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**NEW SPECIES OF MYCOBIOTA INHABITING THE NATURE RESERVE “CAPE MARTYAN”: MACROMYCETES**

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**Introduction**

Fungi being a part of biogeocenosis are components of phytocenoses by way of mycosynusias. It is an organic and inherent element of any phytocenosis, one of the components in heterotrophic biota block. Monitoring of mycobiota is a part of general monitoring on reserve area. It is an essential step in collecting data about mycobiota, as most species of macromycetes are characterized by regular bearing fruits, a number of species possesses such a property as uncontrolled fructification. Long-term monitoring gains a particular importance concerning rare species, making Red lists and creation of regional Red books.

On territory of the State nature reserve “Cape Martyan” (SNRCM) within long-term monitoring, lists of fungi species for every year are made, that permits to enrich and correct data of the whole researching period. SNRCM is situated in the central part of the Crimean Submediterranean, its total area makes 240 ha: 120 ha of land and 120 ha of water area. Since 1981 traditionally Records of reserve nature have been added by lists of macromycetes inventory. Since 1996 section “Calendar of nature” has been replenished by annual lists of macromycetes. Besides these Records, information about species composition, ecological groups, dynamics and fructification peculiarities, rare and protected species are kept in a number of publications and summaries [4, 7, 8, 10, 13 and etc.]. The list that generalized study results of macromycetes in NR “Cape Martyan” for 1980-2010 was published in 2010. [9]. It includes 298 taxons of species and intraspecies range: Ascomycetes – 9, Basidiomycetes – 289. According to data of 2011-2014 and results of herbarium treatment of early collections, 23 more new species for the reserve, are presented in our article.

**Objects and methods of the research**

Research object were Basidiomycetes and Ascomycetes, collected within the territory of SNRCM during stationary and itinerary inspections. Methodology of material collection and treatment corresponded to common approaches in investigation of macroscopic fungi (macromycetes) functioned as elements of phytocenoses [1, 2]. Abundance and species sociability were rated by Haas scale, ecological status was determined due to works of Kovalenko A.E. [5]. Investigation of morphological characteristics of fruit bodies and microstructures was realized applying light microscope MBI-11.

Classification of macromycetes is presented according to the ninth edition of «Ainsworth & Bisby’s Dictionary of the Fungi» [14]. Latin names of species and genera correspond to nomenclatural database «Index Fungorum» [17].

**Results and Discussion**

New species revealed in SNRCM are quite heterogeneous by their taxonomic composition, living forms, ecological status, seasonality, zoological importance. They are representatives of two classes, 7 orders, 15 families and 18 genera. There are 8 mycorrhiza creators and 15 saprotrophes of different appropriation, 10 species with basidiomas development during warm and (April – October) and cold (November – March) periods, 3

species are polyseasonal. For Crimea peninsula there are 10 new species, 14 rare and protected species. 19 species are referred to overground mycosynusias (12 species are in mycosynusias of juniper and oak cenoses, 7 species are a part of pine and oak cenoses), out-of-layer mycosynusias include 4 species. Besides presented macromycetes, one type of myxomycetes was found there, new in phytocenoses of the reserve.

Below there is an annotated systematized list of new species. While working out this list following symbols and abbreviations were used: Ecological groups. *Mr* – symbiotrophs, saprotrophs: *Hu* – humic, *St* – on mat, *Le* – on wood, xylotroph, *M* – on moss. Phytocenoses. OHb – oak (*Quercus pubescens* Willd.) with oriental hornbeam layer (*Carpinus orientalis* Mill.), OHb(Jp) – oak with juniper (*Juniperus excelsa* M.B.) and oriental hornbeam layer, JpO – juniper and oak, JpOHb – juniper and oak with oriental hornbeam layer, OJp – oak and juniper, OJpHb – oak and juniper with oriental hornbeam layer, OHb(Jp,P) – oak with oriental hornbeam layer, partly juniper and pine *Pinus pallasiana* D. Don), JpO(P) – juniper and oak, partly pine, JpPO – juniper, pine and oak, ArbOJp(P) – arbutus (*Arbutus anrachne* L.) oak and juniper, partly pine. Abundance/Sociability. 4 – in many places, 3 – unevenly, scattered, 2 – scattered a lot, + – single place (one specimen or one group, assemblage) / 3 – by big groups, 2 – by small groups, 1 – single specimens. Degree of species novelty. (\*) – new in the reserve (the first find in the reserve),\* – new in the Crimea (the first find in the Crimea).

**A S C O M Y C O T A**  
**A S C O M Y C E T E S**  
**PEZIZALES**

**Pezizaceae**

**PEZIZA Fr.**

(\*)*Peziza badia* Pers. – *Hu*, moistened ecotope, on stone with *Adiantum capillus-veneris*, +/3, 05.06.2012, 13.07.2012.

(\*)*Peziza violacea* Pers. – *Hu*, the same place, +/3, 14.02.2013, 14.03.2013.

**Tuberaceae**

**TUBER P. Micheli**

(\*)*Tuber aestivum* Vittad. – *Mr*, block № 3, JpPO, 1 specimen, 05.05.2014. During a long-term period reliable information about *T. aestivum* spreading in the Crimea were added up to data of Khrystyuk P.M. (1961), which were included into “Ocherk o svedobnyh i nesvedobnyh grybah Kryma” [12]. Last decade *T. aestivum* was registered on South Coast (05.06.2006) and in Karadagsky reserve (16.11.2007) – the first of the Crimean reserves where this fungus was found [11]. It was included into the Red Data Book of the Russian Federation (RDBRF), as a species, reducing its number, and Ukraine (RBU), as a rare species with underground fruit bodies, European Red Data List of threatened fungi (ERDLTF) as well [6, 13, 16].

**B A S I D I O M Y C O T A**  
**B A S I D I O M Y C E T E S**  
**A g a r i c o m y c e t i d a e**  
**AGARICALES**

**Coprinaceae**

**COPRINUS (Fr.) Gray**

(\*)*Coprinus xanthothrix* Romagn. – *Hu*, OJp, block № 14, 1 specimen., 03.04.2013.

**PSATHYRELLA (Fr.) Quél.**

\**Psathyrella spadiceogrisea* (Fr.) Maire. *Hu*, moistened ecotope, at the stone with *Adiantum capillus-veneris*, +/3, 3 specimens., 02.06.2011.

(\*)*Psathyrella piluliformis* (Bull.) P.D. Orton [syn. *Psathyrella hydrophila* (Bull.) Maire].  
Hu, the same place, +/2 (3+3 specimens.), 17.06.2011.

#### Cortinariaceae

##### CREPIDOTUS (Fr.) P. Kumm.

(\*)*Crepidotus cesatii* (Rabenh.) Sacc. [syn. *Crepidotus sphaerosporus* (Pat.) J.E. Lange].  
Le, block № 10, OHb(Jp), on the oak wood, 4/2-3, 13.01.2012.

#### Entolomataceae

##### ENTOLOMA (Fr. ex Rabenh.) P. Kumm.

\**Entoloma nidorosum* (Fr.) Quél. [syn. *E. rhodopolium* (Fr.: Fr.) Kummer f. *nidorosum* (Fr.) Noordel.]. Mr/St, southern part block № 10, OHb(Jp,P), +/2 specimens., 04.11.2010.  
This species was included into the RBU as a rare species, found sporadically [13]. The most favorable European regions are southern and southeast.

#### Hygrophoraceae

##### HYGROPHORUS Fr.

\**Hygrophorus arbustivus* Fr. Mr, block № 12, JpO(P), 2-3/1-2, 06-22.02.2013.

#### Pluteaceae

##### PLUTEUS Fr.

\**Pluteus hiatulus* Romagn. Le, block № 10, JpPO, 1 specimens., 07.10.2013.

#### Tricholomataceae

##### ARRHENIA Fr.

\**Arrhenia rickenii* (Hora) Watling [syn. *Leptoglossum rickenii* (Hora) Singer]. St, blocks №№ 10, 13, OJpHb and JpOHb, 2(+)/2, 24.02.1010, 10.12.2012.

##### MYCENA (Fr.) GRAY

(\*)*Mycena purpureofusca* (Peck) Sacc. St/Le, block № 10, JpPO, 3/2-3, 22.01.2013.

(\*)*Mycena zephirus* (Fr.) P. Kumm. St, block № 10, JpPO, 3/2-3, 07.10.2013.

##### RICKENELLA Raitelh.

\**Rickenella fibula* (Bull.) Raitelh. M, block № 14, JpO, +/2, place of growth is at a path, in moss 22.01.2013.

### BOLETALES

#### Boletaceae

##### BOLETUS L.

\**Boletus depilatus* Redeuilh. Mr, block № 6, OHb, 1 specimen., 05.07.2006. A rare species, included into ERDLTF [16] is a candidate for RBU [3]. Its localities are Eastern and Central Europe, the Mediterranean, Balkan Peninsula.

\**Boletus lupinus* Fr. Mr, blocks №№ 6, 10; JpPO, 5 specimens., 21-25.10.2013. warm-requiring xerophilous species, mostly found in southern, especially in the Mediterranean and European regions, but isn't adapted in the northern regions, can be found in Israel. It was included into ERDLTF [16].

\**Boletus queletii* Schulzer. Mr, block №№ 2; 4, JpOHb, 3/1-2, 03-09.07.2014. Thermophilous species. It is mostly spread in plain and deciduous forests (Oak-Hornbeam, Oak, Beech (Fagus)). It was included into ERDLTF [16], a candidate for RBU [3].

#### Suillaceae

##### SUILLUS Gray

\**Suillus collinitus* (Fr.) Kuntze. Mr, blocks №№10, 11, JpPO и ArbOJp(P), 1-2/1-2, 24.12.2010, 28.11.2012. Thermophilous species, mostly spread in Southern Europe, creating mycorrhiza in connection with some species of pine (*Pinus halepensis* Miller, *P. nigra* J.F.Arnold, *P. pinea* L., *P. sylvestris* L.), well-known in Iran, favorable environment is a lime soil. It was included into ERDLTF [16].

## PHALLALES

## Geastraceae

## MYRIOSTOMA Desv.

(\*)*Myriostoma coliforme* (Dicks.) Corda. *Hu*, block № 5, OHb(Jp), three groups consisted of 3-5 specimens, 22.10.2013. In the Crimea *M. Coliforme* was actual for old parks only. It was included into addition to the Bern Convention, ERDLTF, RBU (as a rare species), Appendix to RDBRF [6, 13, 15, 16].

## POLYPORALES

## Ganodermataceae

## GANODERMA P. Karst.

(\*)*Ganoderma lucidum* (Curtis) P. Karst. *Le*, block № 4, OHb(Jp), place of growth is on a tree of pubescent oak, 2 specimens 20.08.2014. It was included into RDBRF, as a rare species, and ERDLTF [6, 16].

## RUSSULALES

## Russulaceae

## RUSSULA Pers.

(\*)*Russula torulosa* Bres. *Mr*, blocks №№ 6, 10, 11, 12, JpPO and phytocenoses with pine plants, 2-3/1-2, 21.10-12.11.2013.

## Stereaceae

## STEREUM Hill ex Pers.

(\*)*Stereum hirsutum* (Willd.) Pers. *Le*, OHb and OHb(Jp), +/2-3, summer-autumn. Before it wasn't included into the species list, as by mistake it was denoted as syn. *Trametes hirsuta* (Wulfen: Fr.) Pilát instead of *Coriolus hirsutus* (Wulfen) Pat. [9].

## THELEPHORALES

## Bankeraceae

## PHELLODON P. Karst.

(\*)*Phellodon melaleucus* (Sw.: Fr.) P. Karst. *Hu /Le*, block № 11, JpPO, place of growth is a gully, +/2-3, 05.12.2010.

MYCETOZOA  
MYXOMYCETES

## Ceratiomyxaceae

## CERATIOMYXA J. Schröt.

(\*)*Ceratiomyxa fruticulosa* (O.F. Müll.) T. Macbr. OHb(Jp), block №10, place of growth is on semidecomposed oak wood, 19.06.2006.

## Conclusions

Therefore by present number of macromycetes taxons of species and intraspecies rank in the State nature reserve "Cape Martyan" reaches 321: Ascomycetes – 12, Basidiomycetes – 309.

Since last generalized published list (2010) it has been found 23 more species, new for this reserve, 10 of them are presented in the Crimea for the first time, 1 species of myxomycetes was new for the nature reserve.

Among new species there are 14 rare including 3 protected species in Russian Federarion (*Ganoderma lucidum*, *Myriostoma coliforme*, *Tuber aestivum*) and 3 – in Ukraine (*Entoloma nidorosum*, *M. coliforme*, *T. aestivum*), 7 species are included into ERDLTF (*Boletus depilatus*, *B. lupinus*, *B. queletii*, *G. lucidum*, *M. coliforme*, *Suillus collinitus*, *T. aestivum*), and 1 species is in the Addition to Bern Convention (*M. coliforme*). These facts

emphasize long-term monitoring importance, carried out on the territory of the SNR “Cape Martyan”.

### References

1. Bondartsev A.S., Zynger R.A. Rukovodstvo po sboru vysshyh bazidialnih gribov dlya nauchnogo ih izucheniya//Tr. Botan. in-ta AN SSSR.–1950.–Ser. 2, vyp. 6.–S.499 – 543.
2. Vasiljeva L.N. Izucheniye makroskopicheskikh gribov (makromysetov) kak komponentov rastitelnykh soobshchestv // Polevaya geobotanika. – M.-L.: Izd-vo AN SSSR, 1959. – T. 1. – S. 378 – 398.
3. Gelyuta V.P. Oglyad predstavnykiv rodu *Boletus* L., yak pretenditiv na vkluchennya do “Chervonoyi knygy Ukraini” // Roslinnij svyt u Chervonij knyzi Ukraini: vprovadzhennya globalnoyi strategii zberezheniya roslyn: Material II mizhnarodnoyi naukovoyi konferentsii (9-12 zhovtnya 2012r., m. Umanj, Cherkasskaya oblastj). – Kiev: PALYVODA A.V., 2012. – S. 201 – 204.
4. Gribovi prirodnykh zon Krymu / Dudka I.O., Gelyuta V.P., Tikhonenko Yu.Ya., Andrianova T.V., Gayova V.P., Prydyuk M.P., Dzhagan V.V., Isikov V.P. / In-t botan. im. M.G. Kholodnogo NANU. – K.: Phytosotsiotsentr, 2004. – 452 s.
5. Kovalenko A.E. Ekologichesky obzor grybov iz porjadkov Polyporales s. str., Boletales, Agaricales s. str., Russulales v gornyh lesah tsentralnoj chasti Severo-Zapadnogo Kavkaza // Mykol. i phytopatol. – 1980. – T. 14, vyp.4. – S. 301.
6. Krasnaya knyga Rossijskoj Federatsii (rasteniya i grybi) / Gl. Redkol.: Yu.P. Trutnyev i dr. – M.: Tovarishestvo nauchnykh izdaniy KMK, 2008. – 855s.
7. Maslov I.I., Sarkina I.S., Belich T.V., Sadogursky S.Ye. Annotirovannij katalog vodoroslei i grybov zapovednika “Mys Martiyan”. – Yalta, 1998. – 31 s.
8. Sarkina I.S. Annotirovannij katalog makromysetov Kryma. – Yalta, 2001. – 26 s.
9. Sarkina I.S. Konspekt bazidialnih i sumchatykh makromysetov prirodnogo zapovednika “Mys Martiyan”: itogi 30-letnykh issledovanij // Nauchniye zapiski prirodnogo zapovednika “Mys Martiyan”. – 2010. – Vyp.1. – S. 42 – 70.
10. Sarkina I.S. Grybi znakomiye i neznakomiye. Spravochnik-opredelitelj grybov Kryma. 2-e izdaniye: utochnennoye i dopolnennoye. – Simferopol: Biznes-Inform, 2013. – 440 s.
11. Sarkina I.S. Makroskopicheskiye grybi s podzemnymi plodovymi telami: yestj li v Krymu trufeli // Zapovedniki Kryma. Bioraznoobraziye i ohrana prirodi v Azovo-Chernomorskom regione. Materiali VII Mezhdunarodnoj nauchno-prakticheskoy konferentsii (Simferopol, 24-26 oktyabrya 2013 g.). – Simferopol, 2013. – S. 253-258.
12. Khristyuk P.M. Ocherk o sjedobnykh i yadovytykh grybah Kryma: Ser. “Pryroda Kryma”. – Simferopol: Krym, 1966. – 70 s.
13. Chervona knyga Ukraini. Roslinnij svyt / Za red. Ya.P. Didukha. – K.: Globalkonsalting, 2009. – 900 s.
14. Ainsworth & Bisby’s Dictionary of the Fungi. Edition 9 / P.M. Kirk, P.F. Cannon, J.C. David and J.A. Stalpers. –Oxon, Wallingford: CAB International, 2001. – 655 p.
15. Datasheets of threatened mushrooms of Europe, candidates for listing in Appendix 1 of the Convention (document establ. by J.-P. Koune) // Convention on the conservation of Europ. wildlife and natur. habitats, Strasbourg, 2001. – 43 p.
16. European Red List of endangered macrofungi [on-line site]. — 2010. – Access mode: <http://www.wsl.ch/eccf/candlist-subtotals.xls>
17. The CABI Bibliography of Systematic Mycology, 2008. – Access mode.: <http://www.indexfungorum.org/Names/Names.asp>

**Sarkina I.S. New species of mykobiota inhabiting the nature reserve “Cape Martyan”:  
macromycetes**

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The article includes data of 23 new species of macromycetes in the State nature reserve “Cape Martyan”. They were obtained during the field collection in 2011-2014 years and treatment of the herbarium. 14 species of the given number are rare and protected, 10 species are presented for the first time in the Crimea Peninsula. There is an annotated list of new species. Generally by now 321 taxons of macromycetes of specific and intraspecific class are known for this natural area of preferential protection (120 ha).

**Key words:** *mykobiota, macromycetes, the State nature reserve “Cape Martyan”, monitoring.*