## МІКОЛОГІЯ

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# THE CURRENT STATE OF *THYRONECTRIA* STUDY IN UKRAINE: CORRECTION OF DATA FROM HERBARIA AND THE LITERATURE

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Fungicolous fungi are a large and heterogeneous group, the entire life cycle of which, or at least a significant part of it, takes place in association with other fungi. The nature of the interaction between the fungicolous fungus and their host is not always clear, but quite often it is parasitism, which is quite specialized. Compared to other trophic groups of fungi, fungicolous organisms still have been poorly studied. Often even widely distributed and well-known fungi, like *Tremella* spp., which for a long time were considered as xylosaprotrophic or phytopathogenic, appeared to be fungicolous after the careful research. The representatives of the genus *Thyronectria*, which may serve as an example of such a fungi, are considered in this article. Many important features of the biology of the species, assigned to this genus, still remain unknown. Our work is based on critical analysis and summarizing of literature data, as well as on the revision of the collections from the mycological collections of KW (M.G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine, Kyiv) and CWU (V.N. Karazin National University of Kharkiv). For now, 6 representatives of the genus have been reliably recorded in Ukraine. The species with the largest number of finds are *Thyronectria berolinensis* (17 records), *T. caraganae* (7 records), *T. cucurbitula* (7 records) and *T. coryli* (6 records). *Thyronectria lamyi* and *T. rhodochlora* are represented by a smaller number of finds (by 3 records each). It should be noted, that the species *Thyronectria caraganae* Voglmayr, Akulov & Jaklitsch was described from the territory of Ukraine and remains known only from this country. *T. chlorinella* was excluded from a checklist as doubtful find, *T. megalospora* – as a misidentified collection. Information about some of the findings is published here for the first time. For some species of the genus, the host fungus is also given for the first time.

***Key words:*** *fungicolous fungi, biodiversity, revision, distribution, specialization, new records, Ukraine*.

## INTRODUCTION

*Thyronectria* Sacc. (Nectriaceae, Hypocreales, Sordariomycetes, Ascomycota) is a large but still little-studied genus of fungi. Some members of this taxon are represented in world collections by a small number of specimens (GBIF, 2022). Recently, due to the application of molecular genetic methods, this genus has been considerably revised (Hirooka et al., 2012; Jaklitsch and Voglmayr, 2014; Voglmayr et al., 2016; Voglmayr et al., 2022).

The genus *Thyronectria* was described by P.A. Saccardo in 1875 and included species of the Nectriaceae with muriform spores. It is mainly characterized by *Nectria*-like ascomata with persistent yellowish scurf at the outer surface in combination with muriform ascospores similar to *Thyridium*, as it is reflected in the generic name. According to the current data, ascospores within the genus are highly diverse in size, shape, colour, and septation. In some species, they are budding within the ascus to produce ascoconidia (Seeler, 1940; Jaklitsch and Voglmayr, 2014).

Many important peculiarities of the biology of *Thyronectria* still need to be clarified. The representatives of the genus usually develop on recently dead or living branches and twigs of woody plants and/or fungi, which colonize these substrata. Until recently, they were considered as saprotrophs, but modern research suggests that they are likely to be fungicolous. Species of *Thyronectria* have commonly been found in association with effete pyrenomycetes. However, the substrate specialization of several representatives of the genus still remains unclear (Voglmayr et al., 2022). Until now, *Thyronectria* has not been an object of specialized mycological research in Ukraine, so any conclustions about the species composition and distribution of this genus have not been available for the territory of the country.

## MATERIALS AND METHODS

The article is based on the analysis and generalization of literary data for the entire period of mycological research in the country, as well as on the results of a critical revision of herbarium specimens from the collections of V.N. Karazin Kharkiv National University (CWU (MYC)) and M.G. Kholodny Institute of botany NAS of Ukraine (KW–M).

The specimens were examined by light microscopy using a Granum R60 Trino microscope, camera Sigeta M3CMOS 14 MP, and the specialized program ToupView. The concept of species in the article follows the Index Fungorum (Kirk, Cooper, 2022).

## RESULTS

A generalized list of all records is given below. Distribution data were aggregated both from publications, and herbarium specimens.

***Thyronectria berolinensis*** **(Sacc.) Seaver** – **Kharkiv region**, Chuhuiv district, Kochetok settlement, on *Ribes rubrum* twigs, leg. A.O. Potebnia 18 Apr 1903. prel. det. (as *Pleonectria berolinensis* Sacc.) A.O. Potebnia (Herbarium Rossicum Universitatis Cesareae Charkoviensis N 53, publ. Potebnia, 1907); Zolochiv district, country cooperative near Svitlychnyi village, on *Ribes rubrum* stems, leg. O.Yu. Akulov 03 Oct 2002 and 28 June 2004, det. O.Yu. Akulov (CWU (Myc) AS 007, 213; 282, 368 and 920); – **Donetsk region**, Nikolske district, National Nature Park "Meotyda" (Polovetskyi Step branch), on the conidiomata of *Diplodia seriata* De Not. on *Ribes rubrum* twigs, leg. O.Yu. Akulov 30 Apr. 2013, det. O.Yu. Akulov 27 Jan 2020 (CWU (Myc) AS 7491); – **Poltava region**, Lubny (former Orzhytsia) district, Onyshky village, on *Ribes nigrum* twigs, leg. O.A. Bereznytskyi 03 May 2003, det. O.Yu. Akulov 07 July 2004 (CWU (Myc) AS 974); – **Kyiv region**, Kyiv city, Botanical Garden, on *Ribes album* twigs, leg. Z.K. Girzhits'ka 05 May 1925, prel. det. (as *Nectria berolinensis* (Sacc.) Cooke) Z.K. Girzhitska (KW 5394); at the same place, on *Ribes uva-crispa* (as *R. grossularia*) twigs, leg. Z.K. Girzhitska 21 Nov 1926 and 05 June 1926, prel. det. (as *Pleonectria ribis* P. Karst.) Z.K. Girzhitska (KW 5397 and 5398, accordingly); at the same place, on *Ribes nigrum* twigs, leg. Z.K. Girzhitska 05 June 1926, prel. det. (as *Pleonectria ribis* P. Karst.) Z.K. Girzhitska (KW 5298); Kyiv city, Syrets suburban, on *Ribes nigrum* twigs, leg. Z.G. Lavitska 12 Nov 1938, prel. det. (as *Pleonectria ribis* P. Karst) M.Ya. Zerova, the specimen was not available (Zerova, 1948); Boryspil district, vicinities of Boryspil town, on *Ribes nigrum* twigs, leg. and prel. det. (as *Pleonectria ribis* P. Karst) T.O. Vynogradska, the specimen was not available (Vynogradska, 1958); Fastiv district, Mala Snitynka village, on *Ribes nigrum* twigs, leg. G.L. Rozhenko 2 May 1947, prel. det. (as *Pleonectria ribis* P. Karst.) G.L. Rozhenko (KW 7420); – **Zhytomyr region**, Ovruch district, vicinities of Ovruch town, on *Ribes nigrum* twigs, leg. O. Barbarych 04 June 1941, prel. det. (as *Pleonectria ribis* P. Karst.) M.Ya. Zerova (KW 7421); – **Cherkasy region**, Smila district, Smila town, on *Ribes sp*. twig, leg. G.S. Nevodovsky 01 Jan 1914, prel. det. (as *Nectria berolinensis* (Sacc.) Cooke) G.S. Nevodovsky (KW 5393); – **Odesa region**, Bolgrad (former Tarutyne) district, vicinities of Tarutyne settlement, on *Ribes uva-crispa* (as *R. grossularia*) twigs in the agronursery, leg. and prel. det. (as *Pleonectria beroliensis* Sacc.) G.G. Radziyevsky, 1950-1951, the specimens were not available (Radziyevsky, 1952); – **Ivano-Frankivsk region**, Kolomyia district, Kolomyia town (as Baginsberg), on the stems of *Ribes rubrum* (as *R. vulgare*) in the gardens along Prut river, leg. and prel. det. (as *Pleonectria berolinensis* Sacc.) A. Wróblewski May 1914 and Jan 1916, the specimens were not available (Wróblewski, 1916); Ivano-Frankivsk (as Stanislav) city, on *Ribes nigrum* stems, leg. et det. (as *Pleonectria berolinensis* Sacc.) Petrak F., 24 Jan 1918, the specimen was not available (Petrak, 1925).

*Thyronectria berolinensis* is a relatively common species on *Ribes* spp. There is no information about its fungicolous origin in the literature (Jaklitsch and Voglmayr, 2014; Voglmayr et al., 2022). In one of the Ukrainian specimens, it is associated with fructifications of *Diplodia seriata* De Not. (Botryosphaeriales), which may be a potential

host fungus. In some specimens, sporulation of *T. beroliensis* is accompanied by sporulation of *Dothiora ribesia* (Pers.) M.E. Barr (Botryosphaeriales).

***Thyronectria caraganae*** **Voglmayr, Akulov & Jaklitsch** – **Mykolaiv region**, Berezan district, vicinities of Tashine village, on the dead *Caragana arborescens* branches, leg. L.V. Smyk 16 May 1990, prel. det. (as *Calonectria decora*) L.V. Smyk, redet. H. Voglmayr, O.Yu. Akulov & W. Jaklitsch (**WU 35938 holotype**, KW 7033/8583 and CWU (Myc) AS 374 – isotypes); – **Donetsk region**, Volnovacha district, Olshanka village, on the same host, leg. 31 July 1986 L.V. Smyk, prel. det. (as *Thyronectria megalospora* (Speg.) Seaver et Chardón) L.V. Smyk, redet. H. Voglmayr, O.Yu. Akulov & W. Jaklitsch (KW 7419/7853, = CWU (Myc) AS 430, = WU 35939); Kramatorsk district, vicinities of Sviatohirsk town, National Nature Park "Sviati hory", forest near "Arseniivskyi skyt" on the right bank of Siverskyi Donets river, on the conidiomata of *Diaporthe caraganae* on the dead *Caragana arborescens* stems, leg. O.Yu. Akulov 01 Aug 2021, det. O.Yu. Akulov (CWU (Myc) AS 8234); – **Zaporizhzhia region**, Yakymivka district, vicinities of Bohatyr village, Bogatyrske forestry, on the dead *Caragana arborescens* branches, leg. M.F. Smitska 19 Jan. 1972, prel. det. (as *Pleonectia beroliensis* Sacc.) L.V. Smyk, redet. H. Voglmayr, O.Yu. Akulov & W. Jaklitsch (KW 7417/7851, = CWU (Myc) AS 428, = WU 35940); – **Dnipropetrovsk region**, Piatykhatky district, vicinities of Piatykhatky town, artificial grove along motorway Dnipropetrovsk-Piatykhatky, on the same host, leg. L.V. Smyk 10 Oct 1973, prel. det. (as *Pleonectria lamyi* (Desm.) Sacc.) L.V. Smyk, redet. H. Voglmayr, O.Yu. Akulov & W. Jaklitsch (KW 7418/7852, = CWU (Myc) AS 429, = WU 35941); – **Kharkiv region**, Dvorichna district, vicinities of Krasne Pershe village, National Nature Park "Dvorichanskyi", protected stow Zalomne, on the conidiomata of *Diaporthe caraganae* on the dead *Caragana arborescens* stems, leg. O.Yu. Akulov 11 Apr 2021, det. O.Yu. Akulov (CWU (Myc) AS 8120); Vovchansk district, vicinities deciduous trees and shrubs (GBIF, 2022). In mixed piles of cut twigs, it can spread from one of the Verkhnia Pysarivka village, in the subor on the left bank of Pechenizke reservoir, on the same host, leg. O.Yu. Akulov 09 May 2021, det. O.Yu. Akulov (CWU (Myc) AS 8165).

*Thyronectria caraganae* was described recently on the basis of old herbarium specimens and is still known only from Ukraine (Voglmayr et al., 2016). When we described this species, it was suggested that it may be associated with "*Cucurbitaria caraganae*", presently *Camarosporidiella* spp. (Pleosporales). But recently collected fresh specimens of *T. caraganae* demonstrate its ability to grow on *Diaporthe caraganae* Jacz. (Diaporthales).

***Thyronectria coryli*** **(Fuckel) Jaklitsch & Voglmayr** – **Kyiv region**, Kyiv district, Pushcha-Vodytsia suburban, on *Corylus avellana* twigs, leg. Z.K. Girzhitska 30 June 1928 (as *Nectria coryli* Fuckel), det. Z.K. Girzhitska (CWU (Myc) AS 402, KW 7162); vicinities of Kyiv, Bilychi suburban, on the old empty conidiomata of *Diplodia sp*. on *Alnus glutinosa* branches, leg. N. Yefimova 23 May 1946, prel. det. (as *Nectria citrina* Fr.) N. Yefimova, redet. O.Yu. Akulov 01 Dec 2018 (CWU (Myc) AS 7012, ex KW 34520); Bucha district, Irpin town, on *Corylus avellana* twigs, leg. Z.K. Girzhitska 30 June 1928 and 30 Oct 1928 prel. det. (as *Nectria coryli* Fuckel) Z.K. Girzhits`ka, the specimen was not available (Girzhitska, 1929); – **Kharkiv region**, Zolochiv district, cottage village Alpha near Chepeline village, on the conidiomata of *Sphaeropsis malorum* (= *Botryosphaeria stevensii*) soc. *Cytospora* sp. on *Prunus domestica* twigs, leg. O.Yu. Akulov, 03 May 2020, det. O.Yu. Akulov (CWU (Myc) AS 7592); – **Lviv region**, Brody district, Pidhirtsi village, vicinities of Pidhirtsi Castle, on dead twigs of *Corylus avellana*, leg. F. Petrak 05 Jan, det. (as *Necria coryli* Fuckel) F. Petrak, the specimen was not available (Petrak, 1925); – **Ternopil region**, Ternopil (former Berezhany) district, Lisnyky village, on dead *Corylus avellana* twigs, leg. and prel. det. (as *Necria coryli* Fuckel) G. Bobiak, 1903, the specimen was not available (Bobiak, 1907).

*Thyronectria coryli* is a quite common species in Europe and North America, which grows on *Corylus*, as well as a number of other plant host to others (up to six different plants in a single pile). Its known fungal hosts include

*Cytospora* (*Valsa*) spp. (Diaporhales) and *Otthia* cf. *spiraeae* (Fuckel) Fuckel (Dothideales) (Jaklitsch and Voglmayr, 2014). In the studied Ukrainian specimens, it was associated with *Diplodia* sp. and *Botryosphaeria stevensii* Shoemaker (Dothideomycetes), and *Cytospora* sp. (Diaporhales).

***Thyronectria cucurbitula* (Tode) Jaklitsch & Voglmayr** (sometimes at anamorph stage known as *Zythiostroma pinastri* (P. Karst.) Höhn.) – **Kyiv region**, Bucha (former Makariv) district, Kodra settlement, on *Pinus sylvestris* twigs, leg. Z.K. Girzhits`ka 15 Oct. 1932, prel. det. (as *Nectria cucurbitula* (Tode) Fr.) Z.K. Girzhitska (CWU (Myc) AS 407, ex KW 7272); Kyiv city, Darnytsia suburb, on *Pinus sylvestris* twigs, leg. and prel. det. (as *Zythia cucurbitula* Jacz.) Z.K. Girzhitska (KW 9009); Kyiv city, Bilychi suburb, on *Pinus sylvestris* twigs, leg. and prel. det. (as *Zythia cucurbitula* Jacz.) N.I. Efimova (KW 9010); – **Ternopil region**, Kremenets (former Borshchiv) district, vicinities of Rudka village, on *Pinus strobus* twigs, leg. and prel. det. (as *Zythia cucurbitula* Jacz.) O.V. Isayeva 1949 (KW 9012); vicinities of Hrabivtsi village, on *Pinus strobus* twigs, leg. and prel. det. (as *Scoleconectria cucurbitula* (Tode) Booth) O.V. Isayeva 06 May 1960 (KW 5391); – **Lviv region**, Yavoriv district, vicinities of Ivano-Frankove (Yaniv) settlement, Natural Nature Park "Yavorivs`kyi", on the conidiomata of *Sphaeropsis sapinea* (= *Diplodia pinea*) soc. *Valsa friesii* on dead *Pinus sylvestris* twigs, leg. O.Yu. Akulov 28 Oct 2019, det. O.Yu. Akulov 19 March 2020 (CWU (Myc) AS 7573); – **Donetsk region**, Liman district, vicinities of vicinities of Studenok village, Sviatohirsk forestry, National Nature park "Sviati hory", on the fallen branches of *Pinus sylvestris* soc. *Sydowia polyspora*, leg. O.Y. Akulov 29 Apr 2008, det. O.Yu. Akulov 12 May 2008 (CWU (Myc) AS 2735).

*Thyronecria cucurbitula* is the species found on *Pinus* subgenus *Pinus* representatives. Information about its fungicolous properties is still absent (Jaklitsch and Voglmayr, 2014; Voglmayr et al., 2022). In Ukrainian specimens, it was associated with *Sphaeropsis sapinea* (Fr.) Dyko & B. Sutton (Botryosphaeriales), *Sydowia polyspora* (Bref. & Tavel) E. Müll. (Dothideales) and *Valsa friesii* (Duby) Fuckel (Diaporthales).

***Thyronectria lamyi* (Desm.) Seeler** – Chernihiv region, Nizhyn district, vicinities of Borzna town, on *Berberis vulgaris* stems, leg. G.S. Nevodovsky 22 March 1912, prel. det. (as *Nectria lamyi* (Desm.) De Not) G.S. Nevodovsky (KW 5396, = CWU (Myc) AS 903A, = LE 133045); – Ivano-Frankivsk region, Ivano-Frankivsk district, vicinities of Vovchynets, on *Berberis vulgaris* stems, leg. Petrak F. 14 Apr 1918, prel. det. (as *Nectria lamyi* (Desm.) Sacc. (Petrak, 1925); – Dnipropetrivsk region, Petrykivskyi district, Dniprovs`ko-Oril`s`kyi Nature Reserve, on the ascomata of *Cucurbitaria berberidis* (Pers.) Gray on dead *Berberis vulgaris* branches, leg. M.P. Prydiuk 27 July 1997, prel. det. (as *Pleonectria lamyi* (Desm.) Sacc.) M.P. Prydiuk, teste O.Yu. Akulov 09 Dec 2018 (CWU (Myc) AS 7026, ex KW without number).

*Thyronectria lamyi* is common on *Berberis* spp. in Asia, Europe, and North America. Its known fungal host is *Cucurbitaria berberidis* (Pers.) Gray (Pleosporales) (Jaklitsch and Voglmayr, 2014).

***Thyronectria rhodochlora* (Mont.) Seeler** – Kharkiv region, Kharkiv city, Forest-park, local protected area "Sokol`niki-Pomerki", on the conidiomata of *Diplodia seriata* Do Not. (confirmed by ITS sequence) on dead *Acer platanoides* twigs, leg. O.Yu. Akulov 01 Dec 2019, det. O.Yu. Akulov (CWU (Myc) AS 7303); Kharkiv city, Sarzhyn Yar, on the conidiomata of *Diplodia sp.* on dead *Acer platanoides* twigs, leg. O.Yu. Akulov 02 March 2008, det. O.Yu. Akulov 16 July 2020 (CWU (Myc) AS 7628). – Ternopil region, Zalischyky district, National Nature park "Dnistrovskyi Canyon" (Dniester Canyon), deciduous forest in the Porosyachka river valley, on the conidiomata of *Botryodiplodia* (*Sphaeropsis sp*.) on the fallen branches of cf. *Alnus glutinosa*, leg. O.Yu. Akulov 06 Oct 2016, det. O. Yu. Akulov 18 March 2020 (CWU (Myc) AS 6216).

*Thyronectria rhodochlora* is a parasite on *Diplodia* spp. and some other fungi colonising dead corticated branches or twigs, mainly of *Acer campestre*, but it was also found on

other deciduous trees in Europe. *T. rhodochlora* differs from other species of the genus by the width of mature ascospores averaging > 9 μm (Voglmayr et al., 2022). In Ukrainian specimens it was associated with *Diplodia* and *Botryodiplodia* (*Sphaeropsis*) spp.

DOUBTFUL FINDS

The following records still require revision of the specimens in order to confirm the accuracy of the determination.

*Thyronectria berolinensis* (Sacc.) Seaver (= *Nectia beroliensis* (Sacc.) Cooke) – Mykolaiv region, Kazanka district, Volodymyrivka village, on *Crataegus sp*. twigs, leg. L.V. Smyk 25 Sept 1973, prel. det. L.V. Smyk (KW 7416). Typical hosts of *T. berolinensis* are *Ribes spp*.

*Thyronectria chlorinella* (Cooke) Seeler (= *Pleonectria chlorinella* (Cooke) Hirooka, Rossman & P. Chaverri). – Khmelnitskyi region, Slavuta district, Slavuta, on *Carpinus betulus* twigs, leg. L.V. Smyk 01 Oct 1970, det. L.V. Smyk (KW 5382). This is a quite rare North American species known from two host plants: *Ulmus americana* and *Platanus occidentalis*.

*Thyronectria coryli* (Fuckel) Jaklitsch & Voglmayr – Ivano-Frankivsk region, Tysmenytsia district, vicinities of Podluzhzhia, on *Berberis vulgaris* stems, leg. Petrak F. 29 July 1918, det. (as *Nectria coryli* Fuckel) Petrak F. (Petrak, 1925). Possibly conspecific with *Thyronectria lamyi*, which is common on *Berberis* spp. — Lviv region, Brody district, Pidhirtsi, vicinities of Pidhirtsi Castle, on dead twigs of *Carpinus betulus*, leg. F. Petrak 06 Jan 1917, det. (as *Necria coryli* Fuckel) F. Petrak – There is only a literature record (Petrak, 1925), and the specimen was not available. — Kyiv region, Bila Tserkva district, Bila Tserkva town, on *Ptelea trifoliata* twigs, leg. and prel. det. (as *Necria coryli* Fuckel) V.P. Panasenko. There is a single record in the literature (Panasenko, 1938), and the specimen was not available. — Zakarpattia region, Tiachiv district, Ust-Chorna settlement, on *Populus nigra* twigs, leg. I.O. Dudka 29 Oct 1969, det. L.V. Smyk (KW 7164). The specimen was not available for revision. — Autonomous Republic of Crimea, Yalta district, Nikita Botanic Garden, on *Rhus coriaria* twigs, leg. 08 Oct 1967 L.V. Smyk, det. L.V. Smyk (KW 7266). The specimen was not available for revision.

*Thyronectria cucurbitula* (Tode) Jaklitsch & Voglmayr (as *Scoleconectria cucurbitula* (Tode) C. Booth) – There are fourteen specimens named *S. cucurbitula*, collected by V.P. Isikov on the territory of the Autonomous Republic of Crimea in the period 1989-1990 (KW 2707, 2859, 2907, 3272, 3443, 3455, 3683, 4496, 663875, 664512, 664540, 667904, 667940 and 668810).

The substrates are specified as *Cedrus atlantica*, *Cupressus sempervirens* and *Pinus nigra* var. *palassiana*. The aforementioned specimens are currently unavailable for revision, but we have serious doubts about the reliability of the previous identifications for the following reasons. Firstly, as it has been mentioned above, *Thyronectria cucurbitula* is a host-specific fungus that colonizes bark and twigs of *Pinus* subgenus *Pinus* (Pinaceae). Secondly, *T. cucurbitula* has a pycnidial, not a sporodochial anamorph. In contrast to these facts, the text of the original article does not provide any description or illustration, but indicates "*Tubercularia vulgaris* Tode together with its teleomorph *Scoleconectria cucurbitula* (Tode) C. Booth" (Isikov, 1997). It should be mentioned that a *Tubercularia* anamorph is typical for members of the *Nectria cinnabarina*-complex. Sporodochial anamorphs are also inherent to *Corinectria* (=*Neonectria*) *fuckeliana*, which occurs on conifers.

Also, it should be noted that the current name of *Nectria cucurbitula* sensu auct. is *Thyronectria cucurbitula* (Tode) Jaklitsch & Voglmayr, while *Nectria cucurbitula* sensu Fuckel is *Corinectria fuckeliana* (C. Booth) C. González & P. Chaverri. Earlier the name *Nectria cucurbitula* Fuckel was widely used in Europe for the canker now named *Corinectria fuckeliana*.

*Thyronectria cucurbitula* (Tode) Jaklitsch & Voglmayr (as *Zythia cucurbitula* Jacz.) – Rivne region, Rivne district, vicinities of Klevan village, on *Corylus avellana* twigs, leg. and prel. det. L.V. Smyk (KW 9011). – Typical hosts of *T. cucurbitula* are members of the *Pinus* subgenus *Pinus*.

*Thyronectria cucurbitula* (Tode) Jaklitsch & Voglmayr – Ivano-Frankivsk re-

gion, Kolomyia district, vicinities of Kniazhdvir village, on the fallen branches of *Abies alba* (as *A. pectinata*), leg. and prel. det. (as *Nectria cucurbitula* (Tode) Fr.) A. Wróblewski April 1914. – Typical hosts of *T. cucurbitula* are *Pinus* subgenus *Pinus* representatives. There is only literature data (Wróblewski, 1916), and the specimen was not available

EXCLUDED RECORDS

*Thyronectria berolinensis* (Sacc.) Seaver (as *Pleonectia beroliensis* Sacc.) – Zaporizhzhia region, Yakymivka district, vicinities of Bohatyr village, Bogatyrske forestry, on *Caragana arborescens* stems, leg. M.F. Smits`ka 19 Jan. 1972, prel. det. L.V. Smyk (KW 7417/7851) – reidentified as *Thyronectria caraganae* Voglmayr, Akulov & Jaklitsch.

*Thyronectria lamyi* (Desm.) Seeler (as *Pleonectria lamyi* (Desm.) Sacc.) – Dnipropetrovs`k region, Piatykhatky district, vicinities of Piatykhatky town, artificial grove along motorway Dnipropetrovs'k-Piatykhatky, on *Caragana arborescens* stems, leg. L.V. Smyk 10 Oct 1973, prel. det. L.V. Smyk (KW 7418/7852) – reidentified as *Thyronectria caraganae* Voglmayr, Akulov & Jaklitsch.

*Thyronectria megalospora* (Speg.) Seaver et Chardón – Donets'k region, Volnovacha district, Ol'shanka village, on *Caragana arborescens* stems, leg. 31 July 1986 L.V. Smyk, prel. det. L.V. Smyk (KW 7419/7853) – reidentified as *Thyronectria caraganae* Voglmayr, Akulov & Jaklitsch.

## CONCLUSIONS

At present, six species of the genus *Thyronectria* have been recorded in Ukraine. For three species: *T. berolinensis*, *T. caraganae* and *T. cucurbitula* the names of the host fungi that they colonize are indicated for the first time. *Thyronectria caraganae* Voglmayr, Akulov & Jaklitsch was described from the territory of Ukraine and still is known only from the territory of this country. *Thyronectria chlorinella* was excluded from the list as doubtful, and *T. megalospora* as misidentified. A number of herbarium specimens are currently unavailable and therefore have not been revised. Information about some of the findings is published here for the first time.

### *LITERATURE*


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## СУЧАСНИЙ СТАН ВИВЧЕНОСТІ ГРИБІВ РОДУ ТИРОНЕКТРІЇ В УКРАЇНІ: РЕВІЗІЯ ДАНИХ З ГЕРБАРІЇВ ТА ЛІТЕРАТУРИ

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Мікофільні гриби - велика і неоднорідна група грибів, весь життєвий цикл яких, або принаймні значна його частина, проходить в асоціації з іншими грибами. Природа взаємодії мікофільнних грибів з їхніми хазяями не завжди ясна, але досить часто це − паразитизм, до того ж досить спеціалізований. Порівняно з іншими трофічними групами грибів, грибоподібні залишаються маловивченими. Часто навіть поширені та добре відомі види, такі як Tremella spp., що їх протягом тривалого часу вважали дереворуйнуючими або фітопатогенними, після більш ретельного дослідження виявляються мікофільними. До таких грибів належать і представники роду Thyronectria, що розглядається в цій статті. Багато важливих особливостей біології представників роду досі залишаються невідомими.

В основу роботи покладено критичний аналіз та узагальнення літературних даних, а також ревізію гербарних зразків з мікологічних колекцій KW (Інститут ботаніки ім. М.Г. Холодного НАН України, Київ) та CWU (ХНУ ім. В.Н. Каразіна, м. Харків). Станом на цей час в Україні достовірно ідентифіковано 6 представників роду. Види з найбільшою кількістю знахідок – Thyronectria berolinensis (17 знахідок), T. caraganae (7 знахідок), T. curbitula (7 знахідок) та T. coryli (6 знахідок). Thyronectria lamyi та T. rhodochlora представлені невеликою кількістю знахідок (по 3 кожна). Вид Thyronectria caraganae Voglmayr, Akulov & Jaklitsch описаний з території України і досі відомий лише з території цієї країни. Знахідка T. chlorinella в Україні розглядається нами як сумнівна, T. megalospora − як помилково ідентифікована. Інформація про деякі знахідки публікується вперше. Для частини видів гриб-господар також дається вперше.

***Ключові слова:*** *мікофільні гриби, біорізноманіття, ревізія, поширення, спеціалізація, нові знахідки, Україна.*