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Aphyllophoroid fungi (*Agaricomycetes, Basidiomycota*) in forests of a middle part of the Luga River valley (Leningrad Oblast)

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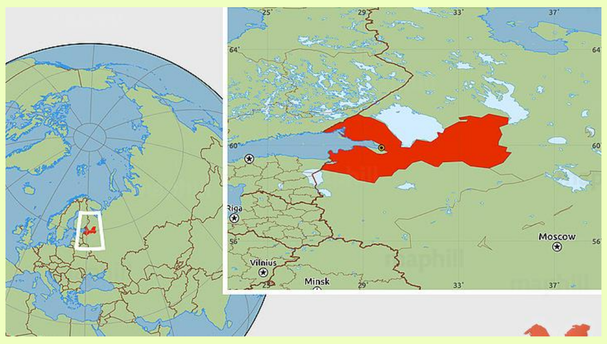


Fig. 1. Location of Leningrad Oblast.

Fig. 2. The Luga River (photo by A. Doronina)

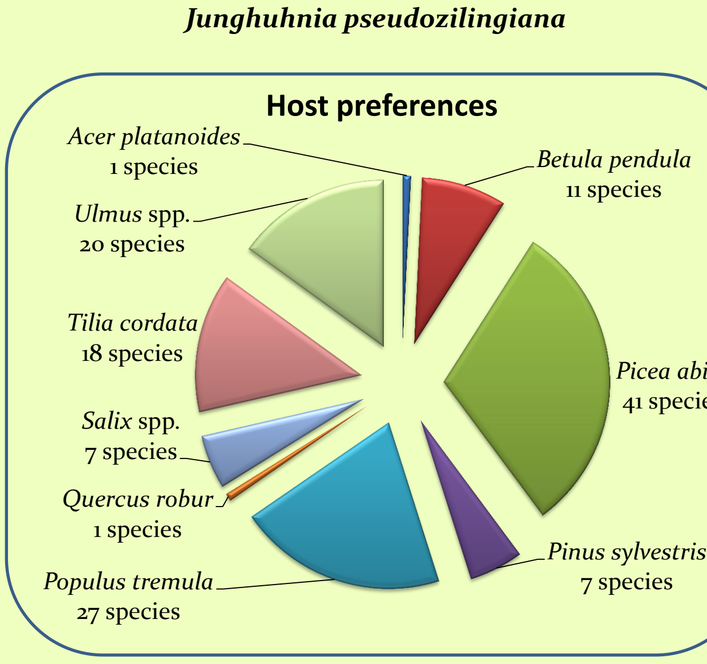
Materials and methods.

The explored territory presents the "Yashchera–Lemovzha" planned protected area located in south-west of Leningrad Oblast (Fig. 1), and it includes the basin of the Luga River (Fig. 2) with its tributaries – the Yashchera River, the Kemka River (Fig. 3), the Lemovzha River, the Gubenka River. The absolute elevation is from 29 (water boundary of the Luga River) to 90 m a. s. l. The climate in this zone is intermediate between continental and maritime, with a moderate warm summer and mild winter. The average temperature in January is -8.1 °C and +17.0 °C in June. Winter temperature may go down until -42 °C, while in summer it can reach up to +36 °C. Average sum of precipitation is 664 mm per year, and two-thirds of it falls in summer. The podzolic and peaty-podzolic soils are spread here. The main types of vegetation observed were spruce-dominated forests (with green mosses, with grasses, with *Oxalis acetosella* (Fig. 4), with *Populus tremula* and *Betula pendula* herb-rich, with *Populus tremula* and ferns), pine-dominated forests (with green mosses and *Vaccinium myrtillus*) (Fig. 6), floodplain deciduous forests (*Ulmus* spp., *Quercus robur*, *Tilia cordata*, *Populus tremula*) (Fig. 5) and mixed forests, including boreal as well as nemoral features. Both uneven-aged clear cut areas and old-growth forests were revealed.
Fungal specimens were collected by the route method in Luzhsky District and Volosovsky District (Leningrad Oblast) within the "Yashchera–Lemovzha" planned protected area in June, 25, and October, 2-4, 2015. The microscopic characters of polypores and other fungal groups were studied in laboratory by means of the light microscopy technique and standard set of chemicals (5% KOH, Melzer's reagent, Cotton Blue).
Voucher specimens are deposited in the Mycological herbarium of the Komarov Botanical Institute of RAS, St. Petersburg (LE).

Amylocystis lapponica

Junghuhnia pseudozilingiana

Dentipellis fragilis



Phellinidium ferrugineofuscum

Pycnoporellus fulgens

Crustoderma dryinum

Introduction.

Aphyllophoroid fungi present an artificial non-taxonomical group of macrofungi in Basidiomycota. It unites diverse morphological types of fungi, such as polypores, corticioids, hydnoids and clavarioids, which play a very important role in forest ecosystems, being wood decayers (most of them), along with litter saprotrophs, ectomycorrhizal, parasitic fungi and mycoparasites (Kotiranta et al., 2009; Kunttu et al., 2014). Wood-decaying fungi form the basis of the saprotrophic food web of forests (Spirin et al., 2015), where a lot of different living forms take part in (vascular plants, other fungi, different invertebrates (e.g. *Coleoptera*) and even vertebrates).
Besides, presence and (or) abundance of easily detectable species (the so-called "indicator species") from some groups which are specific for rare or threatened forest types, for example, old growth forests is a strong argument for forest protection and conservation.
Along with indicating rare or threatened types of forests, associations of aphyllophoroid fungi can also be indicators of habitats with rich diversity of different species from many kingdoms (Andersson et al., 2009).
The aim of the study was an inventory of the species diversity of aphyllophoroid fungi and an analysis of red-listed and indicator species occurrence in the territory planned to be a protected area.

Fig. 3. The Kemka River (photo by I. Stepanchikova)

Fig. 4. Spruce-dominated forest with *Oxalis acetosella* (photo by O. Stepochkina)

Fig. 5. Deciduous forest (photo by I. Stepanchikova)

Fig. 6. Pine-spruce forest with *Vaccinium myrtillus* (photo by O. Stepochkina)

Results and discussion.

All of **110 species** were identified. Most of species are common for hemiboreal and southern boreal zones, but along with them some fungal species, e.g. *Amylocystis lapponica*, *Crustoderma dryinum*, *Dentipellis fragilis*, *Dichostereum granulosum*, *Fomitopsis rosea*, *Hydnocristella himantia*, *Phellinidium ferrugineofuscum*, *Phlebia centrifuga*, which indicate old growth forests of high conservation value were found.

New localities of nine species from the **Red Data Book of Leningrad Region (2000)** have been revealed:

- *Ceriporiopsis aneirina* (Sommerf.) Domański
- *Ceriporiopsis pannocincta* (Romell) Gilb. et Ryvarden
- *Ceriporiopsis resinascens* (Romell) Domański
- *Dentipellis fragilis* (Pers.) Donk
- *Junghuhnia collabens* (Fr.) Ryvarden
- *Junghuhnia pseudozilingiana* (Parmasto) Ryvarden
- *Pluteus umbrosus* (Pers.) P. Kumm. (NB! Agaricoid fungus)
- *Pycnoporellus fulgens* (Fr.) Donk
- *Rigidoporus crocatus* (Pat.) Ryvarden

The analysis of substrate preferences of wood-inhabiting fungi showed that the most occupied host was *Picea abies* (41 fungal species) as a leading forest-forming tree. At the same time, the amount of fungal species, which grew on *Populus tremula*, *Tilia cordata*, *Ulmus* spp., was 27, 18 and 20 species respectively, and it is connected with some nemoral features of the vegetation.
As a conclusion, the territory studied should be recommended for preservation by organization of a special protected area. All obtained data provides the interest for future mycological exploration which has to be continued here.

Acknowledgments
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