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GORDANA KASOM

MITKO KARADELEV

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## The family Boletaceae s.l. (excluding *Boletus*) in Montenegro

Gordana KASOM<sup>1,\*</sup>, Mitko KARADELEV<sup>2</sup>

<sup>1</sup>Institute for Nature Protection of Montenegro, P.O. Box 2, Trg Vojvode Bećir Bega Osmanagića 16, 20000 Podgorica - MONTENEGRO

<sup>2</sup>Institute of Biology, Faculty of Natural Science and Mathematics, P.O. Box 162, Arhimedova 5, 1000 Skopje - REPUBLIC OF MACEDONIA

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**Abstract:** The current paper contains the results of systematic research into Boletaceae s.l. (excluding *Boletus* L.) in Montenegro; 39 species and 1 variety belonging to 12 genera are presented. For each species, the published and unpublished sources of data are provided, in addition to the collections where the materials were deposited. The genus *Aureoboletus* Pouzar and the taxa *Aureoboletus gentilis* (Quél.) Pouzar, *Leccinum duriusculum* (Schulzer ex Kalchbr.) Singer, and *Leccinum piceinum* Pilát & Dermek are reported for the first time for the territory of Montenegro. From the mycobiota of Montenegro taxa *Suillus alboboculosus* Pantidou & Watling and *Suillus littoralis* Bouchet s. str. M.M. Moser non Leclaire have to be excluded.

**Key words:** Boletaceae, mycobiota, biodiversity, bibliography, Montenegro

### Introduction

Montenegro is located in the Balkan Peninsula in southern Europe. The geographic coordinates of Montenegro are 41°51' and 43°33'N; 18°26'E is the most western point and 20°21'E is the most eastern point. The total area of Montenegro is 13,812 km<sup>2</sup>. The altitude varies between 0 and 2523 m. The terrain of Montenegro ranges from high mountains in the northern part of the country, through a karst segment in the central and southern parts, to a narrow coastal plain. The coastal plain disappears completely in the north, where Lovćen Mountain and other mountain ranges plunge abruptly into the inlet of the Gulf of Kotor. Montenegro's section of the karst generally lies at elevations of 900 m altitude although certain areas rise up to 1800 m a.s.l. The Montenegrin high mountains include some of the most rugged

terrain in Europe. The averages of these mountains are more than 2000 m in elevation. Bobotov Kuk in Durmitor Mountain, which reaches 2523 m, is one of the notable peaks. The dominant types of climate are moderate continental, mountainous, and Mediterranean (Stevanović & Stevanović, 1995). The area of Montenegro is characterised by diverse habitats and forest associations with rich fungal diversity. According to Stevanović (1995) the following biogeographical regions are represented in Montenegro: Mediterranean-represented by broadleaved evergreen woodlands and scrubs (*Quercion ilicis*, *Ostryo-Carpinion orientalis*); Middle European-represented by different broadleaved deciduous woodlands of the temperate area (*Ostryo-Fagenion illyricum*, *Ostryo-Fagenion moesiaca*, *Carpinion betululi illyrico-moesiacum*, *Quercion*

\* E-mail: gkasom@t-com.me

*frainetto*, *Fagenion illyricum*, *Fagenion moesiacum*, and *Fagenion moesiacae subalpinum*); boreal-represented by frigidifilous coniferous woodlands (*Vaccinion-Piceion*, *Abieti-Piceion*, and *Juniperion sibiricae*); and Middle south-European alpine-beyond the highest woodland border with orobionms of high mountain grasslands, stones, perpetual snow, and screes.

The first data on Boletaceae s.l. (excluding *Boletus* L.) were provided at the close of the 20th century (Tortić, 1974, 1988; Hadžić, 1995; Karadžić, 1995; Perić & Perić, 1995, 1996a, 1996b, 1996c, 1997a, 1997b, 1997c, 1997d, 1997e, 1998a, 1998b, 1998c, 1999a, 1999b). At the beginning of the 21st century,

the studies into the quoted taxonomic group have continued. Data derived from these studies have been recorded in numerous papers (Perić et al., 2000, 2001; Perić & Perić, 2000, 2002, 2003; Kasom, 2003, 2004; Perić & Perić, 2004, 2005, 2006b; Kasom & Četković, 2011; Perić, 2011). Perić and Perić (2006a) presented their data on the genus *Boletus* s.l. in Montenegro, from 1993 to 2006, but in this paper they did not include published data from other researchers of the investigated area.

In the current paper we present a survey of *Boletaceae* s.l. (excluding *Boletus* L.), including all the published and unpublished sources to date.

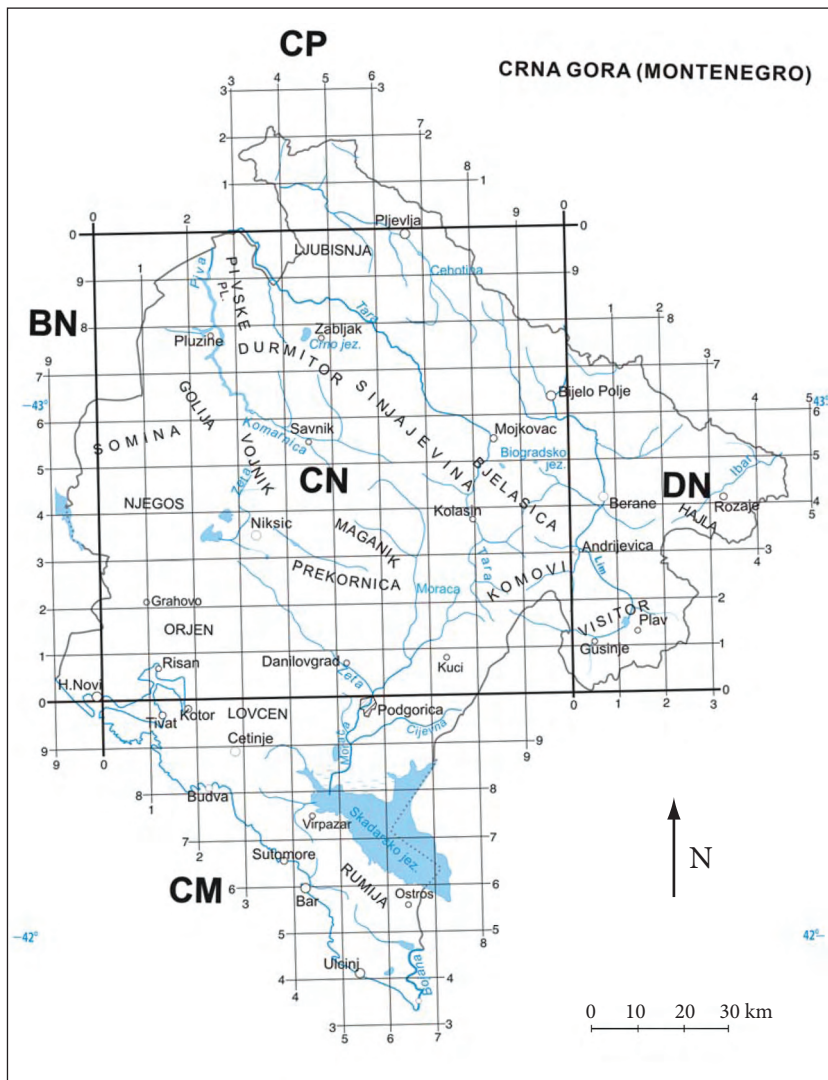


Figure. UTM grid of Montenegro.

## Materials and methods

The data provided in the present paper are based on the published and unpublished records of family Boletaceae sensu lato (excluding *Boletus*) in Montenegro. The survey of taxa is given in alphabetical order. Along with each taxon presented, the published sources of records for Montenegro are specified (chronologically), coupled with the collections in which the collected material has been deposited. All synonyms that the authors of species' records have used in Montenegro are also specified as well as those used in modern taxonomic literature. An attempt has been made to interpret all unpublished records in view of taxon names and dates of recording in the context of modern taxonomy. The identification of the species has been carried out using Alessio (1991), Arnolds et al. (1995), Breitenbach and Kränzlin (1991), Hansen and Knudsen (1992), Horak (2005), Ladurner and Simonini (2003), Moser (1983), Muñoz (2005), Phillips (1981), Singer (1964) "1965", Singer (1966) "1967", Singer (1962), Šutara et al. (2009), and Tortić (1968). For the interpretation of species we have used also the papers by Alli (2011), Doğan et al. (2011, 2012), Karadelev et al. (2007), and Tkalčec and Mešić (2003). For each species, the literature and illustrations are cited on the basis of which we have identified or interpreted the records. Taxonomic nomenclature followed that of Robert et al. (2005). A number of records by other authors that were accessible to us have also been revised.

At the end of the species interpretation, our unpublished data (Material examined) with UTM coordinates for every species found in Montenegro have been presented (Figure). The material collected during our investigation is deposited in the Montenegrin National Fungarium, Institute for Nature Protection, Podgorica, Montenegro. At the end, also, we have given some details about the distribution and ecology of the mentioned species.

The section Excluded records comprises records of species that we have not been able to interpret in the sense of the modern classification.

Accordingly, a relatively complete survey of the published and unpublished sources of data concerning this taxonomic group in Montenegro has been rendered.

The material known to us has been deposited in the following herbaria and fungaria:

F.M.M.C.= Fungarium of Montenegrin Mycological Centre, Podgorica, Montenegro;

Hadžić= Private fungarium of Ibrahim Hadžić, Rožaje, Montenegro;

M.N.F. = Montenegrin National Fungarium, Institute for Nature Protection, Podgorica, Montenegro.

## Marks and abbreviations

\* = taxon reported for the first time from Montenegro; • = at least part of records of the taxon revised; = = synonym; ( ) = empty brackets indicate that the author of the record has also quoted the taxon under the name used herewith; (1, 2) = the number in brackets indicates a synonym or name of taxa under which the author of the record has quoted the taxon; BEO = Natural History Museum, Belgrade; Exs. = collections in which the dried material (exiccatum) is deposited; Ill. = illustration and photography; leg. = legator; Lit. = literature; Misappl. = misapplied name; Mt. = mountain; nom. illeg. = nomen illegitimum; nom. Inval. = nomen invalidum; NP = national park; Ref. = references (sources of records of the taxon in Montenegro); rev. = revised (when records of other authors have been revised); s. str. = sensu stricto; vill. = village.

## Results

This paper renders 39 species and 1 variety belonging to 12 genera from the family *Boletaceae* (excluding *Boletus*) found in Montenegro. In our research, we confirmed 23 species from Montenegro.

Two taxa, *Suillus alboboculosus* and *Suillus littoralis*, have to be excluded from the mycobiota of Montenegro.

## Survey of taxa

\**Aureoboletus* Pouzar

\*•*Aureoboletus gentilis* (Quél.) Pouzar

Exs.: M.N.F.

Lit.: Arnolds et al. (1995: 74); Horak (2005: 67); Muñoz (2005: 286-290).

**Ill.:** Breitenbach & Kränzlin (1991: 77 as *Pulveroboletus gentilis*); Muñoz (2005: 662-664); Phillips (1981: 205 as *Aureoboletus cramesinus*); Šutara et al. (2009: 97).

**Material examined:** 09.07.2009, Andrijevića town (UTM DN 03), forest of *Quercus cerris*, leg. G.Kasom, M.N.F. 10/09.

**Distribution:** According to Muñoz (2005: 288) it grows in hardwood forests, occasionally associated with *Quercus* and *Fagus*. It was found for the first time in Montenegro during our research.

*Chalciporus* Bataille

•*Chalciporus amarellus* (Quél.) Bataille

Basionym: = *Boletus pseudorubinus* Thirring (1).

= *Chalciporus pseudorubinus* (Thirring) Pilát & Dermek (2).

**Ref.:** Perić & Perić [1996a: 72(2), 1997b: 57(2), 1997c: 47-48(2) (rev.), 1997d: 14-15(2) (rev.), 1997e: 63(2), 1999a: 51(2)]; Perić et al. [2000: 156(2)]; Perić & Perić [2003: 77(1), 2004: 14(2), 2005: 92(2), 2006a: 41, 2006b: 30(2)]; Kasom & Četković (2011: 586-587); Perić [2011: 293, 358 (rev.)].

**Exs.:** F.M.M.C.

**Lit.:** Horak (2005: 67); Muñoz (2005: 277-280).

**Ill.:** Breitenbach & Kränzlin (1991: 67); Karadelev et al. (2007: 540); Muñoz (2005: 658-660).

**Material examined:** 16.08.2006, Kuči: Hum Orahovski Mt. (UTM CN 70), forest of *Pinus heldreichii*, leg. G.Kasom; 27.10.2011, Komovi: Vasojevički Kom Mt. (UTM CN 92), forest of *Pinus heldreichii*, leg. G.Kasom.

**Distribution:** It grows in coniferous forests or alpine pastures under *Picea* or *Pinus*. For the first time, the species was found by Perić and Perić (1996a). Until now, the species is known only for these localities, associated with *Pinus heldreichii*.

**Annotation:** According to Muñoz (2005: 277-278, 280) *Chalciporus pseudorubinus* (*Boletus pseudorubinus* basionym) could be a synonym of *Chalciporus amarellus*.

•*Chalciporus piperatus* (Bull.) Bataille

= *Suillus piperatus* (Bull.) Poir. (1).

**Ref.:** Hadžić (1995: 16); Karadžić [1995: 174-175(1) (rev.)]; Perić & Perić (1997b: 57, 1997e: 63, 1999a: 51, 2006a: 41).

**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 89-90); Horak (2005: 67); Muñoz (2005: 273-276).

**Ill.:** Breitenbach & Kränzlin (1991: 67); Muñoz (2005: 657-658, 885); Phillips (1981: 194 as *Boletus piperatus*); Šutara et al. (2009: 93).

**Material examined:** 24.08.2006, NP Durmitor: Podgora vill. (UTM CN 47), forest of *Picea abies*, leg. G.Kasom, M.N.F. 7/06; 27.10.2008, Pljevlja town: Odžak vill. (UTM CP 60), forest of *Picea abies*, leg. G.Kasom, M.N.F. 137/08; 10.07.2009, NP, Prokletije: Visitor Mt. (UTM DM 01), forest of *Picea abies*, leg. G.Kasom; 08.10.2009, Durmitor Mt.: Planina Ivica Mt. (UTM CN 47), forest of *Picea abies*, leg. G.Kasom.

**Distribution:** It grows in coniferous forests, among mosses, along pathways, etc., principally at mountain elevations, rarely in hardwood forests, on both acid and calcareous soils (Breitenbach & Kränzlin, 1991: 66). The species is widespread in Montenegro and it has been registered in 9 localities.

*Chroogomphus* (Singer) O.K.Mill.

•*Chroogomphus helveticus* (Singer) M.M.Moser

**Ref.:** Hadžić (1995: 16); Kasom & Četković (2011: 587).

**Exs.:** Hadžić, M.N.F.

**Lit.:** Horak (2005: 78); Moser (1983: 74 as subsp. *helveticus*); Singer (1962: 705); Tkalčec & Mešić (2003: 272 as subsp. *helveticus*).

**Material examined:** 08.09.2006 and 31.07.2008, NP, Prokletije: Visitor Mt., near Visitor Lake (UTM DM 01), forest of *Pinus peuce* and *Picea abies*, leg. G.Kasom, M.N.F. 33/08.

**Distribution:** It grows in subalpine coniferous forests with *Picea exelsa* and *Pinus cembra* (Horak, 2005). The species was found for the first time by Hadžić (1995). In Montenegro this species has been observed in 2 localities.

•*Chroogomphus rutilus* (Schaeff.) O.K.Mill.

**Ref.:** Hadžić (1995: 16); Karadžić [1995: 50-51 (rev.)]; Perić & Perić (1996a: 73, 1996b: 56-57 (rev.), 1997b: 59-60, 1999a: 52, 1999b: 89); Perić et al. (2000: 155); Kasom (2003: 251, 2004: 25); Perić & Perić (2005: 92); Perić (2011: 248, 273 (rev.)).



**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 90-91); Hansen & Knudsen (1992: 68); Horak (2005: 78).

**Ill.:** Breitenbach & Kränzlin (1991: 97); Phillips (1981: 190).

**Material examined:** 01.10.2006, NP "Lovćen": Blatišta (UTM CM 29), forest of *Pinus mugo*, leg. G.Kasom; 16.08.2006, Kuči vill. (UTM CN 70), forest of *Pinus heldreichii*, leg. G.Kasom; 01. 11. 2005 and 09. 07. 2009, Prokletije: Hajla Mt. (UTM DN 34), forest of *Pinus peuce*, leg. G.Kasom; 08.10.2009 and 22.09.2010, NP Durmitor: Ćiperovača vill. (UTM CN 47), forest of *Pinus sylvestris*, leg. G.Kasom, M.N.F. 113/09.

**Distribution:** It grows in coniferous forests under 2-needle species of *Pinus* (Breitenbach & Kränzlin, 1991: 96). The species is widespread in Montenegro and it has been registered at 15 localities.

**Gomphidius** Fr.

•**Gomphidius glutinosus** (Schaeff.) Fr.

**Ref.:** Hadžić (1995: 16); Karadžić [1995: 62-63 (rev.)]; Perić & Perić (1996b: 54-55 (rev.), 1997b: 60, 1998a: 75, 1999b: 89); Kasom (2004: 25).

**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 214-215); Doğan et al. (2012: 90); Hansen & Knudsen (1992: 69); Horak (2005: 78).

**Ill.:** Breitenbach & Kränzlin (1991: 97); Phillips (1981: 189).

**Material examined:** 24.08.2006, NP Durmitor: Podgora vill. (UTM CN 47), forest of *Picea abies*, leg. G.Kasom; 20.07.2009, Prokletije: Hajla Mt. (UTM DN 34), forest of *Picea abies*, leg. I.Hadžić, M.N.F. 40/09.

**Distribution:** It grows in coniferous or mixed conifer-hardwood forests, associated with *Picea* (Breitenbach & Kränzlin, 1991: 96). The species is widespread in Montenegro and it has been registered at 7 localities.

**Gomphidius maculatus** (Scop.) Fr.

**Ref.:** Hadžić (1995: 16).

**Exs.:** Hadžić.

**Lit.:** Arnolds et al. (1995: 215); Doğan et al. (2012: 90); Hansen & Knudsen (1992: 69); Horak (2005: 77).

**Ill.:** Breitenbach & Kränzlin (1991: 99); Phillips (1981: 191).

**Distribution:** It is mycorrhizal only with *Larix* (Horak, 2005: 77). The species was found by Hadžić (1995) and it is the only finding in Montenegro.

**Gomphidius roseus** (Fr.) Fr.

**Ref.:** Hadžić (1995: 16).

**Exs.:** Hadžić.

**Lit.:** Arnolds et al. (1995: 215); Hansen & Knudsen (1992: 69); Horak (2005: 77).

**Ill.:** Breitenbach & Kränzlin (1991: 99); Phillips (1981: 189).

**Distribution:** It grows in coniferous forests, associated with *Pinus* (Horak, 2005: 77). The species was found by Hadžić (1995) and it is the only finding in Montenegro.

**Gyrodon** Opat.

•**Gyrodon lividus** (Bull.) Sacc.

**Ref.:** Hadžić (1995: 15); Perić et al. (2000: 155); Perić & Perić (2004: 17, 2006a: 45, 2006b: 30); Kasom & Ćetković (2011: 588-589).

**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 217); Horak (2005: 61); Muñoz (2005: 154-158).

**Ill.:** Breitenbach & Kränzlin (1991: 69); Muñoz (2005: 604-606, 876); Phillips (1981: 206 as *Uloporus lividus*); Šutara et al. (2009: 55).

**Material examined:** 21.09.2004 and 09.09.2005, NP "Biogradska Gora": Jungle Reserve, near Biogradska river (UTM CN 94), under *Alnus* sp., leg. G.Kasom, M.N.F. 17/04; 29.09.2011, Mojkovac town, near Bjelojevića river, under *Alnus* sp., leg. G.Kasom, (UTM. CN 85).

**Distribution:** It is mycorrhizal only with *Alnus* (Horak, 2005: 61). In Montenegro the species has been found at 3 localities.

**Gyroporus** Quél.

**Gyroporus castaneus** (Bull.) Quél.

**Ref.:** Perić & Perić (1997b: 57, 1997e: 63, 1999b: 89, 2004: 17, 2006a: 44-45, 2006b: 30).

**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 217); Hansen & Knudsen (1992: 53); Horak (2005: 60); Muñoz (2005: 140-144).

**Ill.:** Breitenbach & Kränzlin (1991: 69); Phillips (1981: 207); Muñoz (2005: 595-597, 877); Šutara et al. (2009: 59).

**Distribution:** It grows in hardwood and coniferous forests, especially under *Quercus* (Breitenbach & Kränzlin, 1991: 65). In Montenegro the species has been found at 3 localities in hardwood forests.

•*Gyroporus cyanescens* (Bull.) Quél.

**Ref.:** Hadžić (1995: 15); Perić & Perić (1996c: 153, 1997b: 57, 1997e: 63, 1999a: 51, 2004: 17, 2006a: 45, 2006b: 30).

**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 217); Hansen & Knudsen (1992: 52-53); Horak (2005: 61); Muñoz (2005: 147-150 as var. *cyanescens*).

**Ill.:** Breitenbach & Kränzlin (1991: 69); Muñoz (2005: 599-602, 824-825, 878 as var. *cyanescens*); Phillips (1981: 207); Šutara et al. (2009: 57).

**Material examined:** 09.09.2005, NP "Biogradska gora": Jungle Reserve, on path to Bendovac (UTM CN 94), forest of *Fagus sylvatica*, leg. G.Kasom, M.N.F. 16/05.

**Distribution:** According to Muñoz (2005: 142) the species grows in hardwood forests, especially under *Fagus sylvatica*, *Castanea sativa*, and *Quercus*. The species is widespread in Montenegro and it has been registered at 5 localities.

*Leccinum* Gray

•*Leccinum aurantiacum* (Bull.) Gray

**Ref.:** Hadžić (1995: 16); Karadžić (1995: 164-165); Perić & Perić (1996b: 72-73 (rev.), 1997b: 57, 1997e: 63, 1999a: 51, 2006a: 41); Perić (2011: 97, 115).

**Exs.:** F.M.M.C., Hadžić.

**Lit.:** Hansen & Knudsen (1992: 65); Horak (2005: 74); Karadelev et al. (2007: 541); Muñoz (2005: 555-559).

**Ill.:** Muñoz (2005: 803-806, 912); Phillips (1981: 210).

**Material examined:** 08.10.2006, Kolašin town (UTM CN 73), under *Populus tremula*, leg. G.Kasom.

**Distribution:** It is associated only with *Populus tremula* (Muñoz, 2005: 556). The species is widespread in Montenegro and it has been registered at 5 localities.

*Leccinum decipiens* (Singer) Pilát & Dermek

**Ref.:** Perić & Perić (1995: 63, 1997b: 57, 1997e: 63).

**Exs.:** F.M.M.C.

**Lit.:** Šutara et al. (2009: 264 as *Leccinum rufus* var. *decipiens*).

**Ill.:** Šutara et al. (2009: 265 as *Leccinum rufus* var. *decipiens*).

**Distribution:** The species was only found at one locality by Perić and Perić (1995, 1997e).

\*•*Leccinum duriusculum* (Schulzer ex Kalchbr.) Singer

**Exs.:** M.N.F.

**Lit.:** Arnolds et al. (1995: 282); Hansen & Knudsen (1992: 64); Horak (2005: 74); Karadelev et al. (2007: 541); Muñoz (2005: 537-541 as f. *duriusculum*).

**Ill.:** Breitenbach & Kränzlin (1991: 71); Muñoz (2005: 792-795 as f. *duriusculum*); Phillips (1981: 212).

**Material examined:** 05.11.2008 and 20.11.2011, Ulcinj town: Ada Bojana peninsula (UTM CM 63), forest of *Alnus* sp., *Populus nigra*, and *P. alba*, leg. G.Kasom, M.N.F. 166/08.

**Distribution:** According to Muñoz (2005: 540) it grows under *Populus*, especially under *Populus tremula*. It was found for the first time in Montenegro during our research.

\*•*Leccinum piceinum* Pilát & Dermek

**Exs.:** M.N.F.

**Lit.:** Hansen & Knudsen (1992: 64); Horak (2005: 74); Šutara et al. (2009: 268).

**Ill.:** Šutara et al. (2009: 269).

**Material examined:** 08.09.2006 and 31.07.2008, NP "Prokletije": Visitor Mt. (UTM DN 01), forest of *Picea abies* and *Pinus peuce*, leg. G.Kasom, M.N.F. 4/06.

**Distribution:** According to Šutara et al. (2009: 268) it grows under *Picea abies*. It was found for the first time in Montenegro during our research.

•*Leccinum pseudoscabrum* (Kallenb.) Šutara

= *Leccinum carpini* (R. Schulz) M.M.Moser ex D.A.Reid (1).

= *Leccinum griseum* (Quél.) Singer (nom. illeg.) sensu Singer, non. org. (2).

**Ref.:** Hadžić [1995: 16(2)]; Karadžić [1995: 166-167(2)]; Perić & Perić [1996b: 66-67(2), 1996c: 154(2), 1997b: 57(2), 1997e: 63(2), 1998a: 74(2), 1999a: 51(2)]; Kasom [2003: 251(2), 2004: 25(1)]; Perić & Perić [2006a: 41-42(1)].

**Exs.:** F.M.M.C., Hadžić.

**Lit.:** Arnolds et al. (1995: 282 as *Leccinum griseum*); Hansen & Knudsen (1992: 65); Horak (2005: 73 as *Leccinum carpini*); Karadelev et al. (2007: 541); Muñoz (2005: 581-585 as *Leccinum carpini*); Šutara et al. (2009: 246); Tkalčec & Mešić (2003: 263-264 as *Leccinum carpini*).

**Ill.:** Breitenbach & Kränzlin (1991: 71 as *Leccinum carpini*); Muñoz (2005: 817-820, 875-876 as *Leccinum carpini*); Phillips (1981: 212 as *Leccinum carpini*); Šutara et al. (2009: 247).

**Material examined:** 02.09.2006, Lovćen Mt.: Gornič vill. (UTM CM 29), forest of *Quercus cerris* and *Carpinus orientalis*, leg. G.Kasom.

**Distribution:** It grows primarily under *Carpinus* and *Corylus* but also *Populus*, *Quercus*, and rarely *Fagus* (Breitenbach & Kränzlin, 1991: 70). The species is widespread in Montenegro and it has been registered at 8 localities.

•*Leccinum scabrum* (Bull.) Gray

**Ref.:** Hadžić (1995: 16); Karadžić (1995: 166-167); Perić & Perić (1995: 63, 1996b: 68-69, 1997b: 57, 1997e: 63-64, 1999a: 51); Perić et al. (2000: 155); Perić & Perić (2006a: 42); Perić (2011: 335, 366).

**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 284); Hansen & Knudsen (1992: 65); Horak (2005: 75); Muñoz (2005: 474-478 as var. *scabrum*).

**Ill.:** Breitenbach & Kränzlin (1991: 75); Muñoz (2005: 771-773, 906 as var. *scabrum*); Phillips (1981: 213); Šutara et al. (2009: 249).

**Material examined:** 17.10.2008, NP "Prokletije": Visitor Mt. (UTM DN 01), under *Betula* sp., leg. G.Kasom, M.N.F. 66/08; 30.09.2009, Golija Mt. (UTM CN 25), forest of *Betula* sp., leg. G.Kasom, M.N.F. 56/09.

**Distribution:** It is always mycorrhizal with *Betula* (Breitenbach & Kränzlin, 1991: 74). The species is widespread in Montenegro and it has been registered at 7 localities.

*Leccinum variicolor* Watling

**Ref.:** Perić & Perić (1996c: 154, 1997b: 57, 1997e: 64).

**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 284); Hansen & Knudsen (1992: 66); Horak (2005: 75); Muñoz (2005: 502-515).

**Ill.:** Muñoz (2005: 782-786); Phillips (1981: 213).

**Distribution:** It is associated with *Betula* (Breitenbach & Kränzlin, 1991: 74). The species has only been found at one locality in Montenegro, by Perić and Perić (1996c, 1997b, 1997e).

*Leccinum versipelle* (Fr. & Hök) Snell

= *Leccinum testaceoscabrum* (Secr.) Singer (nom. inval.) (1).

**Ref.:** Perić & Perić [1996b: 70-71(1), 2006a: 42].

**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 284-285); Hansen & Knudsen (1992: 65); Horak (2005: 74); Muñoz (2005: 545-548).

**Ill.:** Breitenbach & Kränzlin (1991: 75); Muñoz (2005: 797-799); Phillips (1981: 208); Šutara et al. (2009: 273).

**Distribution:** It is mycorrhizal only with *Betula* (Muñoz, 2005: 546). It has been found in only one locality in Montenegro, by Perić and Perić (1996b, 2006a).

*Leccinum vulpinum* Watling

**Ref.:** Perić & Perić (2006a: 42).

**Exs.:** F.M.M.C.

**Lit.:** Hansen & Knudsen (1992: 64); Horak (2005: 74); Muñoz (2005: 563-566); Singer [(1966) "1967": 105-106].

**Ill.:** Muñoz (2005: 797-799); Šutara et al. (2009: 269).



**Distribution:** It is mycorrhizal with *Pinus sylvestris* (Muñoz, 2005: 546). In Montenegro it has been found in one locality in a forest of *Pinus nigra*.

*Porphyrellus* E.-J. Gilbert

•*Porphyrellus porphyrosporus* (Fr. & Hök) E.-J. Gilbert

= *Porphyrellus pseudoscaber* Secr. ex Singer (nom. inval.) (1).

**Ref.:** Tortić [1974: 213(1), 1988: 126(1) (letter, specimen not found in BEO)]; Hadžić [1995: 15( ) (1)]; Karadžić [1995: 168-169(1) (rev.)]; Perić & Perić [1997b: 57-58(1), 1997e: 64(1), 1998a: 74(1), 2004: 24(1), 2006a: 44, 2006b: 30(1)].

**Exs.:** F.M.M.C., Hadžić.

**Lit.:** Hansen & Knudsen (1992: 71-72); Horak (2005: 59); Muñoz (2005: 268-271); Singer [(1966) "1967": 109-112 as *Porphyrellus pseudoscaber*]; Šutara et al. (2009: 240).

**Ill.:** Breitenbach & Kränzlin (1991: 51); Muñoz (2005: 655-656, 836-837); Phillips (1981: 207 as *Porphyrellus pseudoscaber*); Šutara et al. (2009: 241).

**Distribution:** According to Muñoz (2005: 270) it grows under coniferous trees *Pinus* sp., *Picea* sp., and *Abies* sp., or mixed conifer-hardwood forests, under *Fagus sylvatica* and *Quercus* sp. It is widespread in Montenegro and it has been registered at 6 localities.

*Strobilomyces* Berk. 1851.

•*Strobilomyces strobilaceus* (Scop.) Berk.

= *Strobilomyces floccopus* (Vahl: Fr.) P. Karst. (1).

**Ref.:** Karadžić [1995: 168-169(1) (rev.)]; Perić & Perić [1997b: 59(1), 1997c: 49-50(1) (rev.)]; Perić et al. [2000: 156(1), 2001: 16(1)]; Perić & Perić [2004: 26(1), 2006a: 44, 2006b: 31(1)].

**Exs.:** F.M.M.C., M.N.F.

**Lit.:** Arnolds et al. (1995: 418-419); Hansen & Knudsen (1992: 72); Horak (2005: 59); Muñoz (2005: 135-138).

**Ill.:** Breitenbach & Kränzlin (1991: 51); Muñoz (2005: 593-595, 822-823); Phillips (1981: 206 as *Strobilomyces floccopus*); Šutara et al. (2009: 243).

**Material examined:** 04.10.2005, NP "Prokletije": Visitor Mt., Gornja Brezjojevica vill. (UTM DN 01), forest of *Fagus sylvatica*, leg. S.Hadžiablahović, M.N.F. 20/05.

**Distribution:** According to Muñoz (2005: 136) it grows in hardwood forests under *Fagus sylvatica*, *Quercus petraea*, and *Castanea sativa*. It has been found at 4 localities in Montenegro.

*Suillus* Gray

*Suillus bellinii* (Inzenga) Watling

**Ref.:** Perić & Perić (1997a: 282, 1997b: 58, 1997e: 64, 1998b: 68-69, 1999b: 88, 2000: 111, 2006a: 45).

**Exs.:** F.M.M.C.

**Lit.:** Horak (2005: 63); Muñoz (2005: 238-242 as f. *bellinii*); Tkalčec & Mešić (2003: 268).

**Ill.:** Muñoz (2005: 639-642, 832, 882 as f. *bellinii*); Šutara et al. (2009: 81).

**Distribution:** According to Muñoz (2005: 409) it is a Mediterranean species that grows in coniferous forests under *Pinus* spp., especially under *P. pinea*, *P. pinaster*, and *P. halepensis*, but is rare under *P. radiata*. It has only been found in one locality in Montenegro, mycorrhizal with *Pinus halepensis*.

•*Suillus bovinus* (L.) Roussel

**Ref.:** Hadžić (1995: 15); Karadžić [1995: 170-171 (rev.)]; Perić & Perić (1997b: 58, 1997e: 64, 2000: 111); Kasom (2004: 25).

**Exs.:** Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 419); Hansen & Knudsen (1992: 70); Horak (2005: 64); Muñoz (2005: 253-256); Tkalčec & Mešić (2003: 268).

**Ill.:** Breitenbach & Kränzlin (1991: 77); Muñoz (2005: 646-649); Phillips (1981: 215); Šutara et al. (2009: 91).

**Material examined:** 24.08.2006, NP Durmitor: Podgora vill. (UTM CN 47), forest of *Pinus* sp., leg. G.Kasom.

**Distribution:** According to Muñoz (2005: 254) it grows in coniferous forests under *Pinus* spp., especially under *P. sylvestris*. It has been found at 3 localities in Montenegro, under *Pinus nigra* or *P. sylvestris*.

•*Suillus collinitus* (Fr.) Kuntze

**Ref.:** Perić & Perić (1996a: 72, 1997a: 282, 1997b: 58, 1997e: 64, 1998b: 70-71 (rev.), 1999b: 88, 2000: 111); Perić et al. (2000: 155); Perić & Perić (2006a: 45).

**Exs.:** F.M.M.C., M.N.F.

**Lit.:** Alli (2011: 306); Arnolds et al. (1995: 419-420); Muñoz (2005: 222-226, 236, 238 as var. *collinitus*).

**Ill.:** Breitenbach & Kränzlin (1991: 79); Muñoz (2005: 633-634, 833 as var. *collinitus*); Phillips (1981: 215 as *Suillus fluryi*); Šutara et al. (2009: 75).

**Material examined:** 27.10.2009, Podgorica town: Gorica (UTM CM 59), forest of *Pinus halepensis*, leg. G.Kasom, M.N.F. 115/09; 26.11.2011, Bar town, Ratac peninsula (UTM CM 36), forest of *Pinus halepensis*, leg. G.Kasom; 02.12.2011, Budva town: Zavala (UTM CM 28), forest of *Pinus halepensis*, leg. G.Kasom.

**Distribution:** According to Muñoz (2005: 224) it grows with *Pinus*, especially in a pine plantation with 2-needle species of pine (*P. radicata*, *P. pinea*, *P. pinaster*, *P. sylvestris*, and *P. halepensis*). It has been found at 3 localities in Montenegro, associated with *Pinus halepensis* and *P. nigra*.

var. *velatipes* Contu, Lavorato & Simonini

**Ref.:** Perić & Perić (2006a: 46).

**Exs.:** F.M.M.C.

**Lit.:** Muñoz (2005: 227-229).

**Ill.:** Muñoz (2005: 635).

**Distribution:** According to Muñoz (2005: 228) it grows with *Pinus*, especially in a pine plantation with 2-needle species of pine (*P. pinea*, *P. pinaster*, *P. sylvestris*, and *P. halepensis*) Mediterranean forest. It has only been found in one locality in Montenegro, associated with *Pinus halepensis*.

•*Suillus granulatus* (L.) Roussel

= *Boletus granulatus* L. (1).

**Ref.:** Hadžić (1995: 15); Karadžić [1995: 170-171 (rev.)]; Perić & Perić [1995: 63, 1996a: 72, 1997b: 58, 1997e: 64, 1998a: 74, 1998c: 72-73 (rev.), 1999a: 51, 1999b: 88, 2000: 111-112]; Perić et al. (2000: 155); Perić & Perić (2002: 136(1)); Kasom [2003: 251 (rev.), 2004: 25 (rev.)]; Perić & Perić (2005: 92, 2006a: 46); Perić [2011: 45, 58 (rev.)].

**Exs.:** F.M.M.C., Hadžić, M.N.F.

**Lit.:** Arnolds et al. (1995: 420); Hansen & Knudsen (1992: 71); Horak (2005: 63); Muñoz (2005: 230-234).

**Ill.:** Breitenbach & Kränzlin (1991: 79); Muñoz (2005: 636-637); Phillips (1981: 217); Šutara et al. (2009: 77).

**Material examined:** 25.08.2005, NP "Lovćen", Ivanova korita (UTM CM 39) and Njeguši (UTM CM 39), forest of *Pinus nigra*, leg. G.Kasom; 16.08.2006, Hum Orahovski Mt. (UTM CN 70), forest of *Pinus heldreichii*, leg. G.Kasom; 27.10.2008, Pljevlja: Odžak (UTM CP 60), forest of *Pinus* sp., leg. G.Kasom.

**Annotation:** The species *Suillus granulatus* is cited for fir and red fir forest (NP Durmitor: Mliniski Potok) in Perić & Perić (1998a: 74); beech forest (NP "Lovćen": Ivanova korita) in Perić & Perić (1999a: 51, 1999b: 88, 2006a: 46); oak forest (Kući: Raušnik) in Perić et al. (2000: 155). As *Suillus granulatus* formed mycorrhiza only with pines, we suppose that certain *Pinus* spp. trees must be present in those localities.

**Distribution:** This is a common species, growing in coniferous or mixed conifer-hardwood forests, associated with 2-needle pines (Breitenbach & Kränzlin, 1991: 78). It is widespread in Montenegro and it has been registered in 50 localities, associated with *Pinus*.

•*Suillus grevillei* (Klotzsch) Singer

**Ref.:** Karadžić [1995: 172-173 (rev.)]; Perić & Perić (1997b: 58, 1997e: 64, 2000: 112).

**Exs.:** M.N.F.

**Lit.:** Arnolds et al. (1995: 420); Doğan et al. (2012: 91); Hansen & Knudsen (1992: 70 as var. *grevillei*); Horak (2005: 63); Muñoz (2005: 197-201).

**Ill.:** Breitenbach & Kränzlin (1991: 81); Muñoz (2005: 621-624); Phillips (1981: 216); Šutara et al. (2009: 65).

**Material examined:** 08.10.2009, Durmitor: Planina Ivica Mt. (UTM CN 47), forest of *Larix* sp., leg. G.Kasom, M.N.F. 112/09.

**Distribution:** It is mycorrhizal with *Larix*, lowland to subalpine, it was also found in artificial plantations (Breitenbach & Kränzlin, 1991: 80). It has been found in only one locality in Montenegro, mycorrhizal with *Larix*.

•*Suillus luteus* (L.) Roussel

**Ref.:** Karadžić [1995: 172-173 (rev.)]; Perić & Perić (1997b: 58, 1997e: 64, 1999b: 88, 2000: 112); Kasom (2003: 251); Perić & Perić (2006a: 46).

**Exs.:** F.M.M.C., M.N.F.

**Lit.:** Arnolds et al. (1995: 421); Doğan et al. (2011: 232); Hansen & Knudsen (1992: 70); Horak (2005: 62; Muñoz (2005: 214-218 as f. *luteus*).

**Ill.:** Breitenbach & Kränzlin (1991: 81); Muñoz (2005: 629-631 as f. *luteus*); Phillips (1981: 214); Šutara et al. (2009: 73).

**Material examined:** 01.10.2006, NP "Lovćen": Ivanova korita (UTM CM 29), forest of *Pinus mugo*, leg. G.Kasom; 16.10.2008, Prokletije: Hajla Mt. (UTM DN 34), under *Pinus* sp., leg. G.Kasom, M.N.F. 74/08; 27.10.2008, Pljevlja: Odžak (UTM CP 60), forest of *Pinus* sp., leg. G.Kasom; 08.10.2009, NP Durmitor: Ćiperovača (UTM CN 47), forest of *Pinus sylvestris*, leg. G.Kasom.

**Distribution:** According to Breitenbach and Kränzlin (1991: 80) it grows under *Pinus* spp., especially under *P. sylvestris*. In Montenegro, it is widespread, growing under *Pinus*, principally *Pinus sylvestris* or *P. nigra*. It is known from 6 localities.

*Suillus mediterraneensis* (Jacquet. & J. Blum) Redeuilh

**Ref.:** Perić & Perić (2005: 92, 2006a: 46).

**Exs.:** F.M.M.C.

**Lit.:** Karadelev et al. (2007: 543); Muñoz (2005: 234-238).

**Ill.:** Muñoz (2005: 638-639); Šutara et al. (2009: 81).

**Distribution:** This is a Mediterranean species and it grows in coniferous forests under *Pinus* spp., especially under *P. halepensis*, but also under *P. pinea* and *P. pinaster* (Muñoz, 2005: 235). It has only been found in one locality in Montenegro, mycorrhizal with *Pinus halepensis*.

•*Suillus sibiricus* (Singer) Singer

**Ref.:** Kasom & Ćetković (2011: 587-588).

**Exs.:** M.N.F.

**Lit.:** Horak (2005: 62); Muñoz (2005: 211-214); Tortić (1968: 55-58).

**Ill.:** Breitenbach & Kränzlin (1991: 83 as subsp. *helveticus*); Muñoz (2005: 627-628, 830-831); Šutara et al. (2009: 83).

**Material examined:** 07.09.2006, NP "Prokletije": Bogičevica Mt., near Lake Hrid (UTM DN 12), forest of *Pinus peuce*, leg. G.Kasom, M.N.F. 8/06.

**Distribution:** This species is associated with 5-needle species of pine *Pinus cembra* or *Pinus sribus* (Horak, 2005: 62) or *Pinus peuce* (Tortić, 1968: 55-58). In Montenegro it is only known from Prokletije Mt., in molika pine associations. It is the first finding from Montenegro.

•*Suillus variegatus* (Sw.: Fr.) Kuntze

**Ref.:** Kasom & Ćetković (2011: 588).

**Exs.:** M.N.F.

**Lit.:** Arnolds et al. (1995: 421); Hansen & Knudsen (1992: 71); Horak (2005: 64); Muñoz (2005: 257-260).

**Ill.:** Breitenbach & Kränzlin (1991: 85); Muñoz (2005: 649-652); Phillips (1981: 217); Šutara et al. (2009: 89).

**Material examined:** 08.09.2006 and 20.07.2009, Rožaje: Hajla Mt. (UTM DN 34), forest of *Pinus peuce* and *Pinus nigra*, on very swampy soil, leg. G.Kasom, M.N.F. 11/06, 43/09.

**Distribution:** It grows under 2-needle species of *Pinus* (Breitenbach & Kränzlin, 1991: 84). Until now the species was known in one locality by us. It is the first finding for Montenegro.

*Tylopilus* P. Karst.

*Tylopilus felleus* (Bull.) P. Karst.

= *Boletus felleus* Bull. (1).

**Ref.:** Hadžić (1995: 16); Perić & Perić [2003: 77(1), 2006a: 42].

**Exs.:** F.M.M.C., Hadžić.

**Lit.:** Arnolds et al. (1995: 436); Hansen & Knudsen (1992: 72); Horak (2005: 72); Muñoz (2005: 263-267).

**Ill.:** Breitenbach & Kränzlin (1991: 85); Muñoz (2005: 652-654, 884); Phillips (1981: 205); Šutara et al. (2009: 239).

**Annotation:** Perić and Perić (2006: 42) revised the finding of *Boletus subappendiculatus* Dermek, Lazebnick et J. Veselský, published in Perić and Perić (2000), as cited by the authors. However, in Perić and Perić (2006) this reference is not mentioned, and so we suppose that they have in mind Perić et al. (2000: 155), where this datum is cited.

**Distribution:** According to Muñoz (2005: 264) it grows in coniferous forest under *Picea* sp. and *Pinus* sp., or hardwood forests, associated with *Castanea* sp., *Fagus* sp., *Quercus* sp., and *Alnus* sp. Until now the species was known in two localities by us.

*Xerocomus* Quél.

*Xerocomus chrysenteron* (Bull.) Quél.

**Ref.:** Tortić (1988: 126); Hadžić (1995: 16); Karadžić (1995: 174-175); Perić & Perić (1997b: 58, 1997e: 64, 1998a: 74, 1999a: 51, 1999b: 89); Perić et al. (2000: 156); Kasom (2004: 25); Perić & Perić (2006a: 43).

**Exs.:** F.M.M.C., Hadžić.

**Lit.:** Alessio (1991: 65); Arnolds et al. (1995: 78 as *Boletus chrysenteron*); Horak (2005: 66); Ladurner and Simonini (2003: 283-295).

**Ill.:** Breitenbach & Kränzlin (1991: 87); Ladurner & Simonini (2003: 490-491: 522); Phillips (1981: 204 as *Boletus chrysenteron*); Šutara et al. (2009: 225 as *Xerocomellus chrysenteron*).

**Distribution:** According to Ladurner and Simonini (2003: 285) it is a widespread and common species all over Europe. It usually grows associated with conifers but sometime grows with deciduous trees as *Fagus*. In Montenegro it is widespread. It is known from 9 localities.

*Xerocomus ferrugineus* (Schaeff.) Alessio

= *Xerocomus spadiceus* (Fr.) Quél. 1888 (nom. illeg.) (1).

**Ref.:** Hadžić [1995: 16(1)]; Perić & Perić [1999a: 51-52(1), 1999b: 89(1), 2006a: 43].

**Exs.:** F.M.M.C., Hadžić.

**Lit.:** Arnolds et al. (1995: 79); Horak (2005: 65); Ladurner & Simonini (2003: 152-161).

**Ill.:** Ladurner & Simonini (2003: 415-418, 511); Šutara et al. (2009: 214).

**Distribution:** According to Ladurner and Simonini (2003: 154) it is a widespread species in the temperate European forest, where it grows in association with various coniferous trees and with *Fagus* in the mountains. In Montenegro it is known from 3 localities.

*Xerocomus pelletieri* (Lév.) Manfr. Binder

Misappl.: *Phylloporus rhodoxanthus* (Schwein.) Bres. sensu auct. europ. (1).

**Ref.:** Perić & Perić [1996c: 154(1), 1997b: 57(1), 1997e: 64(1), 1998c: 64-65(1)]; Perić et al. [2001: 16(1)]; Perić & Perić [2004: 23(1), 2006a: 43, 2006b: 30(1)].

**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 355 as *Phylloporus pelletieri*); Ladurner & Simonini (2003: 132-139); Šutara et al. (2009: 234 as *Phylloporus pelletieri*).

**Ill.:** Ladurner & Simonini (2003: 406, 509); Šutara et al. (2009: 235 as *Phylloporus pelletieri*).

**Distribution:** According to Ladurner and Simonini (2003: 134) it grows in coniferous as well as in deciduous forests. It is widespread in central and western Europe. In Montenegro it is known from 3 localities.

*Xerocomus porosporus* (Imler ex G. Moreno & Bon) Contu

= *Xerocomus porosporus* Imler, Imler in Watling (1).

Misappl.: *Xerocomus truncatus* Singer (2).

**Ref.:** Perić & Perić [1997b: 59(2), 1997e: 65(2), 2006a: 43(1)].

**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 81 as *Boletus porosporus*); Hansen & Knudsen (1992: 62 as *Boletus porosporus*); Horak (2005: 66); Ladurner & Simonini (2003: 194-201).

**Ill.:** Ladurner & Simonini (2003: 434-436, 514); Phillips (1981: 203 as *Boletus porosporus*); Šutara et al. (2009: 227 as *Xerocomellus porosporus*).

**Distribution:** According to Ladurner and Simonini (2003: 196) it is widespread but rather rare in Europe. It grows associated with deciduous trees (*Fagus*, *Carpinus betulus*, *Quercus cerris*, *Q. petraea*, *Q. robur*, *Q. suber*, *Betula*, *Crataegus*, and *Rubus*) and in mixed forests, exceptionally also with *Pinus* and *Picea*. In Montenegro it is only known from one locality, associated with *Quercus cerris*.

*Xerocomus pruinatus* (Fr. & Hök) Quél.

**Ref.:** Perić & Perić (2006a: 43); Perić (2011: 204, 266).



**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 81); Hansen & Knudsen (1992: 61-62 as *Boletus pruinaus*); Horak (2005: 66); Ladurner & Simonini (2003: 259-273).

**Ill.:** Ladurner & Simonini (2003: 470-475, 520); Phillips (1981: 204 as *Boletus pruinaus*); Šutara et al. (2009: 233 as *Xerocomellus pruinaus*).

**Distribution:** According to Ladurner and Simonini (2003: 262) it is widespread in Europe. It grows associated with conifers (*Abies*, *Picea*, and *Pinus*) as well as with deciduous trees (*Acer*, *Carpinus*, *Castanea*, *Fagus*, *Fraxinus*, *Quercus*, etc.). In Montenegro it is known from 2 localities, associated with *Abies alba* or *Picea abies*.

*Xerocomus rubellus* (Krombh.) Quél.

**Ref.:** Perić & Perić (1996b: 74-75, 1997a: 282, 1997b: 58, 1996c: 154, 1997e: 64, 2006a: 44).

**Exs.:** F.M.M.C.

**Lit.:** Arnolds et al. (1995: 83 as *Boletus rubellus*); Hansen & Knudsen (1992: 62 as *Boletus rubellus*); Horak (2005: 66); Ladurner & Simonini (2003: 217-234).

**Ill.:** Breitenbach & Kränzlin (1991: 89); Ladurner & Simonini (2003: 355, 358, 443-450, 515-517); Šutara et al. (2009: 219 as *Xerocomellus rubellus*).

**Distribution:** According to Ladurner and Simonini (2003: 219) it is widespread in Europe. It grows associated with deciduous trees and shrubs (e.g., *Quercus* sp., *Tilia* sp., and *Corylus avellana*), often in urban areas, on lawns, etc. In Montenegro it is known from 3 localities, associated with *Quercus* or *Fagus*.

• *Xerocomus subtomentosus* (L.) Quél.

= *Boletus subtomentosus* L.: Fr. (1).

**Ref.:** Hadžić (1995: 16); Karadžić (1995: 176-177); Perić & Perić [1997b: 58, 1997e: 65, 1998c: 70-71, 1999a: 52, 1999b: 89, 2002: 136(1)]; Kasom (2003: 251); Perić & Perić (2006a: 44).

**Exs.:** F.M.M.C., M.N.F.

**Lit.:** Arnolds et al. (1995: 83 as *Boletus subtomentosus*); Ladurner & Simonini (2003: 140-151).

**Ill.:** Breitenbach & Kränzlin (1991: 89); Ladurner & Simonini (2003: 408-412, 510); Šutara et al. (2009: 213).

**Material examined:** 09.07.2009, Andrijevića town (UTM DN 03), forest of *Quercus cerris*, leg. G.Kasom, M.N.F. 15/09; 20.07.2009, Prokletije, Hajla Mt. (UTM DN 34), forest of *Picea abies* and *Pinus peuce*, leg. G.Kasom, M.N.F. 48/09.

**Distribution:** According to Ladurner and Simonini (2003: 142) it is widespread in zones with mild climate as well as in the thermophilous Mediterranean shrub area. It grows associated with various deciduous trees and shrubs, with a preference for *Castanea*, *Coryllus*, *Quercus*, and *Fraxinus*. In Montenegro it is known from 9 localities.

#### EXCLUDED RECORDS

*Suillus alboflocculosus* Pantidou & Watling

**Ref.:** Perić & Perić (1996a: 72, 1997b: 58, 1997a: 282, 1997e: 64, 1999a: 51, 2000: 111).

**Annotation:** Most modern authors do not mention the taxon *Suillus alboflocculosus*. According to Muñoz (2005: 214) *Suillus alboflocculosus* could be a synonym of *Suillus luteus* (L.) Roussel f. *luteus*.

*Suillus littoralis* Bouchet s. str. M. M. Moser non Leclaire

**Ref.:** Perić & Perić (1996a: 72, 1997a: 282, 1997b: 58, 1997e: 64, 2000: 112).

**Annotation:** Modern authors disagree about the interpretation of this taxon. Merlo et al. (1983) regard it as an independent species; Engel et al. (1996) consider it a synonym of *Suillus mediterraneensis* (Jacquet. et J. Blum) Redeuilh; Redeuilh & Simonini (1998) consider it a synonym of *Suillus bellinii* (Inzenga) Kuntze, while Galli (1998) deems it a nomen ambiguum (all in Tkalčec & Mesić, 2003: 276). Muñoz (2005: 242) considers it a nomen nudum.

#### Discussion and conclusions

The studies on the family *Boletaceae* (excluding *Boletus*) in the territory of Montenegro were started at the close of the 20th century and have continued in the 21st century. In this paper we presented 39 species, and 1 variety belonging to 12 genera found in Montenegro up to now. For Montenegrin mycobiota we confirmed 23 species. For each presented species, the published and unpublished sources of data are provided, in addition to the collections where the material is deposited.



The distribution of the taxa and their genera are as follows: *Aureoboletus* (1 species), *Chalciporus* (2 species), *Chroogomphus* (2 species), *Gomphidius* (3 species), *Gyrodon* (1 species), *Gyroporus* (2 species), *Leccinum* (9 species), *Porphyrellus* (1 species), *Strobilomyces* (1 species), *Suillus* (9 species and 1 variety), *Tylopilus* (1 species), and *Xerocomus* (7 species).

The genus *Aureoboletus* and the taxa *Aureoboletus gentilis*, *Leccinum duriusculum*, and *Leccinum piceinum* are reported for the first time for the territory of Montenegro.

Two taxa, *Suillus alboboculosus* and *Suillus littoralis*, have to be excluded from the mycobiota of Montenegro.

## References

- Alessio CL (1991). *Fungi Europaei. Supplemento a Boletus* Dill. ex L. (*sensu lato*), Vol. 2a. Saronno: Libreria editrice Biella Giovanna.
- Alli H (2011). Macrofungi of Kemaliye district (Erzincan). *Turkish Journal of Botany* 35: 299-308.
- Arnolds E, Kuyper TW & Noordeloos ME (1995). *Overzicht van de Paddenstoelen in Nederland*. Wijster: Nederlandse Mycologische Vereniging.
- Breitenbach J & Kränzlin F (1991). *Pilze der Schweiz*, Auflage 3. Luzern: Verlag Mykologia.
- Doğan HH, Karadelev M & İşiloğlu M (2011). Macrofungi diversity associated with the scale-leaf juniper trees, *Juniperus excelsa* and *J. foetidissima*, distributed in Turkey. *Turkish Journal of Botany* 35: 219-237.
- Doğan HH, Aktaş S, Öztürk C & Kaşık G (2012). Macrofungi distribution of Cocakdere valley (Arslanköy, Mersin). *Turkish Journal of Botany* 36: 83-84.
- Hadžić I (1995). Prilog izučavanju mikoflore rožajskog kraja. *Rožajski zbornik* 7: 11-34.
- Hansen L & Knudsen H (1992). *Nordic Macromycetes*, Vol. 2. (*Polyporales, Boletales, Agaricales, Russulales*). Copenhagen: Nordsvamp.
- Horak E (2005). *Röhrlinge und Blätterpilze in Europa*, Auflage 6. München: Elsevier GmbH.
- Karadelev M, Rusevska K & Spasikova S (2007). The Family Boletaceae s.l. (Excluding Boletus) in the Republic of Macedonia. *Turkish Journal of Botany* 31: 539-550.
- Karadžić D (1995). *Gljive Nacionalnog Parka Durmitor*. Žabljak, Beograd: Nacionalni park Durmitor, Šumarski fakultet Beograd.
- Kasom G (2003). Prvi prilog proćavanju makromiceta Lovćena (Crna Gora). *Doclea* 4: 247-271.
- Kasom G (2004). The contribution to the study of macromycetes of Montenegro. *Glasnik Republičkog zavoda za zaštitu prirode* 27-28: 19-32.
- Kasom G & Ćetković I (2011). Material for the red book of fungi of Montenegro. In: *Zaštita Prirode u XXI Vijeku. Zbornik Referata, Rezimea Referata i Poster Presentacije (knjiga 2)*, pp. 585-590. Žabljak, Crna Gora: Zavod za zaštitu prirode.
- Ladurner H & Simonini G (2003). *Fungi Europaei. Xerocomus* s.l., Vol. 8. Alassio SV, Italia: Edizioni Candusso.
- Moser M (1983). *Kleine Kryptogamenflora, Die Röhrlinge und Blätterpilze (Polyporales, Boletales, Agaricales, Russulales)*, Band IIb/2. Stuttgart, New York: Gustav Fischer.
- Muñoz JA (2005). *Fungi Europaei. Boletus* s.l. (excl. *Xerocomus*). Vol. 2. Alassio SV, Italia: Edizioni Candusso.
- Perić B (2011). *Gljive i cvjetnice Crne Gore. Prilog estetiĉki prirodno lijepog*. Podgorica: Crnogorska akademija nauka i umjetnosti.
- Perić B, Karadelev M & Tkalćec Z (2001). *Ugroženost i zaštita gljiva u Crnoj Gori, Makedoniji i Hrvatskoj*. Podgorica: Crnogorski mikološki centar.
- Perić B & Perić O (1995). Prilog proućavanju gljiva Crne Gore. *Poljoprivreda i šumarstvo* 41: 61-69.
- Perić B & Perić O (1996a). Makromicete Crne Gore (8. prilog proućavanju makromiceta Crne Gore). *Poljoprivreda i šumarstvo* 42: 69-84.
- Perić B & Perić O (1996b). *Mala Mikološka Edicija, Gljivarske Staze, Jesen*. Podgorica: CID.

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- Perić B & Perić O (1996c). Nacionalni park Biogradska gora, prilog proučavanju mykodiverziteta. In: *Balkan conference: "National parks and their role in biodiversity protection on Balkan peninsula"*, pp. 151-161. Ohrid: Macedonian ecological society and Republic of Macedonia national parks union.
- Perić B & Perić O (1997a). Makromicete šumskih kultura na području urbane zone Podgorice. *Glasnik Odeljenja prirodnih nauka* 44: 279-290.
- Perić B & Perić O (1997b). Diverzitet makromiceta u Crnoj Gori. *Glasnik Odeljenja prirodnih nauka* 11: 45-142.
- Perić B & Perić O (1997c). Funghi rari o interessanti raccolti in Montenegro. *Bollettino del Gruppo micologico G. Bresadola Trento* 15: 45-50.
- Perić B & Perić O (1997d). Petit étude de la mycologie du Monténégro. *Flora Mediterranea* 7: 11-20.
- Perić B & Perić O (1997e). Jestive gljive iz porodice *Boletaceae* u Crnoj Gori (10. prilog proučavanju gljiva Crne Gore). *Poljoprivreda i šumarstvo* 43: 57-71.
- Perić B & Perić O (1998a). Prilog proučavanju makromiceta NP "Durmutor". *Glasnik Odeljenja prirodnih nauka* 12: 71-94.
- Perić B & Perić O (1998b). *Mala Mikološka Edicija, Gljivarske Staze, Zima*. Podgorica: Mikološko društvo Crne Gore.
- Perić B & Perić O (1998c). *Mala Mikološka Edicija, Gljivarske Staze, Proljeće*. Podgorica: Mikološko društvo Crne Gore.
- Perić B & Perić O (1999a). Makromicete Crne Gore (18. prilog proučavanju makromiceta Crne Gore). *Poljoprivreda i šumarstvo* 45: 47-67.
- Perić B & Perić O (1999b). Prilog proučavanja makromiceta Crne Gore. *Mycologia Montenegrina* 2: 83-98.
- Perić B & Perić O (2000). Neke najčešće jestive i ljekovite samonikle gljive Crne Gore. *Poljoprivreda i šumarstvo* 46: 97-119.
- Perić B & Perić O (2002). Makromicete Crne Gore (prilog proučavanju 33°). *Mycologia Montenegrina* 5: 131-146.
- Perić B & Perić O (2003). Makromicete Crne Gore 36° prilog proučavanju. *Mycologia Montenegrina* 6: 73-95.
- Perić B & Perić O (2004). Preliminarna crvena lista makromiceta Crne Gore 2°. *Mycologia Montenegrina* 7: 7-33.
- Perić B & Perić O (2005). Makromicete Crne Gore 46° prilog proučavanju. *Mycologia Montenegrina* 8: 85-102.
- Perić B & Perić O (2006a). Contribution to the study of the genus *Boletus* s. l. in Montenegro. *Mycologia Montenegrina* 9: 35-54.
- Perić B & Perić O (2006b). The Provisory Red List of Endangered Macromycetes of Montenegro. Newsletter, 14: 25-27.
- Perić B, Perić O & Perić I (2000). Prilog proučavanju makromicete Crne Gore. *Mycologia Montenegrina* 3: 149-165.
- Phillips R (1981). *Mushrooms and Other Fungi of Great Britain and Europe*. London: Pan Books Ltd.
- Robert V, Stegehuis G & Stalpers J (2005). The MycoBank engine and related databases[online]. Website <http://www.mycobank.org> (accessed on 13 December 2011).
- Singer R (1962). *The Agaricales in Modern Taxonomy*. Weinheim: J. Cramer.
- Singer R (1964) "1965": *Die Pilze Mitteleuropas*, Band V. *Die Röhrlinge*. Teil I. *Die Boletaceae (ohne Boletioideae)*. Heilbrunn Obb: Julius Klinkhardt.
- Singer, R. (1966) "1967": *Die Röhrlinge II. Die Pilze Mitteleuropas VI*. Bad Heilbrunn Obb: Verlag Julius Klinkhardt.
- Stevanović V (1995). Biogeografska podela teritorije Jugoslavije. In: Stevanović V & Vasić V (ed.) *Biodiverzitet Jugoslavije sa Pregledom Vrsta od Međunarodnog Značaja*, pp. 117-127. Beograd: Ecolobri.
- Stevanović V & Stevanović B (1995). Osnovni klimatski, geološki i pedološki činioci biodiverziteta kopnenih ekosistema Jugoslavije. In: Stevanović V & Vasić V (ed.) *Biodiverzitet Jugoslavije sa Pregledom Vrsta od Međunarodnog Značaja*, pp. 75-95. Beograd: Ecolobri.
- Šutara J, Mikšik M & Janda V (2009). *Hřibovité Houby (Čeled' Boletaceae a rody Gyrodon, Gyroporus, Boletinus a Suillus)*. Praha: Academia.
- Tkalčec Z & Mešić A (2003). Preliminary checklist of *Agaricales* from Croatia III, Families *Boletaceae*, *Gomphidiaceae* and *Paxillaceae*. *Mycotaxon* 83: 255-282.
- Tortić M (1968). Ein neuer Fundort und neuer mycorrhizapartner von *Suillus sibiricus* (Sing.) Sing. *Schweizerischen Zeitschrift für Pilzkunde* 45: 55-58.
- Tortić M (1974). Mali prilog ljetnoj flori makromiceta Crne Gore. *Tokovi* 9: 207-214.
- Tortić M (1988). Macromycetes of Crna Gora (Montenegro). *Glasnik Odeljenja prirodnih nauka* 6: 113-138.