

UDK 632.4

AN ANNOTATED LIST OF FUNGI ON TREES AND SHRUBS ON THE BLACK SEA COAST OF THE CAUCASUS

V.P. ISIKOV

Nikita Botanical Garden - National Scientific Center, Yalta

Introduction

In 117 species of trees and shrubs in 9 localities of the Black Sea coast it was found 98 fungi species of three classes: Deuteromycetes - 37 fungi species on 42 plant species, Ascomycetes - 26 fungi species on 42 plant species, Basidiomycetes - 35 fungi species on 92 plant species. Dominated fungi are those causing powdery mildew - 17 fungi species, necrotic diseases of shoots - 35, root rot - 10 species. Most common species are fungi of the genera *Oidium* – on 19 plant species, *Cytospora* – on 4 species, *Diaporthe* – on 5 species, *Phyllactinia* – on 3 species, *Ganoderma* – on 14 species, *Stereum* – on 9 plant species.

Materials and Methods

Studies of fungi species composition on trees and shrubs were carried out in the 9 settlements on the Black Sea coast of the Caucasus: Anapa, Adler, Sochi, Novy Afon, Sukhumi, Zugdidi, Ochamchire, Pitsunda, Batumi. The studies were made in botanical gardens, city plantings, ornamental nurseries, arboretums, natural stands. It has been totally studied mycoflora of 117 species of introduced and native trees from 81 genera. Dominated families were Fabaceae - 8, Rosaceae - 9, Oleaceae - 4, Pinaceae - 4 genera. According to the number of species the genera *Pinus* - 8, *Quercus* - 7, *Salix* - 4 dominated. Mycological investigations were carried out in autumn. They included the expedition route surveys of plantings, which takes into account the prevalence of the disease on number of hosted plants in the planting and intensity of fungus development on a 5-point scale: 1 point - single fruit bodies on the plant organ; 2 - low intensity, fungus revealed on not more than 25% of leaves and/or shoots; 3 - middle intensity, fungus affected 50% of leaves and/or shoots; 4 – strong intensity, about 75% of organs are affected; 5 - fungus found throughout the tree in its respective ecological niches.

Results and discussion

According to its environmental conditions, many areas of the Black Sea coast of the Caucasus are very similar to the Southern Coast of the Crimea, so these areas are considered potential sources of new exotic species introduction to the Crimea. However, together with the introduction of woody plants symbiotrophic related fungi, including pathogens, that could be of a great danger to the life of plants in new environment, are brought. Therefore, knowledges of plant pathogenic fungi species composition has scientific and practical value for successful introduction. Mycoflora of potentially new to the Crimea exotic plants on the Black Sea Coast of Caucasus has not been studied. There are some literature information about bracket fungi of Caucasus [1, 2, 9], fungi of the genus *Cytospora* [4], diseases of laurel [8] and subtropical plants [3, 5], mycobiota of some introduced and native species in the adjacent regions [6, 7, 10, 11]. With this regards, studies of mycobiota in potentially new for Crimea species was carried out in their natural and culture habitats.

Class DEUTEROMYCETES**Order Moniliales, family Moniliaceae**

Oidium sp. - powdery mildew fungi, the development of which was fixed in the conidial stage. It was found on the leaves of *Hydrangea arborescens* L., rarely noticed, only on single plants, the intensity of fungus development is middle (Adler).

Oidium sp. - found on the certain *Eucalyptus* species, only the apical leaves on the stool shoots are affected, it occurs sporadically (Adler).

Oidium sp. - noticed on the coppice shoots` leaves on *Laurocerasus officinalis* Roem., intensity of fungus development is low (Adler).

Oidium sp. - 100% coppice shoots` leaves on *Quercus ilex* L. were damaged, intensity of fungus development is strong, it`s often found in shaded areas (Sukhumi).

Oidium sp. – rarely noticed on *Mahonia fortune* (Lindl.) Fedde, powdery coating is formed on the bottom side of leaves, in some plants up to 30% of the leaves were affected (Sukhumi).

Oidium sp. - 100% leaf damages was noticed on *Carpinus betulus* L., fungus is found on different age plants, intensity of fungus development is strong, especially in habitats with high humidity (Sukhumi).

Oidium sp. - fungus found on the leaves of coppice shoots on *Robinia pseudoacacia* L., rare, intensity of fungus development is low (Sukhumi).

Oidium sp. - fungus found on the leaves of the young summer shoots on *Platanus orientalis* L., rare (Sochi).

Oidium sp. - fungus is widespread on *Lagerstroemia indica* L., occurs on the leaves, flowers, fruits and young shoots. Prevalence of the fungus is up to 100% through all the areas of the host plant growth, intensity of fungus development is high (Sochi).

Pseudoidium tuckeri (Berk.) Paul et Kap. - fungus found on the leaves *Euonymus japonica* Thunb., it`s common in all the areas of this plant growth, intensity of fungus development is usually low, but in shaded places it`s up to the middle level (Sochi).

Order Moniliales, family Dematiaceae

Stigmina platani (Fuck.) Sacc. - fungus causes brown spots on leaves *Platanus acerifolia* (Ait.) Willd., damages are up to 70% of leaves` surface, rare, intensity of fungus development is high (Adler).

Order Moniliales, family Tuberculariaceae

Tubercularia vulgaris Tode - found on dead annual shoots *Kerria japonica* (L.) DC., noticed on single plants, intensity of fungus development is middle (Sukhumi). The species was also noticed on died old trunks and skeletal branches *Pittosporum eugenioides* A.Cunn. Found on single plants, intensity of fungus development is high (Adler).

Order Melanconiales, family Melanconiaceae

Gloeosporium platani (Lev.) Oudem. - specialized pathogenic fungus, causing wilting and premature shedding of leaves on different *Platanus* L. species. On *Platanus acerifolia* (Ait.) Willd. intensity of fungus development is low (Sochi); on *Platanus occidentalis* L. fungus affects up to 50% of leaves but it has low developmental intensity (Adler); on *Platanus orientalis* L. fungus was found on the coppice shoots and intensity of fungus development is middle (Sochi).

Pestalotia funerea Desm. - pathogenic fungi identified on *Pinus* sp., strongly affects needles on current-year shoots. Affected needles become light, gray and fall prematurely (Ochamchira).

Pestalotia quepini Desm. - fungus causes brown spots on leaves, found on *Acca selloviana* (Berg.) Burr., rare (Sukhumi). Much more frequently was noticed on *Pterostyrax hispida* Sieb. et Zucc., at the first stage of development causes strong (up to 25% of the leaf surface) brown, then light spotting, more common on the autumn leaves (Ochamchira).

Coryneum depressum Kze et Schum. - phytopathogenic necrotrophic fungus found on different age *Quercus suber* L. trees, affects up to 15% of annual shoots, intensity of fungus development is high (Sochi).

Order Sphaeropsidales, family Sphaeropsidaceae

Phyllosticta mahoniae Sacc. et Speg. - fungus causes brown spots on leaves *Mahonia bealei* (Fortune) Carr., rare, intensity of fungus development is low (Batumi).

Phyllosticta arbuti-unedonis Pass. - found on *Arbutus unedo* L. leaves, on the single trees 100% of leaf damages was noticed, intensity of fungus development is middle (Adler).

Cytospora leucosperma Fr. - one of the most common necrotrophic fungi on woody plants, found on *Platanus acerifolia* (Ait.) Willd., affects IV-I order shoots, occurs on every plant of this species, intensity of fungus development is high (Adler).

Cytospora leucostoma Sacc. - necrotrophic micromycetes identified on *Chaenomeles japonica* (Thunb.) Lindl., damages 10-year-old shoots, intensity of fungus development is low (Sochi).

Cytospora sacculus (Schw.) Gvrit. - found on IV-III order shoots *Castanea sativa* Mill., noticed on every plant of the species, intensity of fungus development is middle (Batumi). This species is wide-spread on *Punica granatum* L., causes necrosis of 1-2-year-old shoots, intensity of fungus development is high (Sochi).

Cytospora chrysosperma Fr. - necrotrophic fungus is wide-spread on many *Salix* L. species. It was revealed on *Salix alba* L. weakened plants, damages annual shoots, intensity of fungus development is low (Anapa).

Phoma berberidis Sacc. - specialized phytopathogenic fungus that causes shoot necrosis on *Berberis thunbergii* DC. resulting in annual shoots death along the tree. It's spreaded on plants of this species, intensity of fungus development is low (Adler).

Phomopsis laschi v. Hohn. - found on *Euonymus wilsonii* Sprague, causes necrosis of I-II order shoots, intensity of fungus development is middle (Batumi).

Phomopsis dearnesiana (Sacc.) Arx. - noticed on the flowering shoots *Zanthoxylum piperitum* DC., affects I order shoots, intensity of fungus development is high (Batumi).

Phomopsis magnoliicola f. macrosporophora Dias. ex Camar - noticed on *Magnolia delavayi* Franch., causes necrosis of 2-3-year-old shoots, rare (Batumi).

Cytosporina stellulata Sacc. - necrotrophic fungus found on annual shoots *Berberis thunbergii* DC., intensity of fungus development is low (Adler).

Coniothyrium concentricum (Desm.) Sacc. - fungus causes ringed spots on *Jucca* sp. stems, damages all plants of this species, intensity of fungus development is low (Adler). This species is also noticed on all the specimens of *Hedera helix* L. leaves of which are affected up to 70% (Sukhumi).

Fusicoccum sp. - fungus found on 3-5-year-old shoots *Broussonetia papyrifera* (L.) L. Her., has low spreading in tree crown, intensity of fungus development is middle (Sochi).

Sphaeropsis ellisii Sacc. - specialized necrotrophic fungus with epiphytotic type of development. Causes mass shrinkage of *Pinus pytiusa* Stev. young trees, occurs in all areas of the host species growth. Intensity of fungus development is high (Pitsunda).

Camarosporium laburni Sacc. et Roum. - specialized fungus on *Laburnum anagyroides* Medic., fruit bodies are found abundantly on the 1-3-year-old shoots, available on all the specimens (Sukhumi).

Paradiplodia ribis Zer. – fungus found on dead biennial shoots of *Hedera colchica* K. Koch, rare, intensity of fungus development is middle (Sochi).

Diplodia rutaecola Thum. - necrotrophic fungus found on III order shoots *Phellodendron amurense* Rupr., intensity of fungus development is high (Batumi).

Diplodia sp. - fungus found on III-IV order shoots in *Paulownia tomentosa* Steud., has low intensity of development (Batumi).

Diplodia buxi Fr. - specialized necrotrophic fungus found on *Buxus sempervirens* L., causes death of annual shoots. It occurs in all individuals of this plant species, intensity of fungus development is middle. Ascigerous stage of this fungus *Othia* sp. was noticed on the single plants (Adler).

Order **Sphaeropsidales**, family **Leptostromataceae**

Malasmia acerinum Lev. - pathogenic fungus causes black spots on leaves *Acer platanoides* L. The prevalence of the fungus is low (5%), found in damp places, mainly in the spherical form of this species (Sochi).

Order **Excipulales**, family **Excipulaceae**

Dinemasporium decipiens Sacc. – fungus found on all dead shoots *Collecia cruciata* Gill. et Hook., intensity of fungus development is high (Sukhumi).

Class **ASCOMYCETES**

Order **Erysiphales**, family **Erysiphaceae**

Microsphaera alphitoides Griff. et Maubl. - powdery mildew fungus in teleomorphic stage. It was found on the leaves *Quercus iberica* Stev., strongly affects up to 100% of leaves (Zugdidi). Fungus is typical for this plant species in other habitats also, noticed in 150-year-old trees in the lower part of the crown (Adler). On *Quercus castaneifolia* C.A.M. mildew was noticed on the coppice shoots (Adler), and on *Quercus petraea* Liebl. it was found on young trees and strongly – on coppice shoots (Sochi). Intensity of fungus development in all cases is high.

Microsphaera sp. - powdery mildew found in dense plantings and shaded areas on *Viburnum tinus* L., fungus affects up to 80% of leaves, intensity of its development is high (Sochi).

Phyllactinia fraxini (DC.) Fuss - specialized powdery mildew fungus noticed on *Fraxinus excelsior* L., available in all of the specimens of this species, intensity of fungus development is high. It also occurs in the decorative forms of this species - *Fraxinus excelsior* "monofila-pendula" and affects 100% of leaves (Sochi).

Phyllactinia roboris (Gachet) Blum. - powdery mildew fungus found on all individuals of *Fagus orientalis* Lipsky through the area of plants` growth, prevalence in the tree is up to 50%, intensity of fungus development is high (Zugdidi).

Phyllactinia guttata (Wallr.: Fr.) Lev. - one of the most common powdery mildew fungi on *Corylus avellana* L., occurs throughout the area, prevalence along a tree in the shaded areas is 70%, intensity of fungus development is high (Sochi).

Uncinula adunca (Wallr.: Fr.) Lev. - powdery mildew fungus found on *Salix caprea* L., affects 100% of leaves, intensive development occurs in damp places (Sochi).

Sphaerotheca pannosa (Wallr.: Fr.) Lev. - fungus causes powdery mildew on *Rosa canina* L., common, intensity of fungus development is high (Adler).

Order **Helotiales**, family **Dermateaceae**

Cenangium abietis (Pers.) Rehm. - necrotrophic fungus with epiphytotic development. Causes the death of *Pinus sylvestris* L. young plants (up to 15 years age), the prevalence along a tree is 100%, intensity of fungus development is high (Sochi).

Order **Hypocreales**, family **Nectriaceae**

Nectria magnusiana Rehm - obligate saprotroph, found on the dead skeletal branches in *Pteroceltis tatarinovi* Maxim, development of fungus takes place after the destruction of fungi pathogenic species fruit bodies (Batumi). It was also found in *Magnolia grandiflora* L., its development is similar (Zugdidi).

Nectria cucurbitula (Tode) Fr. - obligate saprotroph, found on dead shoots in *Pinus pytiusa* Stev., common, intensity of fungus development is middle (Pitsunda).

Order **Hysteriales**, family **Hysteriaceae**

Hysterographium fraxini (Pers.) De Not. - plant pathogenic necrotrophic fungus, specialized in plants of Oleaceae family, more rarely - in Bignoniaceae. In particular, this fungus was found on *Catalpa steciosa* Ward where it affects skeletal branches; intensity of fungus development is very high. The fungus was also found on *Ligustrum chinensis* Koehne in all the areas of its growth, affects shoots 2-5 mm in diameter, intensity of fungus development is high (Batumi). Has low prevalence on *Osmanthus fragrans* Lour. wintering shoots of 3-years age (Sochi, Batumi). Fungus is mostly widespread on *Olea europaea* L., occurs in all the growth areas. In plantings it affects up to 100% of the trees and up to 30% of shoots in the crown, intensity of fungus development is high (New Athos).

Hysterographium biforme (Fr.) Rehm. - saprotroph, identified on trunk bear wood on *Hibiscus mutabilis* L., *Xylosoma racemosa* Miq., *Pittosporum tobira* Ait., *Cornus iberica* G.Woron. and skeletal branches *Ulmus parvifolia* Jacq. Rare, intensity of fungus development is middle (Batumi).

Hysterium pulicare Pers. - saprotroph, revealed on the annual shoots on *Genista hispanica* L., common, intensity of fungus development is high (Sochi).

Order **Diaporthales**, family **Diaporthaceae**

Cryptodiaporthe hranicensis (Petr.) Wehm. - phytopathogenic necrotrophic fungus found on annual coppice shoots *Ligustrum lucidum* Ait., rare, intensity of fungus development is high (Sukhumi).

Cryptodiaporthe pyrrocystis (Berk. et Br.) Wehm. - phytopathogenic necrotrophic fungus found on *Osmanthus fortune* Carr., spreaded on young annual shoots, rare (Adler).

Cryptosporella aurea Sacc. - necrotrophic fungus is widespread on the 8-10-year shoots *Sophora japonica* L., occurs in all individuals of the species, prevalence along a tree is up to 25%, intensity of fungus development is very high (Sochi).

Diaporthe leiphaemia (Fr.) Sacc. - necrotrophic fungus found on annual coppice shoots *Quercus myrsinaefolia* Blume. Anamorph of this species is fungi from genus *Phomopsis*. It occurs in all growing areas of the host plant, intensity of fungus development is high (Ochamchira).

Diaporthe eres Nits. - necrotrophic fungus found on all the annual shoots *Staphylea colchica* Stev. Ubiquitous, everywhere has a high developmental intensity (Pitsunda). This species has also been found on IV order shoots *Magnolia delavayi* Franch, intensity of fungus development is middle. Simultaneously with this fungus its anamorph - *Phomopsis magnoliicola* f. *macrosporophora* was noticed (Adler). Significantly spread on *Magnolia grandiflora* L., occurs on skeletal branches (diameter 16 mm), intensity of fungus development is high (Zugdidi).

Diaporthe medusae Nits. - necrotrophic fungus found on shoots with a diameter of 4-7 mm on *Vitis vinifera* L., presents on every plant of the species, intensity of fungus development is high (Batumi). It was also noticed on *Desmodium tiliaefolium* (D.Don) G.Don shoots, where intensity of fungus development is middle (Sukhumi).

Diaporthe oncostoma (Duby) Fuck. - necrotrophic fungus found on shoots with a diameter of 8-10 mm on *Robinia pseudoacacia* L., is widespread, intensity of fungus development is very high. Its development occurs only in teleomorph stage (Pitsunda).

Order **Diaporthales**, family **Valsaceae**

Valsa ceratosperma (Tode: Fr) Maire – teleomorphic stage of necrotrophic fungus from *Cytospora* genus. This fungus was found on I order shoots *Pretoceltis tatarinovi* Maxim, intensity of fungus development is very high (Batumi).

Order **Diatrypales**, family **Diatrypaceae**

Diatrypella verruciformis (Ehrh.) Nits. - necrotrophic fungus, its anamorph is fungi from genus *Phoma*. It was found on skeletal branches in *Hibiscus mutabilis* L., intensity of fungus development is middle. This species was also noticed on skeletal branches with a diameter of 15 mm on *Phellodendron amurense* Rupr., intensity of fungus development is high (Batumi).

Order **Rhytismatales**, family **Phacidiaceae**

Rhytisma acerinum (Pers.) Fr. – phytopathogenic fungus causes black spots on leaves *Acer platanoides* L. Occurs in conjunction with the anamorph *Malasmia acerinum*, fungus prevalence in plantings is 100%, intensity of fungus development is middle (Sochi).

Order **Xylariales**, family **Xilariaceae**

Daldinia concentrica (Bolt.) Ces. et de Not. - xylophilic micromycete found on bare wood on *Machilus thunbergii* Sieb. et Zucc., rare. It was also noticed on skeletal branches *Phellodendron amurense* Rupr., intensity of fungus development is very high (Batumi). Besides, the fungus occurs on II-III order shoots *Desmodium tiliaefolium* (D.Don) G.Don, where it has a strong degree development (Sukhumi).

Hypoxylon fuscum Fr. - xylophilic micromycetes identified on thick skeletal branches *Photinia serrulata* Lindl., rare (Sochi).

Class **BASIDIOMYCETES**

Order **Uredinales**, family **Pucciniaceae**

Phragmidium tuberculatum Mull. - rust fungus, found on different varieties of *Rosa canina* L., affects leaves, found everywhere, intensity of fungus development is high (Adler).

Tranzschelia pruni-spinosae (Pers.) Diet. - rust fungus found on *Prunus divaricata* Ldb., in all places of the host plant growth it has a very poor developmental level. In areas with high humidity affects 100% of leaves, intensity of fungus development is high (Sochi).

Order **Aphylophorales**, family **Popyporaceae**

Abortiporus biennis (Bull. Ex Fr.) Sing. - bracket fungus causing root rot. Found on *Trachycarpus fortune* (Hook.) H.Wendl. stumps in wet conditions, rare (Adler). This fungus has also been found on the stumps of *Padus racemosa* (Lam.) Gilib., single finding (Sukhumi).

Antrodia albida (Fr.) Donk. - xylophilic macromycetes found on the dieing trunks *Laurocerasus officinalis* Roem., rare (Adler).

Bjercandera fumosa (Pers. Ex Fr.) Karst. – xylotrophic macromycetes noticed on the broken trunks *Chamaecyparis lawsoniana* (Murr.) Parl., rare (Adler).

Coriolus versicolor (L. ex Fr.) Quel. - one of the most common xylotrophic macromycetes in some deciduous plants and conifers. Found on trunks and drying skeletal branches *Laurus nobilis* L., in the points of mechanical damage on *Pittosporum tobira* Ait. trunks (Sukhumi), on stumps and bare wood on *Castanea sativa* Mill., masse on *Sapindus mucorossii* Gaerth. stumps, everywhere on the felled trunks *Fagus orientalis* Lipsky, rarely on *Cryptomeria japonica* D.Don. (Batumi) stumps, often on large deadfallen wood on *Carpinus betulus* L. (Adler).

Daedalea guercina L. ex Fr. – specialized to *Quercus* genus plants, xylotrophic macromycetes found on stumps of old trees, the species of which could not be established, rare (Sochi).

Fomitopsis cytisina (Berk) Bond. et Sing. - xylotrophic macromycetes causes root rot fruit bodies appear at the base of dead old trees *Populus pyramidalis* Roz. and *Platanus orientalis* L. (Zugdidi), at the base of alive trunks with a diameter of 60 cm on *Sapindus drummondii* Hook. et Arn. (Sukhumi) and it has been also found on trunks diameter of 130 cm *Platanus acerifolia* (Ait.) Willd. (New Athos).

Fomitopsis ulmarius (Sow. Ex Fr.) Bond. et Sing. - xylotrophic macromycetes causes stem rot in dead trees *Cinnamomum camphora* (L.) Nees. et Eberm. (Sukhumi) and *Platanus orientalis* L. (Zugdidi).

Fomitopsis pinicola (Sw. Ex Fr.) Karst. - optional macromycetes causes stem and root brown rot, identified on the stumps of dead trunks *Pinus* sp. (Adler, Sukhumi).

Gloeophyllum abietinum (Bull. Ex Fr.) Karst. - xylotrophic macromycetes specialized to coniferous trees found on the dead trunks *Pinus* sp. (Adler).

Hirschioporus pergamenus (Fr.) Bond. et Sing. - xylotrophic macromycetes causes intense peripheral white rot in dead trunks, found on stumps and fallen trunks of deciduous species, common (Sukhumi).

Lenzites betulina (L. ex Fr.) Fr. - xylotrophic macromycetes found on fallen trunks of deciduous trees, rare (Batumi).

Polyporus squamosus Huds. ex Fr. – saddleback fungus, a parasitizes on alive trunks of hardwood, causes a central stem rot, found on *Salix purpurea* L. trunks and at the places of thick side trunks cuts on *Eucalyptus viminalis* Labill. (Sukhumi).

Fomes fomentarius (L. ex Fr.) Gill. - a real tinder, causes central stem rot, found on dead old trees (diameter 100 cm) *Populus pyramidalis* Roz. (New Athos), on the drying trees *Salix matsudana* Koidz. (Sukhumi), everywhere on *Fagus sylvatica* L. (Adler), rarely on *Platanus orientalis* L. (Sochi).

Laetiporus sulphureus (Bull) Bond. et Sing. - sulfur-shelf mushroom, causes intense stem rot, found in urban plantings on injured trunks *Salix matsudana* Koidz., and also on alive trees with mechanically damaged trunks *Eucalyptus viminalis* Labill. (Sukhumi).

Tyromyces sp. - xylotrophic macromycetes found on stumps after *Pinus pytiusa* Stev. young trees cut, rare (Pitsunda).

Order **Aphyllorales**, family **Stereaceae**

Stereum hirsutum (Willd.) Pers. - xylotrophic macromycetes causes peripheral rot of dead trunks and skeletal branches, found in damp places on dead wood and old trees with mechanically damaged trunks on *Eucalyptus viminalis* Labill. (Adler, Batumi), on dead trunks *Callistemon salignus* DC. (Batumi), massively on stumps *Cerasus vulgaris* Mill. (Batumi), rarely on stumps *Phyllostachys edulis* (Carr.) A.et C.Riviere (Sukhumi), in places of skeletal branches cut on *Quercus bicolor* Willd. (Sukhumi), on stumps *Osmanthus fortunei*

Carr. (Adler), abundant on *Acacia dealbata* Link (Sochi) stumps, rarely on dead skeletal branches *Carpinus betulus* L. (Adler), on trunks *Jubaea spectabilis* HB et K. (Sochi).

Order Aphyllophorales, family Corticiaceae

Schizopora paradoxa Vel. - xylotrophic macromycetes causes weak peripheral wood rot found on dead trunks *Carpinus betulus* L. (Adler).

Order **Aphyllophorales**, family **Hymenochaetaceae**

Phellinus punctatus (Fr.) Pil. - causes peripheral trunk rot in growing trees, rarely found on the trunks of old trees *Buxus sempervirens* L., rarely on the trunks of old trees *Phillyrea latifolia* L. (Sukhumi), rarely on dead trunks *Ligustrum lucidum* Ait. (New Athos), rarely on old trees *Olea europaea* L. (Sukhumi), on the stumps of old trees *Osmanthus fortunei* Carr. (Adler), rarely on dead trunks of ornamental *Acer* sp. (Adler), at the point of the thick trunks breakings on *Platanus orientalis* L. (Adler).

Phellinus contiguus (Pers.: Fr.) Pat. - xylotrophic macromycetes causes wound rot on living trunks *Eucalyptus* sp., rare (Sukhumi).

Phellinus sp. – bracket fungus, identified on the inside-out butt *Carpinus caucasica* A.Grossh., single finding (Zugdidi).

Phellinus tuberosus (Baumg.) Niem. - plum tinder, a parasitizes on the species of Rosaceae family, commonly found on the trunks of old trees *Prunus domestica* L. (Sukhumi) and *Persica vulgaris* Mill. (Pitsunda).

Phellinus tremulae (Bond.) Bond. et Borisov in Bond. - xylotrophic macromycetes specialized to *Populus tremula* L., parasitizes on living trees, causes white stem rot, noticed in all host plant places of growth (Adler).

Phellinus torulosus (Pers.) Bourd. et Galz. - lumpy bracket, causes root rot in growing trees, identified on *Laurocerasus officinalis* Roem., rare (Batumi).

Phylloporia ribis (Schum.: Fr) Ryv. - currant sponge fungus causes root rot in shrub species, found on *Euonymus latifolia* Mill. (Sukhumi).

Order Aphyllophorales, family Caloporaceae

Phaeolus schweinitzii (Fr.) Pat. – Schweinitz`s polypore, the fungus causes root rot in conifers, found at the base of the living trunks *Pinus* sp., *Pinus strobus* L., *Pinus radiata* Don (Sukhumi), on stumps *Pinus nigra* Arn. (Adler, Sochi).

Oxyporus sp. - xylotrophic macromycetes found on stumps *Eucalyptus rubida* Deane et Maid., rare (Batumi).

Order **Aphyllophorales**, family **Clavariaceae**

Sparassis crispa (Fr.) Fr. - xylotrophic optional macromycetes found on fallen trunks *Pinus* sp., very rare (Sukhumi).

Order **Aphyllophorales**, family **Ganodermataceae**

Ganoderma lucidum (Fr.) Karst. - causes brown root rot in hardwood, rarely found on stumps *Fagus sylvatica* L. (Adler), sporadically at the points of trunks mechanical damages on *Quercus ilex* L. (Sochi), often on old trees *Quercus iberica* Stev. (Sochi), rarely on dying trees *Salix matsudana* Koidz. (Sukhumi).

Ganoderma applanatum (Pers. Ex Wallr.) Pat. - causes white root rot in many leaf and coniferous tree species, found on old trees *Cinnamomum camphora* (L.) Nees. et Eberm. (Batumi, Sukhumi, Sochi, New Athos), on the damaged trunks in *Populus simonii* Carr. (Sukhumi), on old trees with a diameter of 100 cm *Gleditschia triacanthos* L. (Sukhumi), on the dying plants *Hibiscus syriacus* L. (New Athos), massively in urban plantings of *Salix matsudana* Koidz., on the stumps with a diameter of 50 cm *Cedrus atlantica* Manetti, on 50

years aged trees *Elaeagnus multiflora* Thunb., 30-40-year-old trees *Acacia dealbata* Link, on old trees *Cercis canadensis* L. and *Cercis siliguastrum* L. (Sukhumi), abundant on stumps *Picea smithiana* (Wall.) Boiss. and *Abies nordmanniana* (Stev.) Spach, on old trees *Carpinus betulus* L. (Adler), often in damp places on stumps *Zelkova carpinifolia* (Pall.) K.Koch (Sochi).

Order **Aphylophorales**, family **Schizophyllaceae**

Schizophyllum commune Fr. - xylophilic macromycetes causes weak surface rot in dead trunks and branches, rarely found on dead trunks *Cupressus sempervirens* L. (Zugdidi), often in *Hedera helix* L. (Sukhumi), rarely on stumps *Pinus densiflora* Sieb. et Zucc. (Adler), singly on leafstocks *Jubaea spectabilis* HB et K. and often on dead trunks *Acacia dealbata* Link (Sochi).

Order **Auriculariales**, family **Auriculariaceae**

Auricularia mesenterica Pers. - xylophilic macromycetes found on dead skeletal branches *Davidia vilmoriana* Wagh. (Batumi) and on the stumps *Ligustrum lucidum* Ait. (Sukhumi).

Order **Agaricales**, family **Lepiotaceae**

Armillaria mellea (Fr.) Kumm. – honey fungus, causes root rot, found on stumps *Carpinus caucasica* A.Grossh. (Zugdidi).

Order **Tricholomatales**, family **Pleurotaceae**

Pleurotus ostreatus (Jacq. Ex Fr.) Kumm. - xylophilic macromycetes found on dead trunks in *Nerium oleander* L., common on weakened trees *Salix matsudana* Koidz. (Sukhumi), sporadically noticed at the cut points of side trunks in *Cordyline australis* Hook. (Batumi).

Conclusions

Thus, on 117 species of woody plants growing in different regions of the Black Sea coast of Caucasus, it has been identified 98 species of fungi from three classes: Deuteromycetes - 37 species in 42 plant species, Ascomycetes - 26 fungi species in 42 plant species and Basidiomycetes - 35 fungi species in 92 plant species. In the class Deuteromycetes fungi belong to 4 orders, 7 families and 20 genera have been identified. Predominated fungi are ones of the order Sphaeropsidales - 20 species, most of them cause necrotic diseases. The most widespread in this class are powdery mildew fungi from the genus *Oidium* - 9 species and necrotrophic fungi of the genus *Cytospora* - 4 species. Ascomycetes are presented with 4 orders, 8 families and 16 genera. Predominated species belong to the order Diaporthales - 9 species, which are ascigerous stage of main necrotrophic fungi, and to the order Erysiphales - 7 species that are teleomorphs of powdery mildew fungi. Class Basidiomycetes includes fungi from 5 orders, 12 families, 27 genera with dominated order Aphylophorales - 22 species, dominated family Polyporaceae - 15 species, dominated genera *Phellinus* - 6 species. According to the number of host plants genera *Ganoderma* (14 species) predominates and due to species number - *Stereum* (9 species). Fungi that cause root rot prevail in this class.

References

1. Bondartsev A.S. Trutovye griby Evropeiskoi chasti SSSR I Kavkaza. – M.-L: izd. AN SSSR, 1953. – 1106 s.
2. Voronihin N.N. Materialy k mikologicheskoi flore Kavkaza // Izv. Kavkaz. muzeia. – Tiflis, 1916. – T. 10. – S. 1-35
3. Voronihin N.N. K flore gribov “cherni” Kryma I Kavkaza // Botan. zhurn. - 1934. – T. 19. – № 6. – S. 551-561.
4. Grivitchvili M.N. Griby roda Cytospora Fr. v SSSR: Sobchata Sakartvelo, 1982. – 214 s.
5. Dzhalongia K.T. Parazitnye griby glavneishih subtropicheskikh dekorativnyh rastenii Abhazii. – Tbilisi, 1965. – 72 s.
6. Lozovoi V.V. Veshenka na Chernomorskom poberezhe Kavkaza // Mikologia I fitopatologia, 1977. – T. 11. – Vyp. 5. – S. 382-385.
7. Melek-Hachatrian Dzh.G. Analis mikoflory severo-vostochnoi Armenii // Izv. AN ArmSSR, ser. Biolog. nauki, 1960. – T. 13. – № 4. – S. 89-96.
8. Mkervali V.G. Gribnye bolezni blagorodnogo lavra // Subtropich. kultury. - 1962. – Vyp. 2. – S. 115.
9. Nikolaeva T.L. K monografii nekotoryh rodov iz sem. Polyporaceae Evropeiskoi chasti Soiuza I Kavkaza (Trametes, Daedaleae, Lenzites) // Trudy botan. in-ta AN SSSR, ser. 2, Sporovye rastenia. – 1938. – Vyp. 4. – S. 377-431.
10. Simonian S.A. Mikoflora botanicheskikh sadov i dendroparkov Armianskoi SSR – Erevan: izd. AN ArmSSR, 1981. – C. 142-143.
11. Shavliashvili I.A., Tavadze B.L. O patogennosti griba *Endotia parasitica* (Murr.) And. et And. v otnoshenii dubov – gruzinskogo i dlinnonozhkovogo: materialy IV konf. po sporovym rasteniam. – Tbilisi, 1983. – S. 108-109.

Isikov V.P. Annotated checklist of tree-inhabiting fungi of the Black Sea Coast of the Caucasus // Works of the State Nikit. Botan. Gard. – 2014. – V. 139 – P. 149 – 158.

The article contains data about microflora of 117 tree and bush species from 45 families and 81 genera, growing along the Black Sea Coast of the Caucasus from Anapa till Batumi. Most of arboreal exotics are potential introduced species for the Southern Crimea. There were found out 98 species fungi from three classes: Deuteromycetes – 37 species, Ascomycetes – 26, Basidiomycetes – 36. The fungi caused leaf illnesses are prevailed - 24, canker and cancer disease of shoots – 40, root rot – 10. Each of the fungi species has its own characteristics in its dissemination and development rate.

Key words: *arboreal exotics, introduced species, microflora, diseases, dissemination, special sorts.*