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Gordan S. Karaman \*

**BOGIDIELLA MONTENIGRINA, N. SP. (GAMMARIDEA,  
FAM. BOGIDIELLIDAE), ONE NEW SPECIES FROM CRNA  
GORA (MONTENEGRO)**

(CONTRIBUTION TO THE KNOWLEDGE OF THE AMPHIPODA 217)

Synopsis

One new species of the family *Bogidiellidae* (*Amphipoda Gammaridea*), *Bogidiella montenigrina*, n. sp. is described and figured from the subterranean waters of the cave Lipska pecina near Cetinje in Crna Gora (Montenegro), and its taxonomic position is discussed.

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## INTRODUCTION

Hertzog described (1933) a new genus and species *Bogidiella albertimagni* from Germany, without designation of the corresponding family. S. Karaman described in the same time (1933) the same genus under the name of *Jugocrangonyx*, n. gen., with new species *Jugocrangonyx skopljensis* n. sp. from Skoplje (Macedonia), mentioning the close affinity of this genus to the *Crangonyx* complex, but without designation of the family.

Hertzog (1936) established a new family Bogidiellidae for the single genus *Bogidiella* Hertzog, 1933 (= *Jugocrangonyx* S. Karaman, 1933) with the single species *B. albertimagni* Hertzog, 1933 (he considered *B. skopljensis* as synonym of *B. albertimagni*). Later many other genera of this family have been discovered by various authors.

Schellenberg (1942) removed genus *Bogidiella* to the family *Gammaridae*, and later many authors followed this way under the pressure of high authority of Schellenberg (Ruffo 1952; Ruffo 1953; Carausu, Dobreanu, Manolache 1955; G. Karaman 1973; Ruffo 1973; Ruffo Vigna-Taglianti 1973; G. Karaman 1974; Ruffo Vigna-Taglianti 1977; G. Karaman 1979, 1979 a, 1982 a).

G. Karaman (1981, 1982) mentioned the name of *Bogidiella* group of genera within the family *Gammaridae*, and Barnard & Barnard (1983) mentioned the name *Bogidiellids* without the name of the family.

On the other hands, various authors tried to avoid the nomination of the family name to which genus *Bogidiella* belongs (Ruffo & Delamare-Deboutteville 1952; Siewing 1953; Ruffo 1958; S. Karaman 1959; Ruffo 1963; Ruffo 1970).

But, many authors continued to recognize the genus *Bogidiella* within the family *Bogidiellidae* (S. Karaman 1943; Balazuc 1954, Delamare-Deboutteville 1955, Mateus & Maciel 1967, Birstein & Ljovuskin 1968, Bousfield, 1977; Stock 1978; Stock 1981; Holsinger, 1982; Stock 1985, Coineau & Stock 1986, G. Karaman 1987; Botosaneanu & Stock, 1988, G. Karaman 1989, 1889 a, 1994, etc.

Bousfield (1977, 1979) established also a superfamily *Bogidiellioidea* with family *Bogidiellidae* and *Spelaeogammarus* - complex, and later (1982) with families *Bogidiellidae* and *Artesiidae*.

G. Karaman (1981, 1982) and Stock (1981) tried to divide the family *Bogidiellidae* and especially the genus *Bogidiella* into the subgenera, but with one limited success, because the various taxa of each subgenus has one very problematic distribution (Guatemala and Balkan for subgenus *Guagidiella* Stock 1981, etc.), what suggested that the new division of the genus *Bogidiella* (sensu lato) must be done in the future, taking in consideration also the zoogeographic data.

On the Balkan peninsula various taxa of the genus *Bogidiella* are known from fresh and brackish waters: *Bogidiella albertimagni* Hertzog 1933, *B. cerberus* Bou & Ruffo 1979, *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* G. Karaman 1989, *B. skopljensis* (S. Karaman, 1933), and maybe *B. chappuisi* Ruffo 1952.

During the present studies of the subterranean fauna of Crna Gora (Montenegro), one new species of the genus *Bogidiella* was collected from the fresh subterranean waters of Lipska pecina cave near Cetinje.

Despite the scarce material in hands (one entire animal and one half of specimen only), we decided to describe this new species because of his very interesting taxonomical characters absent in all other known taxa of this genus from Balkan peninsula.

By this way, the number of *Bogidiella* species, known from Crna Gora is elevated to three taxa (*B. albertimagni* Hertzog 1933, *B. dalmatina* S. Karaman 1953 and *B. montenigrina*, n. sp.

## BOGIDIELLA MONTENIGRINA, N. SP.

Figs. 1-4

**MATERIAL EXAMINED:** Crna Gora (Montenegro): Lipska pecina-cave in Lipa Dobrska near Cetinje, April 27, 1995, 2 exp. (leg. T. Karanovic).

**DESCRIPTION:** MALE (?) 1.8 mm. Body slender, metasomal segments 1-3 with 3-4 dorsoposterior marginal setae each (fig. 1P); urosomites smooth. Urosomite 1 without any ventroposterior spine or seta near basis of peduncle of uropod 1 (fig. 1R).

Head with short subrounded lateral cephalic lobes and developed ventroanterior sinus, eyes absent (fig. 1 O).

Antenna 1: peduncular segments 1-3 progressively shorter, peduncular segment 1 with one ventral spine; main flagellum with missing distal

part, proximal articles with 1 long aesthetasc each; accessory flagellum 2-segmented, slightly shorter than last peduncular segment (fig. 1 K).

Antenna 2 normal, peduncular segment 5 slightly shorter than 4, flagellum with 5 articles; antennal gland cone short and straight (fig. 1 L).

Labrum broader than long, hardly concave distally (fig. 1 M). Labium broader than long, with well developed inner lobes, outer lobes entire and broad (fig. 1 N).

Mandibles with well developed triturative molar bearing one subdistal short seta. Left mandible with 5-toothed incisor and strong lacinia mobilis bearing 5 teeth, accompanied by 3 strong rakers (fig. 4 M). Right mandible: incisor with 5 teeth, lacinia mobilis poorly bifurcate, with 5 teeth, accompanied by 3 strong rakers (fig. 4 L); mandibular palp 3-segmented, first segment shorter than last one; second segment with 1 seta; third segment with 3 setae (4 L).

Maxilla 1: inner plate with 2 distal setae, outer plate with 7 toothed spines (each spine with 10 or more teeth), palp 2-segmented, not reaching tip of spines of outer plate, and bearing 3 distal setae (fig. 3 R).

Maxilla 2 with inner plate slightly smaller than outer one, both plates with 6 distomarginal setae each (fig. 3 S).

Maxilliped: inner plate short, with 2 setae and one distal spine; outer plate short, reaching tip of first palp segment only, with smooth inner margin, bearing 1 obtuse and 1 pointed spine accompanied by 2 setae; palp strong, 4-segmented, third segment lobed distally, segment 4 produced distally with nail, along inner margin with 2 setae (fig. 4 N).

Coxae 1-7 much broader than long, shallow (fig. 2K, M; 3K); coxae 5-7 progressively smaller (fig. 3M, N, O).

Gnathopods 1-2 of subequal size. Gnathopod 1: segment 2 along posterior margin with 1 long median and 1 short distal seta, along anterior margin with 1 short distal seta. Segment 5 short and triangular, with produced posterior part bearing 2 facial and 2 distal setae; segment 6 ovoid, longer than broad; palm irregularly rugged and oblique nearly to the half of posterior margin of segment 6, bearing single palmar setae and one corner spine; on inner face appears one subcorner spine and one posterior marginal spine; dactyl with one seta along outer margin (fig. 2K, L).

Gnathopod 2: segment 2 provided along posterior margin with one long median and 1 short distal seta, along anterior margin with 1 short

distal seta only; segment 5 short but not produced posteriorly; segment 6 hardly different than that of gnathopod 1, with irregularly rugged oblique palm bearing single palmar setae and one corner spine; one subcorner spine appears on inner face of segment 6; dactyl likes that of gnathopod 1 (fig. 2M, N).

Pereopod 3 missing. Pereopod 4 relatively slender, dactyl exceeding half of segment 6, with one short seta at inner margin; nail nearly as long as pedestal (fig. 3K).

Pereopod 5: segment 2 slightly dilated, segments 4-6 slender; dactyl slightly shorter than half of segment 6, with one longer seta at inner margin, nail shorter than pedestal (fig. 3 L).

Pereopod 6 with segment 2 nearly like that of pereopod 5 (fig. 3 T); segments 4-6 probably malformed, dactyl likes that of pereopod 5.

Pereopod 7 missing. Segment 2 of gnathopods and pereopods without any visible Hertzog's organ (= lenticular organ).

Pleopods 1-3 normal, unmodified; peduncle with 2 retinacula each; inner ramus absent, outer ramus 3-segmented, each segment with 2 plumose setae (fig. 4 K).

Epimeral plates 1-3 with subangular obtuse ventroposterior corner and with 1 posterior seta each (fig. 1 P).

Uropod 1: peduncle without basifacial spine, but with 2 distal spines only; rami shorter than peduncle; inner ramus slightly longer than outer one, with 4 distal normal spines (the longest spine exceeding half of ramus itself); outer ramus with modified 3 distal spines: one long spine with poorly spoon-shaped tip and 2 short hooked spines (fig. 1R, S, T).

Uropod 2: peduncle with 2 distal spines; outer ramus shorter than inner one, both rami with 4 distal normal spines (the longest spine exceeding half of ramus itself) (fig. 1 R).

Uropod 3 missing.

Telson nearly as long as broad, with slightly concave distal margin bearing 2 long spines; a pair of short plumose setae appears in upper part of each side of telson (fig. 3 P).

Mesosomal segments 4-6 with short ovoid coxal gills (fig. 3K, M, N).

FEMALE (?) (only posterior part of body): Metasomal segments 1-3 with 4 dorsoposterior marginal setae each (fig. 4 O).

Pleopods 1-3 like these in males. Epimeral plates 1-3 with almost subangular ventroposterior corner and with 1 posterior seta (fig. 4 O).

Uropods 1-2 like these in males but with normal, unmodified spines (4 distal spines on each ramus) (fig. 4 P). Uropod 3 missing.

Telson almost as long as broad, with slightly concave distal margin bearing 2 long spines and 2 pairs of short subdistal plumose setae (fig. 4 R).

VARIABILITY: Unknown.

HOLOTYPE: Male (?) 1.8 mm. Holotype and paratype are deposited in KARAMAN'S Collection in Podgorica (= Titograd), Crna Gora.

LOC. TYP.: Lipska pecina-cave near Cetinje, Crna Gora.

DISTRIBUTION: Known only from type-locality.

REMARKS AND AFFINITIES. The single entire animal was with modified outer ramus of uropod 1, based on which character we considered it as a male. On the other hand, the posterior half of another specimen, with normal uropod 1 we considered as a female of the nearly same size as a male.

By the shape of telson, *B. montenigrina* is similar to the species *B. dalmatina* S. Karaman 1953 (known from the mesopsammon of the coasts of the Adriatic Sea) and to *B. semidenticulata* Mestrov 1961 (known from freshwater in Slovenia, Croatia and Serbia). But, *B. dalmatina* differs from our species by serrate outerplate of maxilliped, by longer distal spines on rami of uropods 1-2, more pointed epimeral plates, etc.

*B. semidenticulata* differs from our species by presence of distinct Hertzog's organ on pereopods, by presence of 4 spines on telson, by serrate outer plate of maxilliped, etc.

*B. montenigrina* differs from all other species from Balkan peninsula by modified distal spines on outer ramus of uropod 1. This character is known for the taxa of the subgenus *Bogidiella* (*Guagidiella*) Stock 1981, known from Mexico and Guatemala (taxa: *arganoi* Ruffo & Vigna-Taglianti 1973; *arganoides* G. Karaman, 1982; *holsingeri* Ruffo & Vigna-Taglianti 1973; *pasquinii* Ruffo & Vigna-Taglianti 1977). Our species has evidently nothing common with Mexican taxa of the subgenus *Guagidiella* in the zoogeographical point of view.

The shape of modified spines on rami of uropods 1 and 2 seems to be a good taxonomic character, what suggested already before (G. Karaman 1979, 1979 a, 1994).

As the taxonomical division of the family *Bogidiellidae*, and especially the genus *Bogidiella* into several different subgenera, is not satisfactorily resolved (controversial geographical distribution of taxa of each of these subgenera, etc.), we left *B. montenigrina* without subgeneric designation, before the existence of one acceptable revision of the genus *Bogidiella*.

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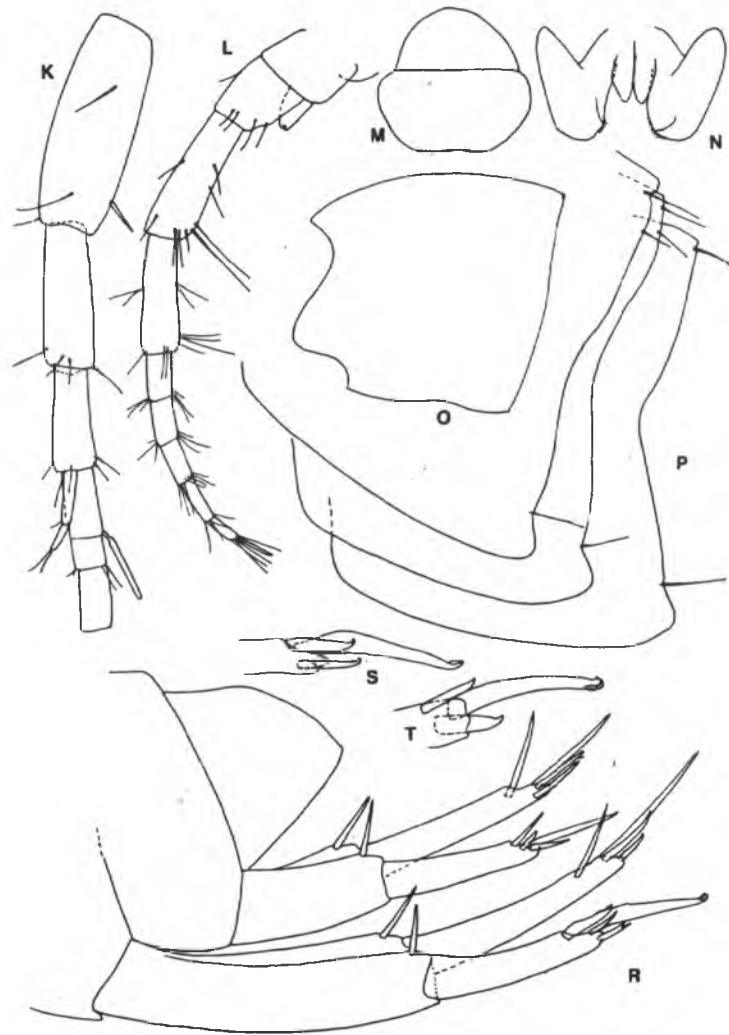


Fig. 1. *Bogidiella montenigrina*, n. sp., Lipska pecina-cave, male (?) 1.8 mm: K = antenna 1; L = antenna 2; M = labrum; N = labium; O = head; P = epimeral plates 1-3; R = urosome with uropods 1-2; S-T = tip of outer ramus of uropod 1.

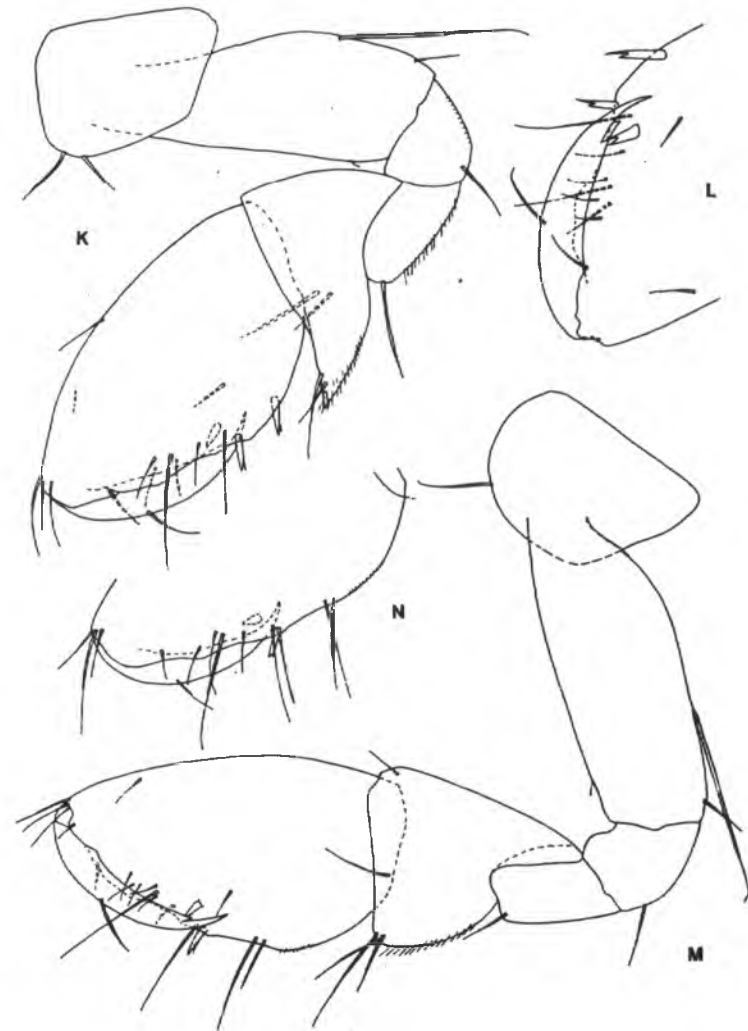


Fig. 2. *Bogidiella montenigrina*, n. sp., Lipska pecina-cave, male (?) 1.8 mm: K = gnathopod 1, outer face; L = gnathopod 1, inner face; M = gnathopod 2, inner face; N = gnathopod 2, outer face.



Fig. 3. *Bogidiella montenegrina*, n. sp., Lipska pecina-cave, male (?) 1.8 mm:  
 K = pereopod 4; L = pereopod 5; M = coxa 5; N = coxa 6; O = coxa 7;  
 P = telson; R = maxilla 1; S = maxilla 2; T = pereopod 6.

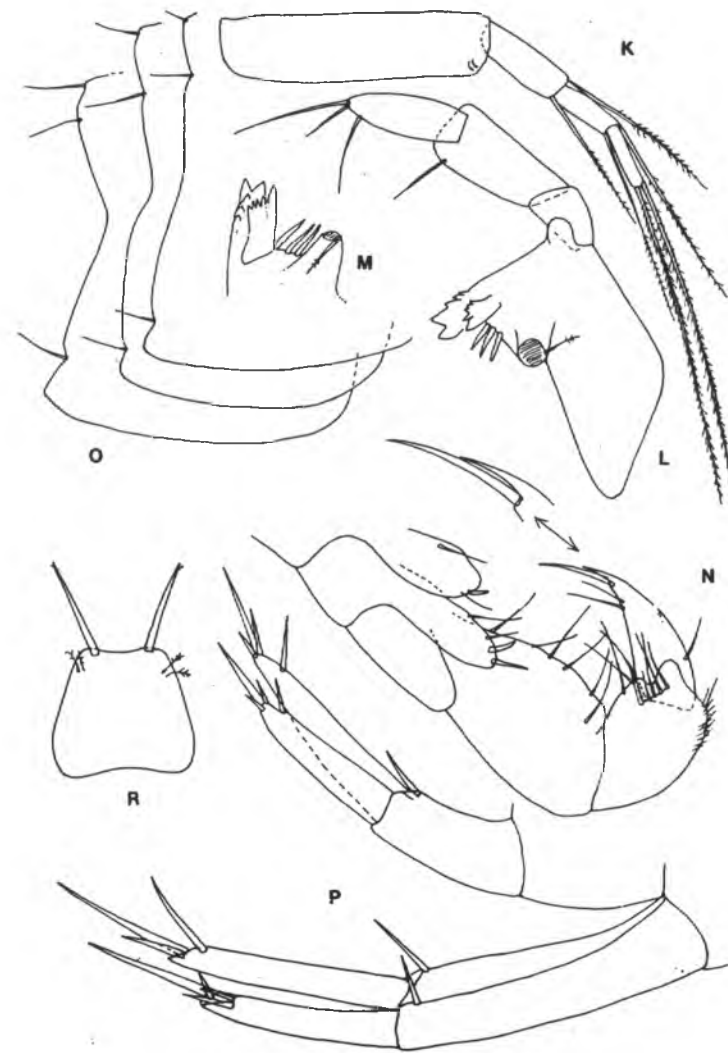


Fig. 4. *Bogidiella montenegrina*, n. sp., Lipska pecina-cave, male (?) 1.8 mm:  
 K = pleopod 3; L = right mandible; M = left mandible; N = maxilliped; O =  
 epimeral plates 1-3, female (?); P = uropods 1-2, female (?); R = telson,  
 female (?).



## Synopsis

***Bogidiella montenigrina*, n. sp., (Gammaridea, fam. Bogidiellidae),  
jedna nova vrsta iz Crne Gore**

**(217. Prilog poznavanju Amphipoda)**

Iz podzemnih voda Lipske pećine kod Cetinja u Crnoj Gori opisana je jedna nova vrsta iz familije *Bogidiellidae* (*Amphipoda Gammaridea*), *Bogidiella montenigrina*, n. sp., analiziran je njen taksonomski položaj.

*Bogidiella montenigrina*, n. sp., (Gammaridea, fam. Bogidiellidae), jedna nova vrsta iz Crne Gore (217. prilog poznavanju Amphipoda)

## Rezime

Rod *Bogidiella* je postavio Hertzog (1933) za jednu novootkrivenu podzemnu vrstu *Bogidiella albertimagni*, n. sp., iz Njemačke, koju je nešto kasnije (1936) postavio u novu familiju *Bogidiellidae*.

Poslije toga je opisano mnoštvo različitih vrsta i rodova iz Evrope i iz mnogih drugih tropskih i subtropskih krajeva svijeta. Među njima je najkompleksniji rod *Bogidiella* sa velikim brojem međusobno sličnih vrsta. G. Karaman (1981, 1982) i Stock (1981) su razbili taj rod u niz podrodova na osnovu određenih taksonomskih karaktera. Međutim, još uvijek možemo smatrati da podjela na podrodove ovog roda nije zadovoljavajuća jer se rasprostranjenje taksona svakog podroda ne poklapa sa zoogeografskim podacima, što izaziva sumnju u validnost takve podjele. Stoga je potrebna revizija cijele familije *Bogidiellidae* na osnovu detaljne obrade svih taksona ove grupe.

Iz Lipske pećine kod Cetinja (Crna Gora) sakupljen je u lokvicama u samoj pećini jedan novi predstavnik roda *Bogidiella*, *B. montenigrina*, n. sp., Ova vrsta se znatno razlikuje od svih ostalih taksona ove grupe na Balkanu po modifikovanoj vanjskoj grani prvog uropoda kod mužjaka. Međutim, veoma oskudni sakupljeni materijal i nezadovoljavajuća taksonomska razgraničenost podrodova u okviru roda *Bogidiella*, ne dozvoljavaju neka detaljnija upoređenja i analize podrodovske pripadnosti ove vrste, pa je ona za sada ostavljena unutar roda *Bogidiella* bez određivanja podroda kome bi pripadala.

Ovim otkrićem se broj vrsta roda *Bogidiella* poznatih u Crnoj Gori popeo na tri: *Bogidiella albertimagni* H e r t z o g 1933, *B. dalmatina* S. K a r a m a n 1953 i *B. montenigrina*, n. sp.,

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**DIVERZITET MAKROMICETA U CRNOJ GORI**

**DIVERSITY OF MACROMYCETES IN MONTENEGRO**

Izvod

Iako je od prvih mikoloških istraživanja u Crnoj Gori proteklo više od sto godina, za to vrijeme, mali broj mikologa je svoju pažnju posvetio makromicetama. Na osnovu objavljenih podataka i vlastitih istraživanja autori su priredili listu do sada ustanovljenih taksa na ovom prostoru, pružili podatke o značajnijim lokalitetima i preliminarne zaključke o diverzitetu, ugroženosti i potrebi zaštite pojedinih vrsta i mikoloških staništa.

Key words: Crna Gora, makromicete, diverzitet, ugroženost, zaštita.

Abstract

Although it has been more than a century since the first mycological researches in Montenegro, only a few mycologists really focused on macromycetes. On the basis of published data and their own research, the authors have composed a list of the established taxa of this region, produced evidence on significant localities and preliminary conclusions on the diversity, endangerment and protection measures for certain species and mycological habitats.

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