

LICHENS AND ALLIED FUNGI FROM THE ČEPKELIAI STATE NATURE RESERVE (SOUTHERN LITHUANIA)

Jurga MOTIEJŪNAITĖ

Nature Research Centre, Institute of Botany, Žaliųjų Ežerų Str. 49, LT-08406 Vilnius, Lithuania
 E-mail: jurga.motiejunaite@botanika.lt

Abstract

Motiejūnaitė J., 2015: Lichens and allied fungi from the Čepkeliai State Nature Reserve (southern Lithuania) [Čepkelių valstybinio rezervato (pietinė Lietuva) kerpės ir su jomis susiję grybai]. – Bot. Lith., 21(1): 3–12.

Results of inventory of lichen-forming, lichenicolous and allied saprobic fungi from the Čepkeliai State Nature Reserve are presented. From this largest in Lithuania mire complex, altogether 207 species (of these, 180 species of lichens, 22 lichenicolous and 5 non-lichenized saprobic fungi) are reported. One lichenized – *Fuscidea praeruptorum* and two lichenicolous species – *Sphaerellothecium cladoniae* and *Taeniolella cladinicola* are reported for the first time in Lithuania. Two lichenicolous fungi – *Endococcus tricolorans* and *Nectriopsis cariosae* are reported for the first time in the Baltic region. *Parmelia* and *Pseudevernia* are reported as new host genera for *Endococcus tricolorans*.

Keywords: lichenicolous fungi, lichens, Lithuania, protected areas, wetlands.

INTRODUCTION

Although a number of protected areas in Lithuania have been inventoried lichenologically (MOTIEJŪNAITĖ et al., 2012), the Čepkeliai State Nature Reserve, one of the major protected sites, has remained unstudied until present, whereas the neighbouring Dzūkija National Park has merited such research (MOTIEJŪNAITĖ, 1999). The only concise description of geography, vegetation and biodiversity of the Čepkeliai Reserve was published in the eighties of the 20th century (BALEVIČIUS, 1984); however, it included only a small review on macrofungi by URBONAS (1976), but no data on lichens. Some specimens from the Reserve were collected between 1989 and 2010, however, the data of only few have been published (KUKWA & MOTIEJŪNAITĖ, 2012; RAŠOMAVIČIUS, 2007).

The present study aims to inventory lichenized, lichenicolous and allied fungi in the Čepkeliai State Nature Reserve with special attention to distribution

of rare and vulnerable lichens (especially the Lithuanian Red Data Book (RDB) species).

MATERIALS AND METHODS

Most of the material was collected by the author of this paper in 2012–2014 from the whole territory of the Čepkeliai State Nature Reserve, all habitats and substrates were considered. Additionally, collections from the Reserve, which are deposited at the Herbarium BILAS, were checked. Lichens and non-lichenized fungi were identified following routine microscopic techniques; sterile corticolous lichens were identified employing TLC (methodology following ORANGE et al., 2001). Micrographs were taken using digital camera Nikon DS-Fi1 mounted on a Nikon SMZ 800 stereomicroscope and digital camera Nikon DS mounted on a Nikon Eclipse Ci light microscope. All voucher specimens of the study are deposited at the Herbarium BILAS.

INVESTIGATION AREA

The Čepkeliai State Nature Reserve is located in the southern part of Lithuania, Varėna administrative district (53°58'42" N, 24°31'18" E). The Reserve was established in 1975, though it had already been under protection since 1960, as the Botanical-Zoological Preserve. Total area of the present Reserve is 11227 ha (buffer zone – 1527 ha), more than half of it is occupied by raised bog. The purpose of the Reserve is conservation of the largest and one of the oldest raised bogs in Lithuania, wetland system with 21 lakes, wooded inland dunes at the edge of sandy plain (Dainava) and their animal and plant diversity. Most forests of the Reserve are mature dry pine stands of *Cladonia* and *Vaccinium vitis-idaea* type, overgrowing sandy inland dunes. Swampy black alder stands, spruce and mixed forests occupy western edge of the Reserve's territory. Mixed forests with old oaks are found in the south-eastern part of the Reserve and in the close-laying islands inside the raised bog.

The Čepkeliai State Nature Reserve is situated in the area that gets little anthropogenic influence from the surrounding territories. In the north and west, the Reserve borders with Dzūkija National Park, in the east – with the Ūla Landscape Reserve, in the south, along the River Katra, there is Lithuanian/EU border with Belarus and the Kotra Reserve from the side of that country. The Čepkeliai mire has *Natura 2000* status and was included in the list of sites protected under Ramsar Convention (BALEVIČIUS, 1984; BAŠKYTĖ et al., 2006).

RESULTS AND DISCUSSION

List of species

New to Lithuania species are typed in bold face, RDB and old-growth forest indicator species (following ANDERSSON et al., 2002, MOTIEJŪNAITĖ et al., 2004) are underlined, lichenicolous fungi are marked with #, non-lichenized saprobic fungi are marked with +. Nomenclature mainly follows NORDIN et al. (2011).

Absconditella delutula (Nyl.) Coppins & H.Kilias – on damp decaying wood in bog.

Absconditella lignicola Vězda & Pišút – on decaying wood of *Picea abies* at the bog edge.

Absconditella sphagnum Vězda & Poelt – on

dead *Sphagnum* spp. in an open bog.

Acrocordia gemmata (Ach.) A.Massal. – on trunks of *Populus tremula*.

Alyxoria varia (Pers.) Ertz & Tehler – on trunks of *Fraxinus excelsior*.

Anaptychia ciliaris (L.) Körb. – on trunks of *Fraxinus excelsior* and *Populus tremula*.

Arthonia byssacea (Weigel) Almq. – on trunks of *Fraxinus excelsior* and *Quercus robur*.

Arthonia ruana A.Massal. – on trunks of young *Fraxinus excelsior*, *Quercus robur* and *Sorbus aucuparia*, on branches of *Corylus avellana*.

Arthonia spadicea Leight. – on trunks of young *Quercus robur*, on branches of *Corylus avellana*.

#*Arthrorhaphis aeruginosa* R.Sant. & Tønsberg – on squamules of *Cladonia* spp.

Bacidia arceutina (Ach.) Arnold – on trunks of *Populus tremula*.

Bacidia rubella (Hoffm.) A.Massal. – on trunks of *Acer platanoides* and *Fraxinus excelsior*.

Bacidina delicata (Larbal. ex Leight.) V.Wirth & Vězda – on trunk of *Sorbus aucuparia*.

Bacidina sulphurella (Samp.) M.Hauck & V.Wirth – on branches of *Corylus avellana* and *Picea abies*.

Baeomyces rufus (Huds.) Rebent. – on trampled soil on a forest path.

#*Briancoppinsia cytospora* (Vouaux) Diederich, Ertz, Lawrey & Van den Boom – on thallus of *Parmelia saxatilis*.

Bryoria fuscescens (Gyeln.) Brodo & D.Hawksw. – on trunk of *Betula* sp.

Bryoria implexa (Hoffm.) Brodo & D.Hawksw. – on trunks of *Betula* spp.

Bryoria nadvornikiana (Gyeln.) Brodo & D.Hawksw. – on trunk of *Betula* sp.

Bryoria subcana (Nyl. ex Stizenb.) Brodo & D.Hawksw. – on trunks of *Betula* spp.

Buellia griseovirens (Turner & Borrer ex Sm.) Almb. – on trunks and branches of various deciduous trees.

Buellia schaeferi De Not. – on wood of *Pinus sylvestris*.

Calicium adpersum Pers. – on trunk of old *Quercus robur*.

Calicium glaucellum Ach. – on snags of *Picea abies* and *Pinus sylvestris*.

Candelaria pacifica M.Westb. & Arup – on fallen

twig of *Pinus sylvestris* at the edge of the bog.

Candelariella xanthostigma (Ach.) Lettau – on branches of *Populus tremula*.

Carbonicola anthracophila (Nyl.) Bendiksby & Timdal – on trunks of *Pinus sylvestris*, on charred stumps.

Carbonicola myrmecina (Ach.) Bendiksby & Timdal – on charred stumps in the bog.

Catillaria croatica Zahlbr. – on branches of *Corylus avellana*.

Cetraria aculeata (Schreb.) Fr. – on sandy soil in open areas.

Cetraria islandica (L.) Ach. – on soil in open areas and in pine stands.

Cetraria sepincola (Ehrh.) Ach. – on twigs of *Betula* spp. and *Malus sylvestris*.

Cetrelia monachorum (Zahlbr.) W.L.Culb. & C.F.Culb. – on trunks of *Fraxinus excelsior* and.

Cetrelia olivetorum (Nyl.) W.L.Culb. & C.F.Culb. – on fallen trunk of *Alnus glutinosa* and *Fraxinus excelsior*.

Chaenotheca brachypoda (Ach.) Tibell – on trunk of *Salix* sp.

Chaenotheca chlorella (Ach.) Müll. Arg. – on wood of *Picea abies* and *Quercus robur*.

Chaenotheca chrysocephala (Turner ex Ach.) Th.Fr. – on wood and trunks of *Alnus glutinosa*, *Picea abies* and *Pinus sylvestris*.

Chaenotheca ferruginea (Turner ex Sm.) Mig. – on wood and trunks of *Alnus glutinosa*, *Picea abies* and *Pinus sylvestris*.

Chaenotheca furfuracea (L.) Tibell – on roots of upended *Picea abies*.

Chaenotheca stemonea (Ach.) Müll.Arg. – on wood of snags, on trunks of *Picea abies*.

Chaenotheca trichialis (Ach.) Th.Fr. – on wood of snags, on trunk of old *Quercus robur*.

Chaenotheca xyloxena Nádv. – on snag of *Alnus glutinosa*.

#*Chaenothecopsis consociata* (Nádv.) A.F.W.Schmidt – on thalli of *Chaenotheca chrysocephala*.

Chrysothrix candelaris (L.) J.R. Laundon – on trunk of old *Quercus robur*.

Cladonia arbuscula (Wallr.) Flot. – on soil, on plant remains, on decayed wood.

Cladonia cenotea (Ach.) Schaer. – on soil and plant remains, on bases of *Betula* spp. trunks.

Cladonia chlorophaea (Flörke ex Sommerf.)

Spreng. – on soil, on decaying wood, on trunks of *Alnus glutinosa* and *Fraxinus excelsior*.

Cladonia coniocraea (Flörke) Spreng. – on trunks of various deciduous trees, on decaying wood.

Cladonia cornuta (L.) Hoffm. – on soil.

Cladonia crispata (Ach.) Flot. – on soil.

Cladonia deformis (L.) Hoffm. – on peat in the bog, on soil and plant remains, on decaying wood, on bases of *Betula* spp. trunks.

Cladonia digitata (L.) Hoffm. – on bases of *Betula* spp. and *Pinus sylvestris* trunks, on decaying wood.

Cladonia fimbriata (L.) Fr. – on bases of *Alnus glutinosa* trunks, on decaying wood, on soil and plant remains.

Cladonia floerkeana (Fr.) Flörke – on decaying wood.

Cladonia furcata (Huds.) Schrad. – on soil.

Cladonia gracilis ssp. *gracilis* (L.) Willd. – on soil, on decaying wood.

Cladonia gracilis ssp. *turbinata* (Ach.) Ahti – on soil, on decaying wood.

Cladonia grayi G.Merr. & Sandst. – on decaying wood, on plant remains, on trunks of *Betula* spp., *Picea abies* and *Pinus sylvestris*.

Cladonia incrassata Flörke – on peat in the bog.

Cladonia macilentata Hoffm. – on bases of *Betula* spp. trunks, on decaying wood, on peat in the bog.

Cladonia merochlorophaea Asahina – on plant remains, on peat in the bog.

Cladonia mitis Sandst. – on soil.

Cladonia norvegica Tønsberg & Holien – on moist decaying wood.

Cladonia novochlorophaea (Sipman) Brodo & Ahti – on soil, on upended *Picea abies*.

Cladonia ochrochlora Flörke – on decaying wood.

Cladonia phyllophora Ehrh. ex Hoffm. – on soil.

Cladonia pleurota (Flörke) Schaer. – on soil.

Cladonia pyxidata (L.) Hoffm. – on sandy soil.

Cladonia rangiferina (L.) Weber ex F.H.Wigg. – on soil and on peat in the bog.

Cladonia squamosa (Scop.) Hoffm. – on bases of *Alnus glutinosa* trunks and on plant remnants in mire.

Cladonia stygia (Fr.) Ahti – among mosses in the bog.

Cladonia subulata (L.) Weber ex F.H.Wigg. – on

soil and on plant remains.

Cladonia sulphurina (Michx.) Fr. – on peat in the bog.

Cladonia uncialis (L.) Nyl. ssp. *Uncialis* – on soil.

#*Clypeococcum cetrariae* Hafellner – on thalli of *Cetraria islandica*.

#*Clypeococcum hypocenomycis* D. Hawksw. – on thalli of *Hypocenomyce scalaris*.

Coenogonium pineti (Ach.) Lücking & Lumbsch – on trunks of *Alnus glutinosa*, *Betula* spp., *Picea abies* and *Pinus sylvestris*, on mosses overgrowing decaying wood.

#*Cornutispora lichenicola* D.Hawksw. & B.Sutton – on thalli of *Cetraria sepincola*.

#*Endococcus tricolorans* Alstrup – on thalli of *Parmelia sulcata*.

#*Epiclادonia sandstedei* (Zopf) D.Hawksw. – on thalli of *Cladonia* spp.

#*Epiclادonia stenospora* (Harm.) D.Hawksw. – on thallus of *Cladonia coniocraea*.

Evernia mesomorpha Nyl. – on trunk of *Betula* sp.

Evernia prunastri (L.) Ach. – on trunks and branches of various trees.

Fellhanera bouteillei (Desm.) Vězda – on twigs and needles of *Picea abies*.

Fellhanera subtilis (Vězda) Diederich & Sérus. – on twigs of *Vaccinium myrtillus*.

Fellhaneropsis myrtillicola (Erichsen) Sérus. & Coppins – on twigs of *Vaccinium myrtillus*.

***Fuscidea praeruptorum* (Du Rietz & H.Magn.) V.Wirth & Vězda** – on trunks of *Alnus glutinosa* and *Betula* spp.

Fuscidea pusilla Tønsberg – on trunks of *Betula* spp.

Graphis scripta (L.) Ach. (s. l.) – on trunks and branches of deciduous trees.

Hertelidea botryosa (Fr.) Printzen & Kantvilas – on charred stumps in the bog.

Hypocenomyce scalaris (Ach.) M.Choisy – on trunks and dead wood of *Betula* spp., *Picea abies* and *Pinus sylvestris*.

Hypogymnia farinacea Zopf – on trunks of *Betula* spp. and *Pinus sylvestris*.

Hypogymnia physodes (L.) Nyl. – on trunks and branches of various trees, on wood.

Hypogymnia tubulosa (Schaer.) Hav. – on trunks and branches of *Betula* spp., *Picea abies* and *Pinus*

sylvestris.

Hypotrachyna revoluta (Flörke) Hale – on trunks of old *Alnus glutinosa*.

Imshaugia aleurites (Ach.) S.L.F.Mey. – on trunks and branches of *Alnus glutinosa*, *Betula* spp., *Pinus sylvestris* and *Salix* sp., on wood.

Jamesiella anastomosans (P.James & Vězda) Lücking, Sérus. & Vězda – on wood of upended *Picea abies*.

Lecanora allophana Nyl. – on trunks and branches of *Populus tremula*.

Lecanora carpinea (L.) Vain. – on trunks and branches of *Populus tremula* and *Sorbus aucuparia*.

Lecanora chlarotera Nyl. – on trunks of *Populus tremula*.

Lecanora compallens Herk & Aptroot – on branches of *Corylus avellana*, on trunks of *Acer platanoides*.

Lecanora conizaeoides Nyl. ex Cromb. – on twigs of *Betula* sp.

Lecanora expallens Ach. – on trunks of *Fraxinus excelsior*.

Lecanora farinaria Borrer – on trunk of *Alnus glutinosa*.

Lecanora norvegica Tønsberg – on trunk of *Alnus glutinosa*.

Lecanora pulicaris (Pers.) Ach. – on twigs of *Betula* spp. and *Picea abies*, on trunks of *Betula* spp., on fallen cones of *Pinus sylvestris*.

Lecanora saligna (Schrad.) Zahlbr. – on branches of *Malus sylvestris*.

Lecanora symmetrica (Ach.) Ach. – on fallen cones of *Pinus sylvestris*.

Lecanora thysanophora R.C. Harris – on trunks of *Acer platanoides*.

Lecanora varia (Hoffm.) Ach. – on trunks and twigs of *Betula* spp., on timber fence, on fallen cones of *Pinus sylvestris*.

Lecidea nylanderii (Anzi) Th.Fr. – on trunks of *Alnus glutinosa*, *Betula* spp. and *Pinus sylvestris*, on branches of *Picea abies*.

Lecidella elaeochroma (Ach.) M.Choisy – on trunks and branches of *Populus tremula* and *Sorbus aucuparia*.

Lecidella euphorea (Flörke) Hertel – on branches of *Frangula alnus*.

Lepraria elobata Tønsberg – on trunks of *Alnus glutinosa* and *Betula* spp.

Lepraria incana (L.) Ach. – on trunks of various

trees, on wood.

Lepraria jackii Tønsberg – on trunks of *Alnus glutinosa*, *Betula* spp., *Picea abies* and *Pinus sylvestris*.

Lepraria lobificans Nyl. – on trunks of various deciduous trees, on decaying wood of a deciduous tree.

+*Leptorhaphis epidermidis* (Ach.) Th.Fr. – on trunks of *Betula* spp.

#*Lichenocodium erodens* M.S.Christ. & D.Hawksw. – on thalli of *Cladonia macilenta*, *Hypogymnia physodes*, *Imshaugia aleurites*, *Parmelia sulcata*, *Parmeliopsis ambigua*, *Pseudevernia furfuracea*.

#*Lichenocodium lecanorae* (Jaap) D.Hawksw. – on thallus of *Platismatia glauca*.

#*Lichenocodium pyxidatae* (Oudem.) Petr. & Syd. – on squamules of *Cladonia* sp.

#*Lichenocodium usneae* (Anzi) D.Hawksw. – on thalli of *Evernia prunastri*, *Hypogymnia physodes*, *Imshaugia aleurites* and *Parmelia sulcata*.

Lichenomphalia umbellifera (L.) Redhead, Lutzoni, Moncalvo & Vilgalys – on moist and soft decayed wood, on plant remains.

Lobaria pulmonaria (L.) Hoffm. – on trunks of *Fraxinus excelsior* and *Quercus robur*.

Loxospora elatina (Ach.) A.Massal. – on trunks of *Alnus glutinosa*, *Betula* spp. and *Picea abies*.

Melanelixia glabrata (Lamy) Sandler & Arup – on trunks and branches of various deciduous trees.

Melanelixia subaurifera (Nyl.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch – on trunks and branches of deciduous trees, on twigs of *Picea abies*.

Melanohalea exasperatula (Nyl.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch – on twigs and branches of *Malus* spp. and *Picea abies*.

Menegazzia terebrata (Hoffm.) A.Massal. – on trunk of *Alnus glutinosa*.

Micarea denigrata (Fr.) Hedl. – on decaying wood.

Micarea melaena (Nyl.) Hedl. – on decaying wood, on bases of *Betula* spp. trunks, on wood of burnt snag of *Quercus robur*.

Micarea micrococca (Körb.) Gams ex Coppins – on branches of *Picea abies*, on decaying wood.

Micarea misella (Nyl.) Hedl. – on decaying

wood.

Micarea peliocarpa (Anzi) Coppins & R.Sant. – on trunk of *Alnus glutinosa*.

Micarea prasina Fr. (s. str.) – on decaying wood, on trunks of *Betula* spp.

#*Monodictys epilepraria* Kukwa & Diederich – on thallus of *Lepraria* sp.

+*Mycocalicium subtile* (Pers.) Szatala – on wood and timber.

+*Mycomicrotheliawallrothii* (Hepp) D.Hawksw. – on trunks of *Betula* spp.

#*Nectriopsis cariosae* Brackel & D.G.Zimmermann – on thalli of *Cladonia coniocraea* and *C. chlorophaea* s. l.

Normandina acroglypta (Norman) Aptroot – on epiphytic bryophytes growing on trunks of *Populus tremula*.

Ochrolechia alboflavescens (Wulfen) Zahlbr. – on trunk of *Betula* sp.

Ochrolechia arborea (Kreyer) Almb. – on trunk of *Alnus glutinosa*.

Ochrolechia microstictoides Räsänen – on trunks of *Alnus glutinosa* and *Betula* spp., on decaying wood.

Opegrapha rufescens Pers. – on trunks of *Fraxinus excelsior*.

Parmelia saxatilis (L.) Ach. – on trunks of *Alnus glutinosa* and *Betula* spp.

Parmelia submontana Nád. ex Hale – on branches of *Salix* sp. at a mire edge.

Parmelia sulcata Taylor – on trunks and branches of various trees, on decaying wood.

Parmeliopsis ambigua (Wulfen) Nyl. – on trunks of *Alnus glutinosa* and *Pinus sylvestris*, on decaying wood.

Peltigera canina (L.) Willd. – on soil.

Peltigera malacea (Ach.) Funck – on soil.

Peltigera polydactylon (Neck.) Hoffm. – on bases of *Populus tremula* trunks.

Peltigera praetextata (Flörke ex Sommerf.) Zopf – on trunks of *Fraxinus excelsior* and *Populus tremula*, on decaying upended trees.

Peltigera rufescens (Weiss) Humb. – on soil.

Pertusaria albescens (Huds.) M.Choisy & Werner – on trunks of *Populus tremula* and *Quercus robur*.

Pertusaria amara (Ach.) Nyl. – on trunks of various deciduous trees.

Pertusaria coccodes (Ach.) Nyl. – on trunks of

Betula spp., *Populus tremula* and *Quercus robur*.

Pertusaria coronata (Ach.) Th.Fr. – on trunk of *Alnus glutinosa*.

Pertusaria leioplaca DC. – on trunks of *Fraxinus excelsior*.

Pertusaria pupillaris (Nyl.) Th.Fr. – on branches of *Corylus avellana*.

Phaeophyscia orbicularis (Neck.) Moberg – on trunks and branches of *Populus tremula*.

#*Phaeopyxis punctum* (A.Massal.) Rambold, Triebel & Coppins – on squamules of *Cladonia* sp.

Phlyctis argena (Spreng.) Flot. – on trunks and branches of various deciduous trees.

Physcia adscendens (Fr.) H.Olivier – on branches and twigs of *Betula* spp. and *Populus tremula*, on dead twigs of *Juniperus commune*.

Physcia stellaris (L.) Nyl. – on branches of *Malus sylvestris* and *Populus tremula*.

Physcia tenella (Scop.) DC. – on trunks and branches of various deciduous trees.

Physconia distorta (With.) J.R.Laundon – on trunks of *Populus tremula*.

Physconia enteroxantha (Nyl.) Poelt – on trunks of *Acer platanoides* and *Populus tremula*, on branches of *Populus tremula*.

Physconia perisidiosa (Erichsen) Moberg – on trunks of *Acer platanoides* and *Quercus robur*.

Placynthiella icmalea (Ach.) Coppins & P.James – on decaying wood and plant remains, on peat, on trunks of *Betula* spp., on roots of upended *Picea abies*.

Placynthiella oligotropha (J.R.Laundon) Coppins & P.James – on plant remains in burnt area.

Placynthiella uliginosa (Schrad.) Coppins & P.James – on plant remains, on peat, on sandy soil.

Platismatia glauca (L.) W.L.Culb. & C.F.Culb. – on trunks and branches of various trees, on wood.

Pseudevernia furfuracea (L.) Zopf – on trunks of *Betula* spp. and *Pinus sylvestris*, on branches of *Picea abies* and *Tilia cordata*.

Pycnora sorophora (Vain.) Hafellner – on trunks and on wood of *Pinus sylvestris*.

Pycnothelia papillaria (Ehrh.) L.M.Dufour – on trampled sandy soil.

Pyrenula nitidella (Flörke ex Schaer.) Müll. Arg. – on trunks of *Fraxinus excelsior* and *Populus tremula*.

Ramalina farinacea (L.) Ach. – on trunks and

branches of deciduous trees.

Ramalina fastigiata (Pers.) Ach. – on trunks of *Populus tremula*.

Ramalina fraxinea (L.) Ach. – on trunk of *Acer platanoides*.

Reichlingia leopoldii Diederich & Scheid. – on trunks of old *Fraxinus excelsior* and *Quercus robur*.

Ropalospora viridis (Tønsberg) Tønsberg – on trunks of *Alnus glutinosa*, *Betula* spp., *Picea abies* and *Salix* spp.

+*Sarea resinae* (Fr.:Fr.) Kuntze – on resinous exudate of *Pinus sylvestris* (anamorph).

Scoliciosporum chlorococcum (Graewe ex Stenh.) Vězda – on twigs of *Betula* spp.

***Sphaerellothecium cladoniae* (Alstrup & Zhurb.) Hafellner** – on thallus of *Cladonia macilenta*.

+*Stenocybe pullatula* (Ach.) Stein – on dead twigs of *Alnus glutinosa*.

Strangospora moriformis (Ach.) Stein – on decaying stump and on a wooden fence.

#*Taeniolella beschiana* Diederich – on squamules of *Cladonia novochlorophaea*.

#***Taeniolella cladinicola* Alstrup** – on thallus of *Cladonia arbuscula*.

Thelocarpon intermediellum Nyl. – on decaying wood.

Trapelia corticola Coppins & P.James – on decaying wood.

Trapeliopsis flexuosa (Fr.) Coppins & P.James – on decaying wood, on trunks of *Betula* spp.

Trapeliopsis granulosa (Hoffm.) Lumbsch – on soil and plant remains, on decaying wood.

Trapeliopsis percrenata (Nyl.) Gotth. Schneid. – on decaying wood.

Trapeliopsis pseudogranulosa Coppins & P.James – on decaying wood.

#*Trichonectria anisospora* (Lowen) Van den Boom & Diederich – on thalli of *Hypogymnia physodes*.

#*Trichonectria rubefaciens* (Ellis & Everh.) Diederich & Schroers – on thalli of *Parmelia sulcata*.

Tuckermanopsis chlorophylla (Willd.) Hale – on trunks of *Betula* spp., on branches of *Picea abies*, on snags of *Pinus sylvestris*.

Usnea dasypoga (Ach.) Nyl. – on trunks of *Betula* spp.

Usnea hirta (L.) Weber ex F.H. Wigg. – on trunks of *Betula* spp. and *Pinus sylvestris*, on branches of

Tilia cordata, on snags of *Pinus sylvestris*.

Usnea lapponica Vain. – on branch of *Pyrus commune*.

Usnea subfloridana Stirt. – on trunks of *Betula* spp., on branches of *Corylus avellana*, *Picea abies*, *Salix* spp.

Usnea substerilis Motyka – on branch of *Pyrus commune*.

Violella fucata (Stirt.) T.Sprub. – on trunks of *Betula* spp.

#*Vouauxiella lichenicola* (Linds.) Petr. & Syd. – on apothecia of *Lecanora pulicaris*.

Vulpicida pinastri (Scop.) J.-E.Mattsson & M.J.Lai – on decaying wood, on trunks of *Pinus sylvestris*, on roots of *Pinus sylvestris*, on twigs of *Picea abies* and *Vaccinium uliginosum*.

Xanthoria parietina (L.) Th.Fr. – on trunks and branches of deciduous trees.

Xanthoria polycarpa (Hoffm.) Th.Fr. ex Rieber – on twigs and branches of *Betula* spp., *Malus sylvestris* and *Salix* spp., on dead twigs of *Juniperus commune*.

Xylopsora friesii (Ach.) Bendiksby & Timdal – on stumps, snags and logs of *Pinus sylvestris*.

Zwackhia viridis (Ach.) Poetsch & Schied. – on trunk of *Quercus robur*.

Characteristics of the lichen flora

Altogether 207 species (of these, 180 species of lichens, 22 lichenicolous and 5 non-lichenized saprobic fungi) were found during the study. Among these, seven species are included in the RDB of Lithuania: *Calicium adpersum*, *Cetrelia olivetorum* s. l. (the complex is treated as one species in the RDB, for details see KUKWA & MOTIEJŪNAITĖ, 2012), *Chaenotheca chlorella*, *Evernia mesomorpha*, *Hypotrachyna revoluta*, *Lobaria pulmonaria* and *Menegazzia terebrata*. Besides, twenty old-growth forest indicators were recorded in the Reserve. General species number recorded in the Reserve is high, as compared to the species richness and RDB/old-growth forest indicator ratios in protected areas in Lithuania (MOTIEJŪNAITĖ, 2011). Also a number of lichens that are rare or very rare in Lithuania were recorded, such as *Absconditella delutula*, *A. sphagnum*, *Carbonicola myrmecina*, *Fellhaneropsis myrtillicola*, *Ochrolechia alboflavescens*, *Pertusaria coronata*, *Pycnothelia papillaria*, *Trapezia corticola*, *Zwackhia viridis*. The number of new

for the country records was also high – one lichenized and four lichenicolous species, of the latter two are new for the Baltic region.

The composition of lichenized, lichenicolous and allied mycobiota of the Čepkeliai State Nature Reserve reflects the diversity of habitats and substrata of the area. A large number of lichens are typical of oligotrophic pine forests, such as common *Cladonia rangiferina*, *Lecanora conizaeoides*, *L. pulicaris*, *Usnea hrta*, *Vulpicida pinastri* or rare, such as *Carbonicola myrmecina*, *Lecanora norvegica*, *Usnea lapponica*, etc. Wetland species are represented both by those that in Lithuania are confined to oligotrophic peat bogs or boggy pine forests, such as *Absconditella sphagnum*, *Cladonia incrassata*, *C. stygia*, *Hertelidea botryosa* and by those usually found in more fertile moist deciduous and mixed stands, i.e. *Jamesiella anastomosans*, *Lichenomphalia umbellifera*. However, a considerable number of lichens and allied fungi of the Reserve are connected to broad-leaved stands, especially hardwoods. Most of the recorded RDB and old-growth forest indicator species were found in these stand types.

Notes on the newly recorded species

Fuscidea praeruptorum is a lichen of a subatlantic pattern of distribution. Usually it grows on siliceous rocks in shady situations, but is known also from wood and bark, where it becomes less dependent on shade (TØNSBERG, 1992). It is widely distributed in Europe and is also known in neighbouring north-eastern Poland (CIEŚLIŃSKI, 2003) and Estonia (RANDLANE & SAAG, 2004), but is uncommon in both countries.

Endococcus tricolorans (Fig. 1) was, until recently, known from a few collections in Denmark (ALSTRUP, 1993; CHRISTENSEN et al., 1995), however, recently it was found also in Russia (ZHURBENKO & VERSHININA, 2014). In Denmark, the fungus was found on *Platismatia glauca*, in Russia – on *Nephromopsis komarovii* and some discrepancies were noted between the characters described in the species protologue (ALSTRUP, 1993) and the Russian specimen, namely in ascus length, ascospore colour and wall ornamentation (ZHURBENKO & VERSHININA, 2014). The Čepkeliai specimens were collected from new hosts – *Parmelia sulcata* and *Pseudevernia furfuracea*. Both hosts showed same infection pattern as was de-

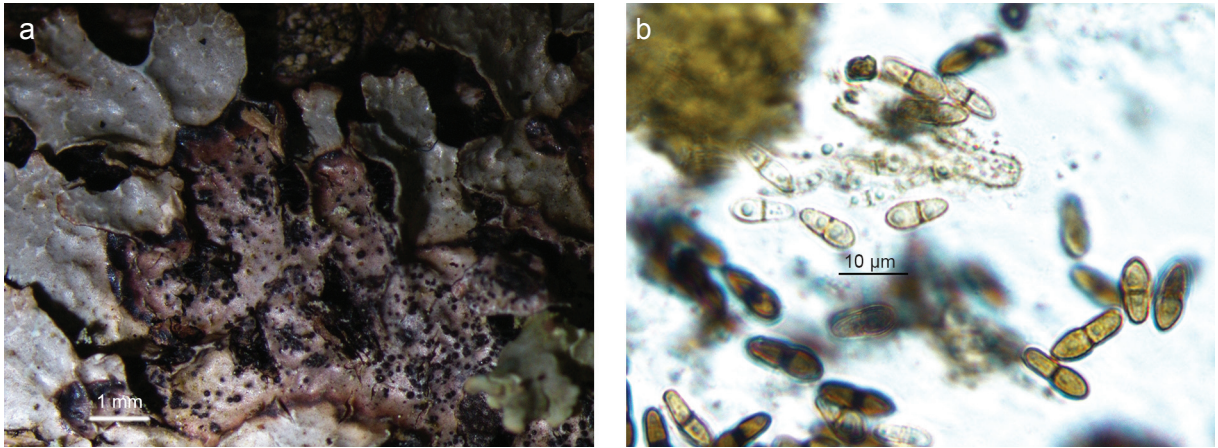


Fig. 1. *Endococcus tricolorans*: a) characteristic infection area on thallus of *Parmelia sulcata*; b) ascospores.

scribed in the protologue (ALSTRUP, 1993). Notably, in Lithuanian specimens asci measurements were more similar to Danish than to Russian specimens: (36–)40–50(56) \times (9–)11–12(–14) μm ($n = 15$) (on *Parmelia*) and 42–44(–47) \times 10–11(–12) μm ($n = 8$) (on *Pseudevernia*). Ascospore measurements fall into the ranges given in both references: (9.5–)10–11(–13) \times (3–)3.5–4(–4.5) μm (on *Parmelia*) and (9–10)(–12) \times (3.5–)4–4.5(–5) μm (on *Pseudevernia*) (both $n = 20$). Spore and exciple colour were as given in ZHURBENKO & VERSHININA (2014), though in Lithuanian specimens all colour range from colourless to dark brown (as in the protologue) was seen (Fig. 1b). Spore wall ornamentation and halo as noted by ZHURBENKO & VERSHININA (2014) and not seen by ALSTRUP (1993) was observed in Lithuanian specimens, too, but only in the young colourless or light brown spores. Walls of dark brown spores were smooth.

Nectriopsis cariosae (Fig. 2) is a recently described species known so far only from type locality in Germany and is characterized by superficial orange perithecia with peridial walls collapsing when dry, asci 45–50(–75) \times 6–8 μm and ascospores (9)9.7–12.3(–15) \times (3.5–)3.7–4.4(–5) μm (BRACKEL & ZIMMERMANN, 2012, p. 232). All characteristics of our specimen fell into the description in the protologue.

Sphaerellothecium cladoniae is apparently common and widely distributed in the northern hemisphere (ZHURBENKO & ALSTRUP, 2004) and also known from the southern hemisphere (FLAKUS et al., 2008).



Fig. 2. *Nectriopsis cariosae* on squamules of *Cladonia chlorophaea* s. l.: dry collapsed ascomata on the upper part of the image, fresh ascomata on the lower part.

In the eastern Baltic region it is known from Estonia (SUIJA et al., 2005).

Taeniolella cladinicola is found on species of *Cladonia*, subgenus *Cladina*. *Taeniolella beschiana* can inhabit same hosts and is more commonly reported than *T. cladinicola*, but differs from the latter by its verrucose conidia, coarser conidiophores that give the colonies bristly appearance (instead of velvety in *T. cladinicola*). *Taeniolella cladinicola* is rather rarely recorded: it is known from Austria (HAFELLNER et al., 2004), Czech Republic (KOCOURKOVÁ, 2000), Estonia (SUIJA, 2005), Denmark (ALSTRUP, 1993), Germany (BRACKEL & FEUERER, 2007) and UK (WOODS & COPPINS, 2012).

ACKNOWLEDGEMENTS

The author expresses her sincere gratitude to Dr Mindaugas Lapelė and Dr Onutė Grigaitė (Marcinkonys) for showing lichen-rich habitats and for hospitality while working at the Reserve and to colleague mycologist Dr Reda Iršėnaitė (Vilnius) for being good and helpful company during the field work. Sincere thanks are addressed to two anonymous reviewers for their comments that helped to improve the MS. The species inventory was financed by the Directorate of Dzūkija National Park and the Čepkeliai State Nature Reserve. Laboratory work was supported by the Open Access to research infrastructure of the Nature Research Centre under Lithuanian open access network initiative.

REFERENCES

- ALSTRUP V., 1993: Notes on some lichenicolous fungi from Denmark. – *Graphis Scripta*, 5(1): 60–64.
- ANDERSSON L., KRIUKELIS R., ČIUPLYS R. (eds), 2002: Inventory of woodland key habitats. Methodology. Forest Department, Ministry of Environment, Lithuania. County Forestry Board, Östra Götaland, Sweden. – Vilnius–Linköping.
- BALEVIČIUS K. (ed.), 1984: Čepkelių rezervatas. – Vilnius.
- BAŠKYTĖ R., BEZARAS V., KAVALIAUSKAS P., KLIMAVIČIUS A., RAŠČIUS G., 2006: Protected areas in Lithuania. – Kaunas.
- BRACKEL W. VON, FEUERER T., 2007: Inventarisation von Flechten in Kiefern-Naturwaldreservaten. Bericht 2007. Institut für Vegetationskunde und Landschaftsecology. http://www.ivl-web.de/docs/Bericht_2007_Flechten_Kiefern_NWR.pdf (30 September 2014).
- BRACKEL W. VON, ZIMMERMANN D.G., 2012: Eine neue *Nectriopsis*-Art auf *Cladonia* aus Nordrhein-Westfalen. – *Herzogia*. 25: 231–234.
- CHRISTENSEN S.N., ALSTRUP V., SVANE S., 1995: Floristic notes from SW Denmark. – *Graphis Scripta*, 7: 87–89.
- CIEŚLIŃSKI S., 2003: Atlas rozmieszczenia porostów (Lichenes) w Polsce Północno-Wschodniej. – *Phytocoenosis* 15 (N.S.), Supplementum Cartographiae Geobotanicae, 15: 1–425.
- FLAKUS A., AHTI T., KUKWA M., WILK K., 2008: New and interesting records of *Cladonia* and their lichenicolous fungi from the Andean cloud forest in Bolivia. – *Annales Botanici Fennici*, 45: 448–454.
- HAFELLNER J., KOCOURKOVÁ J., OBERMAYER W., 2004: Records of lichenicolous fungi from the northern Schladminger Tauern (Eastern Alps, Austria, Styria). – *Herzogia*, 17: 59–66.
- KOCOURKOVÁ J., 2000: Lichenicolous fungi of the Czech Republic (the first commented checklist). – *Sborník Národního Musea v Praze, Rada B*, 55(3–4): 59–169.
- KUKWA M., MOTIEJŪNAITĖ J., 2012: Revision of the lichen genera *Cetrelia* and *Punctelia* (Lecanorales, Ascomycota) in Lithuania with implications for their conservation. – *Herzogia*, 25: 5–14.
- MOTIEJŪNAITĖ J., 1999: Dzūkijos Nacionalinio parko kerpės ir su jomis susiję grybai. – *Botanica Lithuanica*, 5(2): 13–153.
- MOTIEJŪNAITĖ J., 2011: Lichens and allied fungi from Kamanos State Nature Reserve (northern Lithuania). – *Botanica Lithuanica*, 17(2–3): 109–116.
- MOTIEJŪNAITĖ J., CZYZEWSKA K., CIEŚLIŃSKI S., 2004: Lichens – indicators of old-growth forests in biocenters of Lithuania and NE Poland. – *Botanica Lithuanica*, 10: 59–74.
- MOTIEJŪNAITĖ J., BERGLUND T., CZARNOTA P., HIMELBRANT D., HÖGNABBA F., KONOREVA L.A., KORCHIKOV E.S., KUBIAK D., KUKWA M., KUZNETSOVA E., LEPPIK E., LÖHMUS P., PRIGODINA LUKOŠIENĖ I., PYKĀLĀ J., STONČIUS D., STEPANCHIKOVA I., SUIJA A., THELL A., TSURYKAU A., WESTBERG M., 2012: Lichens, lichenicolous and allied fungi found in Asveja Regional Park (Lithuania). – *Botanica Lithuanica*, 18(2): 85–100.
- NORDIN A., MOBERG R., TØNSBERG T., VITIKAINEN O., DALSAËTT Å., MYRDAL M., SNITTING D., EKMAN S., 2011. Santesson's checklist of Fennoscandian lichen-forming and lichenicolous fungi. Ver. April 29, 2011 – <http://130.238.83.220/santesson/home.php> (30 September 2014).
- ORANGE A., JAMES P.W., WHITE F.J., 2001: Microchemical methods for the identification of lichens. – London.
- RANDLANE T., SAAG A. (eds), 2004: Eesti pisisamblikud. – Tartu.
- RAŠOMAVIČIUS V. (red.), 2007: Lietuvos raudonoji knyga. – Vilnius.
- SUIJA A., 2005: Lichenicolous fungi and lichens in

- Estonia II: Basidiomycota and conidial fungi. – Nova Hedwigia 80(3–4): 349–365.
- SUIJA A., NOMM M., BOCH S., 2005: New Estonian records. Lichens and lichenicolous fungi. – Folia Cryptogamica Estonica, 41: 135–136.
- TØNSBERG T., 1992: The sorediate and isidiate, corticolous, crustose lichens in Norway. – Sommerfeltia, 14: 1–331.
- URBONAS V., 1976: Grybų flora. – In: BALEVIČIUS K. (ed.), Čepkelių rezervatas: 78–81. – Vilnius.
- WOODS R.G., COPPINS B.J., 2012: A conservation evaluation of British lichens and lichenicolous fungi. Species status 13. – Peterborough.
- ZHURBENKO M.P., ALSTRUP V., 2004: Lichenicolous fungi on *Cladonia* mainly from the Arctic. – Symbolae Botanicae Upsaliensis, 34(1): 477–499.
- ZHURBENKO M.P., VERSHININA S.E., 2014: *Opegrapha bryoriae* sp. nov. and other lichenicolous fungi from Asian Russia. – Herzogia, 27: 93–109.

ČEPKELIŲ VALSTYBINIO REZERVATO (PIETŲ LIETUVA) KERPĖS IR SU JOMIS SUSIJĘ GRYBAI

Jurga MOTIEJŪNAITĖ

Santrauka

Straipsnyje pateikiami lichenizuotų, lichenofilinių ir jiems artimų saprotrofinių grybų inventorizacijos Čepkelių valstybiniame rezervate duomenys. Iš viso rezervato teritorijoje aptikta 207 rūšys (iš jų 180 rūšių kerpės, 22 rūšių lichenofiliniai ir 5 rūšių nelichenizuoti saprotrofiniai, su kerpėmis susiję grybai). Viena kerpių rūšis – *Fuscidea praerupto-*

rum ir du lichenofiliniai grybai – *Sphaerellothecium cladoniae* ir *Taeniolella cladinicola* aptikti pirmą kartą Lietuvoje. Du lichenofiliniai grybai – *Endococcus tricolorans* ir *Nectriopsis cariosae* rasti pirmą kartą Baltijos regione. *Parmelia* ir *Pseudevernia* pirmą kartą nustatytos kaip šeimininkai grybui *Endococcus tricolorans*.