1-3 is 3-segmented, inner ramus vestigial. Coxal gills occur on pereonites 4-6, oostegites occur on pereonites 2-5.

Taxons: *somala* (Ruffo 1970).

Remarks: Stock evidently overlooked our paper (1979) in which the genus *Afridiella* has been described, so that the diagnosis and type-species of genus *Somagidiella* are identical with these of genus *Afridiella*.

AFRIDIELLA SOMALA (Ruffo)

Syn.: *Bogidiella somala* Ruffo 1970: 160, fig. I-IV.

Afridiella somala G. Karaman & J. Barnard 1979: 158;
G. Karaman 1981: 30.

Somagidiella somala Stock 1981: 352.

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

Localities cited: Somalia: loc. typ.; well in Cot Cot, NE. of El Gambole (Ruffo 1970).

Genus ARTESIA Holsinger

Syn.: *Artesia* Holsinger, in Holsinger & Longley 1980: 38;
Stock 1981: 352.

Type - species: *Artesia subterranea* Holsinger 1980.

Diagnosis: Coxa 1 short, broader than long, coxae 2-5 progressively longer, coxa 6 as long as coxa 5 but narrower. Coxa 7 very short. Antenna 1 longer than antenna 2, accessory flagellum present. Labrum with convex entire distal margin, labium with well developed inner plates. Mandibular incisor toothed, molar feeble, obsolete, palp 3-segmented, segment 1 is the shortest one. Maxilla 1: inner plate short, smooth, outer plate with 7 spines, palp reduced, 1-segmented. Maxilla 2: both plates partially coalesced, weak, only with distal setae. Maxilliped: both plates small, bearing setae only, palp strong, 4-segmented.

Gnathopod 1 larger than gnathopod 2, segment 5 of both gnathopods lobed posteriorly. Pereopods 3-7 normal, with unlobed segment 2. Pleopods 1-3 biramous, both rami bearing 5-6 segments each. Uropods 1-2 biramous normal, unmodified. Uropod 3 biramous, rami lanceolate, long, 1-segmented, obtuse distally. Telson short, deeply incised. Coxal gills occur on pereonites 2-6. Oostegites narrow.

Females like males.

Taxons: *subterranea* Holsinger 1980.

ARTESIA SUBTERRANEA Holsinger

Syn.: *Artesia subterranea* Holsinger, in: Holsinger & Longley 1980: 39, fig. 19-22; Stock 1981: 352.

Loc. typ.: USA: Texas: Hays County, artesian well in San Marcos.

Localities cited: known only from type-locality (Holsinger, 1980).

ARTESIA SP.

Syn.: *Artesia sp.* Holsinger, in: Holsinger & Longley 1980: 44.

Loc. typ.: cave in Culberson County, Texas.

Remarks: Holsinger mentioned (1980) that description of this species is in process.

Genus BOGIDIELLA Hertzog

Syn.: *Bogidiella* Hertzog 1933: 226; Karaman, G. 1979: 27; Karaman, G. & Barnard, J. 1979: 159; Karaman, G. 1981: 30; Stock 1981: 353.

Jugocrangonyx Karaman, S. 1933: 45.

Type - species: *Bogidiella albertimagni* Hertzog 1933.

Diagnosis: Because of erection of many new genera and elevation of some subgenera to the generic level, diagnosis of this genus proposed by me (1981) must be something modified:

Coxae 1-7 very short, broader than long, coxa 5 not larger than coxa 4. Accessory flagellum present. Labrum entire, labium with short inner lobes, often partially fused. Mandible: molar tritulative, incisor toothed, palp 3-segmented, segment 1 shorter than segment 3. Maxilla 1: inner plate with distal setae, outer plate with 7 spines, palp 2-segments, symmetric to each other. Maxilla 2: both plates narrow, with distal setae only. Maxilliped: inner and outer plates short, spinose, palp 4-segmented, strong.

Gnathopods 1-2 subequal or gnathopod 1 larger or smaller than gnathopod 2. Segment 5 of gnathopod 1 lobed posteriorly, that of

gnathopod 2 unlobed. Pereopods 3-7 normal, with unlobed segment 2. Pleopods modified or unmodified in males, outer ramus 3-4 segmented, inner ramus 0-1 segmented. Uropods 1-2 biramous, modified or unmodified in males, normal to partially reduced. Uropod 3 biramous, both rami unisegmented, obtuse distally, nearly subequal. Telson short, entire to partially incised or excavated distally. Coxal gills occur on pereonites 4-6 (i. e. near pereopods 4-6); oostegites occur on pereonites 2-5 or 3-5 (i. e. near gnathopod 2 and pereopods 3-5, or pereopods 3-5 respectively). Sexual dimorphism absent or poorly developed.

Taxons: see sub taxons of subgenera.

Remarks: Karaman, G. divided genus *Bogidiella* into 2 subgenera and 4 groups (A-D) based on sexual dimorphic characters of pleopods and uropods 1-2 in males and females (1981). He established also a new genus *Marinobogidiella* based on shape of uropods 1-2 and mouthparts. Stock (1981) established several new subgenera and genera based on the same taxonomic characters.

Subgenus BOGIDIELLA (BOGIDIELLA) Hertzog

Syn.: *Bogidiella (Bogidiella)* G. Karaman 1981: 31; Stock 1981: 353.

Type - species: *Bogidiella albertimagni* Hertzog 1933.

Diagnosis: Diagnosis like that of genus *Bogidiella* except: pleopods 1-3 unmodified in males and females, uropods 1-2 unmodified in males and females. No other more remarkably sexual dimorphic characters between males and females were observed.

Taxons: *albertimagni* Hertzog 1933, *aprutina* Pesce 1980, *cooki* Grosso & Ring. 1979, *dalmatina* S. Karaman 1953, *glacialis* S. Karaman 1959, *helenae* Mateus & Maciel 1967, *ichnusae* Ruffo & V. T. 1973, *ichnusae africana* G. Karaman & Pesce 1980, *lindbergi* Ruffo 1958, *longiflagellum* S. Karaman 1959, *michaelae* Ruffo & V. T. 1977, *neotropica* Ruffo 1952, *niphargoides* Ruffo & V. T. 1977, *ruffoi* Birst & Ljov. 1968, *sedimenticulata* Meštrov 1961, *skopljensis* S. Karaman 1933, *vomeroi* Ruffo & V. T. 1977.

BOGIDIELLA (BOGIDIELLA) SEMIDENTICULATA Meštrov

figs. I-II.

Syn.: *Bogidiella semidenticulata* Meštrov 1961: 74, fig. I, 3, 12; II, 13-17; Ruffo 1963: 191; Dancau & Serban 1965: 341; Mateus & Maciel 1967: 39; G. Karaman 1973: 41; figs. X, XI; Ruffo 1973: 52.

Bogidiella (Bogidiella) semidenticulata G. Karaman 1981: 31.

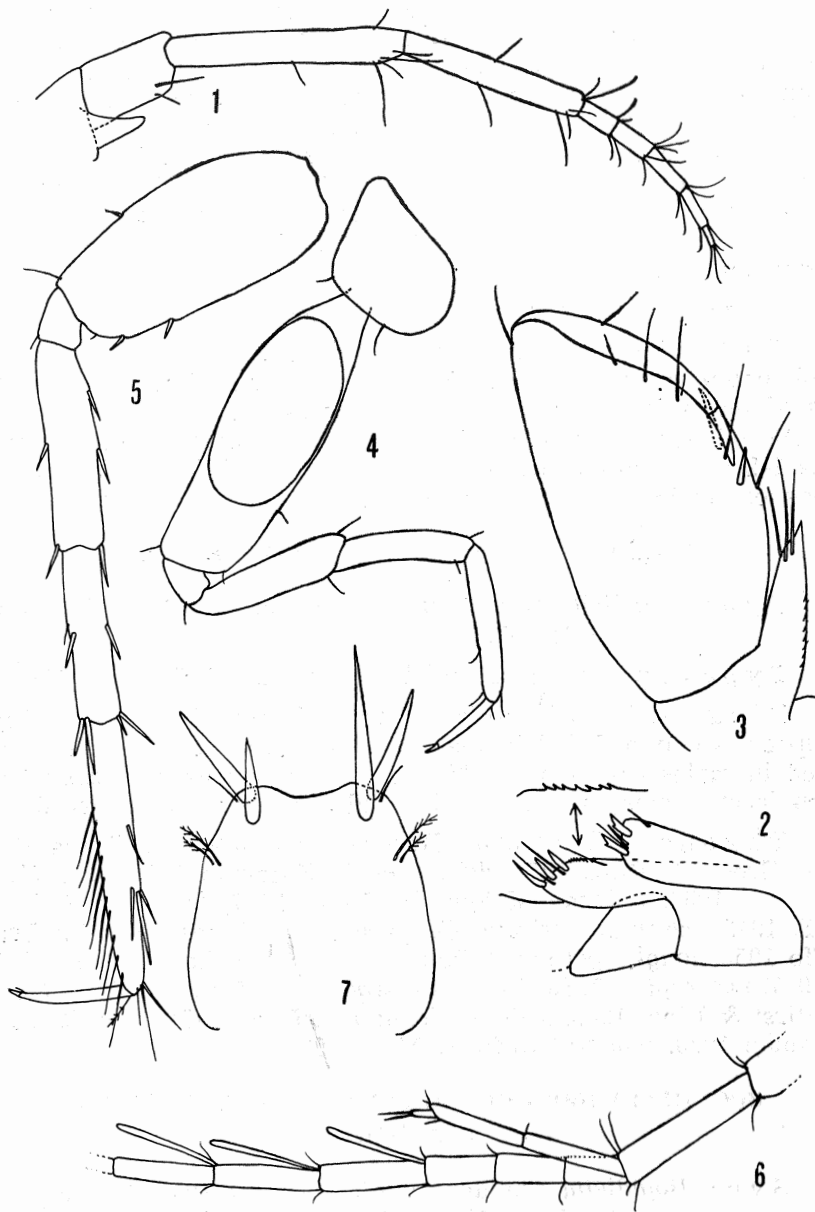


Fig. 1. *Bogidiella (Bogidiella) semidenticulata* Meštrov, Trgoviški Timok, female 2 mm: 1 = antenna 2; 2 = plates of maxilliped; 3 = gnathopod 1; 4 = pereopod 3; 5 = pereopod 7; 6 = antenna 1; 7 = telson.

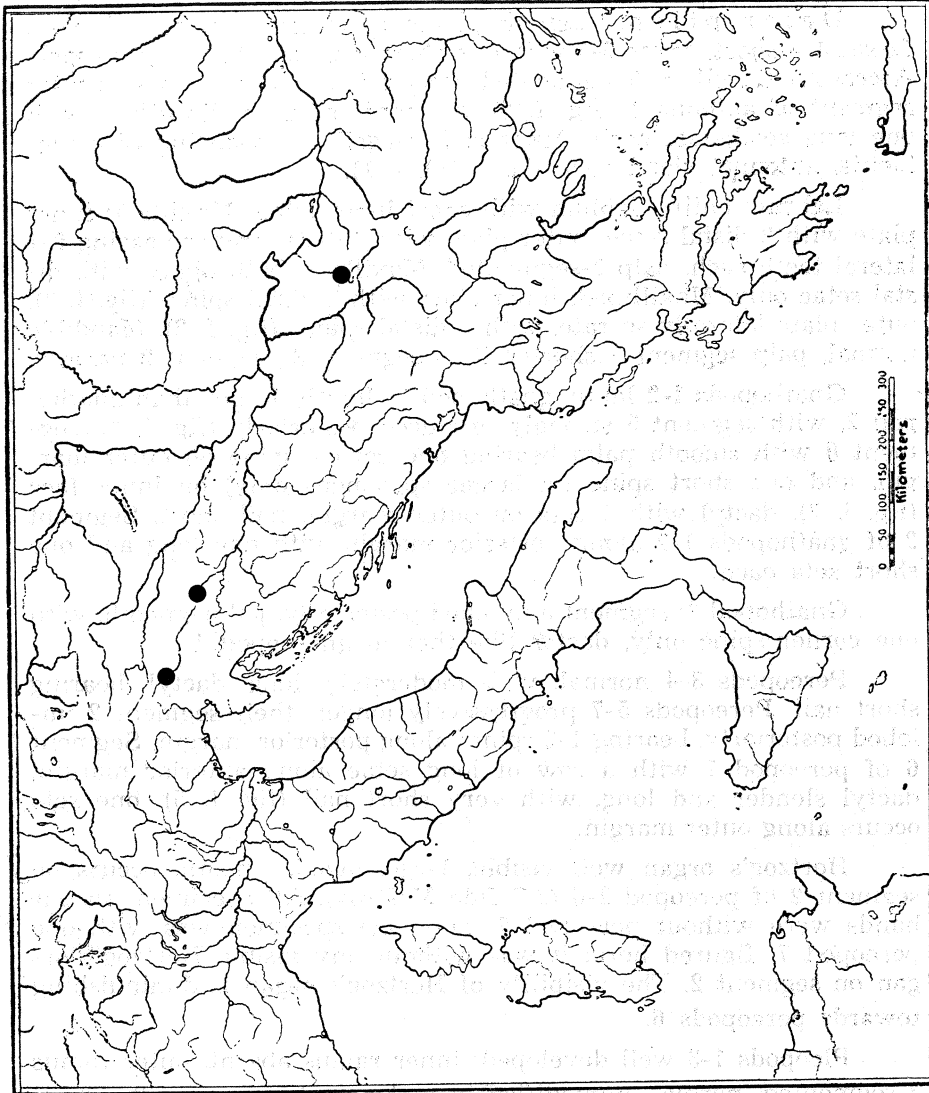


Fig. II. Distribution of *Bogidiella (Bogidiella) semidenticulata* Meštrov 1961.

Material examined: River Trgoviški Timok near vill. Trgovište (Eastern Serbia, Yugoslavia), August 9, 1981, several exp. intermixed with *Niphargopsis caspary* (Pratz) and *Niphargus jugoslavicus* G. Karaman 1981.

Description: Length of the specimens up to 2.1 mm. Coxae 1-4 short, coxae 5-7 with one short ventroposterior spine each. Accessory flagellum 3-segmented, longer than the third peduncular segment of antenna 1 (fig. I, 6), segments of main flagellum with one long aesthetasc each. Antenna 2: flagellum consisting of 5 segments, antennal gland cone short (fig. I, 1).

Labrum entire, labium with short inner lobes. Maxilla 1: inner plate with 2 distal setae, outer plate with 7 distal spines bearing 0-1 lateral teeth each, palp 2-segmented. Maxilla 2: both plates with distal setae only. Maxilliped: inner plate with 2 distal spines (fig. I, 2), outer plate laterally serrate, with 3 distal spines (fig. I, 2). Mandible normal, palp segment 1 shorter than segment 3, segment 2 narrow.

Gnathopods 1-2 large, gnathopod 1 slightly larger than gnathopod 2, with segment 5 strongly produced posteriorly (fig. I, 3); segment 6 with smooth palm bearing one corner spine on outer margin, and one short spine (in larger specimens only) on inner face (fig. I, 3), dactyl with 1 seta on outer margin, nail short. Segment 2 of gnathopods 1-2 along posterior margin with one long and one short seta each.

Gnathopod 2: segment 5 unlobed posteriorly, palm smooth, with one corner spine only, dactyl like that in gnathopod 1.

Pereopods 3-4 normal, with moderately long dactyl bearing short nail. Pereopods 5-7 progressively longer, their segment 2 unlobed posteriorly, bearing 1-2 spines along posterior margin. Segment 6 of pereopod 7 with a row of long setae along anterior margin; dactyl slender and long, with very short nail (fig. I, 5), one seta occurs along outer margin.

Hertzog's organ well visible, large, ovoid, smooth, occurs on segment 2 of pereopod 2-6 (2-7 fide Meštrov). All specimens in our hands were without pereopod 7, only one specimen was with one pereopod 7, figured here: it was without any visible Hertzog's organ on segment 2. The visibility of Hertzog's organ is diminishing towards pereopods 6.

Pleopods 1-3 well developed: inner ramus absent, outer ramus 3-segmented, normal, unmodified in males, peduncle with 2 retinacula.

Epimeral plates 1-3 angular to pointed posteriorly, smooth. Uropods 1-2 normal, unmodified in males and females. Peduncle of uropod 1 with 1, rarely 2 ventrofacial spines, rami nearly subequal, with

lateral and long distal spines (the longest distal spines reaching half of rami-length).

Uropod 2 with shorter spines, inner ramus distinctly longer than outer one, distal spines of rami shorter than the half of rami-length. Uropod 3 was missing in all our specimens.

Telson short, entire, emarginate distally (fig. I, 7), bearing 4 unequal distal spines and 2 short distal setae (the longest spines reaching up to the length of the telson).

Coxal gills occur on pereonites 4-6, ovoid. Males like females.
Loc. typ.: Dovjež, Yugoslavia.

Localities cited: Yugoslavia: Slovenia: Dovjež; Tacen; Croatia: Zagreb (Meštrović 1961); Serbia: Trgoviški Timok (present paper). The locality Trgoviški Timok is the most eastern known locality of this species (fig. II).

BOGIDIELLA (BOGIDIELLA) ALBERTIMAGNI Hertzog

Syn.: *Bogidiella albertimagni* Hertzog 1933: 226, fig. 1; G. Karaman 1973: 22, fig. I-III.

Bogidiella (Bogidiella) albertimagni G. Karaman 1981: 31. (for other synonymies see G. Karaman 1973: 22).

Loc. typ.: Valley of Rhein river near Strassbourg.

Material examined: subterranean waters of river Pek on road Golubac-Požarevac, Eastern Serbia, Yugoslavia, August 13, 1981, 2 specimens intermixed with *Niphargopsis caspary* (Pratz) and *Niphargus* sp.

Remarks: Specimens from Pek agree with the figures and description given by G. Karaman (1973) from Trebaljevo in Montenegro (Crna Gora, Yugoslavia). Hertzog's organ visible, palm of gnathopods 1-2 serrate. Epimeral plates pointed. Distal spines of rami of uropod 1 long. Inner ramus of pleopods 1-3 absent, outer ramus 3-segmented.

Subgenus BOGIDIELLA (ANTILLOGIDIELLA) Stock

Syn.: *Bogidiella (Bogidiella) group B* (part.) G. Karaman 1981: 28.

Subgenus *Antillobogidiella* Stock 1981: 354.

Type - species: *Bogidiella martini* Stock 1978.

Diagnosis: Diagnosis similar to that of genus *Bogidiella* except: Pleopod 2 modified in males; uropod 1 modified in females.

Taxons: *martini* Stock 1978, *martini* ssp. Sket (in press).

BOGIDIELLA (ANTILLOGIDIELLA) MARTINI Stock

Syn.: *Bogidiella martini* Stock 1978: 104, figs. 1-30.

Bogidiella (Bogidiella) martini G. Karaman 1981: 31
(group A).

Bogidiella (Antillogidiella) martini Stock 1981: 354.

Loc. typ.: Saint Martin island (West Indies, Antilles: well in valley of Mont Vernon, 18°05'07"N, 63°01'45"W).

Localities cited: loc. typ.; well in Ravine du Colombier, 18°05'03"N, 63°04'46"W (Stock 1978).

Remarks: Remarkable sexual dimorphic characters in the shape of gnathopods 1-2 in males and females are observed.

Subgenus BOGIDIELLA (GUAGIDIELLA) Stock

Syn.: *Bogidiella (Bogidiella) group C* (part.) G. Karaman 1981: 28.

Subgenus *Guagidiella* Stock 1981: 354.

Type - species: *Bogidiella holsingeri* Ruffo & Vigna-Taglianti 1973.

Diagnosis: Diagnosis similar to that of genus *Bogidiella* except: Pleopods 1-3 unmodified in males and females. Uropod 1 modified in males. No other sexual dimorphic characters between males and females were observed.

Taxons: *arganoi* Ruffo & V. T. 1973, *arganoides*, n. sp., *holsingeri* Ruffo & V. T. 1973, *pasquinii* Ruffo & V. T. 1977.

BOGIDIELLA (GUAGIDIELLA) ARGANOI Ruffo & Vigna-Taglianti

Syn.: *Bogidiella arganoi* Ruffo & Vigna-Taglianti 1973: 115, figs. 8-9; G. Karaman 1979: 27.

Bogidiella (Bogidiella) arganoi G. Karaman 1981: 28
(group C).

Bogidiella (Medigidiella) arganoi Stock 1981: 353.

Loc. typ.: Mexico: Veracruz, Cordoba, Paraje Nuevo, well.

Localities cited: known only from type-locality.

BOGIDIELLA (GUAGIDIELLA) ARGANOIDES n. sp.

Syn.: *Bogidiella cf. arganoi* Ruffo & Vigna-Taglianti 1977: 153, fig. 13.

Loc. typ.: Mexico: Oaxaca, Etna, well.

Holotype: male cca 2 mm, dissected partially on slides 1495-1498 (in Museo Civico di Storia Naturale, Verona, Italy) and

figured by Ruffo & Vigna-Taglianti (1977) on fig. 13a, b, d, i

Diagnosis: *Bogidiella arganoides* is very similar to *B. arganoi*, but differs from later in following characteristics (males only): different shape of modified distal spines on both rami of uropod 1; accessory flagellum 2-segmented (3-segmented in *arganoi*); pereopod 5 setose, with long dactyl (pereopod 5 spinose, with short dactyl in *arganoi*); presence of small Hertzog's organ (absent in *arganoi*); segment 6 of gnathopods 1-2 more narrow, especially that of gnathopod 2; segment 5 of gnathopod 2 with 3 posterior setae (2 setae in *arganoi*).

Based on all these differences we consider the specimens from Etna as a distinct species, *Bogidiella (Guagidiella) arganoides*, n. sp.

BOGIDIELLA (GUAGIDIELLA) HOLSINGERI Ruffo & Vigna-Taglianti

Syn.: *Bogidiella holsingeri* Ruffo & Vigna-Taglianti 1973: 121, figs. 10-13; Ruffo & Vigna-Taglianti 1977: 134, figs. 2 m, n; G. Karaman 1979: 27.

Bogidiella (Bogidiella) holsingeri G. Karaman 1981: 28 (group C).

Bogidiella (Guagidiella) holsingeri Stock 1981: 354.

Loc. typ.: Guatemala: Alta Verapaz, Senahu, Finca Seamay, Cueva Seamay.

Localities cited: Guatemala: loc. typ.; Finca Sepacuite, Cueva Sepacuite (Ruffo & Vigna-Taglianti 1973, 1977).

Remarks: Oostegys are present on pereonites 2-5.

BOGIDIELLA (GUAGIDIELLA) PASQUINII Ruffo & Vigna-Taglianti

Syn.: *Bogidiella pasquini* Ruffo & Vigna-Taglianti 1977: 141, figs. 7-9.

Bogidiella (Bogidiella) pasquini G. Karaman 1981: 28 (group C).

Bogidiella (Guagidiella) pasquini Stock 1981: 354.

Loc. typ.: Guatemala: Huehuetenango, S. Eulalia, Cueva de los Resadores, m. 2500.

Localities cited: known only from type-locality.

Remarks: Outer ramus of uropod 1 in males strongly modified, with long recurved spine.

Subgenus BOGIDIELLA (MEDIGIDIELLA) Stock

Syn.: *Bogidiella (Bogidiella) group D*, G. Karaman 1981: 28. Subgenus *Medigidiella* Stock 1981: 353.

Type - species: *Bogidiella chappuisi* Ruffo 1952.

Diagnosis: Diagnosis similar to that of genus *Bogidiella* except: Pleopods 1-3 unmodified in males; uropod 1 unmodified in males. Uropod 2 modified in males.

Taxons: *chappuisi* Ruffo 1952, *hebraea* Ruffo 1963, *italica* G. Karaman 1979, *paraichnusae* G. Karaman 1979, *silverii* Pesce 1981. The species *Bogidiella vandeli* Coineau 1968 is transitive species between subgenera *Medigidiella* and *Guagidiella* because of poorly modified uropods 1-2 in males. Maybe both subgenera should be fused together but until the discovering of the males of other species (*silverii*, *italica*, *hebraea*) we leave both subgenera as a distinct ones.

Remarks: Stock mentioned (1981) in diagnosis that here belong all species with modified uropods 1 and/ or uropod 2 in males. But, in this case, *Medigidiella* should be identic with subgenus *Guagidiella*. As the type species of subgenus *Medigidiella* is *Bogidiella chappuisi*, this subgenus must be limited to the species with modified uropod 2 only (in males). For this reason we removed *Bogidiella arganoi* from this subgenus to the subgenus *Guagidiella*.

Subgenus BOGIDIELLA (MEXIGIDIELLA) Stock

Syn.: *Bogidiella (Bogidiella) group B*, G. Karaman 1981: 28.
Subgenus *Mexigidiella* Stock 1981: 354.

Type - species: *Bogidiella tabascensis* Villalobos 1961.

Diagnosis: Diagnosis similar to that of genus *Bogidiella* except: pleopods 1-2 with modified elements in males. Uropods 1-2 unmodified in males and females.

Taxons: *chitalensis* G. Karaman 1981, *mexicana* G. Karaman 1981, *sbordonii* Ruffo & V. T. 1973, *tabascensis* Villalobos 1961.

Remarks: Sexual dimorphism present also in the size and shape of gnathopods 1-2 in males and females (*tabascensis*). In *B. sbordonii* the males and females are similar to each other in gnathopods.

BOGIDIELLA (MEXIGIDIELLA) CHITALENSIS G. Karaman

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

Bogidiella (Bogidiella) chitalensis G. Karaman 1981: 31 (group B).

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

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

BOGIDIELLA (MEXIGIDIELLA) MEXICANA G. Karaman

Syn.: *Bogidiella (Bogidiella) mexicana* G. Karaman 1981: 32 (group B).

Bogidiella sbordonii Ruffo & Vigna-Taglianti 1977: 131, figs. 2a-1.

nec *Bogidiella sbordonii* Ruffo & Vigna-Taglianti 1973: 107, figs. 2-7.

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

Localities cited: Mexico: Cueva de los Chivos, 1400 m over sea level (Chiapas, Altamarino, Nueva Santana); loc. typ. (Ruffo & Vigna-Taglianti 1977).

BOGIDIELLA (MEXIGIDIELLA) SBORDONII Ruffo & Vigna-Taglianti

Syn.: *Bogidiella sbordonii* Ruffo & Vigna-Taglianti 1973: 107, figs. 2-7; Ruffo 1973: 53, fig. I, 1, 2, II, 2; G. Karaman 1979: 27.

Bogidiella (Bogidiella) sbordonii G. Karaman 1981: 31 (group B).

Bogidiella (Mexigidiella) sbordonii Stock 1981: 354.

nec *Bogidiella sbordonii* Ruffo & Vigna-Taglianti 1977: 131, figs. 2a-1.

Loc. typ.: Mexico: Cueva de Cerro Brujo, m. 1320 (Chiapas, Ocozoautla, Rancho del Cielito).

Localities cited: known only from type-locality.

BOGIDIELLA (MEXIGIDIELLA) TABASCENSIS Villalobos

Syn.: *Bogidiella tabascensis* Villalobos 1961: 317, figs. 1-35; Ruffo 1963: 191; Mateus & Maciel 1967: 39; Ruffo 1973: 52; G. Karaman 1979: 27.

Bogidiella tabascensis (part.) Ruffo & Vigna-Taglianti 1973: 106, figs. L a-c; Ruffo & Vigna-Taglianti 1977: 127, figs. 1c, f, h, m, n.

Bogidiella (Bogidiella) tabascensis G. Karaman 1981: 31 (group B).

Bogidiella (Mexigidiella) tabascensis Stock 1981: 354.

Loc. typ.: Mexico: Tabasco, Teapa, Gruta de Cocona.

Localities cited: known only from type-locality (Villalobos 1961, Ruffo & Vigna-Taglianti 1977).

Subgenus BOGIDIELLA (ORCHESTIGIDIELLA) Stock

Syn.: *Bogidiella (Bogidiella) group C* (part.) G. Karaman 1981: 28.

Subgenus *Orchestigidiella* Stock 1981: 354.

Type-species: *Bogidiella orchestipes* Ruffo & Vigna-Taglianti 1977.

Diagnosis: Diagnosis similar to that of genus *Bogidiella* except: pleopods 1-3 unmodified in males and females. Uropod 1 modified in males. Sexual dimorphic characters are present in pereopod 7, gnathopods 1-2 and uropod 3 in males.

Taxons: *orchestipes* Ruffo & Vigna-Taglianti 1977.

Remarks: This subgenus is very similar to the subgenus *Guagidiella* except sexual dimorphic characters regarding uropod 3, pereopod 7 and gnathopods 1-2 in males.

Bogidiella (Bogidiella) vomeroi Ruffo & V. T. 1977 is with slightly different shape of gnathopods 1-2 in males and females (size).

BOGIDIELLA (ORCHESTIGIDIELLA) ORCHESTIPES Ruffo & V. T.

Syn.: *Bogidiella orchestipes* Ruffo & Vigna-Taglianti 1977: 135, figs. 3-6.

Bogidiella (Bogidiella) orchestipes G. Karaman 1981: 31 (group C).

Bogidiella (Orchestigidiella) orchestipes Stock 1981: 354.

Loc. typ.: Mexico: well in casa Bell (Chiapas, S. Cristobal de las Casas).

Localities cited: known only from type-locality.

Subgenus BOGIDIELLA (STYGOGIDIELLA) Stock

Syn.: *Bogidiella (Bogidiella) group B* (part.) G. Karaman 1981: 28.

Subgenus *Stygogidiella* Stock 1981: 354.

Type-species: *Bogidiella bredini* Shoemaker 1959.

Diagnosis: Diagnosis similar to that of genus *Bogidiella* except: Uropods 1-2 unmodified in males and females. Pleopod 2 in males with modified elements.

Taxons: *bredini* Shoemaker 1959, *cerberus* Bou & Ruffo 1979, *perla* Stock 1981, *virginalis* Stock 1981.

Remarks: This subgenus is very similar to the subgenus *Mexigidiella* except unmodified elements on pleopod 1 in males. The value of this subgenus must be reexamined.

BOGIDIELLA (STYGOGIDIELLA) BREDINI Shoemaker

Syn.: *Bogidiella bredini* Shoemaker 1959: 273, fig. 1; G. Karaman 1979: 27.

Bogidiella (Bogidiella) bredini G. Karaman 1981: 28 (group A).

Bogidiella (Stygogidiella) bredini Stock 1981: 356, fig. 3.

Loc. typ.: Barbuda: Dark cave (Lesser Antilles, 17°38'56"N, 61°46'02"W).

Localities cited: known only from type-locality (Shoemaker 1959, Stock 1981).

BOGIDIELLA (STYGOGIDIELLA) CERBERUS Bou & Ruffo

Syn.: *Bogidiella cerberus* Bou & Ruffo 1979: 303, figs. IV-VI.

Bogidiella (Bogidiella) cerberus G. Karaman 1981: 31.

Loc. typ.: slightly brackish water in the cave of Alepotrypa (Pirgos Dirou, Manni, Peloponesus, Greece).

Localities cited: known only from type-locality.

BOGIDIELLA (STYGOGIDIELLA) PERLA Stock

Syn.: *Bogidiella (Stygogidiella?) perla* Stock 1981: 362, figs. 7-9.

Loc. typ.: Venezuela: Isla de Margarita, well La Plaza (11°05'33"N, 63°51'35"W).

Localities cited: known only from type-locality.

BOGIDIELLA (STYGOGIDIELLA) VIRGINALIS Stock

Syn.: *Bogidiella (Stygogidiella) virginalis* Stock 1981: 358, figs. 4-6.

Loc. typ.: Tortola (British Virgin Islands), Road Town, well of Water Works (18°25'45"N, 64°37'23"W).

Localities cited: Tortola: loc. typ.; well Hannah Bay (18°24'10"N, 64°38'10"W); Saint John (U. S. Virgin Islands), King Well (18°20'53"N, 64°43'06"W) (Stock 1981).

Genus DUSSARTIELLA Ruffo

Syn.: *Dussartiella* Ruffo 1979: 429; Stock 1981: 356.

Type - species: *Dussartiella madegassa* Ruffo 1979.

Diagnosis: Coxae 1-4 short, broader than long, coxa 5 shorter than 4, coxae 5-7 small. Accessory flagellum present. Labrum convex distally, entire, labium without distinct inner lobes. Mandible incisor toothed, molar triturative, palp reduced to small 2-segmented appendix.

Maxilla 1: inner plate with distal setae, outer plate with 9 spines, palps asymmetric to each other: left palp 1-segmented, short (anomaly??), right palp strong, 2-segmented. Maxilla 2: both plates narrow, inner plate without dorsal oblique row of setae. Maxilliped: both plates short, palp strong, 4-segmented.

Gnathopods 1-2 nearly subequal, both with unlobed segment 5 posteriorly. Pereopods 3-7 normal, with unlobed segment 2. Pleopods 1-3 with plurisegmented (5-11 segments) outer ramus, inner ramus scale-like, short, 1-segmented. Uropods 1-2 biramous, well developed, undifferentiated. Uropod 3 long, inner ramus scale-like, short, outer ramus 2-segmented, second segment short. Telson short, excavated distally. Coxal gills occur on pereonites 2-6. Females unknown.

Taxons: *madegassa* Ruffo 1979.

Remarks: Only holotype is known, maybe left palp of maxilla 1 is anormal.

DUSSARTIELLA MADEGASSA Ruffo

Syn.: *Dussartiella madegassa* Ruffo 1979: 431, figs. IV-VII; Stock 1981: 356.

Loc. typ.: spring near artificial lake Mantasoa near Manjakandriana (E. of Antananarivo, Madagascar, Malagasy Republic).

Localities cited: known only from type-locality.

Genus EOBOGIDIELLA G. Karaman (new rank)

Syn.: *Bogidiella (Eobogidiella)* G. Karaman 1981: 34.

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

Diagnosis: Coxae (female) 1-4 short, broader than long, coxa 5 short. Accessory flagellum present. Labium with small inner lobes. Mandible: incisor toothed, molar strong, triturative, palp 3-segmented, palp segment 3 longer than segment 1, segment 2 narrow. Maxilla 1: inner plate with distal setae, outer plate with 7 spines, palp 1-segmented. Maxilla 2: both plates with distal setae only. Maxilliped: inner and outer plates short, spinose, palp very broad, 4-segmented, segment 2 dilated.

Gnathopod 1 larger than gnathopod 2, segment 5 of gnathopod 1 lobed posteriorly, that of gnathopod 2 unlobed. Pereopods 3-7 nor-

mal, without ventroposterior lobe on segment 2. Pleopods 1-3 normal, probably unmodified in males, with 3-segmented outer ramus and 1-segmented short inner ramus. Uropods 1-2 well developed, biramous, with rami shorter than peduncle, probably unmodified in males. Uropod 3 with long unisegmented subequal both rami, obtuse distally. Telson short, excavated distally. Males unknown. Oostegites and coxal gills undescribed.

Taxons: *purmamarcensis* Grosso & Ringuelet 1979.

Remarks: G. Karaman (1981) removed to this genus also *Bogidiella brasiliensis* Siewing 1953 because of unisegmented palp of maxilla 1.

Stock (1981) removed it to the distinct genus *Marigidiella*, differing from genus *Eobogidiella* by long inner ramus of pleopods 1-3 (females), by reduced number of segments of outer ramus of pleopod 3 (1-2 segments), by slightly modified uropods 1-2 (female), by peduncle of uropods 1-2 longer than rami, by entire telson etc.

EOBOGIDIELLA PURMAMARCENSIS Grosso & Ringuelet

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

Bogidiella (Eobogidiella) purmamarcensis G. Karaman 1981: 34.

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

Localities cited: known only from type-locality.

Genus KERGUELENIOLA Ruffo

Syn.: *Kerguelenella* Ruffo 1970: 45 (nom. preocc.).

Kergueleniola Ruffo 1974: 507; G. Karaman & J. Barnard 1979: 159; G. Karaman 1981: 36.

Kerguelenicola Stock 1981: 355.

Type-species: *Kerguelenella macra* Ruffo 1970.

Diagnosis: see G. Karaman 1981: 36. This genus is characterized by short coxae, palp of maxilla 1 consisting of 2 segments; mandible normal, with 3-segmented palp (palp segment 1 short). Segment 5 of gnathopods 1-2 unlobed posteriorly. Pleopods 1-3 with biramous, 1-segmented rami. Uropods 1-2 biramous. Telson short, deeply incised in the middle.

Taxons: *macra* Ruffo 1970.

Genus MARIGIDIELLA Stock

Syn.: *Eobogidiella* (part.) G. Karaman 1981: 34.

Marigidiella Stock 1981: 355.

Type - species: *Bogidiella brasiliensis* Siewing 1953.

Diagnosis: Coxae very short, broader than long, not overlapping, accessory flagellum present. Labrum entire, labium with small well developed inner lobes. Mandible: incisor toothed, molar small, triturative, palp 3-segmented, segment 1 smaller than 3.

Maxilla 1: inner plate with distal setae, outer plate with 7 spines, palp 1-segmented. Maxilla 2: both plates with distal setae only. Maxilliped: both plates small, setose, palp 4-segmented.

Gnathopod 1 larger than gnathopod 2, segment 5 of gnathopod 1 lobed, that of gnathopod 2 unlobed posteriorly. Pereopods 3-7 normal, with unlobed segment 2. Pleopods 1-3 with long, 1-segmented inner ramus and 1-3 segmented outer ramus (female), (males unknown, probably with modified pleopods). Uropods 1-2 with bifurcate distal tip of inner ramus, slightly modified, peduncle shorter than rami. Uropods of males unknown. Uropod 3 with subequal long 1-segmented rami, obtuse, distally. Telson entire. Coxal gills occur on pereonites 4-6. Oostegites occur on pereonites 2-4.

Taxons: *brasiliensis* Siewing 1953, *crassipes* Stock 1981.

Remarks: Similar to the genera *Eobogidiella* and *Marinobogidiella* (see discussion sub genus *Eobogidiella*).

MARIGIDIELLA BRASILIENSIS (Siewing)

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

Bogidiella (Eobogidiella) brasiliensis G. Karaman 1981: 34.

Marigidiella brasiliensis Stock 1981: 34.

Loc. typ.: San Salvador (Bahia).

Localities cited: Loc. typ.; Ilhabela (Atlantic coast of Brasil) (Siewing 1953).

MARIGIDIELLA CRASSIPES Stock

Syn.: *Marigidiella crassipes* Stock 1981: 370, figs. 13-14.

Loc. typ.: Tortola (British Virgin Islands): Beef Island, Well Bay (18°26'39"N, 64°32'53"W).

Localities cited: known only from type-locality.

Genus MARINOBOGIDIELLA G. Karaman

Syn.: *Marinobogidiella* G. Karaman 1981: 36.

Type-species: *Bogidiella tyrrhenica* Schiecke 1973 (1979).

Diagnosis: see sub G. Karaman 1981: 36. This genus is characterized by 1-segmented palp of maxilla 1, by strongly modified pleopods 1-3 in males, outer ramus of pleopods 1-3 is 3-segmented, inner ramus long, 1-segmented; third palp of mandible very short. Rami of uropod 1 modified, pointed (females unknown).

Taxons: *tyrrhenica* Schiecke 1973 (1979).

Remarks: see discussion sub *Marigidiella*.

MARINOBOGIDIELLA TYRRHENICA (Schiecke)

Syn.: *Bogidiella tyrrhenica* Schiecke 1973: 28, pls. 5-7; Schiecke 1979: 355, figs. I-III; G. Karaman 1979: 27.

Marinobogidiella tyrrhenica G. Karaman 1981: 37, fig. I, 3-4.

Loc. typ.: Italy: Napoli: Lacco Ameno, Ischia island, submarine cave.

Localities cited: known only from type-locality.

Genus SPELAEOGAMMARUS da Silva Brum

Syn.: *Spelaeogammarus* da Silva Brum 1973: 125; Stock 1981: 352.

Type-species: *Spelaeogammarus bahiensis* da Silva Brum 1973.

Diagnosis: Coxae 1-4 longer than broad, coxa 5 enlarged, longer than coxa 4. Accessory flagellum present. Labrum emarginate, labium undescribed. Mandible: incisor toothed, molar triturative, palp 3-segmented, segment 1 shorter than segment 3.

Maxilla 1: inner plate with distal setae, outer plate with 7 spines, palps symmetric, 2-segmented. Maxilla 2: both plates with distal setae only. Maxilliped: both plates short, palp 4-segmented.

Gnathopod 1 larger than gnathopod 2, segment 5 of gnathopod 1 lobed posteriorly, that of gnathopod 2 unlobed. Pereopods 3-7 with unlobed (?) segment 2. Pleopods 1-3 biramous, inner ramus 1-segmented, long; outer ramus 4-segmented. Uropods 1-2 biramous, normal. Uropod 3 long, biramous, rami subequal, 1-segmented, foliaceous. Telson short, concave distally.

Coxal gills occur on pereonites 4-6.

Taxons: *bahiensis* da Silva Brum 1973.

SPELAEOGAMMARUS BAHIENSIS da Silva Brum

Syn.: *Spelaeogammarus bahiensis* da Silva Brum 1973: 125, figs. 1-17; Stock 1981: 352.

Loc. typ.: Brasil: Municipio de Curaca, Estado da Bahia.

Localities cited: known only from type-locality.

Remarks: Diagnosis of genera *Bollegidia* Ruffo 1974, *Parabogidiella* Holsinger 1980, *Paracrangonyx* Stebbing 1899 and *Pseudingolphiella* Noodt 1965 and data of *Kergueleniola macra* Ruffo are given in our previous paper (G. Karaman 1981).

LITERATURE CITED

- Birstein, J. A., Ljovushkin, S. 1968. Predstavitel novogo dlja fauni SSSR semejstva bokoplavov (Amphipoda, Bogidiellidae) v podzemnih vodah Srednjej Azii. — Zoolog. Zhurnal 47 (5): 676-683.
- 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 à l'étude de la fauna interstitielle Isopodes et Amphipodes. — Mem. Mus. Nat. Hist. Naturelle, nouv. ser., serie A, 55 (3): 147-216.
- Dancau, D., Serban, E. 1965. La presence de Bogidiella albertimagni Hertzog 1933 en Roumanie et quelques remarques sur les especes europeennes du genre. — Intern. Journal Spelol. 1 (3): 339-348.
- da Silva Brum, I. N. 1976. Spelaeogammarus bahiensis g. n. sp. n. de anfipodo cavernicola do Brasil (Amphipoda-Bogidiellidae). — Atas Soc. Biol. Rio de Janeiro, 17 (3): 125-128.
- Grosso, L., Ringuelet, R. 1979. Fauna subterranea de las aguas dulces de la Republica Argentina, I. Dos nuevas especies de anfipodos del genero Bogidiella. — Limnobiologia 1 (9): 381-394.
- Hertzog, L. 1933. Bogidiella albertimagni sp. nov., ein neuer Grundwasser-amphipode aus der Rheinebene bei Strassburg. — Zool. Anzeiger, 102 (9-10): 225-227.
- Holsinger, J., Longley, G. 1980. The Subterranean Amphipod Crustacean Fauna of An Artesian Well in Texas. — Smithsonian Contribution to Zoology, 308: 1-62.
- 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. 1979a. 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. 1979b. Contribution to the Knowledge of the Amphipoda 106. Two new Bogidiella species (fam. Gammaridae) from Italy. — Glas. Rep. Zavoda Zašt. prirode — Prirod. muzeja Titograd, 12: 101-115.
- 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., Barnard, J. L. 1979. Classificatory revisions in Gammaridean Amphipoda (Crustacea), part. 1. — Proc. Biol. Soc. Washington, 92 (1): 106-165.
- Karaman, G., Pesce, G. L. 1980. Researches in Africa by the Zoological institute of L'Aquila, Italy. V. On three subterranean amphipods from North Africa (Amphipoda: Gammaridea). — Bull. Zoologisch Museum Univ. van Amsterdam 7 (20): 197-207.
- Karaman, S. 1933. Über zwei neue Amphipoden, Balcanella und Jugocranogonyx aus dem Grundwasser von Skoplje. — Zoolog. Anzeiger, 103 (1-2): 41-47.
- Karaman, S. 1943. Die Unterirdischen Amphipoden Südserbiens. — Srp. Akad. Nauka, Pos. Izd. 135, Prir. i Matem. spisi 34 (4): 161-312.
- Karaman, S. 1953. Über subterrane Amphipoden und Isopoden des Karstes von Dubrovnik und seines Hinterlandes. — Acta, Mus. Mac. Sc. Nat. Skopje, 1 (7): 137-167.
- Karaman, S. 1959. Über eine neue Art und Unterart der Gattung Bogidiella (Crustacea Amphipoda) aus Jugoslawien. — Acta Zool. Acad. Sc. Hungaricae 4 (3-4): 339-348.
- Mateus, A., Maciel, M. 1967. Description d'une nouvelle espèce de Bogidiella (Crust., Amph.) du psammon du Portugal et quelques notes sur son genre. — Inst. Zool. Augusto Nobre, Porto, 100: 11-47.
- Meštrović, M. 1961. Über neue Bogidiella Arten (Crustacea, Amphipoda) aus unterirdischen Gewässern Kroatiens und Sloveniens. — Zoolog. Anzeiger, 167 (1-2): 74-80.
- Noodt, W. 1965. Interstitielle Amphipoden der konvergenten Gattungen Ingotfiella Hansen und Pseudingotfiella n. gen. aus Südamerika. — Crustaceana 9 (1): 17-30.
- 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. 1952. Bogidiella neotropica n. sp., nuovo Anfipodo dell'Amazonia. — Schweiz. Zeitschrift Hydrobiol. 14: 129-134.
- Ruffo, S. 1958. Studi sui Crostacei Anfipodi LIII. Due nuove specie di Anfipodi delle acque sotterranee dell'Afganistan. — Estr. Mem. Mus. civ. St. Nat. Verona 6: 389-403.
- Ruffo, S. 1963. Studi sui Crostacei Anfipodi LVII. Una nuova species di Bogidiella (Crust Amphipoda) della depressione del Mar Morto. — The Bull. Research Council Israel vol. 11B, 4: 188-195.
- Ruffo, S. 1970a. Studi sui Crostacei Anfipodi LXIV. Bogidiella somala n. sp. delle acque sotterranee della Somalia (Crust. Amphipoda). — Monitore Zoologico Italiano 3 (6): 159-171.
- Ruffo, S. 1970b. Studi sui Crostacei Anfipodi LXVIII. Descrizione di Kergueleniella macra n. gen. n. sp. (Amphipoda, Gammaridae) delle isole Kerguelen. — Mem. Mus. Civ. st. nat. Verona 18: 43-54.
- Ruffo, S. 1973. Studi sui Crostacei Anfipodi LXXIV. Contributo alla revisione del genere Bogidiella Hartzog (Crust. Amph. Gammaridae). — Boll. Ist. Entomologia Univ. Bologna 31: 49-77 (1972-1973).
- Ruffo, S. 1974a. Studi sui Crostacei Anfipodi LXXXVII. Nuovi anfipodi interstiziali delle coste del Sud Africa. — Atti Ist. Veneto Sc. Lettere ed Arti, 132: 399-419 (1973-1974).
- Ruffo, S. 1974b. Due cambiamenti di nome di generi di Crostacei Anfipodi. — Boll. Mus. civ. Storia Naturale Verona 1: 507.

- Ruffo, S. 1979. Descrizione di due nuovi generi di Anfipodi dell'Iran e del Madagascar (*Phreatomelita paceae* n. gen. n. sp., *Dussartiella madagassa* n. gen. n. sp.). — Boll. Mus. Civ. St. Nat. Verona VI: 419-440.
- Ruffo, S., Delamare - Deboutteville, 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., Schiecke, U. 1976. Una nuova *Bogidiella* di Creta. — Boll. Mus. civ. St. Nat. Verona 3: 147-155.
- Ruffo, S., Vigna - Taglianti, A. 1973. Three new subterranean *Bogidiella* from Mexico and Guatemala (Crustacea, Amphipoda). — Accad. Nazionale de Lincei, Roma 370 (171): 105-134.
- Ruffo, S., Vigna - Taglianti, A. 1975. Una nuova *Bogidiella* della Sardegna. — *Fragmenta entomologica* 11 (1): 73-82, Roma.
- Ruffo, S., Vigna - Taglianti, A. 1977. Secondo contributo alla conoscenza del genere *Bogidiella* in Messico e Guatemala (Crustacea, Amphipoda, Gammaridae). — *Quaderno no. 171 »Subterr. fauna Mexico«* part. III, *Further res. ital. zool. miss. Mexico*, Nat. Acad. Lincei Roma, pp. 125-172.
- Schiecke, U. 1973. Ein Beitrag zur Kenntnis der Systematik, Biologie und Autökologie Mariner Peracariden (Amphipoda, Isopoda, Tanaidacea) des Golfes von Neapel. — *Inaugural Dissertation Univ. Kiel*, pp. 1-408, pls. 1-91.
- Schiecke, U. 1979. Neue Amphipoda (Crustacea) vom Golf von Neapel (Italia). — *Boll. Mus. civ. St. Nat. Verona* (1978), 5: 355-368.
- Shoemaker, C. R. 1959. Three new cave Amphipods from the West Indies. — *Journal of the Washington Acad. Sci.* 49 (8): 273-283.
- Siewing, R. 1953. *Bogidiella brasiliensis*, ein neuer Amphipode aus dem Küstengrundwasser Brasiliens. — *Kieler Meeresforschungen* 9: 243-247.
- Stebbing, T. R. 1899. VIII. Amphipoda from Copenhagen Museum and other sources. Part. 2. — *Trans Linn. Soc. London*, 2, Zool. 7: 395-432.
- Stock, J. H. 1978. *Bogidiella martini*, un nouvel Amphipode souterrain de l'Ile Saint-Martin (Antilles) et la zoogeographie des *Bogidiellidae*. — *Intern. Journal Speleology* 9 (2): 103-113.
- Stock, J. H. 1981. The taxonomy and zoogeography of the family *Bogidiellidae* (Crustacea, Amphipoda), with emphasis on the West Indian taxa. — *Bijdragen tot de Dierkunde* 51 (2): 345-374.
- Villalobos, A. F. 1960. Un anfipodo cavernicola nuevo de Mexico, *Bogidiella tabascensis*, n. sp. — *Ann. Inst. Biol. Mexico* 31 (1-2): 317-334.

Re z i m e

KRITIČKI OSVRT NA NEDAVNE REVIZIJE BOGIDIELLA-GRUPE RODOVA SA STUDIJOM NEKIH TAKSONA (FAM. GAMMARIDAE). (126. PRILOG POZNAVANJU AMPHIPODA).

Gordan S. Karaman

Biološki zavod, Titograd

U radu je iznijet kritički osvrt na dva nedavna pokušaja revizije *Bogidiella*-grupe rodova (često nazvane i familijom *Bogidiellidae*) koja spada u red *Amphipoda*. Analizirani su taksonomski karakteri

upotrebljeni u tim revizijama za razdvajanje pojedinih rodova i podrodova ove grupe.

Genus *Somagidiella* Stock 1981 je prebačena u rod *Afridiella* G. Karaman & Barnard 1979 kao sinonim (tip roda je *Bogidiella somala* Ruffo).

Podrod *Eobogidiella* G. Karaman 1981 je podignut na nivo posebnog roda (tip roda je *Bogidiella purmamarcensis* Grosso & Ringuelet 1979).

Vrsta *Bogidiella arganoi* Ruffo & Vigna-Taglianti 1973 je prebačena iz podroda *Medigidiella* u podrod *Guagidiella*. Nova vrsta, *Bogidiella (Guagidiella) arganoides*, n. sp. iz bunara u Etna, Meksiko, je opisana, a dijagnoza podroda *Medigidiella* je modificirana.

Sastavljen je ključ za determinaciju svih rodova i podrodova grupe *Bogidiella*, i date su dijagnoze svakog od njih.

Vrsta *Bogidiella (Bogidiella) semidenticulata* Meštrov 1961 je opisana i djelimično nacrtana na osnovu primjeraka otkrivenih po prvi put iz Srbije (rijeka Trgoviški Timok), i prezentirana je karta rasprostranjenja ove vrste. Vrsta *Bogidiella (Bogidiella) albertimagni* Hertzog 1933 je nađena po prvi put u Srbiji, u podzemnim vodama rijeke Pek.