

Notes on rare and protected macromycete species of natural peatlands in Lithuania

REDA IRŠENAITĖ¹, ERNESTAS KUTORGA², SIGITA SPRAINAITYTĖ³, ONUTĖ GRIGAITĖ⁴

¹Nature Research Centre, Institute of Botany, Vilnius, Lithuania

²Vilnius University, Department of Botany and Genetics, Vilnius, Lithuania

³Kamanos State Strict Nature Reserve, Akmenė, Akmenė distr., Lithuania

⁴Čepkeliai State Strict Nature Reserve, Merkinė, Varėna distr., Lithuania

Introduction

Fungi are important structural and functional elements of peatlands ecosystems. As decomposer organisms, mycorrhizal symbionts and parasites they directly or indirectly influence the formation and functioning of plant communities. They can also be indicators of changes occurring in the natural environment. Peat extraction has led to significant – often still ongoing – loss of peatlands in Europe. Consequently, European populations of rare peatland fungi have become extremely small. In addition, antropogenic nitrogen deposition recently have been recognised as threat to nutritional poor peatlands.

Peatlands are valuable habitats of European significance (RAŠOMAVIČIUS, 2001: habitats 7110, 7140, 7150, 7160, 7210, 7230, 91D0, 9080). About one third of threatened habitats in Lithuania are peatlands. They bear very specific macromycete communities which have been declining since the middle of 20th century.

Little is known about mycological diversity in these important ecosystems in Lithuania. Only few mycological studies (e.g., URBONAS, 1984; URBONAS & JARMALAVIČIENĖ, 2001; KUTORGA, 2002; IRŠENAITĖ et al, 2012; IRŠENAITĖ, 2014) were carried out in natural peatlands.

The aim of this study was to present data on distribution and ecology of rare and protected macromycetes occurring in natural peatlands in Lithuania.

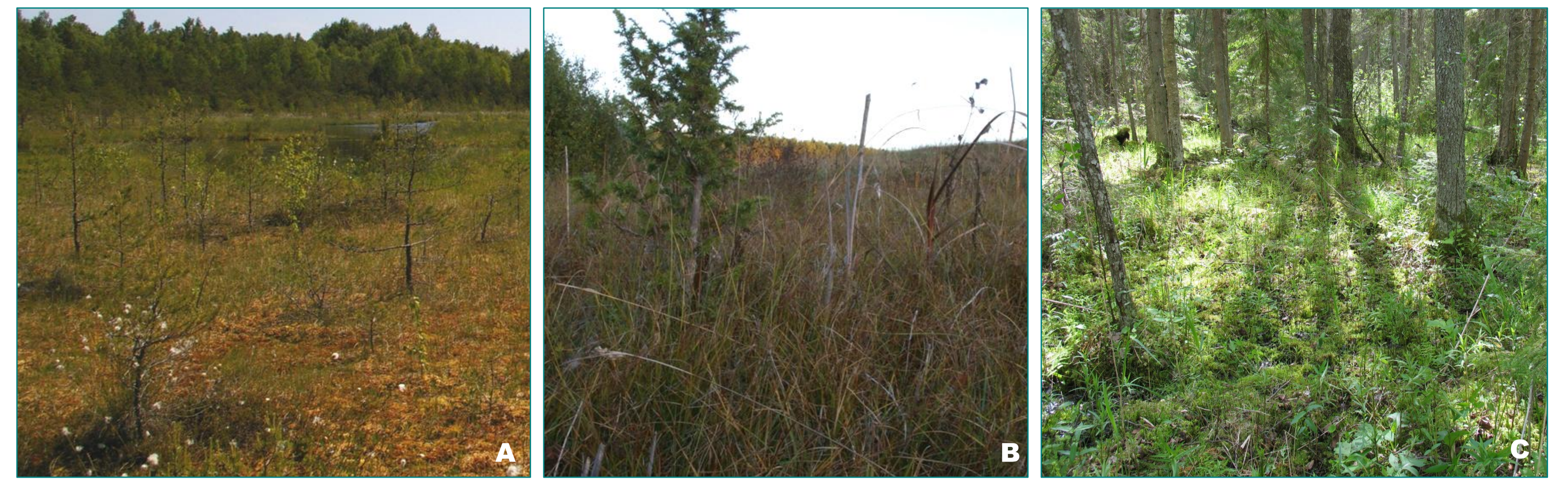


Fig. 1. Study habitats: bogs (A), fens (B), and swamp forests (C).

Material and methods

Data about distribution of rare and protected macromycetes were collected during research done in the major protected areas of Lithuania: Biosphere Reserve Žuvintas, Čepkeliai, Kamanos, and Viešvilė Strict Nature Reserves, as well in several national and regional parks. Species selected for this presentation are associated with peat accumulating wetlands, such as bogs, fens and swamp forests (Fig.1).

Results and conclusions

Notes on five ascomycete (*Geoglossum sphagnophilum*, *Mitrla paludosa*, *Monilinia oxycocci*, *Pseudoplectania sphagnophila*, *Trichoglossum hirsutum*) and three basidiomycete (*Bovista paludosa*, *Clavaria sphagnicola*, *Suillus flavidus*) species of natural peatlands in Lithuania are presented here. Most of them grow among sphagnum mosses as saprobes, some of them are ectomycorrhizal fungi associated with Scots pine (*Pinus sylvestris*), others are parasites on ericoid (*Ericaceae*) plants. Analysis of 61 fungal specimens preserved at herbaria BILAS and WI shows that the higher mentioned species were mainly collected from three protected territories: Čepkeliai (6 species; 10 records), Kamanos (6; 20) and Viešvilė (4; 5) State Strict Nature Reserves, in which bogs are a key habitat of nature conservation (Fig. 2, 3).



Bovista paludosa Lév.

Pelkinė vilktabokė

First recorded in Lithuania in 1975 (Telšiai district), second locality detected in 2013 (Varėna distr.). Widely distributed in Europe in montane and boreal regions, but rare. Saprobe, grows among mosses (e.g. *Scopidium cossoni*, *Paludella squarrosa*) in calcareous fens. Fruiting period is summer and autumn.



Suillus flavidus (Fr.) J. Presl

Pelkinis kazlėkas

First record in 1960, now known from 15 localities from 9 different administrative districts. Widespread in Europe boreal and alpine regions, but rather rare and restricted by its habitat. Ectomycorrhizal species associated with two-needles pines (*Pinus mugo*, *P. sylvestris*) restricted to bogs with sphagnum. Fruiting period is summer and autumn.



Clavaria sphagnicola Boud.

Kimininis žagarūnas

First recorded in 2006 (Zarasai distr.), second locality detected in Čepkeliai Strict Nature Reserve in 2012 (Varėna distr.). Widely distributed in Europe and Greenland and restricted to bogs. Probably associated with ericoid forming mycorrhizal, but also observed growing attached to living sphagnum shoots. Fruiting period is summer and autumn.

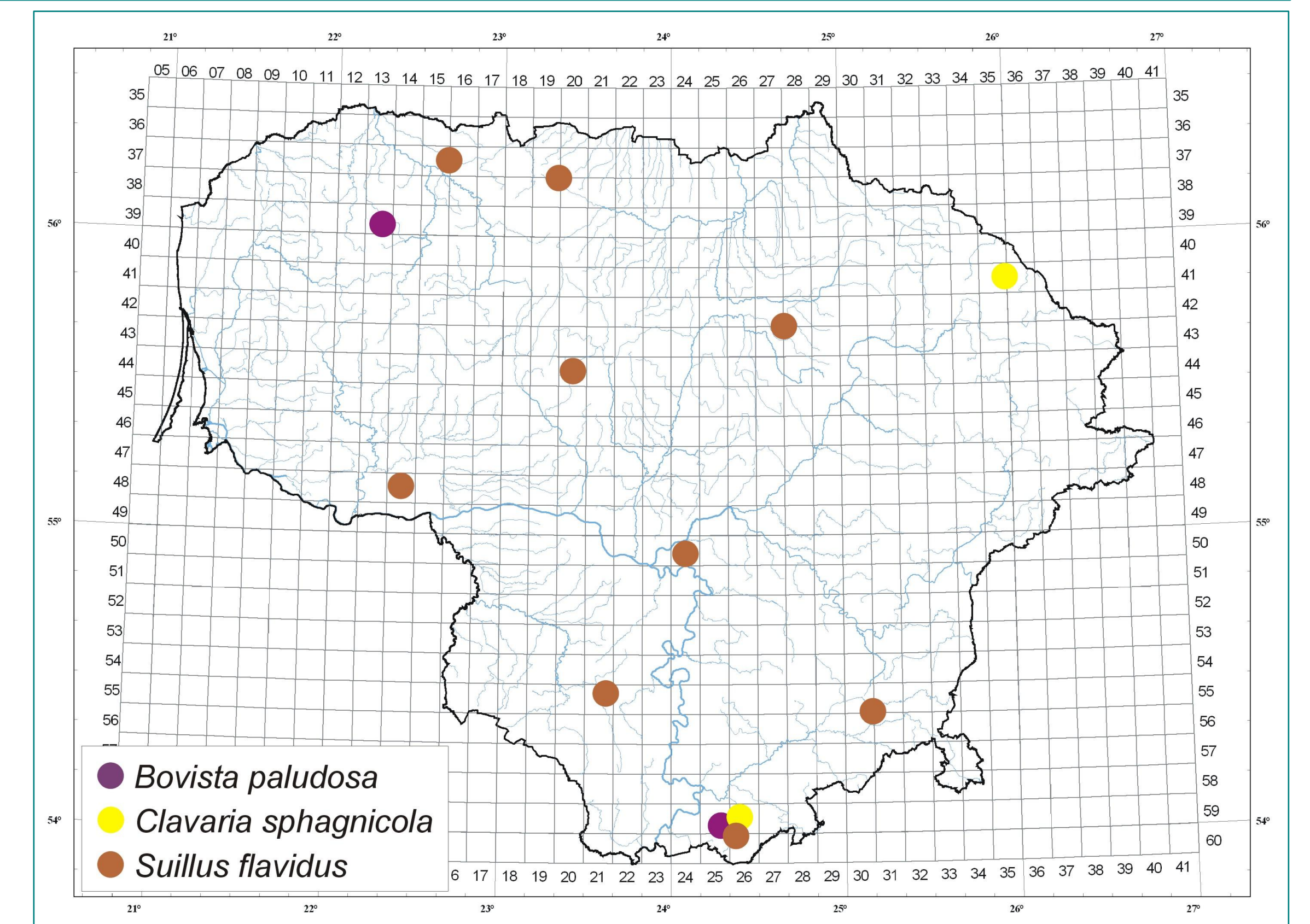


Fig. 2. Distribution of basidiomycete species

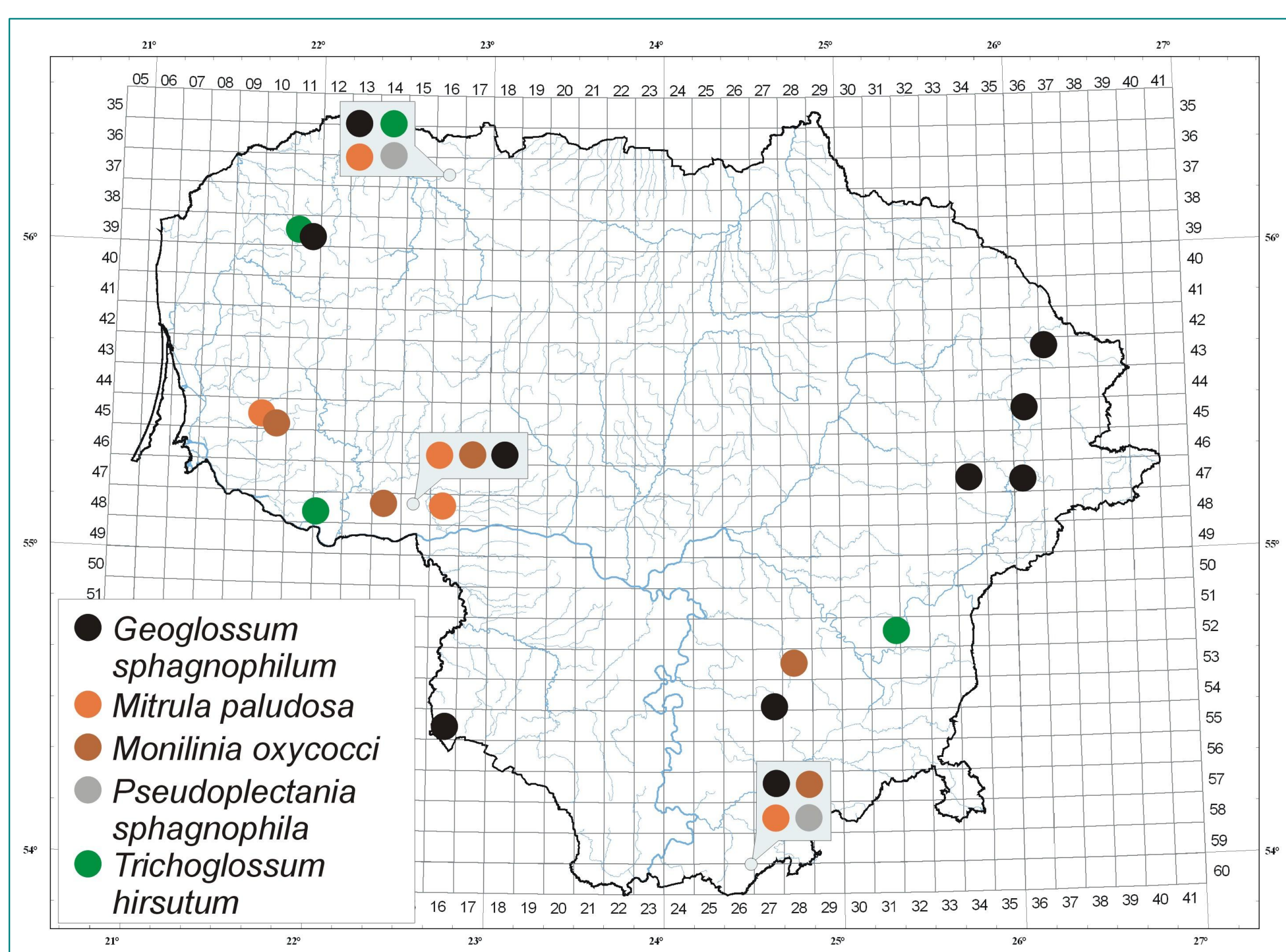


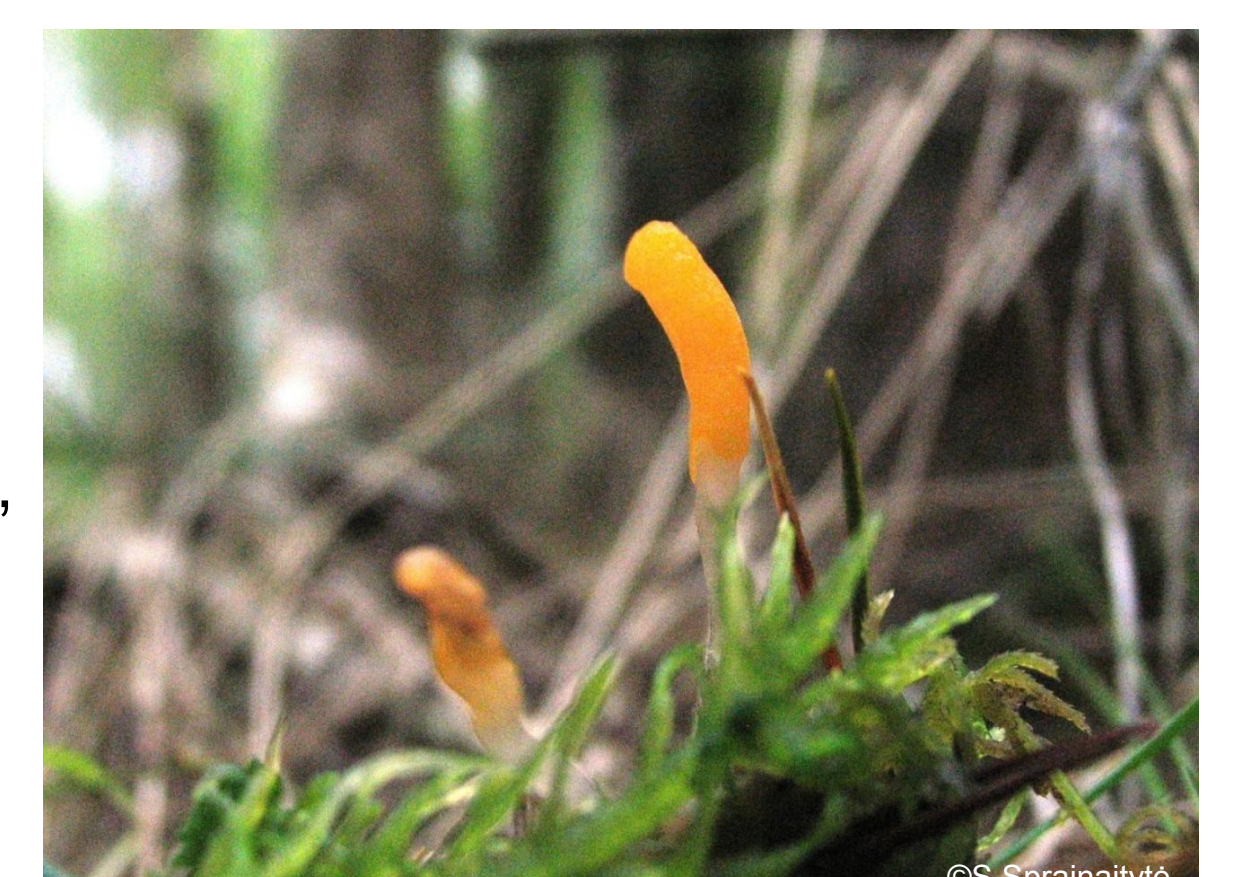
Fig. 3. Distribution of ascomycete species



Trichoglossum hirsutum (Pers.) Boud.

Šiurkštusis grybliežuvis

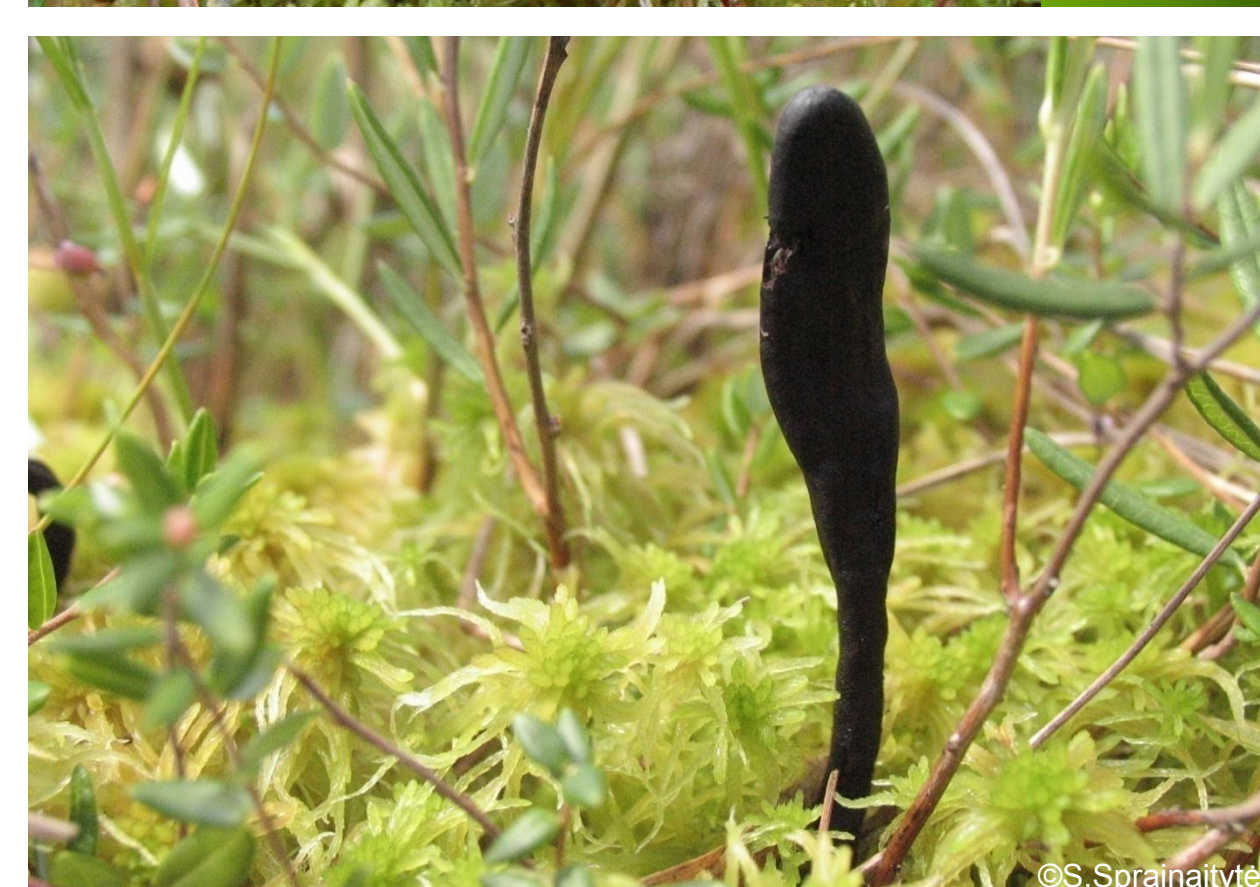
First time recorded in Lithuania in 1960. Known from 5 localities in Akmenė, Plungė, Šilutė and Vilnius districts. Saprobe. Grows on wet soil among green mosses and sphagnum, herbaceous plants and fallen leaves in bogs, wet meadows and swamp forests, in summer and autumn. Listed in the Red Data Book of Lithuania since 1992, 1 (Endangered) category.



Mitrla paludosa Fr.

Pelkinė mitrulė

First time recorded in Lithuania in 1987. Known from 7 localities in Akmenė, Jurbarkas, Šilutė, Tauragė and Varėna districts. Saprobe. Grows on wet or submerged plant remnants (fallen leaves, needles, herbs, mosses) in bogs, ditches with water, swamp forests, in spring and summer.



Geoglossum sphagnophilum

Ehrenb.

Kimininė kelmėnė

First time recorded in Lithuania in 1975 (Varėna distr.). Known from 18 localities in 9 administrative districts. Saprobe. Ascumata develops from dead parts of sphagnum in bogs, in summer and autumn. Listed in the Red Data Book of Lithuania since 2003, 1 (Endangered) category.



Pseudoplectania sphagnophila

(Pers.) Kreisel

Pelkinis juodašius

First time recorded in Lithuania in 2009. Known from 5 localities in Čepkeliai and Kamanos Strict Nature Reserves. Species has been found in Europe only in several countries and is very rare. Saprobe. Grows in spring and summer, in bogs on sphagnum.



Monilinia oxycocci

(Woronin) Honey

Spanguolinė monilija

First time recorded in Lithuania in 1989. Known from 4 localities in Šilutė, Trakai, Tauragė and Varėna districts. Parasite of *Oxycoccus palustris*. Ascumata develops in spring from overwintered mummified cranberry fruits, in bogs.

The mycobiota of peatlands is composed mainly of the sphagnophilous species and ectomycorrhizal symbionts of pine. More than 400 species of macromycetes were found during research in Čepkeliai Strict Nature Reserve. Species composition of peatlands is rather poor but highly specific: e.g. fungi presented here are found exceptionally in peatlands. Two species, *Geoglossum sphagnophilum* and *Trichoglossum hirsutum*, are listed as endangered (1(En) category) in the Red Data Book of Lithuania. Fungus associated with fens, *Bovista paludosa*, is very rare in whole Europe, and recently was proposed for assessment for global IUCN Red List of Threatened Species, together with *Suillus flavidus*, that is associated with pine in bogs. *Clavaria sphagnicola* and *Monilinia oxycocci* are rather rare because of their close association with ericoid plants of bogs that themselves have limited distribution.

The forthcoming new edition of Red Data Book of Lithuania will be based on an extinction risk assessment according to the IUCN Red List Categories and Criteria. Therefore, the diversity and distribution of rare peatlands macromycetes need further investigation and monitoring.

References

- IRŠENAITĖ R., STUKONIS V., GLIWA B., 2012: Praviršulio tyrelio botaninio-zoologinio draustinio grybų sąrašas. - Kn: Šeškauskaitė D. (red.), Patrauklios kaimo aplinkos išsaugojimas ir formavimas: Pelkės ir kitos šlapžemės. Tarptautinė mokslinė konferencija. 2012 m. rugsėjo 21-22d. Šaukotas, Lietuva. Konferencijos leidinys: 102-122.
- IRŠENAITĖ R., 2014: Nauji grybų radiniai Čepkelių rezervate ir Dzūkijos nacionaliniame parke. - <http://gamta.cepkeliai-dzukija.lt>
- KUTORGA E., 2002: Discomyces of Viešvilė Strict Nature Reserve. 1. Diversity and distribution. - Botanica Lithuanica, 8(1): 77-90.
- RAŠOMAVIČIUS V. (ed.), 2001. Europinės svarbos buveinės Lietuvoje. - Vilnius.
- URBONAS V., 1984: Grybų flora - Kn: BALEVIČIUS K.(red.), Čepkelių rezervatas :78-81. - Vilnius.
- URBONAS V., JARMALAVIČIENĖ L., 2001: Viešvilės valstybinio rezervato agarikoidiniai (*Agaricales* s.l.) grybai.- Botanica Lithuanica, 7(4): 365-377.