

Checklist of ascomycetous microfungi of the Nuratau Nature Reserve (Uzbekistan)

I. M. Mustafaev, N. Yu. Beshko, M. M. Iminova

Institute of Botany of Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan

Corresponding author: I. M. Mustafaev, elyor-mustafaev@inbox.ru

Abstract. A checklist of ascomycetous microfungi of the Nuratau Nature Reserve (Nuratau Mountains, Uzbekistan) was compiled for the first time as a result of field research conducted in 2009–2017. In total, 197 species, 3 varieties and 51 forms of micromycetes belonging to 66 genera and 30 families have been identified. Among them 19 species (*Asteromella tanacetii*, *Camarosporium achilleae*, *Diplocarpon alpestre*, *Diplodia celtidis*, *Hendersonia ephedrae*, *Mycosphaerella artemisiae*, *Neopseudocercospora capsellae*, *Phoma hedysari*, *P. mororum*, *Phyllosticta prostrata*, *P. silenes*, *P. trifolii*, *Ramularia trifolii*, *Rhabdospora eremuri*, *Selenophoma nebulosa*, *Septoria cyperi*, *S. dauci*, *S. ranunculacearum*, *S. trifolii*) and one form (*Erysiphe cichoracearum* f. *tanacetii*) were found for the first time for the mycobiota of Uzbekistan. 30 species of microfungi were recorded on 31 new host plants. The most abundant species are representatives of the cosmopolitan genera *Ramularia*, *Septoria*, *Erysiphe*, *Leveillula*, *Mycosphaerella*, *Phoma*, *Cytospora*, *Sphaerotheca*, *Phyllosticta* and *Marssonina*. The annotated checklist includes data on host plant, location, date and collection number of every species.

Keywords: Ascomycetes, biodiversity, host plants, mycobiota, micromycetes, new records, Nuratau Mountains.

Чек-лист сумчатых микромицетов Нуратинского природного заповедника (Узбекистан)

И. М. Мустафаев, Н. Ю. Бешко, М. М. Иминова

Институт ботаники Академии наук Республики Узбекистан, Ташкент, Узбекистан

Автор для переписки: И. М. Мустафаев, elyor-mustafaev@inbox.ru

Резюме. В результате исследований, проведенных в 2009–2017 гг., подготовлен аннотированный список сумчатых микромицетов Нуратинского природного заповедника (хребет Нуратау, Узбекистан). На территории заповедника выявлены 197 видов, 3 разновидности и 51 форма, относящиеся к 66 родам из 30 семейств. Из них девятнадцать видов (*Asteromella tanacetii*, *Camarosporium achilleae*, *Diplocarpon alpestre*, *Diplodia celtidis*, *Hendersonia ephedrae*, *Mycosphaerella artemisiae*, *Neopseudocercospora capsellae*, *Phoma hedysari*, *P. mororum*, *Phyllosticta prostrata*, *P. silenes*, *P. trifolii*, *Ramularia trifolii*, *Rhabdospora eremuri*, *Selenophoma nebulosa*, *Septoria cyperi*, *S. dauci*, *S. ranunculacearum*, *S. trifolii*) и одна форма (*Erysiphe cichoracearum* f. *tanacetii*) выявлены впервые в Узбекистане. 30 видов микромицетов обнаружены на 31 виде новых растений-хозяев. Наиболее распространенными являются представители космополитных родов *Ramularia*, *Septoria*, *Erysiphe*, *Leveillula*, *Mycosphaerella*, *Phoma*, *Cytospora*, *Sphaerotheca*, *Phyllosticta* и *Marssonina*. Аннотированный список содержит подробную информацию по каждому виду, включая питающие растения, местонахождение, дату и коллекционный номер собранных образцов.

Ключевые слова: Ascomycetes, биоразнообразие, микобиота, микромицеты, новые находки, питающие растения, хребет Нурауау.

The Nuratau Nature Reserve (NNR) is situated between 40.468487°N to 40.562476°N and 66.65931°E to 66.927651°E in the central part of the Nuratau Ridge, a major ridge of the Nuratau Mountains (Fig. 1). It is a strictly protected area of IUCN Category I established in 1975. The area is 177.52 km², and altitudes ranging from 530 to 2169 m a. s. l. The Nuratau Mountains with the adjacent small insular ridges are the peripheral northwestern branches of the Pamir-Alay mountain system wedged deeply into the Kyzylkum Desert. They consist of two parallel mountain chains extended on 250 km along the right bank of the Zeravschan River. On southeast, the Nuratau Mountains are separated from the Turkestan Range by Sanzar River Valley. The northern branch of Nuratau is approximately 200 km in length, and the highest peak is 2169 m a. s. l. North of Nuratau, on the southeastern edges of the Kyzylkum Desert, there are some small residual ridges, Pistalitau, Balyklytau, Uchkulach and Egarbelistag. They are 11 to 40 km long and 453 to 654 m a. s. l. The southern branch of the Nuratau Mountains includes Aktau, Karatau, Karakchatau and Khobduntau ridges (maximum altitude is 1993 m a. s. l.). The climate regime is temperate continen-

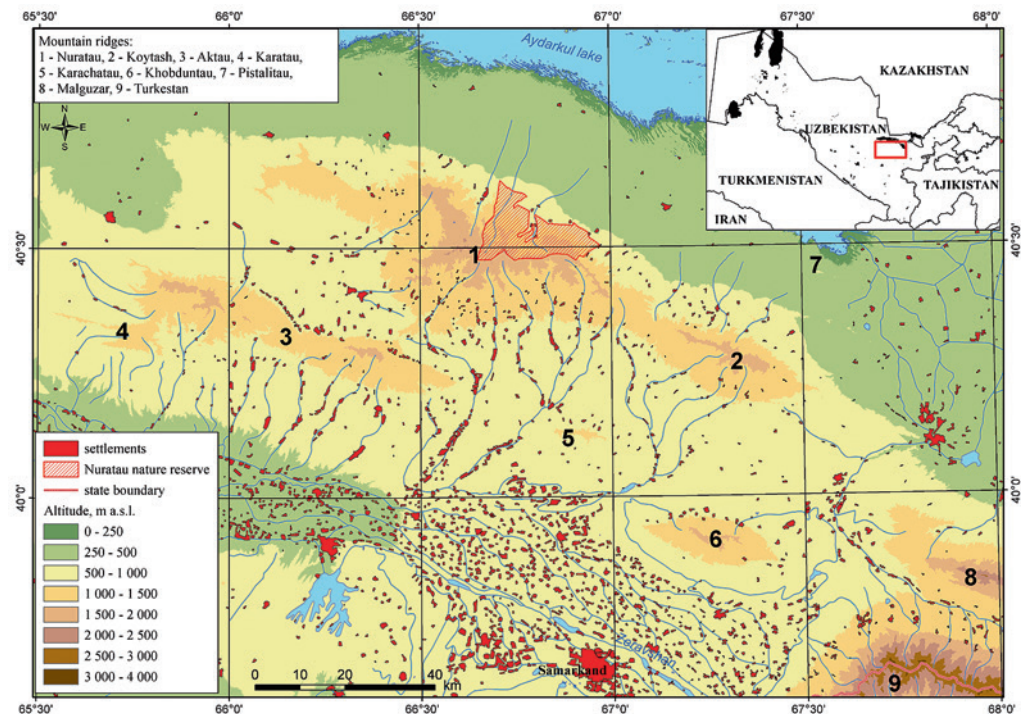


Fig. 1. Location of the study area.

tal semiarid with a mean annual temperature of 14°C and a mean annual precipitation of 300–400 mm. The flora of the Nuratau Mountains includes 1289 species of vascular plants, 34 of them are local endemics; the checklist of the flora of the Nuratau Nature Reserve includes 820 species of 385 genera and 81 families (Tojibaev *et al.*, 2017).

Studies on microfungial biota of Uzbekistan were performed by N. G. Zaprometov, P. N. Golovin, B. D. Kleiner, L. A. Lebedeva, N. I. Gaponenko, T. S. Panfilova, M. Sh. Sagdullaeva, F. G. Akhmedova, S. S. Ramazonova, Sh. G. Kamilov, A. Sh. Sheraliev, Ya. S. Solieva, Kh. Kh. Nuraliev, Yu. Sh. Gafforov and others (Gafforov, 2017). The synopsis of ascomycetous microfungi was published in “Fungal flora of Uzbekistan” (1983–1997). A preliminary checklist of ascomycetous microfungi from the southern part of the Republic of Uzbekistan was prepared by Gafforov (2017).

The mycobiota of the Nuratau Mountains and the NNR was poorly studied until our study. Some data on different taxonomical groups of ascomycetous microfungi of this area were published by author (Mustafaev, Nuraliev, 2012; Mustafaev, 2014a, 2014b). The current study aims to compile a checklist of ascomycetous microfungi of vascular plants of the NNR. The present checklist is the second work about ascomycetous microfungi of Uzbekistan, and serves as one of the sources for complete list of ascomycetous microfungi of the Republic of Uzbekistan.

Material and Methods

About 700 samples of microfungi were collected in 2009–2017 in different habitats of NNR which are designated in the checklist by following abbreviations: **AbV** – Andibarout valley (40.52187°N, 66.74111°E), **AnV** – Andigen Valley (40.54722°N, 66.68990°E), **BMt** – Beshbarmoq Mt. (40.47933°N, 66.81148°E), **GV** – Gurdara Valley (40.50202°N, 66.91888°E), **HMt** – Hayatbashi Mt. (40.49895°N, 66.72956°E), **HV** – Hayat Valley (40.51717°N, 66.74893°E), **MV** – Majrum Valley (40.56529°N, 66.70258°E), **PtMt** – Parandaz Mt. (40.48409°N, 66.79121°E), **QV** – Qarisoy Valley (40.49812°N, 66.80710°E), **TV** – Tikcha Valley (40.48898°N, 66.76365°E). Specimens were examined with a light microscope and identified using the relevant literature (Vasjagina *et al.*, 1961; Bizova *et al.*, 1968; Morochkovskiy *et al.*, 1969, 1971; Shvarzman *et al.*, 1971, 1975; Sutton, 1980; Fungal..., 1989–1997; Melnik, 1997; Crous, 2009; Wikee *et al.*, 2011; Quaedvlieg *et al.*, 2013; Woudenberg *et al.*, 2013; Zhang *et al.*, 2013; Rahimova *et al.*, 2014). Host plant species were identified using “*Conspetus Florae Asiae Mediae*” (1968–1993) and “*Flora of Uzbekistan*” (1941–1962). All collected specimens are stored in Tashkent Mycological herbarium (TASM) of the Institute of Botany.

Voucher specimens for each species of ascomycetous microfungi are cited in the checklist below. Name of collector is designated by abbreviation: IM – Ilyor Mustafaev.

The taxonomy and nomenclature of Ascomycota in the checklist follows international databases “*Index Fungorum*” (2018) and *Mycobank* (2018). The nomenclature of host plants is given according to *The Plant List* (2013).

Results and Discussion

A checklist of ascomycetous microfungi of the Nuratau Nature Reserve is compiled for the first time as a result of field research conducted by authors in 2009–2017. In total, 197 species, 3 varieties and 51 forms of ascomycetous microfungi belonging to 66 genera and 30 families were identified. Among them, four genera and four species have been referred as incertae sedis. 19 new species and one new form to the mycobiota of Uzbekistan were found. They are *Asteromella tanacetii*, *Camarosporium achilleae*, *Diplocarpon alpestre*, *Diplodia celtidis*, *Erysiphe cichoracearum* f. *tanacetii*, *Hendersonia ephedrae*, *Mycosphaerella artemisiae*, *Neopseudocercospora capsellae*, *Phoma hedy-sari*, *P. mororum*, *Phyllosticta prostrata*, *P. silenes*, *P. trifolii*, *Ramularia trifolii*, *Rhabdospora eremuri*, *Selenophoma nebulosa*, *Septoria cyperi*, *S. dauci*, *S. ranunculacearum*, *S. trifolii*. All these new findings are indicated by asterisk (*) in the checklist below. In addition, 30 microfungi are recorded on 31 new host plants in Uzbekistan.

ASCOMYCOTA (Berk.) Caval.-Sm.

Pezizomycotina O. E. Erikss. et Winka

DOTHIDEOMYCETES O. E. Erikss. et Winka

BOTRYOSPHAERIALES C. L. Schoch et al.

Botryosphaeriaceae Theiss. et P. Syd.

***Diplodia celtidis** Roum. — on *Celtis australis* subsp. *caucasica* (Willd.) C. C. Towns.: **MV**, 20 V 2017, IM551.

D. mori Westend. — on *Morus alba* L.: **HV**, 15 VII 2017, IM530.

D. pistaciae Berl. et Bres. — on *Pistacia vera* L.: **HV**, 15 VII 2017, IM550.

Dothiorella sarmentorum (Fr.) A. J. L. Phillips — on *Prunus domestica* L.: **HV**, 15 VII 2017, IM552.

Microdiplodia juglandis Died. — on *Juglans regia* L.: **HV**, 13 VII 2010, IM419.

Phyllostictaceae Fr.

Guignardia alhagi Bubák — on *Alhagi pseudalhagi* (M. Bieb.) Desv. ex B. Keller et Shap.: **MV**, 23 IX 2017, IM662.

Phyllosticta bromi Potebnia — on *Bromus* sp.: **HV**, 4 V 2012, IM152; **TV**, 29 V 2009, IM260.

P. kenimaechia Golovin — on *Ferula moschata* (H. Reinsch) Koso-Pol.: on the north slope of **PMt**, 10 V 2010, IM311; on *Ferula penninervis* Regel et Schmalh.: **MV**, 30 X 2009, IM314; *ibid.*, 20 V 2017, IM374; **HV**, 6 VI 2012, IM149; on *Ferula kokanica* Regel et Schmalh.: **MV**, 30 X 2009, IM082; **BMt**, 15 VI 2010, IM387.

P. lonicerae Westend. — on *Lonicera nummulariifolia* Jaub. et Spach: **HV**, 6 VI 2012, IM132; 28 V 2009, IM290.

***P. prostrata** Brunaud — on *Veronica arguteserrata* Regel et Schmalh.: **HV**, 6 VI 2012, IM077.

***P. silenes** Peck — on *Silene obtusedentata* B. Fedtsch. et Popov: **QV**, 12 V 2010, IM509.

***P. trifolii** Richon — on *Trifolium repens* L.: **HV**, 13 VII 2010, IM195.

P. werestshagini Murashk. — on *Rindera tetraspis* Pall.: **TV**, 6 VI 2012, IM151. First record on *Rindera tetraspis* in Uzbekistan.

CAPNODIALES Woron.

Mycosphaerellaceae Lindau

Mycosphaerella aliena (Pass.) Tomilin — on *Rhaponticum repens* (L.) Hidalgo: **HV**, 6 VI 2012, IM524.

***M. artemisiae** Tilak — on *Artemisia tenuisecta* Nevski: **BMt**, 12 V 2011, IM276.

M. columbariae Feltgen — on *Scabiosa songarica* Schrenk: **BMt**, 15 VII 2010, IM508.

M. ephedrae (Hollós) M. Bechet — on *Ephedra equisetina* Bunge: **PMt**, 3 V 2011, IM523.

M. ferulae (Maffei) Tomilin — on *Ferula* sp.: **PMt**, 6 VI 2012, IM527.

M. graminicola (Fuckel) J. Schröt. — on *Calamagrostis* sp.: **HV**, 30 V 2015, IM526.

M. hypericina (Ellis) Tomilin — on *Hypericum scabrum* L.: **BMt**, 12 V 2011, IM525.

M. recutita (Fr.) Johanson — on *Hordeum bulbosum* L.: **HV**, 6 VI 2012, IM382.

M. sagedioides (G. Winter ex Sacc.) Lindau — on *Dipsacus dipsacoides* (Kar. et Kir.) V. I. Botsch.: **BMt**, 15 VII 2010, IM506.

M. salicicola (Fr.) Johanson ex Oudem. — on *Salix blakii* Goerz: **MV**, 14 VII 2012, IM147.

M. silenicola Woron. — on *Silene* sp.: **HV**, 30 V 2015, IM528.

***Neopseudocercospora capsellae** (Ellis et Everh.) Videira et Crous — on *Crambe cordifolia* subsp. *kotschyana* (Boiss.) Jafri: **GV**, 28 V 2014, IM671.

Ovularia medicaginis Briosi et Cavara — on *Medicago sativa* L.: **HV**, 15 VII 2017, IM672.

O. monosporia (Westend.) Pound et Clem. — on *Rumex* sp.: **HV**, 6 VI 2012, IM555.

Polythrincium trifolii Kunze — on *Trifolium repens*: **HV**, 11 V 2010, IM253; *ibid.*, 18 VII 2011, IM317.

Pseudocercospora cavarae (Sacc. et D. Sacc.) Deighton — on *Glycyrrhiza glabra* L.: **HV**, 27 VII 2016, IM591.

Ramularia acris Lindr. — on *Ranunculus baldschuanicus* Regel ex Kom.: **HV**, 13 V 2010, IM085.

R. anagallidis Lindr. — on *Veronica anagallis-aquatica* L.: **HV**, 11 V 2010, IM083.

R. cynarae Sacc. — on *Cousinia umbrosa* Bunge: **HV**, 6 VI 2012, IM289.

R. didyma Unger — on *Ranunculus baldschuanicus*: **HV**, 19 V 2017, IM375.

R. filaris Fresen. — on *Prunus domestica*: **HV**, 27 VII 2017, IM370.

R. geranii Fuckel — on *Geranium* sp.: **HV**, 6 VI 2012, IM070; on *Geranium collinum* Stephan ex Willd.: **PMt**, 3 V 2011, IM325.

R. grevilleana (Tul. et C. Tul. ex Oudem.) Jørst. — on *Potentilla reptans* L.: **HV**, 4 V 2010, IM120.

R. inaequale (Preuss) U. Braun — on *Taraxacum officinale* Webb: **HV**, 11 V 2010, IM121; on *Cichorium intybus* L.: **HV**, 28 V 2009, IM123; *ibid.*, 8 VI 2012, IM123.

R. lamii Fuckel — on *Leonurus turkestanicus* V. I. Krecz. et Kuprian.: on the north slope of **HMt**, 15 VII 2017, IM334; **QV**, 7 VI 2012, IM389.

R. rhabdospora (Berk. et Broome) Nannf. — on *Plantago lanceolata* L.: **HV**, 11 V 2010, IM084.

R. rufomaculans Peck — on *Persicaria maculosa* Gray: **HV**, 28 V 2009, IM124; *ibid.*, 9 V 2010, IM094; **QV**, 12 V 2010, IM309; on *Polygonum* sp.: **GV**, 28 V 2014, IM413.

R. solenanthi T. M. Achundov — on *Solenanthus circinatus* Ledeb.: on the north slope of **PMt**, 10 V 2010, IM122; **GV**, 3 V 2012, IM130.

- ***R. trifolii** Jaap — on *Trifolium pratense* L.: **HV**, 6 VI 2012, IM425.
R. veronicae Fuckel — on *Veronica anagallis-aquatica*: **HV**, 28 V 2009, IM385.
R. ziziphorae Panf. et Gapon. — on *Ziziphora clinopodioides* Lam.: **HMt**, 6 VI 2011, IM104.
***Rhabdospora eremuri** Ohlert — on *Eremurus* sp.: **TV**, 14 VI 2011, IM170.
R. galii Died. — on *Galium pamiroalaicum* Pobed.: on the north slope of **BMt**, 16 VII 2017, IM400.
R. silenes Petrov — on *Silene* sp.: **HV**, 30 V 2015, IM401.
Rhabdospora sp. — on *Ixiolirion tataricum* (Pall.) Schult. et Schult. f.: **TV**, 19 V 2017, IM402.
Septoria bubakii Jacz. — on *Astragalus* sp.: **PMt**, 6 VI 2012, IM148.
S. convolvuli Desm. — on *Convolvulus arvensis* L.: **HV**, 6 VI 2012, IM154; *ibid.*, 18 VI 2011, IM221; *ibid.*, 1 V 2011, IM274.
S. crataegi Desm. — on *Crataegus turkestanica* Pojark.: **HV**, 27 V 2017, IM436.
***S. cyperi** Ellis et Everh. — on *Cyperus* sp.: **MV**, 3 VIII 2009, IM431.
***S. dauci** Nicolas et Aggéry — on *Daucus carota* L.: **HV**, 16 VII 2017, IM340; *ibid.*, 8 VI 2012, IM432.
S. ferulae Zaprom. — on *Ferula penninervis*: **HV**, 6 VI 2012, IM149; on *Ferula moschata*: **PMt**, 10 V 2010, IM175.
S. galiorum Ellis — on *Galium spurium* L.: **QV**, 15 VII 2010, IM287.
S. gentianae Thüm. — on *Gentiana olivieri* Griseb.: **GV**, 8 V 2012, IM1504; **MV**, 3 V 2015, IM312; *ibid.*, 20 V 2017, IM373.
S. hyperici Roberge ex Desm. — on *Hypericum perforatum* L.: **QV**, 15 VII 2010, IM176; on the north slope of **HMt**, 30 V 2015, IM093.
S. meliloti (Lasch) Sacc. — on *Melilotus albus* Medik.: **HV**, 19 VII 2011, IM310.
***S. ranunculacearum** Lév. — on *Ranunculus arvensis* L.: **HV**, 6 VI 2012, IM159.
S. rubi Westend. — on *Rubus caesius* L.: **HV**, 9 V 2010, IM078.
S. silenes Westend. — on *Silene* sp.: on the north slope of **HMt**, 30 V 2015, IM091.
***S. trifolii** Ellis — on *Trifolium repens*: **HV**, 14 VII 2012, IM143.
Stigmia carpophila (Lév.) M. B. Ellis — on *Prunus bucharica* (Korsh.) B. Fedtsch. ex Rehder: **HV**, 11 V 2010, IM107; on *Cerasus vulgaris* Mill.: **HV**, 29 V 2009, IM328; on *Prunus persica* (L.) Batsch.: **HV**, 5 V 2009, IM109.

Capnodiaceae (Sacc.) Höhn. ex Theiss.

- Capnodium citri** Berk. et Desm. [= *Capnodium salicinum* Mont.] — on *Populus alba* L.: **HV**, 24 IX 2010, IM454.

Cladosporiaceae Nann.

- Cladosporium allii** (Ellis et G. W. Martin) P. M. Kirk et J. G. Crompton — on *Allium altissimum* Regel: **TV**, 10 V 2010, IM313; on *Allium caesium* Schrenk: **MV**, 27 VII 2017, IM458; on *Eremurus* sp.: **TV**, 29 V 2009, IM256.
C. fasciculare Fr. — on *Allium taeniopetalum* Popov et Vved.: **PMt**, 10 V 2010, IM126; *ibid.*, 10 V 2010, IM271.
C. herbarum (Pers.) Link — on *Allium* sp.: **TV**, 27 VII 2017, IM562.
C. macrocarpum Preuss — on *Bothriochloa ischaemum* (L.) Keng: **HV**, 18 VII 2011, IM443.

DOTHIDEALES Lindau

Sacotheciaceae Bonord.

***Selenophoma nebulosa** (Rostr.) Lavrov — on *Oryzopsis latifolia* Roshev: watershed of Hayat and Majrum watercourses, 29 V 2009, IM292.

PLEOSPORALES Luttr. ex M. E. Barr

Camarosporiaceae Wanas.

***Camarosporium achilleae** Hollós — on *Achillea filipendulina* Lam.: **HV**, 31 X 2009, IM399.

C. passerinii Sacc. — on *Morus alba*: **MV**, 3 VIII 2011, IM421.

C. xylostei Sacc. — on *Lonicera bracteolaris* Boiss. et Buhse: **PMt**, 3 V 2011, IM330; **BMt**, 12 V 2010, IM456; on *Lonicera nummulariifolia*: **PMt**, 28 VII 2016, IM420.

Coniothyriaceae W. B. Cooke

Coniothyrium astragali Golovin — on *Astragalus severzovii* Bunge: **PMt**, 10 V 2010, IM298.

C. innatum P. Karst. — on *Populus alba*: **HV**, 27 VII 2017, IM372.

C. olivaceum Bonord. — on *Peganum harmala* L.: **TV**, 15 VII 2010, IM528.

Coniothyrium sp. — on *Scabiosa songarica*: **BMt**, 15 VII 2010, IM409.

Cucurbitariaceae G. Winter

Cucurbitaria astragali Ellis et Everh. — on *Astragalus* sp.: **PMt**, 5 V 2011, IM662.

C. atraphaxidis (Rehm) Vasyag. — on *Atraphaxis virgata* (Regel) Krasn.: **MV**, 19 VII 2011, IM660.

C. ferulae Koshk. — on *Ferula moschata*: **PMt**, 5 V 2011, IM661.

C. obducens (Schumach.) Petr. — on *Juglans regia*: **HV**, 6 VI 2012, IM513.

C. subcaespitosa G. H. Otth. — on *Sorbus persica* Hedl.: **BMt**, 16 VII 2017, IM669.

Didymellaceae Gruyter *et al.*

Ascochyta pisi Lib. — on *Cicer grande* (Popov) Korotkova: on the north slope of **BMt**, 15 VII 2010, IM435. First record on *Cicer grande* in Uzbekistan.

A. viciae Lib. — on *Vicia angustifolia* L. ex Reichard: **HV**, 6 VI 2012, IM131, 18 VI 2011, IM220.

Phoma astragali-alpini Oudem. — on *Astragalus sieversianus* Pall.: on the north slope of **BMt**, 15 VII 2010, IM395. First record on *Astragalus sieversianus* in Uzbekistan.

P. bupleuricola Gonz. Frag. — on *Bupleurum* sp.: **HV**, 18 VI 2016, IM598.

P. consocians Naumov. Host — on *Salix alba* L.: **QV**, 28 VII 2016, IM444; **MV**, 30 X 2009, IM455.

***P. hedysari** Thüm. — on *Hedysarum mogianicum* (B. Fedtsch.) B. Fedtsch.: **BMt**, 15 VII 2010, IM398.

P. herbarum Westend. — on *Scrophularia* sp.: on the north slope of **HMt**, 14 VII 2010, IM393; on *Centaurea ovina* subsp. *besseriana* (DC.) Dostál: **HV**, 11 V 2010, IM446.

P. hyperici Allesch. — on *Dianthus helenae* Vved.: **BMt**, 15 VII 2010, IM392. First record on *Dianthus helenae* in Uzbekistan.

***P. mororum** Sacc. — on *Morus alba*: **HV**, 9 V 2011, IM433.

P. nebulosa (Pers.) Berk. — on *Datisca cannabina* L.: **MV**, 19 VII 2011, IM105.

P. pistacia Bajm. — on *Pistacia vera*: **HV**, 11 V 2010, IM442. *Phoma pistacia* was recorded by Baymuratova in 1961 only on territory of Uzbekistan (Baymuratova, 1963).

P. silenicola Bubák et Ranoj. — on *Silene* sp.: **HMt**, 31 X 2009, IM599.

Leptosphaeriaceae M. E. Barr

Leptosphaeria dianthi N. P. Golovina — on *Dianthus helenae*: **BMt**, 16 VI 2017, IM553.

L. doliolum (Pers.) Ces. et De Not. — on *Artemisia tenuisecta*: **BMt**, 12 V 2010, IM503.

Phaeosphaeriaceae M. E. Barr

Hendersonia atraphaxidis Kravtzev — on *Atraphaxis seravschanica* Pavlov: on the north slope of **HMt**, 14 VII 2010, IM396.

***H. ephedrae** Hollós — on *Ephedra equisetina*: **MV**, 3 VIII 2011, IM397.

Hendersonia sp. — on *Phlomis nubilans* Zakirov: **BMt**, 15 VII 2010, IM404.

Neosetophoma samarorum (Desm.) Gruyter, Aveskamp et Verkley — on *Acer tataricum* subsp. *semenovii* (Regel et Herder) A. E. Murray: **PMt**, 28 VII 2016, IM440.

Pleosporaceae Nitschke

Alternaria alternata (Fr.) Keissl. — on *Erigeron acris* L.: **HV**, 11 V 2010, IM394.

A. brassicae (Berk.) Sacc. — on *Crambe cordifolia* subsp. *kotschyana*: **PMt**, 27 VII 2016, IM223. First record on *Crambe cordifolia* subsp. *kotschyana* in Uzbekistan.

Lewia scrophulariae (Desm.) M. E. Barr et E. G. Simmons — on *Scrophularia vvedenskyi* Bondarenko et Filatova: **BMt**, 15 VII 2010, IM423; on *Leonurus turkestanicus*: **BMt**, 15 VII 2010, IM424.

Pleospora vitalbae (De Not.) Berl. — on *Atraphaxis pyrifolia* Bunge: **GV**, 3 V 2012, IM407.

Pleospora sp. — on *Calamagrostis pseudophragmites* (Haller) Koeler: **MV**, 3 VIII 2011, IM449.

Stemphylium allii Oudem. — on *Allium caesium* Schrenk: **HV**, 27 VII 2017, IM457.

S. vesicarium (Wallr.) E. G. Simmons [= *Macrosporium commune* Rabenh.] — on *Urtica dioica* L.: **PMt**, 3 V 2011, IM098; on *Ferula moschata*: **PMt**, 5 V 2011, IM09; on *Cichorium intybus*: **HV**, 31 X 2009, IM452.

PLEOSPORALES *incertae sedis*

Leptothyrium sibiricum Thüm. — on *Atraphaxis virgata*: **MV**, 19 VII 2011, IM187; on *Atraphaxis pyrifolia*: **MV**, 20 V 2017, IM459.

VENTURIALES Yin, Zhang et al.

Venturiaceae E. Müll. et Arx ex M. E. Barr

Fusicladium pomi (Fr.) Lind — on *Malus sieversii* (Ledeb.) M. Roem.: **HV**, 18 VI 2016, IM380.

Lasiobotrys lonicerae (Fr.) Kunze — on *Lonicera nummulariifolia*: on the north slope of **PMt**, 27 VII 2016, IM427; **MV**, 27 VII 2015, IM429; on the north slope of **HMt**, 27 VII 2015, IM430; on *Lonicera bracteolaris*: on the north slope of **PMt**, 10 V 2010, IM448. First record on *Lonicera bracteolaris* in Uzbekistan.

Venturia inaequalis (Cooke) G. Winter — on *Malus sieversii*: **HV**, 11 V 2010, IM533.

V. radiosa (Lib.) Ferd. et C. A. Jörg. — on *Populus alba*: **HV**, 20 V 2017, IM534.

DOTHIDEOMYCETES *incertae sedis*

***Asteromella tanacetii** (Vasyag.) Vanev et Aa — on *Tanacetopsis karataiensis* (Kovalevsk.) Kovalevsk.: on the north slope of **HMt**, 25 VII 2015, IM445. First record on *Tanacetopsis karataiensis* in Uzbekistan.

Polystomellaceae Theiss. et P. Syd.

Dothidella ulmi (C. J. Duval) G. Winter — on *Ulmus laevis* Pall.: **QV**, 20 X 2017, IM670.

LECANOROMYCETES O. E. Erikss. et Winka

LECANORALES Nannf.

Heterodeaceae Filson

Trichocladia atraphaxis Golovin — on *Atraphaxis pyrifolia*: **TV**, 27 VII 2016, IM167; **BM**, 16 VII 2017, IM349.

T. diffusa (Cooke et Peck) Jacz. f. **hedysarii** Jacz. — on *Hedysarum mogianicum*: **MV**, 19 VII 2011, IM181.

LEOTIOMYCETES O. E. Erikss. et Winka

ERYSIPHALES Gwynne-Vaughan

Erysiphaceae N. K. Sredinsky

Blumeria graminis (DC.) Speer — on *Poa trivialis* L.: **HV**, 25 VII 2015, IM204; **TV**, 10 V 2010, IM273; on *Poa versicolor* Besser: on the north slope of **HMt**, 30 V 2015, IM279; on *Poa bulbosa* L.: **BMt**, 12 V 2010, IM303. First record on *Poa trivialis* in Uzbekistan.

Erysiphe aquilegiae DC. var. **ranunculi** (Grev.) R. Y. Zheng et G. Q. Chen — on *Ranunculus baldschuanicus*: **TV**, 27 VII 2016, IM129; **HV**, 12 VIII 2014, IM130.

E. cichoracearum DC. f. **althaeae** Jacz. — on *Alcea litvinovii* (Iljin) Iljin: **HV**, 23 IX 2010, IM201.

E. cichoracearum f. **bardanae** (Link) Jacz. — on *Arctium leiospermum* Juz. et Ye. V. Serg.: **HV**, 6 VIII 2009, IM075.

E. cichoracearum f. **galii** Jacz. — on *Galium pamiroalaicum*: **PMt**, 27 VII 2016, IM164.

E. cichoracearum f. **lactucae** Jacz. — on *Scariola orientalis* (Boiss.) Soják: watershed of Hayat and Majrum watercourses, 14 VIII 2010, IM406; on the north slope of **HM**, 10 VIII 2012, IM433. First record on *Scariola orientalis* in Uzbekistan.

***E. cichoracearum** f. **tanacetii** Jacz. — on *Lepidolopha komarowii* C. Winkl.: **HMt**, 25 VII 2015, IM202. First record on *Lepidolopha komarowii* in Uzbekistan.

- E. cichoracearum** f. **verbenae** Jacz. — on *Verbena officinalis* L.: **HMt**, 23 IX 2010, IM252; **HV**, 18 VI 2011, IM079; *ibid.*, 23 IX 2017, IM461.
- E. cichoracearum** f. **veronicae** Jacz. — on *Veronica arguteserrata*: **BMt**, 12 V 2010, IM227.
- E. cruciferarum** Opiz ex L. Junell — on *Alyssum dasycarpum* Stephan ex Willd.: **QV**, 7 VI 2012, IM111; **TV**, 10 V 2010, IM110; on *Alyssum alyssoides* (L.) L.: **HV**, 24 IX 2010, IM447.
- E. communis** (Wallr.) Schlttdl. f. **crambes** Jacz. — on *Crambe cordifolia* subsp. *kotschyana*: **GV**, 28 V 2014, IM323.
- E. communis** f. **dianthi** Jacz. — on *Dianthus helenae*: **BMt**, 16 VII 2017, IM339. First record on *Dianthus helenae* in Uzbekistan.
- E. communis** f. **hedysari** Jacz. — on *Hedysarum* sp.: **BMt**, 15 VII 2010, IM275.
- E. convolvuli** DC. — on *Convolvulus arvensis*: **HV**, 23 IX 2010, IM268.
- E. graminis** DC. f. **hordei-spontanei** Jacz. — on *Hordeum bulbosum*: **HV**, 13 V 2010, IM113; *ibid.*, 4 VIII 2009, IM315.
- E. graminis** f. **tritici** É. J. Marchal — on *Aegilops crassa* Boiss.: **HV**, 9 V 2010, IM112; on *Aegilops cylindrica* Host: **QV**, 7 VI 2012, IM128.
- E. horridula** (Wallr.) Rabenh. f. **asperuginis** S. Blumer — on *Asperugo procumbens* L.: **HV**, 9 V 2010, IM234.
- E. horridula** f. **lindelofiae** Golovin — on *Lindelofia macrostyla* (Bunge) Popov: **BM**, 15 VII 2010, IM001.
- E. horridula** f. **rocheliae** Golovin — *Rochelia* sp.: **TV**, 29 V 2009, IM251; on *Rochelia cardiosepala* Bunge: **QV**, 7 VI 2012, IM114; **GV**, 3 V 2012, IM156.
- E. horridula** f. **solenanthi** Jacz. — on *Solenanthus circinatus*: **PMt**, 10 V 2010, IM254; on *Kuschakewiczia turkestanica* Regel et Smirn.: **MV**, 2 V 2011, IM086.
- E. hyperici** (Wallr.) S. Blumer — on *Hypericum perforatum*: **QV**, 3 V 2012, IM158.
- E. labiatarum** Chevall. f. **leonuri** Jacz. — on *Leonurus turkestanicus*: **HMt**, 15 VII 2017, IM335.
- E. labiatarum** f. **origani** (H. A. Dietr.) Jacz. — on *Origanum vulgare* subsp. *gracile* (K. Koch) Ietsw.: **NV**, 6 VI 2014, IM515.
- E. labiatarum** f. **phlomidis** Jacz. — on *Phlomis nubilans*: **NV**, 6 VI 2014, IM106.
- E. necator** Schwein. [= *Uncinula necator* (Schwein.) Burrill] — on *Vitis vinifera* L.: **QV**, 27 VII 2016, IM518.
- E. polygona** DC. — on *Polygonum heterophyllum* Lindm.: **QV**, 15 VII 2010, IM219.
- E. polygona** var. **rumicis** Y. S. Paul et V. K. Thakur — on *Rumex chalepensis* Mill.: **HV**, 24 IX 2017, IM532.
- E. umbelliferarum** (Lév.) de Bary f. **ferulae** Golovin — on *Ferula penninervis*: **HV**, 15 VII 2017, IM337; **BMt**, 16 VII 2017, IM343; on *Ferula angreni* Korovin: **HMt**, 15 VII 2017, IM354. First record on *Ferula penninervis* and *F. angreni* in Uzbekistan.
- E. umbelliferarum** f. **scandicis** Jacz. — on *Physocaulis nodosus* Koch: **GV**, 28 V 2014, IM338; on *Scandix pecten-veneris* L.: **HV**, 3 V 2012, IM157. First record on *Physocaulis nodosus* in Uzbekistan.
- E. urticae** (Wallr.) S. Blumer — on *Urtica dioica*: **HV**, 24 IX 2017, IM504.
- Golovinomyces cichoracearum** (DC.) V. P. Heluta [= *Erysiphe cichoracearum* f. *cichorii* S. Blumer] — on *Cichorium intybus*: **HV**, 23 IX 2017, IM516.
- G. salviae** (Jacz.) M. Scholler, U. Braun et Anke Schmidt — on *Salvia sclaraea* Crantz: **HV**, 23 IX 2017, IM531.

L. Leveillula alhagi (Sorokin) U. Braun [= *L. leguminosarum* f. *alhagi* (Sorokin) Golovin] — on *Alhagi pseudalhagi*: **HV**, 3 VIII 2009, IM076; **MV**, 23 IX 2017, IM510.

L. caryophyllacearum Golovin f. **arenariae** Golovin — on *Arenaria griffithii* Boiss.: on the north slope of **HM**, 25 VII 2015, IM141; *ibid.*, 25 VII 2016, IM280.

L. compositarum Golovin f. **artemisiae** (Jacz.) Golovin — on *Artemisia sogdiana* Bunge: **MV**, 23 IX 2017, IM460. First record on *Artemisia sogdiana* in Uzbekistan.

L. compositarum f. **carthami** (Jacz.) Golovin — on *Carthamus turkestanicus* Popov: **HV**, 24 VII 2015, IM203.

L. compositarum f. **centaureae** (Jacz.) Golovin — on *Centaurea virgata* Lam. subsp. *squarrosa* (Boiss.) Gugler: **HMt**, 23 IX 2010, IM200; **MV**, 13 IX 2014, IM318.

L. compositarum f. **cousiniae** (Jacz.) Golovin — *Cousinia umbrosa*: **TV**, 27 VII 2016, IM257.

L. compositarum f. **helichrysi** (Jacz.) Golovin — on *Helichrysum nuratavicum* Krasch.: **FV**, 24 VII 2015, IM116. First record on *Helichrysum nuratavicum* in Uzbekistan.

L. compositarum f. **perovskiae** Kurbanova — on *Perovskia scrophulariifolia* Bunge: **BMt**, 16 VII 2017, IM462.

L. cruciferarum Golovin f. **lepidii** (Jacz.) Golovin — on *Lepidium draba* subsp. *chalepense* (L.) P. Fourn: **HV**, 3 VIII 2014, IM306.

L. daticacearum Golovin f. **datiscae** (Jacz.) Golovin — on *Datisca cannabina*: **MV**, 13 IX 2014, IM319; **TV**, 27 VII 2016, IM218.

L. guttiferarum Golovin — on *Hypericum scabrum*: **TV**, 27 VII 2016, IM160; **AnV**, 25 VII 2015, IM239.

L. labiatarum Golovin f. **dracocephali** Golovin — on *Dracocephalum nuratavicum* Adylov: **AbV**, 24 VII 2015, IM180. First record on *Dracocephalum nuratavicum* in Uzbekistan.

L. labiatarum f. **phlomidis** (Jacz.) Golovin — on *Phlomis nubilans*: **FV**, 24 VII 2015, IM117; on *Phlomis thapsoides* Bunge: **HV**, 13 VII 2010, IM300. First record on *Phlomis nubilans* in Uzbekistan.

L. labiatarum f. **scutellariae** (Jacz.) Golovin — on *Scutellaria ramosissima* Popov: on the north slope of **HM**, 25 VII 2015, IM118; *ibid.*, 10 VIII 2012, IM102; watershed of Hayat and Majrum watercourses, 25 VII 2015, IM308; on *Scutellaria* sp.: **TV**, 27 VII 2016, IM169. First record on *Scutellaria ramosissima* in Uzbekistan.

L. leguminosarum Golovin f. **medicaginis** (Jacz.) Golovin — on *Medicago sativa*: **HV**, 15 VII 2017, IM333.

L. leguminosarum f. **onobrychidis** Golovin — on *Onobrychis chorassanica* Boiss.: Fargun valley, 24 VII 2015, IM206.

L. plantaginis Golovin — on *Plantago lanceolata*: **HV**, 13 VII 2010, IM100; *ibid.*, 31 X 2009, IM284.

L. scrophulariacearum Golovin f. **dodartiae** (Jacz.) Golovin — on *Dodartia orientalis* L.: on the north slope of **HMt**, 14 VII 2010, IM228.

L. taurica (Lév.) G. Arnaud f. **pegani** Jacz. — on *Peganum harmala*: **TV**, 15 VII 2010, IM286.

L. umbelliferarum Golovin f. **dauci** Golovin — on *Daucus carota*: **HV**, 24 IX 2010, IM230.

L. umbelliferarum f. **prangotis** Golovin — on *Prangos* sp.: **MV**, 3 VIII 2009, IM045; on *Prangos pabularia* Lindl.: **HV**, 15 VII 2017, IM336.

L. umbelliferarum f. **seseli** Golovin — on *Seseli korovinii* Schischk.: **HMt**, 25 VII 2015, IM115; on *Mediasia macrophylla* Pimenov: **PMt**, 27 VII 2016, IM236. First record on *Seseli korovinii* in Uzbekistan.

- L. verbasci** (Jacz.) Golovin — on *Verbascum songaricum* Schrenk: **TV**, 27 VII 2016, IM161; **HMt**, 25 VII 2015, IM205.
- Phyllactinia fraxini** (DC.) Fuss — on *Fraxinus sogdiana* Bunge: **QV**, 20 X 2017, M520.
- P. suffulta** (Rebent.) Sacc. f. **moricola** Jacz. — on *Morus alba*: **HV**, 13 VII 2010, IM196; *ibid.*, 6 VIII 2009, IM304; *ibid.*, 24 IX 2010, IM095; **TV**, 27 VII 2016, IM 281.
- P. suffulta** f. **pistaciae** Jacz. — on *Pistacia vera*: **HV**, 12 XI 2015, IM179.
- P. suffulta** f. **populi** Jacz. — on *Populus afghanica* (Aitch. et Hemsl.) C. K. Schneid.: **MV**, 13 IX 2014, IM124.
- Podosphaera leucotricha** (Ellis et Everh.) E. S. Salmon — on *Malus sieversii* (Ledeb.) M. Roem.: **MV**, 3 VIII 2009, IM296.
- P. plantaginis** (Castagne) U. Braun et S. Takam. [= *Sphaerotheca plantaginis* (Castagne) L. Junell] — on *Plantago lanceolata*: **TV**, 27 VII 2016, IM288; **MV**, 3 VIII 2009, IM345.
- P. tridactyla** (Wallr.) de Bary f. **cerasi** Jacz. — on *Cerasus vulgaris*: **HV**, 24 IX 2017, IM511.
- Sphaerotheca euphorbiae** (Castagne) E. S. Salmon — on *Euphorbia* sp.: **TV**, 27 VII 2016, IM264.
- S. fugax** Penz. et Sacc. — on *Geranium linearilobum* DC.: **GV**, 10 IV 2013, IM242; on *Geranium rotundifolium* L.: **GV**, 3 V 2012, IM089; **HV**, 30 V 2015, IM092; on *Geranium pusillum* L.: **TV**, 10 V 2010, IM417. First record on *Geranium rotundifolium* in Uzbekistan.
- S. fuliginea** (Schltdl.) Pollacci f. **cichorii** Jacz. — on *Cichorium intybus*: **HV**, 29 V 2014, IM463.
- S. fuliginea** f. **dipsaci** Jacz. — on *Dipsacus dipsacoides*: **BMt**, 15 VII 2010, IM265.
- S. fuliginea** f. **lophanthi** Jacz. — on *Lophanthus schtschurovskianus* (Regel) Lipsky: on the north slope of **HMt**, 25 VII 2015, IM182; **AbV**, 25 VII 2015, IM245; **TV**, 27 VII 2016, IM163; **BMt**, 16 VII 2017, IM347. First record on *Lophanthus schtschurovskianus* in Uzbekistan.
- S. fuliginea** f. **scabiosae** Jacz. — on *Scabiosa songarica*: **BMt**, 15 VII 2010, IM103.
- S. fuliginea** f. **sedii** Kalymb. — on *Pseudosedum lievenii* (Ledeb.) A. Berger: **GV**, 4 V 2012, IM119; **GV**, 28 V 2014, IM127. First record on *Pseudosedum lievenii* in Uzbekistan.
- S. fusca** (Fr.) S. Blumer — on *Psychogeton turkestanicus* O. Hoffm. ex Paulsen: **TV**, 27 VII 2016, IM166.
- S. macularis** (Wallr.) Magnus f. **potentillae** Jacz. — on *Potentilla pedata* Nestl.: **TV**, 27 VII 2016, IM168; **MV**, 3 VIII 2009, IM285; **HV**, 6 VI 2012, IM244.
- S. pannosa** (Wallr.) Lév. — on *Prunus bucharica*: **TV**, 3 V 2012, IM066; **QV**, 7 VI 2012, IM067; on *Prunus persica*: **HV**, 5 VIII 2009, IM108.
- S. pannosa** var. **rosae** Woron. — on *Rosa canina* L.: **HV**, 11 V 2010, IM255; **GV**, 3 V 2012, IM294; on *Rosa lehmanniana* Bunge: **MV**, 19 VII 2011, IM069; on *Hulthemia persica* Bornm.: **HV**, 20 VII 2011, IM087; *ibid.*, 15 VII 2017, IM359.
- Sphaerotheca** sp. — on *Orthurus kokanicus* Juz.: on the north slope of **HMt**, 25 VII 2015, IM140. First record on *Orthurus kokanicus* in Uzbekistan.
- Uncinula ulmi** M. N. Kusnezowa — on *Ulmus laevis*: **QV**, 20 X 2017, IM517.

HELOTIALES Nannf.

Drepanopezizaceae Baral

***Diplocarpon alpestre** (Ces.) Rossman — on *Rumex* sp.: **TV**, 27 VII 2016, IM437.

D. mespili (Sorauer) B. Sutton — on *Cotoneaster nummularius* Fisch. et C. A. Mey.: **HV**, 14 VII 2010, IM185; on *Malus sieversii*: **HV**, 28 V 2009, IM384; **PMt**, 27 VII 2016, IM214; **GV**,

28 V 2014, IM238; **BMt**, 16 VII 2017, IM346; on *Pyrus regelii* Rehder: **TV**, 27 VII 2016, IM232. First record on *Pyrus regelii* in Uzbekistan.

Marssonina juglandis (Lib.) Magnus — on *Juglans regia*: **HV**, 6 VI 2012, IM521.

M. populi (Lib.) Sacc. — on *Populus alba*: **HV**, 18 VII 2011, IM278; *ibid.*, 30 V 2015, IM283; *ibid.*, 19 VI 2016, IM377.

M. rosae (Lib.) Died. — on *Rosa canina*: **MV**, 13 IX 2014, IM522.

M. salicina Tehon — on *Salix alba*: **HV**, 6 VI 2012, IM453.

Pseudopeziza medicaginis (Lib.) Sacc. — on *Medicago sativa*: **HV**, 18 VII 2011, IM097.

P. trifolii (Biv.) Fuckel — on *Trifolium pratense*: **MV**, 3 VIII 2009, IM068.

Helotiaceae Rehm

Sporonema phacidioides Desm. — on *Medicago sativa*: **HV**, 15 VII 2017, IM331.

HELOTIALES *incertae sedis*

Cylindrosporium pseudoplatani (Roberge et Desm.) Died. — on *Acer tataricum* subsp. *semenovii*: **HV**, 6 VIII 2009, IM272; **TV**, 27 VII 2016, IM291.

RHYTISMATALES M. E. Barr ex Minter

Ascodichaenaceae D. Hawksw.

Psilospora spadicea Fr. — on *Silene* sp.: **QV**, 9 V 2010, IM426. *Psilospora spadicea* was listed in “Fungal Flora of Uzbekistan” (1989–1997), but we did not find this species from Mycobank (2018) and Index Fungorum (2018).

Rhytismataceae Chevall.

Melasmia populinae Rehm — on *Populus alba*: **HV**, 7 XI 2017, IM507.

M. salicina Lév. — on *Salix alba*: **MV**, 23 IX 2017, IM512.

Melasmia sp. — on *Leonurus turkestanicus*: **TV**, 27 VII 2016, IM439. First record on *Leonurus turkestanicus* in Uzbekistan.

Rhytisma ulmi Fr. — on *Ulmus laevis*: **QV**, 20 X 2017, IM519.

SORDARIOMYCETES O. E. Erikss. et Winka

DIAPORTHALES Nannf.

Diaporthaceae Höhn. ex Wehm.

Phomopsis dipsaci (Cooke) Grove — on *Dipsacus dipsacoides*: **BMt**, 15 XII 2010, IM415.

Gnomoniaceae G. Winter

Asteroma atratum Chevall. — on *Centaurea ovina* subsp. *besseriana*: **HV**, 30 V 2015, IM192; **AnV**, 29 V 2014, IM321; **GV**, 28 V 2014, IM322; on *Pseudolinosyris grimmii* (Regel et Schmalh.) Novopokr.: **HV**, 30 V 2015, IM438. First record on *Pseudolinosyris grimmii* in Uzbekistan.

A. medusula Durieu et Mont. — on *Ferula* sp.: **MV**, 3 VIII 2011, IM414.

Melanconidaceae G. Winter

Stegosporium mori (Nomura) Sacc. et Trotter — on *Morus alba*: **HV**, 6 VI 2012, IM554.

Valsaceae Tul. et C. Tul.

Cytospora capitata Sacc. et Schulzer — on *Pyrus regelii*: **BMt**, 15 VII 2010, IM403. First record on *Pyrus regelii* in Uzbekistan.

C. carposperma Fr. — on *Malus* sp.: **HV**, 27 VII 2017, IM422.

C. juglandina Sacc. — on *Juglans regia*: **HV**, 14 VII 2012, IM270.

C. microspora (Desm.) Rabenh. — on *Sorbus persica* Hedl.: **BM**, 15 VII 2010, IM412.

C. rubescens Fr. — on *Sorbus persica*: **BMt**, 16 VII 2017, IM332.

C. salicis (Corda) Rabenh. — on *Salix alba*: **MV**, 2 V 2011, IM269; **HV**, 27 VII 2017, IM408.

Cytospora sp. 1 — on *Pistacia vera*: **HV**, 27 VII 2017, IM411. First record on *Pistacia vera*.

Cytospora sp. 2 — on *Crataegus pontica* C. Koch: **HV**, 27 VII 2017, IM416. First record on *Crataegus pontica* in Uzbekistan.

Valsa ceratophora Tul. et C. Tul. — on *Prunus bucharica*: **PMt**, 28 VII 2016, IM441. First record on *Prunus bucharica* in Uzbekistan.

V. salicina (Pers.) Fr. — on *Salix alba*: **MV**, 27 VII 2015, IM529.

GLOMERELLALES Chadef. ex Réblová

Glomerellaceae Locq.

Vermicularia herbarum Westend. — on *Dianthus helenae*: **HV**, 9 V 2010, IM293.

PHYLLACHORALES M. E. Barr

Phyllachoraceae Theiss. et H. Syd.

Phyllachora graminis (Pers.) Fuckel — on *Poa bulbosa*: **HV**, 27 VII 2017, IM534.

P. trifolii (Pers.) Fuckel — on *Trifolium* sp.: **HV**, 27 VII 2017, IM558.

Polystigma rubrum (Pers.) DC. — on *Prunus bucharica*: **TV**, 27 VII 2016, IM171; **HV**, 6 VI 2011, IM080; *ibid.*, 20 VII 2011, IM386.

Telimenella gangraena (Fr.) Petr. — on *Poa trivialis*: **HV**, 28 V 2009, IM451.

XYLARIALES Nannf.

Hyponectriaceae Petr.

Discosphaerina cytisi (Fuckel) Sivan. — on *Glycyrrhiza glabra*: on the north slope of **HM**, 13 VII 2010, IM381; **HV**, 27 VII 2017, IM371.

Physalospora rosicola (Fuckel) Sacc. — on *Rosa canina*: **HV**, 28 V 2009, IM668.

HYPOCREALES Lindau

Clavicipitaceae O. E. Erikss.

Epichloe coenophiala (Morgan-Jones et W. Gams) C. W. Bacon et Schardl. — on *Poa* sp.: **HV**, 14 VII 2012, IM597.

SORDARIOMYCETES *incertae sedis*

Strickeria circumclusa (De Not.) Cooke — on *Lonicera nummulariifolia* Jaub. et Spach: **PMt**, 28 VII 2016, IM418.

S. ephedrae Golovin — on *Ephedra equisetina*: **PMt**, 3 V 2011, IM329; **MV**, 3 VIII 2011, IM390.

Taphrinomycotina O. E. Erikss. et Winka

TAPHRINOMYCETES O. E. Erikss. et Winka

TAPHRINALES Gäum. et C. W. Dodge

Taphrinaceae Gäum.

Taphrina amygdali (Jacq.) Mix — on *Prunus bucharica*: **HV**, 6 VI 2012, IM247; *ibid.*, 30 V 2016, IM136; *ibid.*, 15 VII 2017, IM348.

T. deformans (Berk.) Tul. — on *Prunus persica*: **HV**, 6 VI 2012, IM514.

The major number of species of ascomycetous microfungi of NNR belongs to the orders Capnodiales (55 species; 11 genera; 27.92%), Erysiphales (42 species, 50 forms and 3 varieties; 8; 21.32%), Pleosporales (38; 13; 19.29%), Diaporthales (14; 5; 7.10%), Botryosphaeriales (13; 5; 6.60%), Helotiales (10; 5; 5.07%), Rhytismatales (5; 3; 2.53%), Phyllachorales (4; 3; 2.03%), Venturiales (4; 3; 2.03%), Lecanorales (2 species, 1 form; 1; 1.01%); these ten orders include 187 species, 51 forms and 3 varieties from 57 genera, 94.92% of the total. The other orders are represented by 1–2 species.

The most species rich families in the study area are Mycosphaerellaceae (50; 9; 25.38%), Erysiphaceae (42; 8; 21.32%), Didymellaceae (12; 2; 6.09%), Valsaceae (10; 2; 5.07%), Drepanopezizaceae (8; 3; 4.06%), Phyllostictaceae (8; 5; 4.06%), Pleosporaceae (7; 4; 3.55%), Botryosphaeriaceae (5; 3; 2.54%), Rhytismataceae (4; 2; 2.03%), Phyllachoraceae (4; 3; 2.03%), while remaining families include 1–3 species each. The ten leading families include 150 species, 50 forms and 3 varieties (76.14% of the total) of 38 genera. The highest number of species is recorded in genera *Ramularia* (15 species; 7.61%), *Septoria* (14; 7.10%), *Erysiphe* (13; 6.60%), *Leveillula* (13; 6.60%), *Mycosphaerella* (11; 5.58%), *Phoma* (10; 5.07%), *Cytospora* (8; 4.06%), *Sphaerotheca* (7; 3.55%), *Phyllosticta* (7; 3.55%), *Marssonina* (4; 2.03%), other genera contain 1–3 species. The ten leading genera contain 102 species together (51.78% of the total).

The most widespread ascomycetous microfungi in Nuratau Nature Reserve are *Blumeria graminis*, *Erysiphe graminis* f. *tritici*, *Erysiphe cruciferarum*, *Erysiphe horridu-*

la f. solenanthi, Erysiphe cichoracearum f. lactucae, Erysiphe cichoracearum f. verbenae, Leveillula alhagi, Leveillula datiscearum f. datiscae, Leveillula caryophyllacearum f. arenariae, Leveillula taurica f. pegani, Sphaerotheca macularis f. potentillae, Sphaerotheca pannosa var. rosae, Phyllactinia suffulta f. moricola, Cylandrosporium pseudoplatani, Marssonina juglandis, Melasmia salicina, Pseudopeziza trifolii, Septoria gentianae, Phyllosticta kenimaechia, Stigmata carpophila, Camarosporium xylostei, Leptothyrium sibiricum, Polystigma rubrum, Telimenella gangraena.

Acknowledgments

This work was partly supported by Ministry of innovative development of the Republic of Uzbekistan [Project No. PZ-2017-0921183]. Dr. Yu. Gafforov is thanked for valuable comments on the manuscript. Valuable suggestions of anonymous reviewers for improving the manuscript are appreciated.

References

- Baymuratova G. T. 1963. Mycoflora of Hungry steppe. Abstr. cand. diss. Tashkent: 15 p. (In Russ.).
- Bizova Z. M., Vasjagina M. P., Deeva N. G., Kalimbetov B. K., Pisareva N. F., Shvarsman S. R. 1968. *Flora of spore-bearing plants of Kazakhstan. Fungi imperfecti (Deuteromycetes). Sphaeropsidales. Vol. V.* Alma-Ata: 381p. (In Russ.).
- Conspectus Florae Asiae Mediae. Vol. 1–10.* 1968–1993. Tashkent. (In Russ.).
- Crous P. W. 2009. Taxonomy and phylogeny of the genus *Mycosphaerella* and its anamorphs. *Fungal Diversity* 38: 1–24.
- Flora of Uzbekistan. Vol. 1–6.* 1941–1962. Tashkent. (In Russ.).
- Fungal Flora of Uzbekistan. Vol. 1–8.* 1989–1997. Tashkent. (In Russ.).
- Gafforov Yu. Sh. 2017. A preliminary checklist of Ascomycetous microfungi from Southern Uzbekistan. *Mycosphere* 8(4): 660–696. <https://doi.org/10.5943/mycosphere/8/4/12>
- Index Fungorum. 2018. <http://www.indexfungorum.org> (Date of access: 17 XI 2018).
- Melnik V. A. 1997. *Class of Coelomycetes.* St. Petersburg: 281 p. (In Russ.).
- Morochkovskiy S. F., Zerova M. Y., Lavitska Z. G., Smitska M. F. 1969. *Viznachnik gribiv Ukraini. T. 2* [Identification book of fungi of Ukraine. Vol. 2]. Kiev: 515 p. (In Ukrainian).
- Morochkovskiy S. F., Radzivski G. G., Zerova M. Y., Dudka I. O., Smitska M. F., Rojenko G. L. 1971. *Viznachnik gribiv Ukraini. T. 3* [Identification book of fungi of Ukraine. Vol. 3]. Kiev: 689 p.
- Mustafaev I. M. 2014a. Phytopathogenic fungi on trees and shrubs in the Nuratau nature reserve. *O'zbekiston biologiya jurnali* 1: 14–17. (In Russ.).
- Mustafaev I. M. 2014b. Some data about Pycnidial fungi of the Nuratau nature reserve. *Biodiversity, conservation and rational use of the gene pool of plants and animals: Scientific Conference of Republic of Uzbekistan.* Tashkent: 42–44. (In Russ.).
- Mustafaev I. M., Nuraliev Kh. Kh. 2012. Powdery mildew fungi of the Nuratau nature reserve. *O'zbekiston biologiya jurnali* Special issue: 43–46. (In Uzbek).
- Mycobank. 2018. <http://www.mycobank.org> (Date of access: 11 XI 2018).
- Quaedvlieg W., Verkley G. J. M., Shin H. D., Barreto R. W., Alfenas A. C., Swart W. J., Groenewald J. Z., Crous P. W. 2013. Sizing up *Septoria*. *Studies in Mycology* 75: 307–390. <https://doi.org/10.3114/sim0017>
- Rahimova E. V., Nam G. A., Ermekova B. D. 2014. *Short determinant of powder mildew fungi of Kazakhstan and borger area.* Novosibirsk: 129 p. (In Russ.)

- Shvarsman S. R., Vasjagina M. P., Pisareva N. F., Bizova Z. M. 1971. *Flora of spore-bearing plants of Kazakhstan. Fungi imperfecti (Deuteromycetes). Melanconiales. Vol. VII.* Alma-Ata: 262 p. (In Russ.).
- Shvarsman S. R., Vasjagina M. P., Bizova Z. M., Filimonova N. M. 1975. *Flora of spore-bearing plants of Kazakhstan. Fungi imperfecti (Deuteromycetes). Moniliales. Vol. VIII.* Alma-Ata: 517 p. (In Russ.).
- Sutton B. C. 1980. *The Coelomycetes. Fungi imperfecti with pycnidia, acervuli and stomata.* Kew: 696 p.
- The Plant List. 2013. <http://www.theplantlist.org> (Date of access: 12 XII 2018).
- Tojibaev K. Sh., Beshko N. Yu., Popov V. A., Jang C. G., Chang K. S. 2017. *Botanical Geography of Uzbekistan.* Pocheon: 250 p.
- Vasjagina M. P., Kuznetsova M. N., Pisareva N. F., Shvartsman S. R. 1961. *Flora of spore-bearing plants of Kazakhstan. Powdery mildew fungi. Vol. III.* Alma-Ata: 459 p. (In Russ.)
- Wike S., Udayanga D., Crous P. W., Chukeatirote E., McKenzie E. H. C., Bahkali A. H., Dai D., Kevin D. H. 2011. *Phyllosticta* — an overview of current status of species recognition. *Fungal Diversity* 51(1): 43–61. <https://doi.org/10.1007/s13225-011-0146-5>
- Woudenberg J. H. C., Groenewald J. Z., Binder M., Crous P. W. 2013. *Alternaria* redefined. *Studies in Mycology* 75: 171–212. <https://doi.org/10.3114/sim0015>
- Zhang Y., Crous P. W., Schoch C. L., Hyde K. D. 2012. Pleosporales. *Fungal Diversity* 53(1): 1–221. <https://doi.org/10.1007/s13225-011-0117-x>

Литература

- [Baymuratova] Баймуратова Г. Т. 1963. Микофлора голодной степи. Автореф. ... канд. биол. наук. Ташкент: 15 с.
- [Bizova *et al.*] Бызова З. М., Васягина М. П., Деева Н. Г., Калымбетов Б. К., Писарева Н. Ф., Шварцман С. Р. 1968. *Флора споровых растений Казахстана. Т. 5. Несовершенные грибы. Сферопсидные.* Алма-Ата: 381 с.
- [Conspectus...] *Конспект флоры Средней Азии. Т. 1–10.* 1968–1993. Ташкент.
- Crous P. W. 2009. Taxonomy and phylogeny of the genus *Mycosphaerella* and its anamorphs. *Fungal Diversity* 38: 1–24.
- [Flora...] *Флора Узбекистана. Т. 1–6.* 1941–1962. Ташкент.
- [Fungal...] *Флора грибов Узбекистана. Т. 1–8.* 1989–1997. Ташкент.
- Gafforov Yu. Sh. 2017. A preliminary checklist of Ascomycetous microfungi from Southern Uzbekistan. *Mycosphere* 8(4): 660–696. <https://doi.org/10.5943/mycosphere/8/4/12>
- Index Fungorum. 2018. <http://www.indexfungorum.org> (Дата обращения: 17 XI 2018).
- [Melnik] Мельник В. А. 1997. Класс *Coelomycetes*. Определитель грибов России: вып. 1 (редкие и малоизвестные роды). СПб.: 281 с.
- [Morochkovskiy *et al.*] Морочковский С. Ф., Зерова М. Я., Лавітска З. Г., Сміцька М. Ф. 1969. *Визначник грибів України. Т. 2.* Київ: 515 с.
- [Morochkovskiy *et al.*] Морочковский С. Ф., Радзівский Г. Г., Зерова М. Я., Дудка И. О., Сміцька М. Ф., Роженко Г. Л. 1971. *Визначник грибів України. Т. 3.* Київ: 689 с.
- [Mustafaev] Мустафаев И. М. 2014а. Фитопатогенные грибы на древесно-кустарниковых породах Нуратинского заповедника. *Узбекский биологический журнал* 1: 14–17.
- [Mustafaev] Мустафаев И. М. 2014б. Некоторые данные о пикнидиальных грибах Нуратинского заповедника. *Биоразнообразие, сохранение и рациональное использование генофонда растений и животных: Материалы республиканской конференции.* Ташкент: 42–44.
- [Mustafaev, Nuraliev] Мустафаев И. М., Нуралиев Х. Х. 2012. Мучнисто-росяные грибы Нуратинского заповедника. *Узбекский биологический журнал.* Специальный выпуск: 43–46.

- Mycobank. 2018. <http://www.mycobank.org> (Дата обращения: 11 XI 2018).
- Quaedvlieg W., Verkley G. J. M., Shin H. D., Barreto R. W., Alfenas A. C., Swart W. J., Groenewald J. Z., Crous P. W. 2013. Sizing up *Septoria*. *Studies in Mycology* 75: 307–390. <https://doi.org/10.3114/sim0017>
- [Rahimova et al.] Рахимова Е. В., Нам Г. А., Ермакова Б. Д. 2014. *Краткий иллюстрированный определитель мучнисторосяных грибов Казахстана и приграничных территорий*. Новосибирск: 129 с.
- [Shvarsman et al.] Шварцман С. Р., Васягина М. П., Писарева Н. Ф., Бызова З. М. 1971. *Флора споровых растений Казахстана. Т. 7. Несовершенные грибы. Меланкониальные*. Алма-Ата: 262 с.
- [Shvarsman et al.] Шварцман С. Р., Васягина М. П., Бызова З. М., Филимонова Н. М. 1975. *Флора споровых растений Казахстана. Том 8. Несовершенные грибы — Fungi imperfecti (Deuteromycetes). Книга 2. Монилиальные*. Алма-Ата: 517 с.
- Sutton B. C. 1980. *The Coelomycetes. Fungi imperfecti with pycnidia, acervuli and stomata*. Kew: 696 p.
- The Plant List. 2013. <http://www.theplantlist.org> (Дата обращения: 12 XII 2018).
- Tojibaev K. Sh., Beshko N. Yu., Popov V. A., Jang, C. G., Chang, K. S. 2017. *Botanical Geography of Uzbekistan*. Pocheon: 250 p.
- [Vasjagina et al.] Васягина М. П., Кузнецова М. Н., Писарева Н. Ф., Шварцман С. Р. 1961. *Флора споровых растений Казахстана. Т. 3. Мучнисторосяные грибы*. Алма-Ата: 458 с.
- Wikee S., Udayanga D., Crous P. W., Chukeatirote E., McKenzie E. H. C., Bahkali A. H., Dai D., Kevin D. H. 2011. *Phyllosticta* — an overview of current status of species recognition. *Fungal Diversity* 51(1): 43–61. <https://doi.org/10.1007/s13225-011-0146-5>
- Woudenberg J. H. C., Groenewald J. Z., Binder M., Crous P. W. 2013. *Alternaria* redefined. *Studies in Mycology* 75: 171–212. <https://doi.org/10.3114/sim0015>
- Zhang Y., Crous P. W., Schoch C. L., Hyde K. D. 2012. Pleosporales. *Fungal Diversity* 53(1): 1–221. <https://doi.org/10.1007/s13225-011-0117-x>