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BOGIDIELLA SKETI, NEW FRESHWATER SPECIES OF THE
FAMILY BOGIDIELLIDAE FROM DALMATIA (YUGOSLAVIA)
WITH REMARKS TO SOME OTHER BOGIDIELLA SPECIES
(CONTRIBUTION TO THE KNOWLEDGE OF
THE AMPHIPODA 188)

ABSTRACT

New subterranean freshwater species of the family *Bogidiellidae* (*Crustacea Amphipoda, Gammaridea*), *Bogidiella sketi*, n. sp. is described from *Manita pecina* — Cave near Paklenica, on foot of Velebit Mt. in Dalmatia, Yugoslavia. The taxonomic status of this species within the genus *Bogidiella* Hertzog 1933 is discussed. New localities of the species *Bogidiella albertimagni* Hertzog 1933 and *B. semidenticulata* Mestrov 1961 from Yugoslavia are presented.

ABSTRAKT

Iz podzemnih slatkih voda Manite pećine kod Paklenice u podnožju planine Velebit u Dalmaciji, opisana je nova vrsta, *Bogidiella sketi*, n. sp. iz familije *Bogidiellidae* (*Crustacea Amphipoda, Gammaridea*). Analiziran je taksonomski status ove vrste unutar roda *Bogidiella* Hertzog 1933. Prezentirani su novi lokaliteti vrsta *Bogidiella albertimagni* Hertzog 1933 i *Bogidiella semidenticulata* Mestrov 1961 u Jugoslaviji.

INTRODUCTION

The family *Bogideillidae* (*Crustacea Amphipoda, Gammari-dea*) is consisting over the World by numerous genera, but only one genus of this family is known from Yugoslavia, genus *Bogidiella* Hertzog 1933 (type species: *Bogidiella albertimagni* Hertzog 1933).

The genus *Bogidiella* Her. was presented in Yugoslavia by 7 species: *Bogidiella albertimagni* Hertzog 1933, *B. glacialis* S. Karaman 1959, *B. dalmatina* S. Karaman 1953, *B. longiflagellum* S. Karaman 1959, *B. semidenticulata* Mestrov 1961, *B. serbica* G. Karaman 1987 and *B. skopljensis* (S. Karaman 1933).

Recently, Dr. Boris Sket from the University of Ljubljana, sent me very kindly for study several samples of genus *Bogidiella* from various localities over the World. The results of study of some of these samples from Yugoslavia is presented in this work, including the description of a new species, *Bogidiella sketi*, n. sp. from Manita pecina — Cave in Dalmatia.

By this way, the total number of known *Bogidiella* species from Yugoslavia arose on eight.

Acknowledgments: I am indebted to prof. Dr. Boris SKET from the University of Ljubljana for the loan of material used in this study.

BOGIDIELLA SKETI, n. sp.**

Figs: 1 — 4

Material examined: YUGOSLAVIA, Dalmatia: Manita pecina — Cave near Paklenica, on foot of Velebit Mt., one specimens on slide, data, (leg. B. Sket).

Description: Holotype specimen of cca 1.9 mm long, sex unknown:

Head with subrounded lateral cephalic lobes, eyes absent.

Antenna 1: peduncular segments 1 — 3 progressively shorter, poorly setose (fig. 1 A), without spines; peduncular segment 3 short but exceeding half of ped. segment 2 (fig. 1 A); main flagellum consisting of 7 articles (most of articles with one aesthetasc hardly exceeding the length of articles themselves); accessory flagellum 2-segmented, short, nearly as long as third peduncular segment of antenna 1 (fig. 1 B).

Antenna 2: peduncular segment 3 short, with setae (fig. 1 C); peduncular segment 5 only slightly shorter than 4, both poorly setose (fig. 1 C); flagellum longer than last peduncular segment and consisting of 5 articles (fig. 1 C). Antennal gland cone short (fig. 1 C).

** This species is dedicated to prof. Dr. Boris Sket from the University of Ljubljana for his remarkable contributions to the knowledge of the subterranean fauna of Yugoslavia.



Fig. 1. *Bogidiella sketi*, n. sp. Manita pecina — cave, spec. 1.9 mm: A = antenna 1; B = accessory flagellum; C = antenna 2; D—E = uropod 3; F = epimeral plates 1—3; G = tip of mandible.

Labrum entire, broader than long (fig. 2 G); labium with small inner lobes, outer lobes with marked corner (fig. 2 A).

Mandible: molar triturative (fig. 1 G), incisor toothed (5 teeth), lacinia mobilis toothed also (4 teeth), accompanied by single rakers (fig. 1 G), palp missing.

Maxilla 1: inner plate poorly visible, maybe with 2 setae (fig. 3 E, F); outer plate with 7 spines bearing 2—4 lateral teeth each (fig. 3 E, F), palp 2-segmented, almost reaching tip of spines of outer plate and bearing 3 distal setae (fig. 3 E, F).

Maxilla 2: inner plate with 5 distomarginal setae (fig. 2 F), outer plate with 6 distomarginal setae.

Maxilliped: inner plate short, with 2 distal spines (fig. 3 G) (spines seems to be not bicuspidate, but not well visible on slide); outer plate short, with 2 distal spines and single setae (on slide distointerior margin seems to be not serrate) (fig. 3 G); palp strong, 4-segmented; segment 4 recurved, with nail remarkably shorter than pedestal (fig. 3 G).

Coxae 1—7 shallow, remarkably broader than long (= high) (fig. 3 A, B, C); coxa 5 nearly as long as coxa 4 (fig. 3 A), coxae 5—7 with posterior spine, coxae 5—6 bilobe, coxa 7 entire.

Gnathopod 1 remarkably larger than gnathopod 2 (fig. 2 B, E). Gnathopod 1: segment 2 stout, at posterior margin with 2 long medial and one short distal seta (fig. 2 B), at anterior margin with one short distal seta (fig. 2 B); segment 3 weakly serrate at posterior margin (fig. 2 B); segment 4 at posterior margin with numerous very fine hairs; segment 5 with strong distoposterior pointed lobe bearing 3 strong setae (fig. 2 B); segment 6 ovoid, longer than broad (fig. 2 B); palm very oblique, finely crenellated along entire margin and bearing a row of several submarginal bicuspidate spines on outer face. Palm is defined on outer face by one corner spine, on inner face by one subcorner spine longer than corner one; one strong spine appears in lower part of segment 6 on inner face (fig. 2 B); posterior margin below corner spine is not crenellated. Dactyl at inner margin with 2 teeth, at outer margin with one medial seta (fig. 2 B).

Gnathopod 2: segment 2 narrower and longer than that of gnathopod 1, at posterior margin with 2 long medial and one short distal seta (fig. 2 E), at inner margin with one short distal seta (fig. 2 E); posterior margin of segment 4 is smooth (fig. 2 E); segment 5 short but unlobed, with numerous short hairs on posterior face and with 2 posterior setae; segment 6 much longer than broad, with almost parallel lateral margins and with very oblique palm finely crenellated along entire its margin, proximal part of posterior margin of segment 6 with short hairs (fig. 2 E). Palm at outer face with row of submarginal bicuspidate spines, and defined by one



Fig. 2. *Bogidiella sketi*, n. sp., Manita pe ina --- cave, spec. 1.9 mm: A = labium; B = gnathopod 1; C = coxal gill; D = telson; E = gnathopod 2; F = maxilla; G = labrum.

corner spine; on inner face defined by one strong subcorner spine (fig. 2 E); dactyl at inner margin with 2 teeth, at outer margin with one medial seta.

Pereopods 3—4 similar to each other, with slightly dilated segment 2 having smooth margins (fig. 4 E, F); segment 4 of pereopod 3 with one anterior marginal seta (fig. 4 E), that of pereopod 4 with 2 setae (fig. 4 F). Dactyl of pereopods 3—4 nearly reaching half of segment 6, with one seta at inner margin (fig. 4 E, F), nail shorter than pedestal.

Pereopods 5—7 progressively longer towards pereopod 7, but pereopod 5 is much smaller than pereopod 7 (fig. 4 A—C).

Pereopod 5: segment 2 only slightly dilated, unlobed posteriorly, with one short distoposterior seta (fig. 4 A), dactyl nearly reaching half of segment 6.

Pereopod 6: like pereopod 5 but longer (fig. 4 B), segment 2 at posterior margin with 2 setae.

Pereopod 7: segment 2 slightly broader than that of pereopods 5—6, with 2 posterior marginal setae only (fig. 4 C), segments 4—6 with spines; segment 6 at anterior margin with 2 long setae (fig. 4 C); dactyl nearly reaching half of segment 6, with one seta at inner margin (fig. 4 D), nail remarkably shorter than pedestal.

Hertzog's organ was not observed on segment 2 of any of pereopods 3—7.

Epimeral plates 1—3 with distinctly subrounded ventroposterior corner and with 1 (epimeral plate 3) or 2 (epimeral plates 1—2) stronger setae at dorsoposterior margin sitting in the corresponding excavations (fig. 1 F).

Pleopods 1—3 similar to each other (fig. 3 D); peduncle smooth, nearly as long as outer ramus, bearing 2 retinacula (fig. 3 D); inner ramus absent; outer ramus consisting of 3 articles bearing 2 normal long plumose setae each (fig. 3 D): the length of plumose setae are increasing towards distal article of pleopod.

Uropod 1: peduncle without basifacial spine (fig. 3 H), but with one distal spine (fig. 3 H); rami subequal long, each with 4 distal spines (the longest spine reaching $3/4$ of ramus-length).

Uropod 2: peduncle with 2 distal spines (fig. 3 I); rami nearly subequal long, each with 4 distal spines (the longest spine reaching $2/3$ to $3/4$ of rami-length).

Uropod 3: peduncle with 2 distal spines (fig. 1 D, E); rami long, 1-segmented, outer ramus hardly longer than inner one, bearing one group of 2—3 medial and 4 distal spines, inner ramus only with 4 distal spines (the longest spines of rami reaching $1/2$ of rami-length (fig. 1 D, E).

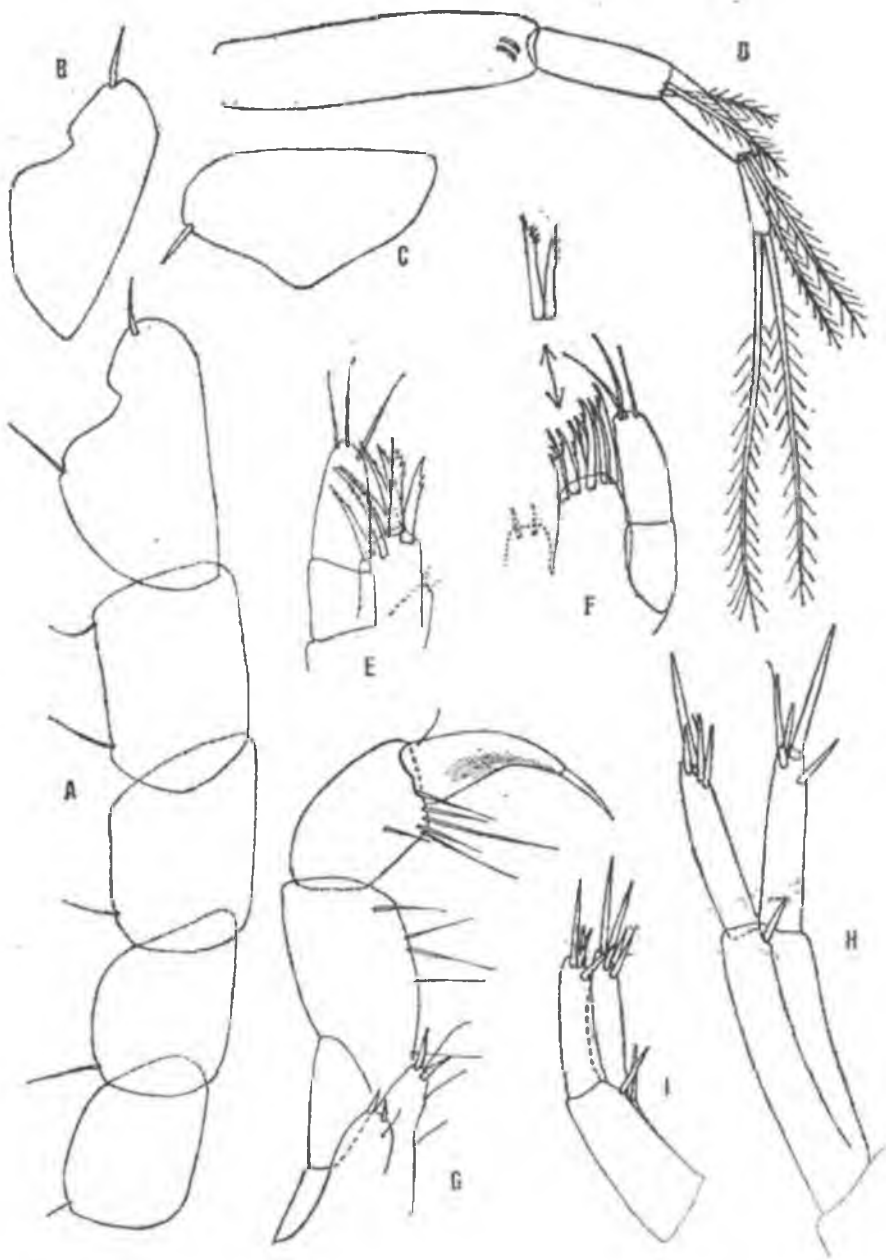


Fig. 2. *Bocidiella sketi*, n. sp., *Manita pecina* — cave, spec. 1.9 mm: A = coxae 1—5; B = coxa 6; C = coxa 7; D = pleopod; E—F = maxilla 1; G = mandible; H = uropod 1; I = uropod 2.

Telson remarkably broader than long (= high), with straight entire distal margin bearing 2 distal spines exceeding the length of telson itself (fig. 2 D); a pair of short plumose setae appears on each distal corner of telson (fig. 2 D).

Coxal gills ovoid, with peduncle (fig. 2 C), occur on pereonites 4 — 6. Oostegites unknown.

Sexual differences unknown.

Variability: The number of setae on inner plate of maxilla 1 was not possible to establish correctly; it was not possible to establish also if distal spines on inner plate of maxilliped are bifurcate or not.

Dorsoposterior margin of epimeral plate 3 is with one posterior excavation and corresponding seta, but it was not possible to establish exactly if there is the second seta also or not.

Holotype: Specimen on slide, off cca 1.9 mm length.

Loc. typ.: Manita pecina — cave near Paklenica.

Distribution: known only from type-locality.

Remarks and Affinities: As the presence or absence of sexual dimorphic characters of *B. sketi* are unknown, it was not possible to determine the exact subgeneric position of this species.

Within the known species of genus *Bogidiella* from Yugoslavia, two species on telson have also the species: *B. longiflagellum* S. Kar. 1959, known from Macedonia and Greece, *B. skopljensis* (S. Karaman 1933) known from Macedonia, *B. serbica* G. Karaman 1987 known from Serbia, *B. albertimagni* Her. 1933, known from central Europe and Yugoslavia, and *B. glacialis* S. Karaman 1959, known from Macedonia.

Among all these species, absence of inner ramus on pleopods 1 — 3 is observed in species *B. albertimagni* and *B. glacialis*.

But, *B. albertimagni* (*denticulata* Meštrov 1961) differs remarkably from *B. sketi* by absence of long setae on posterior margin of segment 2 on gnathopods 1 — 2, by pointed epimeral plates 1 — 3, by presence of basifacial spine on peduncle of uropod 1 and by presence of large Hertzog's organ on segment 2 of pereopods 3 — 7.

Bogidiella glacialis seems to be also similar to *B. sketi* by subrounded epimeral plates, absence of basifacial spine on peduncle of uropod 1, by long distal spines on uropods 1 — 3, 2-segmented accessory flagellum, absence of inner ramus on pleopods 1 — 3 and by presence of 2 spines on telson.

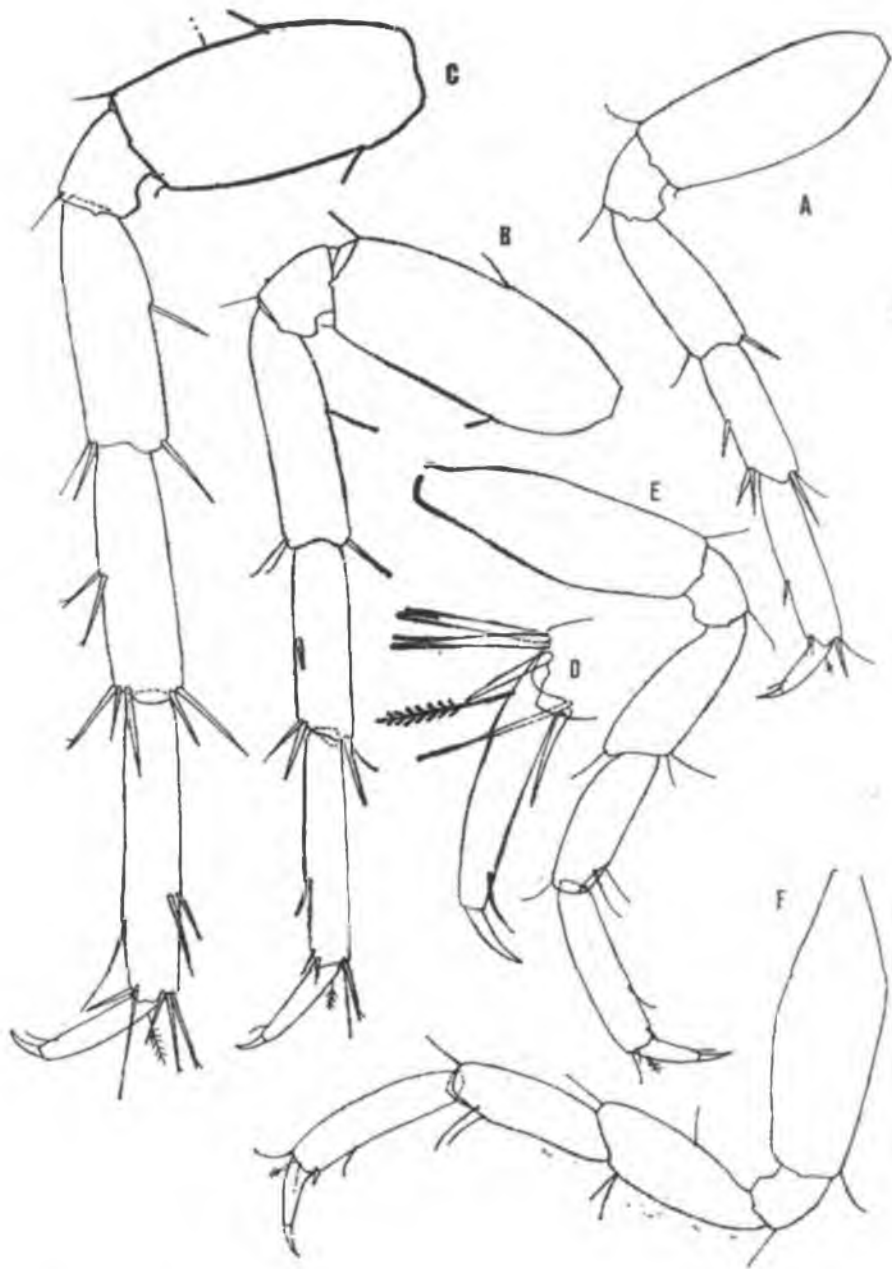


Fig. 4 *Bogidiella sketi*, n. sp., *Manita pecina* — cave, spec. 1.9 mm: A = pereopod 5, B = pereopod 6; C—D = pereopod 7; E = pereopod 3; F = pereopod 4.

But, *B. glacialis* differs from *B. sketi* by inflated and crenelated segment 2 of pereopods 3 — 7, inner plate of maxilla 1 provided with 3 setae, by presence of spines on peduncle of antenna 1, presence of only one long median seta at posterior margin of segment 2 on gnathopods 1 — 2 and by deeply excavated telson.

BOGIDIELLA (BOGIDIELLA) SEMIDETICULATA Mestrov 1961

Bogidiella semidenticulata Mestrov 1961: 74, fig. I, 3, 12; II, 13 — 17; G. Karaman 1973: 41, fig. X — XI.

Bogidiella (Bogidiella) semidenticulata G. Karaman 1981: 31; 1982: 39, fig. I — II.

Material examined: BOSNIA: Travnik, several spec. (leg. B. Sket); Dolac near Travnik, one spec. (leg. B. Sket); Blažuj — Sarajevo, October, 1968, one spec. (leg. B. Sket); Turbe, 2 spec. (leg. B. Sket).

CROATIA: Sračinec, several specimens accompanied by *Bogidiella albertimagni* Hert. 1933 (leg. B. Sket).

Remarks: The specimens of these localities agree with previous descriptions and figures of *B. semidenticulata* given by Mestrov (1961) and G. Karaman (1973, 1982).

Males and females are with unmodified pleopods and uropods 1 — 2. Dactyl of pereopods 3 — 7 ns short but slender; segment 2 of gnathopods 1 — 2 at posterior margin with one long media lseta and 1 short distal seta. Palm of segment 6 of gnathopods 1 — 2 with smooth margin bearing 1 corner spine only.

Mandibular palp article 3 with 4 distal setae. Coxal gills narrow and slightly elongated, occur on pereonites 4 — 6.

BOGIDIELLA (BOGIDIELLA) ALBERTIMAGNI Hertzog 1933

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

Bogidiella (Bogidiella) albertimagni G. Karaman 1982: 43.

Material examined: BOSNIA: Pazarić (W. of Sarajevo), one spec. (leg. B. Sket); Bosanska Dubica, 2 spec. (leg. B. Sket);

SERBIA: Fruška Gora, Rakovac, one spec. (leg. B. Sket);

CROATIA: Petrijanec, 9 km. NW of Varaždin, 8 spec. (leg. B. Sket); Sračinec, 5 km NW of Varaždin, 10 spec., accompanied by *Bogidiella semidenticulata* Mestrov (leg. B. Sket); Majerje, 10 km W. of Varaždin, 10 spec. (leg. B. Sket);

SLOVENIA: Srednja Radovna, june 1970, one spec. (leg. B. Sket).

Remarks: The specimens of these localities agree with descriptions and figures of that species given by G. Karaman (1973). Hertzog's organ well visible, ovoid, large. Coxal gills narrow, occur on pereonites 4 — 6.

Segment 2 of gnathopods 1 — 2 at posterior margin without long medial seta. Segment 6 of gnathopods 1 — 2 with crenellated entire palm. Pleopods without inner ramus. Distal spines on telson (2) in specimens from Stračinec are as long as the length of telson. Males and females are with unmodified pleopods and uropods. Accessory flagellum 3-segmented.

CONCLUSIONS

From the subterranean freshwater of Manita pecina — cave near Paklenica on foot of Velebit Mt. in Dalmatia, is described one new species of the family *Bogidiellidae*, *Bogidiella sketi*, n. sp.

This species differs from all other known species of genus *Bogidiella* from Yugoslavia by presence of 2 long medial setae at posterior margin of segment 2 on gnathopods 1 — 2.

Discovery of this new species, elevated the number of known species of genus *Bogidiella* Hertzog 1933 in Yugoslavia on 8: *Bogidiella albertimagni* Hertzog 1933, *B. dalmatina* S. Karaman 1953, *B. glacialis* S. Karaman 1959, *B. longiflagellum* S. Karaman 1959, *B. semidenticulata* Meštrov 1961, *B. Serbica* G. Karaman 1987, *B. sketi*, n. sp. and *B. skopljensis* (S. Karaman 1933).

The subgeneric position of *Bogidiella sketi*, n. sp. is not determined because of unknown presence or absence of sexual dimorphic characters in males and females of this species.

Several new localities are established for two other species of the same genus, *Bogidiella albertimagni* Hertzog 1933 and *Bogidiella semidenticulata* Meštrov 1961, in Yugoslavia.

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REZIME

BOGIDIELLA SKETI, NOVA SLATKOVODNA VRSTA IZ FAMILIJE BOGIDIPELLIDAE IZ DALMACIJE (JUGOSLAVIJA) SA OSVRTOM NA NEKE DRUGE BOGIDIELLA VRSTE (188. PRILOG POZNAVANJU AMPHIPODA)

Iz podzemnih slatkih voda Manite pećine kod Paklenice u podnožju planine Velebit u Dalmaciji, opisana je jedna nova vrsta za nauku iz familije *Bogidiellidae* (Crustacea Amphipoda), *Bogidiella sketi*, n. vrsta.

Ova vrsta se razlikuje od svih ostalih poznatih vrsta roda *Bogidiella* Hertzog 1933 iz Jugoslavije prisustvom 2 duge srednje dlake na stražnjem rubu drugog segmenta gnatopoda 1 i 2.

Otkrićem ove nove vrste, broj poznatih vrsta roda *Bogidiella* Hertzog u Jugoslaviji se je popeo na 8: *Bogidiella albertimagni* Hertzog 1933, *B. dalmatina* S. Karaman 1953, *B. glacialis* S. Karaman 1959, *B. longiflagellum* S. Karaman 1959, *B. semidenticulata* Mestrov 1961, *B. serbica* G. Karaman 1987, *B. sketi*, n. sp. i *B. skopljensis* (S. Karaman 1933).

Status podroda vrste *B. sketi* nije bilo moguće za sada utvrditi zbog toga što su još nepoznate polne razlike između mužjaka i ženki ove vrste.

U radu su navedeni novi lokaliteti dvaju drugih vrsta roda *Bogidiella* u Jugoslaviji, vrsta *Bogidiella albertimagni* Hertzog 1933 i *Bogidiella semidenticulata* Mestrov 1961.