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ADDITIONS TO SPECIES LIST OF FUNGI ASSOCIATED WITH ALIEN AND NATIVE WOODY PLANTS IN SVERDLOVSK REGION (RUSSIA, MIDDLE URAL)

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We report 115 species of *Fungi* (*Ascomycota, Basidiomycota*) and *Stramenopiles* (*Oomycota*) as new to Sverdlovsk Region. Four species are new to Russia (*Boeremia heteromorpha, Chuppomyces* cf. *handelii, Nectria nigrescens, Passalora* cf. *menispermi*). 94% of species were identified only on alien plants in Ekaterinburg urban green plantations and greenhouses. Pathogenic species account for 92%, while several species are harmful plant pathogens.

Ключевые слова: alien species, *Ascomycota*, *Basidiomycota*, biodiversity, fungal distribution, invasion, *Oomycota*, plant pathogens, Russia

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INTRODUCTION

The research history into alien fungal species of Sverdlovsk Region goes back more than a century (Naumov, 1915; Demidova, 1925; Stepanova, Sirko, 1970). Nevertheless, targeted study of alien and invasive species of fungi in the region began in the 21st century (Shiryaev, 2009; Shiryaev et al., 2010; Shiryaev, Stavishenko, 2011). This is the tenth work in a series of publications devoted to the identification of alien species of fungi on woody plants of the Middle Urals (Shiryaev et al., 2021, 2022a, 2022b, 2023a, 2023b, 2023c, 2023d; Bulgakov, Shiryaev, 2021, 2022). Each annotated record provides details about specimen ecology and collection information: locality, substrate, date of collecting and specimen herbarium numbers.

MATERIALS AND METHODS

Specimens were collected by A.G. Shiryaev, T.S. Bulgakov and O.A. Kiseleva within Ekaterinburg City territory and Krasnoufimsk area of Sverdlovsk Region in 2000–2023. The collected specimens were processed in the mycological collections of Institute of Plant and Animal Ecology of Ural Branch of the Russian Academy of Sciences (Ekaterinburg, SVER), in the Department of Plant Protection of the Federal Research Center "Subtropical Scientific Center of the Russian Academy of Sciences" (Sochi), and in the Komarov Botanical Institute (Saint Petersburg, LE).

The identification of the fungal species was carried out by light microscopy of temporary preparations according to standard methods (Blagoveshchenskaya, 2015); special key books and monographs were used for identification of the fungal species (Kuprevich, Ulyanishchev, 1975; Ulyanishchev, 1978; Teterevnikova-Babayan, 1987; Butin, 1989; Braun, Melnik, 1997; Ellis, Ellis, 1997; Braun, 1998; Karatygin, 2002; Braun, Cook, 2012; Knudsen, Vesterholt, 2012; Ryvarden, Melo, 2014; Blagoveshchenskaya, 2015), as well as some additional publications devoted to the study and taxonomical revision of the some particular fungal taxa and new species descriptions (Chethana et al., 2015; Norphanphoun et al., 2017; Vohlmayr et al., 2017; Hyde et al., 2018; Jaklitsch et al., 2018; Senwanna et al., 2019; Crous et al., 2020) and open global database "Fungal Databases:

U.S. National Fungus Collections" (Farr, Rossman, 2024). The names of fungal species are given according to the open database "MycoBank" (MycoBank, 2024).

The host plant species were identified by the keybook "Keys to the trees and shrubs species of the Urals" (Mamaev, 2000); the plant species are given according to the open nomenclatural database "Plant of the World Online" (POWO, 2024). Some introduced exotic plant species in the collections of the Botanical garden were determined according to the personal data of researchers of the Botanical Garden of the Ural Branch of the Russian Academy of Sciences.

The following abbreviations are used in the list: Ekb – Ekaterinburg City; Ku – Kamensk-Uralski town; Ka – Krasnoufimsk area; BG UrB RAS – Botanical Garden of Ural Branch of the Russia Academy of Sciences; A8 – Arboretum on March 8th street; AP – Arboretum on Pervomayskaya street; VG – Prof. L.I. Vigorov Medicinal crops garden; 4S – Sverdlovsk horticultural selection station; MCP – Mayakovsky Central Park; Scv – Suburban cottage village; 7S – 7 Springs private garden; AA – Park of Agriculture Academy; USTU – Park of the Ural State Transport University; UFU – Botanical garden of Ural Federal University; Pat – pathogenic; Sap – saprobic (non-pathogenic); Myc – mycorrhizal. Before fungal species, the "alien" status is indicated as asterisk. Empty space denotes a local fungal species. New species for Russia are marked with an exclamation mark.

RESULTS

An annotated species list

Ascomycota

Pezizomycotina

Dothideomycetes

Botryosphaeriales

Botryosphaeriaceae

**Dothiorella sarmentorum* (Fr.) A.J.L. Phillips, A. Alves et J. Luque – Par/Sap, on dead twigs and branches of *Prunus armeniaca* L. (*Rosaceae*): Ekb, 4S, 16.09.2021, SVER(F)86315.

**Guignardia miribelii* Aa [≡ *Sarcophoma miribelii* (Fr.) Höhn.] – Par, on living and dying leaves of *Buxus sempervirens* L. (*Buxaceae*): Ekb, BG UrB RAS, 19.09.2010, SVER(F)86414; ibid., AP, 18.10.2023, SVER(F)86413.

Phyllostictaceae

**Phyllosticta innumerabilis* Peck – Par, on living leaves of *Amelanchier* × × *spicata* (Lam.) K. Koch (*Rosaceae*): Ekb, MCP, 20.09.2023, SVER(F)86416.

**P. magnoliae* Sacc. – Par, on living leaves of *Magnolia grandiflora* L. (*Magnoliaceae*): Ekb, BG UrB RAS, Greenhouse № 4, 17.09.1997, SVER(F)86353; ibid., 08.06.2001, SVER(F) 86354.

**P.* cf. *mahoniicola* Pass. [≡ *Phomopsis mahoniicola* (Pass.) Keissl.] – Par, on living leaves of *Mahonia aquifolium* (Pursh) Nutt. (*Barberiaceae*): Ekb, BG UrB RAS, 10.1997, SVER(F)86415.

**P.* cf. *monogyna* Allesch.– Par, on living leaves of *Crataegus* sp. (*Rosaceae*): Ekb, BG UrB RAS, 12.09.2009, SVER(F)86394.

Cladosporiales

Cladosporiaceae

**Graphiopsis chlorocephala* (Fresen.) Trail [= *Cladosporium paeoniae* Pass., = *Dichocladosporium chlorocephalum* (Fresen.) K. Schub., U. Braun et Crous] – Par, on living leaves of *Paeonia* × *suffruticosa* Andrews (*Paeoniaceae*): Ekb, BG UrB RAS, 13.08.2022, SVER(F)86412.

Dothideales

Dothideaceae

**Plowrightia ribesia* (Pers.) Sacc.– Par, on living and dying branches of *Ribes aureum* Pursh (*Rosaceae*): Ekb, 22nd Party Congress Park, 01.09.2020, SVER(F)86470.

**Kabatina thujae* R. Schneid. et Arx – Par, on living and dying needles of *Thuja occidentalis* (*Cupressaceae*): Ekb, BG UrB RAS, 28.08.2022, SVER(F)86411.

Mycosphaerellales

Mycosphaerellaceae

**Cercospora olivascens* Sacc.– Par, on living leaves of *Aristolochia fimbriata* Cham. (*Aristolochiaceae*): Ekb, A8, 06.1995, SVER(F)86316.

!**Chuppomyces* cf. *handelii* (Bubák) U. Braun, C. Nakash., Videira et Crous – Par, on living leaves of *Rhododendron dauricum* L. (*Ericaceae*): Ekb, BG UrB RAS, 17.10.2023, SVER(F)86469.

**Nothoseptoria caraganae* (Henn.) Crous et Bulgakov – Par, on living leaves of *Caragana arborescens* Lam. (*Fabaceae*): Ku, artificial forestline, 03.09.1997, SVER(F)86352.

**Passalora gotoana* (Togashi) U. Braun [≡ *Cercospora gotoana* Togashi] – Par, on living leaves of *Sorbaria sorbifolia* (L.) A. Braun (*Rosaceae*): Ekb, AA, 20.09.2007, SVER(F)86418; ibid., AP, 18.10.2023, SVER(F)86417.

!**P.* cf. *menispermi* (Ellis et Holw.) U. Braun et Crous – Par, on living leaves of *Menispermum dauricum* (*Menispermacea*): Ekb, VG, 21.06.2022, SVER(F)86355.

**P. rhamni* (Fuckel) U. Braun – Par, on living leaves of *Rhamnus cathartica* L. (*Rhamnaceae*): Ekb, AA, 09.08.2011; ibid., AA, 08.1989, SVER(F)86468; ibid., MCP, 01.09.2020, SVER(F)86467.

**Phloeospora ulmi* (Fr.) Wallr.– Par, on living leaves of *Ulmus minor* Mill. (*Ulmaceae*): Ku, artificial treeline, 02.09.2013, SVER(F)86409.

**Pseudocercospora araliae* (Henn.) Deighton – Par, on living leaves of *Aralia mandshurica* Rupr. et Maxim (*Araliaceae*): Ekb, BG UrB RAS, 17.10.2023, SVER(F)86410.

**P. cladrastidis* (Jacz.) J.K. Bai et M.Y. Cheng – Par, on living leaves of *Maackia amurensis* Rupr. (*Fabaceae*): Ekb, BG UrB RAS, 02.09.2023, SVER(F)86465; ibid., AP, 21.08.1986, SVER(F)86466.

**P. depazeoides* (Desm.) U. Braun et Crous – Par, on living leaves of *Sambucus nigra* L. (*Viburnaceae*): Ekb, BG UrB RAS, 03.09.2012, SVER(F)86408; ibid., Scv Karasjeozersk, 25.09.2020, SVER(F)86407.

**Ramularia symphoricarpi* (Ellis et Everh.) U. Braun – Par, on living leaves of *Symphoricarpos albus* (L.) S.F. Blake (*Caprifoliaceae*): Ekb, A8, 07.10.2023, SVER(F)86356.

**Septogloeum carthusianum* (Sacc.) Sacc.– Par, on living leaves of *Euonymus europaeus* L. (*Celastraceae*): Ekb, AA, 20.09.2007, SVER(F)86400.

**Septoria elaeagni* (Chevall.) Desm.– Par, on living leaves of *Elaeagnus angustifolia* L. (*Elaeagnaceae*): Ku, artificial treeline, 02.09.2013, SVER(F)86419.

**S. hippocastani* Berk. et Broome – Par, on living leaves of *Aesculus hippocastanum* L. (*Sapindaceae*): Ekb, BG UrB RAS02.09.2023, SVER(F)86462; ibid., VG, 02.09.2023, SVER(F)86464; ibid., A8, 18.10.2023, SVER(F)86463.

**S. ribis* (Lib.) Desm.– Par, on living leaves of *Ribes uva-crispa* L. (*Grossulariaceae*): Ekb, AA, 09.1996, SVER(F)86350; ibid., A8, 2022 SVER(F)86351.

**S. robiniae* (Lib.) Desm.– Par, on living leaves of *Robinia pseudoacacia* L. and *Amorpha fruticosa* L. (*Fabaceae*): Ekb, VG, 30.09.2020, SVER(F)86403; ibid., BG UrB RAS, 07.10.2022, SVER(F)86404; ibid., Scv Karasjeozersk, 15.09.2022, SVER(F)86405; ibid., 4S, 30.06.2005, SVER(F)86406; ibid., 4S, 30.06.2005, SVER(F)86401; ibid., Scv Kosulino, 15.09.2022, SVER(F)86402.

Sphaerulina cornicola (DC.) U. Braun et Bensch – Par, on living leaves of *Cornus sanguinea* L. (*Rosaceae*): Ekb, AA 09.08.2011, SVER(F)86317.

S. oxyacanthae (Kunze et J.C. Schmidt) Quaedvl., Verkley et Crous – Par, on living leaves of *Crataegus rhipidophylla* Gand. (*Rosaceae*): Ekb, 4S, 30.06.2005, SVER(F)86399.

Pleosporales

Camarosporidiellaceae

**Camarosporidiella elaeagnicola* Wanas., Bulgakov et K.D. Hyde – Par, on dying twigs and branches of *Elaeagnus angustifolia* (*Elaeagnaceae*): Ku, artificial treeline, 05.09.2014, SVER(F)86357; ibid., Ku, artificial treeline, 02.09.2013, SVER(F)86358.

**C. laburni* (Pers.) Wanas., Bulgakov, Camporesi et K.D. Hyde – Par, on dying twigs and branches of *Laburnum* × *watereri* (A.C. Rosenthal et Bermann) Dippel (*Fabaceae*): Ekb, BG UrB RAS, 01.06.2022, SVER(F)86349.

**C. moricola* (Chethana, Bulgakov et K.D. Hyde) Wanas. et K.D. Hyde – Par, on dying twigs of *Morus alba* L. (*Moraceae*): Ekb, Scv Shilovski Park, 16.08.2022, SVER(F)86421; ibid., BG UrB RAS, 12.09.2023, SVER(F)86420.

**Camarosporium quaternatum* (Hazsl.) Schulzer – Par, on dying twigs and branches of *Lycium barbarum* L. (*Solanaceae*): Ekb, Scv Karasjeozersk, 16.08.2022, SVER(F)86461.

Cucurbitariaceae

**Protofenestella ulmi* Jaklitsch et Voglmayr – Par, on dying twigs of *Ulmus minor* (*Ulmaceae*): Ekb, USTU, 19.09.2023, SVER(F)86318.

Didymellaceae

**Ascochyta actinidiae* Tobisch – Par, on living leaves of *Actinidia kolomikta* (*Actinidiaceae*): Ekb, BG UrB RAS, SVER(F)86348.

**A. kabatiana* Trotter – Par, on living leaves of *Laburnum* × *watereri* (*Fabaceae*): Ekb, UFU, 11.10.2022, SVER(F)86397.

**A. deformis* (P. Karst.) P.K. Buchanan – Par, on living leaves of *Sambucus sieboldiana* (Miq.) Graebn. (*Adoxaceae*): Ekb, UFU, 09.09.2021, SVER(F)86398.

**A. orientalis* Bondartsev – Par, on living leaves of *Syringa vulgaris* L. (*Oleaceae*): Ekb, 4S, 17.09.1997, SVER(F)86422.

**A. rhododendri* Lind – Par, on living leaves of *Rhododendron ponticum* L. and *R. caucasicum* Pall. (*Ericaceae*): Ekb, Scv Obraztsovo, 18.09.2020, SVER(F)86424; ibid., BG UrB RAS, 04.06.2023, SVER(F)86423.

**A.* cf. *symphoricarpi* Pass.– Par, on dying twigs of *Symphoricarpos albus* (*Caprifoliaceae*): Ekb, AA, 20.09.2007, SVER(F)86359.

**A. syringae* (Westend.) Bres.– Par, on living leaves of *Syringa vulgaris* and *Syringa* sp. (*Oleaceae*): Ekb, AA, 09.1996, SVER(F)86461; ibid., AP, 21.10.2023, SVER(F)86396.

**A. versicolor* Bubák – Par, on living leaves of *Aristolochia clematidis* L. (*Aristolochiaceae*): Ekb, BG UrB RAS, 03.09.2018, SVER(F)86360.

**Boeremia exigua* (Desm.) Aveskamp, Gruyter et Verkley – Par, on living leaves of *Euonymus japonicus* Thunb. (*Celastraceae*): Ekb, BG UrB RAS, Greenhouse № 2, 03.06.2009, SVER(F)86342.

**B. exigua* (Desm.) Aveskamp, Gruyter et Verkley var. *forsythiae* (Sacc.) Aveskamp, Gruyter et Verkley – Par, on living leaves of *Forsythia* × *intermedia* (*Oleaceae*), БС УрО РАН, 03.10.2021, SVER(F)86343.

**B. exigua* (Desm.) Aveskamp, Gruyter et Verkley var. *viburni* (Roum. ex Sacc.) Aveskamp, Gruyter et Verkley – Par, on living leaves of *Viburnum lantana* L. (*Viburnaceae*): Ekb, BG UrB RAS, 06.10.2021, SVER(F)86344.

**B. hedericola* (Durieu et Mont.) Aveskamp, Gruyter et Verkley – Par, on living leaves of *Hedera helix* L. (*Araliaceae*): Ekb, BG UrB RAS, Greenhouse № 1, 15.07.2006, SVER(F) 86345.

!**B. heteromorpha* (Schulzer et Sacc.) Jayaward., Jayasiri et K.D. Hyde – Par, on living leaves of *Vinca major* L. and *V. minor* L. (*Apocynacea*): Ekb, Scv Romanovo, 18.09.2020, SVER(F)86347; ibid., BG UrB RAS, 07.10.2023, SVER(F)86346.

**Didymella glomerata* (Corda) Qian Chen et L. Cai – Par/Sap, on living leaves of *Berberis vulgaris* L. (*Berberidaceae*): Ekb, Obroshensk Park, 27.08.1985, SVER(F)86395.

**D. pomorum* (Thüm.) Qian Chen et L. Cai – Par/Sap, on living leaves *Prunus cerasus* L. (*Rosaceae*): Ekb, A8, 05.08.2020, SVER(F)86319; ibid., 7S, 31.08.2022, SVER(F)86320.

**Paramacroventuria ribis* Crous et Bulgakov – Par, on living leaves of *Ribes aureum* Pursh (*Rosaceae*): Ekb, 4S, 05.09.1988, SVER(F)86361.

Dothidotthiaceae

**Dothidotthia negundinicola* (Crous et Akulov) Senwanna, Wanas., Bulgakov, Phookamsak et K.D. Hyde – Par, on dying twigs and branches of *Acer negundo* (*Sapindaceae*): Ekb, MCP, 01.09.2020, SVER(F)86340; ibid., Pavlik Morozov's Park, 19.06.2023, SVER(F) 86341.

Phaeosphaeriaceae

**Neosetophoma samarorum* (Desm.) Gruyter, Aveskamp et Verkley – Par, on dying and dead fruits of *Fraxinus pennsylvanica* (*Oleaceae*): Ekb, Belinskogo str., 28.06.2022, SVER(F)86362.

Pleosporaceae

**Pleospora* cf. *dichromotricha* (Speg.) Wehm.– Par, on dying leaves and twigs of *Vitis* sp. (*Vitaceae*): Ekb, BG UrB RAS, 26.07.2022, SVER(F)86425.

Venturiales

Venturiaceae

**Venturia crataegi* Aderh.– Par, on living leaves of *Crataegus nigra* Waldst. et Kit. (*Rosaceae*): Ekb, 22nd Party Congress Park, 17.10.2021, SVER(F)86460.

Polystomellaceae incertae sedis

**Dothidella ulmi* (C.-J.Duval) G. Winter – Par, on living leaves of *Ulmus pumila* L. (*Ulmaceae*): Ekb, UFU Biological Station, 29.07.2006, SVER(F)86321.

Helotiales

Cenangiaceae

Rhabdocline laricis (Vuill.) J.K. Stone – Par, on living needles of Larix sp. (cult.): Ekb, BG UrB RAS, 22.08.2020, SVER(F)86363.

Dermateaceae

Dermea cerasi (Pers.) Fr.– Par, on dead twigs and branches of *Prunus fruticosa* Pall. (*Rosaceae*): Ka, Alexander's Hills, 18.09.2021, SVER(F)86339.

Drepanopezizaceae

Drepanopeziza salicis (Tul. et C. Tul.) Höhn.– Par, on living leaves of *Salix alba* (*Salicaceae*): Ka Sargaya, 25.08.2023, SVER(F)86426.

Erysiphaceae

**Erysiphe kenjiana* (Homma) U. Braun et S. Takam.– Par, on on living leaves of *Ulmus minor* (*Ulmaceae*): Ekb, USTU, 24.08.2022, SVER(F)86390.

**E. lauracearum* (Graniti et U. Braun) M. Bradshaw, U. Braun et Pfister – Par, on on living leaves of *Laurus nobilis* L. (*Lauracea*): Ekb, BG UrB RAS, Greenhouse № 3, 29.06.2009, SVER(F)86393.

**Podosphaera* cf. *amelanchieris* Maurizio – Par, on living leaves of *Amelanchier alnifolia* (*Rosaceae*): Ekb, BG UrB RAS, 02.09.2023, SVER(F)86392; ibid., 4S, 26.09.2023, SVER(F) 86391.

**Sawadaea negundinis* Homma – Par, on living leaves of *Acer negundo* (*Sapindaceae*): Ekb, Botanical City District, 22.08.2021, SVER(F)86389; ibid., Zelenaya Roscha, 09.09.2022 SVER(F)86388.

Mollisiaceae

Trimmatostroma salicis Corda – Sap, on dead twigs and branches of Salix sp. (cult.): Ekb, Moskovskaya str. 215, 22.05.2023, SVER(F)86338.

Sclerotiniaceae

**Botrytis paeoniae* Oudem.– Par, on living leaves of *Paeonia* × *suffruticosa* Andrews (*Paeoniaceae*): Ekb, BG UrB RAS, 28.07.2022, SVER(F)86364.

Sclerotiniaceae incertae sedis

**Coniothyrium laburnophilum* Oudem.– Par, on living leaves of *Laburnum* × *watereri* (*Fabaceae*): Ekb, UFU, 11.10.2022, SVER(F)86429; ibid., BG UrB RAS, 01.10.2022, SVER(F)86322.

**Cryptocline taxicola* (Allesch.) Petr.– Par, on living needles of *Taxus baccata* L. (*Taxaceae*): Ekb, BG UrB RAS, 03.06.2022, SVER(F)86427; ibid. 19.05.2023, SVER(F)86428.

Leotiomycetes

Rhytismatales

Rhytismataceae

**Rhytisma punctatum* (Pers.) Fr.– Par, on living leaves of *Acer campestre* L. (*Sapindaceae*): Ku, artificial treeline, 02.09.2013, SVER(F)86387.

Sordariomycetes

Amphisphaeriales

Sporocadaceae

**Seimatosporium physocarpi* Norph., Bulgakov et K.D. Hyde – Par, on living leaves of *Physocarpus opulifolius* (*Rosaceae*): Ekb, A8, 20.09.2007, SVER(F)86366; ibid., AA, 09.1996, SVER(F)86365.

**Sporocadus cotini* F. Liu, L. Cai et Crous – Par, on living leaves of *Cotinus coggygria* Scop. (*Anacardiaceae*): Ekb, Scv Karasjeozersk, 15.09.2022, SVER(F)86458; ibid., Scv Karasjeozersk, 02.10.2023, SVER(F)86459; ibid., BG UrB RAS, 02.09.2023, SVER(F)86457.

Diaporthales

Gnomoniaceae

**Apiognomonia erythrostoma* (Pers.) Höhn.– Par, on living leaves of *Prunus cerasus* L. (*Rosaceae*): Ekb, Botanical City District, 07.09.2023, SVER(F)86337.

Asteroma alneum (Pers.) B. Sutton – Par, on living leaves of *Alnus incana* (*Betulaceae*): Ka, Sargaya, 25.08.2023, SVER(F)86386.

A. padi DC.– Par, on living leaves of *Prunus padus* L. (*Rosaceae*): Ekb, Zelenaya Roscha, 06.10.2023, SVER(F)86430.

Plagiostoma apiculatum (Wallr.) L.C. Mejia – Par, on dying twigs of *Salix alba* L. (*Salicaceae*): Ekb, Cheluskintsev str., 16.08.2015, SVER(F)86323.

Cytosporaceae

Cytospora sorbicola Norph., Bulgakov, T.C. Wen et K.D. Hyde – Par, on dying twigs and branches of *Amelanchier alnifolia* (*Rosaceae*): Ekb, Moskovskaya str., 215, 06.03.2023, SVER(F)86456.

Diaporthaceae

**Diaporthe eres* Nitschke – Par/Sap, on dying and dead twigs of *Sambucus sieboldiana* (Miq.) Graebn. (*Adoxaceae*): Ekb, UFU, 09.09.2021, SVER(F)86385.

**D. laschii* Nitschke [= *Dothichiza foveolaris* (Fr.) Petr., = *Phomopsis foveolaris* (Fr.) Traverso] – Par, on dying twigs and branches of *Euonymus alatus* (Thunb.) Siebold (*Celastraceae*): Ekb, BG UrB RAS, 26.08.2000, SVER(F)86431.

**Phomopsis arnoldiae* B. Sutton [= *Phyllosticta argyrea* Speg.] – Par, on living leaves and dying twigs and branches of *Elaeagnus angustifolia* (*Elaeagnaceae*): Ku, Big Sungul lake surrounds, artificial treeline, 19.09.2012, SVER(F) 86434; ibid., artificial treeline, 03.09.2023, SVER(F)86433; ibid., BG UrB RAS, 18.08.2023, SVER(F)86435; ibid., MCP, 01.09.2020, SVER(F)86432.

Hypocreales

Nectriaceae

**Nectria* cf. *dematiosa* (Schwein.) Berk.– Par, on dying and dead twigs and branches of *Juglans mandshurica* (*Juglandaceae*), Ekb, Bazhov str., 19.06.2023, SVER(F) 86334; ibid., BG UrB RAS, 12.06.2023, SVER(F) 86335; ibid., *Aesculus hippocastanum* (*Sapindaceae*), Schevchenko str., 22.06.2023, SVER(F)86333.

!**N. nigrescens* Cooke – Par, on dying and dead twigs and branches of *Ulmus pumila* (*Ulmaceae*): Ekb, USTU, 27.06.2012, SVER(F)86455.

**Pseudonectria buxi* (DC.) Seifert, Gräfenhan et Schroers – Par, on dying leaves and twigs of *Buxus sempervirens* (*Buxaceae*): Ekb, AP, 18.10.2023, SVER(F)86383; ibid., 18.10.2023, SVER(F)86384.

**Thyronectria caraganae* Voglmayr, Akulov et Jaklitsch – Sap, on dead twigs and branches of *Caragana arborescens* (*Fabaceae*): Ekb, Serov str., 08.1954, SVER(F)86367.

Phyllachorales

Phyllachoraceae

**Phyllachora phyllostachydis* Hara – Par, on living and dying leaves of *Phyllostachys reticulata* (Rupr.) K. Koch (*Poaceae*): Ekb, BG UrB RAS, Greenhouse № 4, 01.07.2014, SVER(F)86324.

Xylariales

Diatrypaceae

**Diatrypella favacea* (Fr.) Ces. et De Not.– Par/Sap, on dead twigs and branches of *Corylus avellana* (*Betulaceae*): Ekb, BG UrB RAS, 03.09.2023, SVER(F)86437.

**D. verruciformis* (Ehrh. ex Pers.) Nitschke – Par/Sap, on dead twigs and branches of *Corylus heterophylla* Fisch. ex Trautv. (*Betulaceae*): Ekb, BG UrB RAS, 12.06.2023, SVER(F)86436.

Eutypella stellulata (Fr.) Sacc.– Par/Sap, on dead twigs and branches of *Alnus incana* (L.) Moench (*Betulaceae*): Ekb, Obroshensk Park, 17.08.2023, SVER(F)86382.

Hypoxylaceae

Biscogniauxia marginata (Fr.) Pouzar – Par/Sap, on dying and dead twigs and branches of *Scandosorbus intermedia* (Ehrh.) Sennikov [≡ *Sorbus intermedia* (Ehrh.) Pers.]: Ekb, BG UrB RAS, 17.10.2023, SVER(F)86369.

Jackrogersella cohaerens (Pers.) L. Wendt, Kuhnert et M. Stadler [≡ *Hypoxylon cohaerens* (Pers.) Fr.] – Sap, on fallen branch of *Acer platanoides* (Sapindaceae) with *Hyphodontia arguta* (Fr.) J. Erikss.: Ka, Sargaya village surrounds, 18.09.2023, SVER(F)86368.

Pezizomycotina incertae sedis

**Didymosporina aceris* (Lib.) Höhn.– Par, on living leaves of *Acer campestre* L. (*Sapindaceae*): Ku, artificial treeline, 02.09.2008, SVER(F)86438.

Taphrinomycotina

Taphrinomycetes

Taphrinales

Taphrinaceae

**Taphrina deformans* (Berk.) Tul.– Par, on living leaves of *Prunus persica* (L.) Batsch (*Rosaceae*): Ekb, 4S, 16.09.2021, SVER(F)86332.

T. sadebeckii Johanson – Par, on living leaves of *Alnus incana* (*Betulacea*): Ka, Sargaya, 19.07.2023, SVER(F)86381.

T. ulmi (Fuckel) Johanson – Par, on living leaves of *Ulmus glabra* Huds. (*Ulmaceae*): Ekb, MCP, 27.07.2022, SVER(F)86325.

Basidiomycota

Agaricomycotina

Agaricomycetes

Agaricales

Omphalotaceae

**Lentinula edodes* (Berk.) Pegler – Sap, on rotten logs of *Juglans mandshurica* (*Juglandaceae*) and *Tilia amurensis* (*Malvaceae*) serving as curbs: Ekb, BG UrB RAS, Greenhouse № 1, 09.06.1996, SVER(F)86370.

Pleurotaceae

**Pleurotus citrinopileatus* Singer – Sap, on fallen trunks of *Ulmus minor* (*Ulmaceae*) and *Populus balsamifera* (*Salicaceae*): Ekb, Gipsy village, 10.08.2022, SVER(F)86439.

Resupinataceae

Resupinatus applicatus (Batsch) Gray – Sap, on dead stems of *Parthenocissus quinquefolia* (*Vitaceae*): Ekb, BG UrB RAS, 07.08.2019, SVER(F)86380.

**R. poriaeformis* (Pers.) Thorn, Moncalvo et Redhead – Sap, on dead fallen trunk of *Acer negundo* (*Sapindaceae*): Sysert town, Central Park, 30.07.2022, SVER(F)86331.

Schizophyllaceae

Rectipilus fasciculatus (Pers.) Agerer [≡ *Solenia fasciculata* Pers.] – Sap, on dead petioles of *Matteuccia struthiopteris* (L.) Tod. (*Onocleaceae*) with *Woldmaria filicina* (Peck) Knudsen: Ka, Sargaya village surrounds, 18.09.2023, SVER(F)86440.

Hymenochaetales

Hymenochaetaceae

**Hymenochaete jaapii* Corfixen – Sap, on dead stem of *Rubus odoratus* L. (*Rosaceae*): Ekb, VG, 13.09.2020, SVER(F)86371.

Schizoporaceae

Fasciodontia bugellensis (Ces.) Yurchenko, Riebesehl et Langer [≡ *Hyphodontia bugellensis* (Ces.) J. Erikss.] – Sap, on dead trunk of *Populus balsamifera* (*Salicaceae*): Ekb, MCP, 21.09.2016, SVER(F)86379.

Xylodon borealis (Kotir. et Saaren.) Hjortstam et Ryvarden – Sap, on fallen trunk of *Tilia cordata* (*Malvaceae*) with *Phanerochaete laevis* (Fr.) J. Erikss. et Ryvarden: Ka, Nizhneirginsk oak forest, 16.09.2023, SVER(F)86326.

Polyporales

Irpicaceae

Ceriporia rhodella (Fr.) Donk – Sap, fallen trunk of *Viburnum opulus* (*Viburnaceae*): Ka, Alexander's hills, steppe dominated slope, 18.09.2021, SVER(F)86441.

Polyporaceae

**Coriolopsis gallica* (Fr.) Ryvarden [≡ *Funalia gallica* (Fr.) Bondartsev et Singer] – Sap, on fallen dead trunk of *Juglans mandshurica* (*Juglandaceae*): Ekb, BG UrB RAS, 31.09.2000, SVER(F)86372 [as *Funalia trogii* (Berk.) Bondartsev et Singer].

**Lopharia cinerascens* (Schwein.) G. Cunn.– Sap, on fallen trunk of *Acer negundo* (*Sapindaceae*): Ekb, MCP, 23.08.2008, SVER(F)86330.

Phanerochaetaceae

**Porostereum spadiceum* (Pers.) Hjortstam et Ryvarden – Sap, rotten base of living *Malus* sp. (cult.) (*Rosaceae*): Ekb, Zelenaya Roscha, 08.1986, SVER(F)86454.

Thelephorales

Thelephoraceae

Hypochnella violacea Auersw. ex J. Schröt.– Sap, fallen trunk of *Tilia cordata* (*Malvaceae*): Ka, Sargaya village surrounds, 18.09.2023, SVER(F)86442.

Tomentella cinereoumbrina (Bres.) Stalpers – Myc, fallen trunk of *Tilia cordata* (*Malvaceae*) with *Thelephora terrestris* Ehrh.: Ka, Sargaya village surrounds, 17.09.2023, SVER(F)86443.

Typhulaceae

**Typhula thaxtheri* (Burt) Berthier – Sap, on fallen dead twigs of *Populus balsamifera* (*Salicaceae*): Ekb, BG UrB RAS, 07.10.2011, SVER(F)86378.

**T. viticola* (Peck) Berthier [non *T. muelleri* (Sauter) Corner] – Sap, on dead twigs of *Parthenocíssus quinquefolia* (*Vitaceae*): Ekb, BG UrB RAS, 19.07.2017, SVER(F)86327; ibid., 26.05.2020, SVER(F)86377.

Pucciniomycotina

Pucciniomycetes

Pucciniales

Gymnosporangiaceae

**Gymnosporangium sabinae* (Dicks.) G. Winter – Par, on living leaves of *Pyrus communis* (*Rosaceae*): Ekb, 4S, 30.06.2005, SVER(F)86372.

Phragmidiaceae

**Phragmidium tuberculatum* Jul. Müll. – Par, on living leaves of *Rosa centifolia* L. (*Rosaceae*): Ekb, AA, 07.1996, SVER(F)86329.

**P. violaceum* (Schultz) Brockm. – Par, on living leaves of Rubus sp. (cult.) (*Rosaceae*): Ekb, VG, 31.08.2023, SVER(F)86373.

Pucciniaceae

**Puccinia asparagi* DC. – Par, on living leaves of Asparagus sp. (*Asparagaceae*): Ekb, BG Urb RAS, Greenhouse № 2, 18.08.2011, SVER(F)86445.

**P. buxi* Sowerby – Par, on living leaves of *Buxus sempervirens* (*Buxaceae*): Ekb, Scv Karasjeozersk, 02.10.2023, SVER(F)86446.

**P. coronifera* Kleb. – Par, on living leaves of *Rhamnus cathartica* (*Rhamnaceae*): Ekb, 4S, 08.1989, SVER(F)86444.

**P. recondita* Roberge ex Desm. – Par, on living leaves of *Clematis vitalba* L. and *C. orientalis* L. (*Ranunculaceae*): Ekb, BG UrB RAS, 30.05.2012, SVER(F)86453; ibid., Scv Makarovsky, 27.08.2018, SVER(F)86449.

**Uromyces amurensis* Kom. – Par, on living leaves of *Maackia amurensis* (*Fabaceae*): Ekb, BG UrB RAS, 04.08.1997, SVER(F)86448.

**U. caraganae* (Thüm.) Magnus – Par, on living leaves of *Caragana arborescens* (*Fabaceae*): Ekb, UFU, 05.10.2022, SVER(F)86447.

Pucciniastraceae

**Melampsoridium carpini* (Nees) Dietel – Par, on living leaves of *Carpinus betulus* L. (*Betulaceae*): Ekb, Scv Romanovo, 18.09.2022, SVER(F)86375.

**M. hiratsukanum* S. Ito ex Hirats. – Par, on living leaves of *Alnus incana* (*Betulaceae*): Ekb, surrounds of Ural Federal University biological station, 20.08.2023, SVER(F)86374.

Ustilaginomycotina

Exobasidiomycetes

Exobasidiales

Exobasidiacae

**Exobasidium* cf. *camelliae* Shirai – Par, on living leaves of *Camellia japonica* L. (*Theaceae*): Ekb, BG UrB RAS, Greenhouse № 2, 06.1996, SVER(F)86451.

**E. dubium* Racib. – Par, on living leaves of *Rhododendron luteum* Sweet (*Ericaceae*): Ekb, Scv Palnix, 18.09.2020, SVER(F)86450.

Microstromatales

Microstromataceae

**Pseudomicrostroma juglandis* (Bérenger) Kijporn. et Aime – Par, on living leaves of *Juglans regia* and *J. cinerea* (*Juglandaceae*): Ekb, BG UrB RAS, 20.09.2020, SVER(F)86452; ibid., 4S, 05.09.1988, SVER(F)86328.

Oomycota

Peronosporomycetes

Peronosporales

Peronosporaceae

**Plasmopara* cf. *muralis* Thines – Par, on living leaves of *Parthenocissus quinquefolia* (*Vitaceae*): Ekb, BG UrB RAS, 07.2007, SVER(F)86376.

DISCUSSION

In Sverdlovsk Region and Ekaterinburg City, there are 115 species of fungi and fungus-like were identified for the first time. Probably, four species (*Boeremia heteromorpha*, *Chuppomyces* cf. *handelii*, *Nectria nigrescens*, *Passalora* cf. *menispermi*) are indicated for the first time in Russia. 107 species were collected in gardens, parks and forest belts of Ekaterinburg, and eight species in the natural conditions of the region. 106 species are pathogens of woody plants, eight are non-pathogenic saprotrophs on dead wood, and one species mycorrhizal and forms fruiting bodies on dead wood.

A number of fungal species rare for all of Russia have been identified in the open ground of gardens and parks in Ekaterinburg: *Sporocadus cotini* collected on *Cotinus coggygria*; *Calonectria pseudonaviculata*, *Guignardia miribelii*, *Pseudonectria buxi* and *Puccinia buxi* on *Buxus sempervirens*; *Ascochyta rhododendri*, *Chuppomyces* cf. *handelii* and *Exobasidium dubium* on different species of *Rhododendron* spp.; *Camarosporidiella moricola* and *Pseudosplanchnonema phorcioides* on *Morus alba*; *Ascochyta actinidiae* on *Actinidia kolomikta*; *Ramularia schisandrae* on *Schizandra chinensis*; *Pseudocercospora araliae* on *Aralia mandshurica*.

Seven species collected in the urban greenhouses: *Phyllosticta magnoliae* collected on *Magnolia grandiflora*; *Phyllachora phyllostachydis* on *Phyllostachys reticulata*; *Exobasidium* cf. *camelliae* on *Camellia japonica*; *Boeremia hedericola* on *Hedera helix*; *Erysiphe lauracearum* has found on *Laurus nobilis*; *Puccinia asparagi* on *Asparagus* sp. as well as *Lentinula edodes* on rotten logs of *Juglans mandshurica* and *Tilia amurensis* serving as curbs that limit paths from the beds.

A number of fungal species included in the European lists of alien taxa, as well as dangerous phytopathogens on a global scale (Mułenko et al., 2010; Wojewoda, Karasinski, 2010; Beenken, Senn-Irlet, 2016; Rabitsch, Nehring, 2021; Voglmayr et al., 2023; Schertler et al., 2024): *Ascochyta actinidiae*, *A. syringae*, *Boeremia exigua*, *Camarosporium quaternatum*, *Calonectria pseudonaviculata*, *Gymnosporangium sabinae*, *Guignardia miribelii*, *Kabatina thujae*, *Melampsoridium hiratsukanum*, *Nothoseptoria caraganae*, *Phyllosticta innumerabilis*, *P. magnoliae*, *Plasmopara muralis*, *Podosphaera amelanchieris*, *Pseudomicrostroma juglandis*, *Pseudonectria buxi*, *Puccinia asparagi*, *P. buxi*, *Venturia pyrina*, *Uromyces caraganae.*

Pleurotus citrinopileatus was collected in Ekaterinburg on fallen trunks of elm and poplar, where it was deliberately populated. The fungus develops and bears fruitbodies for

several years only on two logs in which its mycelium was placed, but does not spread to adjacent dead logs.

It is also worth mentioning about the alien East Asian species – *Lentinula edodes* (shiitake), which is present in the lists of invasive and alien species in many European countries (Beenken, Senn-Irlet, 2016; Rabitsch, Nehring, 2021; Voglmayr et al., 2023). Since the 1980s, this fungus has been regularly found in European cities greenhouses, and in Ekaterinburg City it was also discovered in a greenhouse in 1996. The fungus is cultivated on an industrial scale: global production of shiitake in 2021 was about 10 million tons, and on farms located in the European part of Russia, about 60 tons of this exotic fungus are grown, which are sold in grocery stores throughout the country (Khrenov, 2022). Consequently, human activities contribute to the expansion of the range and abundance of this species on a national and global scale. Obviously, such alien species should not be given the status of rare and protected in the European and Siberian parts of Russia, and also should not be included in the Monitoring list of the Red Data Book of Russia. In order to preserve natural populations, *L. edodes* is included in the Red Data Book of Primorsky Krai (Postanovleniye.., 2022).

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Дополнение к списку видов грибов, ассоциированных с чужеродными и местными древесными растениями в Свердловской области (Россия, Средний Урал)

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Впервые для Свердловской обл. приводится информация о находках 115 видов и двух подвидов грибов и грибоподобных организмов из отделов *Ascomycota*, *Basidiomycota* и *Oomycota*, которые формируют плодовые тела на чужеродных и местных видах древесных растений. Четыре вида (*Boeremia heteromorpha, Chuppomyces* cf. *handelii, Nectria nigrescens, Passalora* cf. *menispermi*) впервые указываются для России. 94% видов собраны только на чужеродных древесных растениях в посадках города Екатеринбурга. Фитопатогенами являются 92% изученных видов.

Keywords: биоразнообразие, инвазия, патогены растений, распространение грибов, Россия, чужеродные виды, *Ascomycota*, *Basidiomycota*, *Oomycota*.