



This article is cited as: Doğan G, Erdoğan M, Aytaç Z, Ertuğrul T, Karayel Aİ. (2024). *Seifertia*, A New Genus Record For Turkish Mycobiota, *Mantar Dergisi*, 15(1),7-11.

Geliş(Received) :27.09.2023
Kabul(Accepted) :20.12.2023

Research Article
Doi: 10.30708.mantar.1367177

***Seifertia*, A New Genus Record for Turkish Mycobiota**

Gökhan DOĞAN¹, Makbule ERDOĞDU^{2*}
Zeki AYTAÇ³, Tuğba ERTUĞRUL⁴, Ali İhsan KARAYEL⁵

*Sorumlu yazar: merdogdu@ahievran.edu.tr

¹ Kırşehir Ahi Evran University, Graduate School of Natural and Applied Sciences, Kırşehir, TÜRKİYE/ Mgokhandogan06@gmail.com

² Kırşehir Ahi Evran University, Faculty of Agriculture, Department of Landscape Architects, Kırşehir, TÜRKİYE/ merdogdu@ahievran.edu.tr

³ Gazi University, Faculty of Science, Department of Biology, Teknikokullar, Ankara, TÜRKİYE/ zaytac@gazi.edu.tr

⁴ Gazi University, Faculty of Science, Department of Biology, Teknikokullar, Ankara, TÜRKİYE/ tugbaekici@gazi.edu.tr

⁵ Kırşehir Ahi Evran University, Graduate School of Natural and Applied Sciences, Kırşehir, TÜRKİYE/ karayelalihsan@gmail.com

Abstract: In this study, the genus *Seifertia* and species *S. azaleae* belonging to this genus are given as new record for Türkiye. The description of the species is presented and discussed with its macro and micromorphological photographs.

Keywords: *Seifertia*, Bolu, Türkiye, New record

***Seifertia*, Türkiye Mikotası İçin Yeni Bir Cins Kaydı**

Öz: Bu çalışmada, *Seifertia* cinsi ve bu cinse ait *S. azaleae* türü Türkiye için yeni kayıt olarak verilmektedir. Türün deskripsiyonu, makro ve mikromorfolojik fotoğrafları ile birlikte verilmiş ve tartışılmıştır.

Keywords: *Seifertia*, Bolu, Türkiye, Yeni kayıt

Introduction

Seifertia Partr. & Morgan-Jones was established by Partridge and Morgan-Jones (2002) to accommodate *Seifertia azaleae* (Peck) Partridge & Morgan-Jones, which was originally described as *Periconia azaleae* Peck (Peck, 1873). Based on phylogenetic analysis, Seifert et al. (2007) stated that *S. azaleae* is related to *Dothideomycetes* class, but its phylogenetic placement needs to be clarified. Crous et al. (2009) assigned *Seifertia* in *Pleosporales* order, where it was revealed to be related to *Xenostigmina* Crous, a synonym of *Mycopappus* Redhead & G.P. White based on molecular

phylogenetic analyses. Tian et al. (2015) accepted *Mycopappus* and *Xenostigmina* in the family *Melanommataceae* but ruled out *Seifertia* based on molecular phylogenetic analyses. Finally, *Seifertia azaleae* was transferred to the *Melanommataceae* family by Li et al. (2016).

During the field study in Yedigöller National Park on determining the microfungi on vascular plants, we collected *Seifertia azaleae* that cause bud blasts on flower buds of *Rhododendron ponticum* L. *Rhododendron* L., containing more than 1000 species, is the largest genus of *Ericaceae* and is widely distributed in Europe,



CC BY 4.0 Uluslararası Lisansı altında lisanslanmıştır / Licensed under the CC BY 4.0 International License.

Atıflamada APA stili kullanılmıştır, iThenticate ile taranmıştır./ APA style was used in citation, plagiarism was checked with iThenticate.

Asia, and North America, with the center of diversity in southern China (Chamberlain et al., 1996; Fang and Min, 1995). *Rhododendrons* of Türkiye are represented by nine taxa consisting of five wild species and four hybrid species (Url 1). *Rhododendron ponticum*, one of our wild species, is an evergreen large shrub, growing up to 10 m in Northern and Eastern Anatolian mountains, usually in *Fagus orientalis* Lipsky. forests, rarely in other forest types or above the tree line (Stevens, 1978).

Studied area Yedigöller National Park is located in the northern part of Bolu Province in the Western Black Sea Region in Türkiye and it includes seven lakes and many streams. According to Davis's grid square system (1965), the park is located in square A3. According to Emberger's climate classification, the region is of the type having a semi-arid, upper, cold winters Mediterranean climate of daily and seasonal photoperiodism. This indicates that summer precipitation is little in this region; vegetation is under the effect of the summer drought, and the precipitation regime is Eastern Mediterranean precipitation regime type 1.

Material and Method

Seifertia specimens were collected from Yedigöller National Park in Bolu province during the field study in 2021. The Flora of Turkey and the East Aegean Islands was used to identify the host plant (Stevens, 1978). A Leica DM E light microscope was used to examine and measure the preparations prepared from the host tissue. Olympus SZ61 stereo microscope was used for close-up photos of infected flower buds. *Seifertia azaleae* was identified using relevant literature (Chant and Gbaja, 1984; Ellis and Ellis, 1987; Glawe and Hummel, 2006; Partridge and Morgan-Jones, 2002). All specimens are deposited at the Kırşehir Ahi Evran University, Faculty of Agriculture, Kırşehir, Türkiye.

Results

Description, locality, host plant, voucher number, collection date, and macro and micromorphological photographs of the species were presented below according to the systematics given in Wijayawardene et al. (2022). The description of the species was based on the Turkish specimens.

Ascomycota
Dothideomycetes
Pleosporales
Melanommataceae
Seifertia azaleae

Conidiomata synnematal. Synnemata numerous, simple or very rarely branched, erect, capitate at the apex, broad at the base, attenuating to a narrower middle part, 700-920 × 50-75 µm, dark olivaceous or blackish brown with pale dusting conidia at the apex. Conidiophores synnematos, macronematous, branching toward the upper reaches or splaying out, straight or

slightly flexuous, cylindrical, septate, smooth, olivaceous-brown, or brown. Conidiogenous cells monoblastic or polyblastic, determinate, terminal, integrated, cylindrical, and doliiform, bearing a minute spicule at each locus of conidial detachment. Conidia holoblastic in simple or branched acropetal chains, acropleurogenous, ellipsoid, oblong, sub-globose or pyriform, shallowly apiculate, bearing no scar at point of detachment, smooth, usually unicellular, very rarely one-septate, 3.8-7.8 × 3.7-7.5 µm in size, pale brown or olivaceous-brown (Fig. 1).

Material examined—Türkiye, Bolu: Yedigöller National Park, 589 m asl, 40°57'55"N 31°44'07"E, on flower buds of *Rhododendron ponticum* (Ericaceae), 23.04.2021, roadside, G. Doğan 2354 et al.

Discussions

A necrotic fungus, *Seifertia azaleae* causes bud blast and twig blight in rhododendrons and azaleas (Seifert et al., 2007). Viennot-Bourgin (1981), who observed the disease caused by *Seifertia azaleae* during the growing season, stated that the fungus causes both mummification and browning of buds during the summer months (Viennot-Bourgin, 1981). Terminal flower buds are mainly infected in July-August, after which the leaf buds and stems are attacked. *Seifertia azaleae*'s fructifications appear during the following spring (Chant and Gbaja, 1984). In controlled experiments, Kaneko et al., (1988) observed necrotic lesions on both buds and leaves 10 days after inoculation. After 31 days, synnemata bearing conidia formed in the buds (Kaneko et al., 1988). Since necrotic buds do not fall off, 3 to 5 generations of withered buds can be found on a shrub (Frużyńska-Józwiak and Werner, 2000; Glawe and Hummel, 2006).

The conidia and synnemata of the studied specimen are compatible with other reports of *Seifertia azaleae*. The conspicuous differences being the smaller dimensions of synnemata and conidia. Partridge and Morgan-Jones (2002) described 1.5 mm high synnemata, 4-12 × 4-8 µm conidia. Ellis and Ellis (1987) described 2 × 0.5 mm synnemata, 6-12 × 4-6 µm conidia. Glawe and Hummel (2006) described 650-1500 × 50-90 µm synnemata, (3.5) 4.5-7 (10) × (3) 3.5-5.5 (7) µm conidia. The specimen collected in Türkiye has 700-920 × 50-75 µm synnemata, 3.8-7.8 × 3.7-7.5 µm conidia.

Seifertia azaleae was reported from England (Chant and Gbaja, 1984), France (Viennot-Bourgin, 1981), Germany (Garibaldi et al., 2002), Italy (Garibaldi et al., 2002), Japan (Kaneko et al., 1988), Norway (Endrestøl, 2017), Russia (Farr and Rossman, 2016), Slovakia (Pastirčák et al., 2014), Sweden (Svensson, 2016), Switzerland (Beenken et al., 2020) and USA (Farr and Rossman, 2016). Considering the existing literature on the mycobiota of Türkiye (Asan et al., 2022; Sesli et al., 2020), there is no record of the genus *Seifertia* to the best of our knowledge. In this study, *Seifertia azaleae* was first recorded from Türkiye at species and genus level.

Author Contributions

All authors have equal contribution.

Conflict of Interest

The authors declare no conflict of interest.

Ethical Statement:

It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly

cited (Gökhan DOĞAN, Makbule ERDOĞDU, Zeki AYTAÇ, Tuğba ERTUĞRUL, Ali İhsan KARAYEL).

Acknowledgment

This work was financially supported by the Scientific and Technological Research Council of Turkey (TÜBİTAK) (Project No: 217Z038).

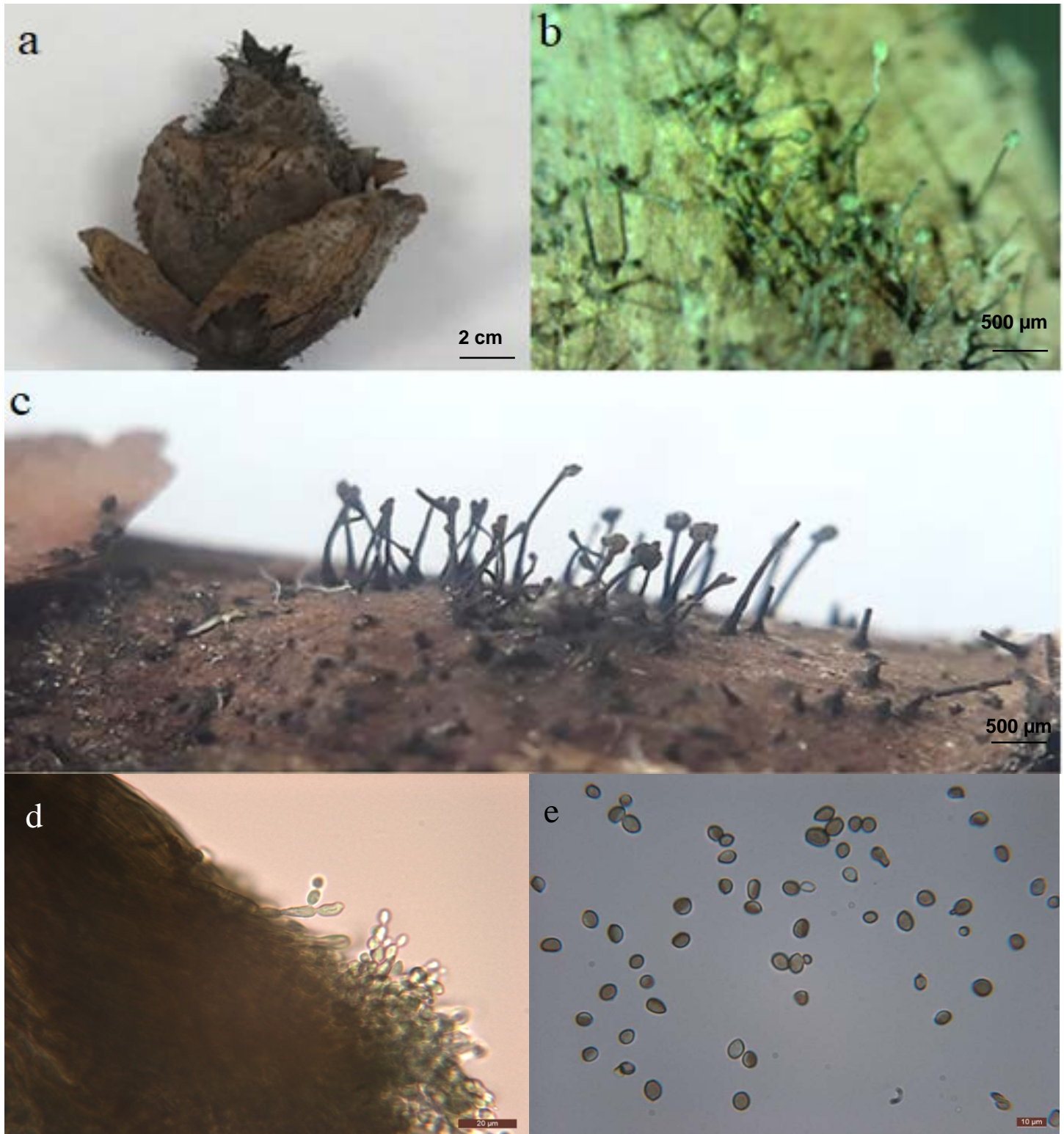


Fig. 1. Microscopic characters of *Seifertia azaleae*: a-c. the appearance of synnemata on flower buds, d, e. conidia.

References

- Asan, A., Selçuk, F., Giray, G., Aydoğdu, H., Ulukapı, M. and Ceylan, M.F. (2022). Türkiye Mantarları Listesi'ne İlaveler-1. Bağbahçe Bilim Dergisi, 9 (3) 65-89.
- Beenken, L., Gross, A. and Queloz, V. (2020). Phylogenetic revision of *Petrakia* and *Seifertia* (*Melanommataceae*, *Pleosporales*): New and Rediscovered Species from Europe and North America. Mycol Progress, 19, 417-440.
- Chamberlain, D., Hyam, R., Argent, G., Fairweather, G. and Walter, K.S. (1996). The genus *Rhododendron*: its classification and synonymy. R. Botanic Garden, Edinburgh.
- Chant, S.R. and Gbaja, I.S. (1984). Scanning electron microscopy of colonization of *Rhododendron* by *Pycnostysanus azaleae*. Transactions of the British Mycological Society, 83 (2) 233-238.
- Crous, P.W., Braun, U., Wingfield, M.J., Wood, A.R., Shin, H.D., Summerell, B.A., Alfenas, A.C., Cumagun, C.J.R. and Groenewald, J.Z. (2009). Phylogeny and Taxonomy of Obscure Genera of Microfungi. Persoonia-Molecular Phylogeny and Evolution of Fungi, 22 (1) 139-161.
- Davis, P.H. (ed.) (1965). Flora of Turkey and East Aegean Islands. Vol. 1. Edinburgh University Press, 824 pp., Edinburgh.
- Ellis, B.M. and Ellis, J.P. (1987). Microfungi on Land Plants. Croom Helm, 818 pp., London-Sydney.
- Endrestøl, A. (2017). *Graphocephala fennahi* Young, 1977 (*Hemiptera*, *Cicadellidae*) and *Seifertia azaleae* (Peck) Partr. & Morgan-Jones (*Ascomycota*, *Dothideomycetes*) in Norway. Norwegian Journal of Entomology, 64, 112-129.
- Fang, R. and Min, T. (1995). The floristic study on the genus *Rhododendron*. Acta Botanica Yunnanica, 17, 359-379.
- Farr, D.F. and Rossman, A.Y. (2016). Fungal Databases, Systematic Mycology and Microbiology Laboratory, ARS, USDA. Available from: <http://nt.ars-grin.gov/fungal-databases/> (accessed 1 February 2016).
- Frużyńska-Jóźwiak, D. and Werner, M. (2000). Grzyby Wyniszczające Pąki i Kwiatostany Różanecznika. / Fungi Destroying Buds and Inflorescences of *Rhododendron*. Ochrona Roślin, 3, 37-38.
- Garibaldi, A., Gilardi, G., Bertetti, D. and Gullino, M.L. (2002). First report of *Pycnostysanus azaleae* on *Rhododendron* in Italy. Plant Disease, 86 (5) 560-560.
- Glawe, D.A. and Hummel, R.L. (2006). North American Records for *Seifertia azaleae*, Cause of *Rhododendron* Bud Blight Disease. Pacific Northwest Fungi, 1 (5) 1-6.
- Kaneko, S., Yokozawa, Y. and Kubono, T. (1988). Bud Blight of *Rhododendron* Trees Caused by *Pycnostysanus azaleae*. Annals of the Phytopathological Society of Japan, 54, 323-326.
- Li, J., Phookamsak, R., Mapook, A., Boonmee, S., Bhat, D.J., Hyde, K.D. and Lumyong, S. (2016). *Seifertia shangrialaensis* sp. nov. (*Melanommataceae*), a new species from Southwest China. Phytotaxa, 273 (1) 34-42.
- Partridge, E.C. and Morgan-Jones, G. (2002). Notes on *Hyphomycetes*, LXXXVIII. New Genera in which to Classify *Alysidium resinae* and *Pycnostysanus azaleae*, with a Consideration of *Sorocybe*. Mycotaxon, 83, 335-352.
- Pastirčák, M., Majeská, M., Ferus, P. and Gubiš, J. (2014). Choroby Rododendronov Spôsobené Hubovými Patogénmi. Zborník Referátov z Vedeckej Konferencie. Dendrologické dni v Arboréte Mlyňany SAV 2014. Vieska nad Žitavou: Arborétum Mlyňany SAV (pp. 145-149).
- Peck, C.H. (1873). Descriptions of New Species of Fungi. Bulletin of the Buffalo Society of Natural Sciences, 1, 41-72.
- Seifert, K.A., Hughes, S.J., Boulay, H. and Louis-Seize, G. (2007). Taxonomy, Nomenclature and Phylogeny of Three *Cladosporium*-like *Hyphomycetes*, *Sorocybe resinae*, *Seifertia azaleae* and the *Hormoconis* anamorph of *Amorphotheca resinae*. Studies in Mycology, 58, 235-245.
- Sesli, E., Asan, A. and Selçuk, F. (edlr.) Abacı Günyar, Ö., Akata, I., Akgül, H., Aktaş, S., Alkan, S., Allı, H., Aydoğdu, H., Berikten, D., Demirel, K., Demirel, R., Doğan, H.H., Erdoğan, M., Ergül, C.C., Eroğlu, G., Giray, G., Halikî Uztan, A., Kabaktepe, Ş., Kadaifçiler, D., Kalyoncu, F., Karaltı, İ., Kaşık, G., Kaya, A., Keleş, A., Kırbağ, S., Kivanç, M., Ocağ, İ., Ökten, S., Özkale, E., Öztürk, C., Sevindik, M., Şen, B., Şen, İ., Türkekul, İ., Ulukapı, M., Uzun, Ya., Uzun, Yu., Yoltaş, A. (2020). Türkiye Mantarları Listesi. Ali Nihat Gökyiğit Vakfı Yayınları, 1177 pp, İstanbul.
- Stevens P.F. (1978). *Rhododendron* L. In Davis, P. H. (ed.) Flora of Turkey and East Aegean Islands. Vol. 6. Edinburgh University Press, Edinburgh.
- Svensson, J. (2016). "Rododendronknoppdödare" i Ramlösa brunnsparke. Puggehatten, 29 (1), 6-7.
- Tian, Q., Liu, J.K., Hyde, K.D., Wanasinghe, D.N., Boonmee, S., Jayasiri, S.C., Luo, Z.L., Taylor, J.E., Phillips, A. J.L., Bhat, D.J., Li, W.J., Ariyawansa, H.A., Thambugala, K. M., Jones, E. B. G., Chomnunti, P., Bahkali, A. H., Xu, J.C. and Camporesi, E. (2015). Phylogenetic Relationships and Morphological Reappraisal of *Melanommataceae* (*Pleosporales*). Fungal Diversity, 74, 267-324.
- Url1. <https://bizimbitkiler.org.tr/> (accessed 25.07.2023).
- Viennot-Bourgin, G. (1981). Observation simultanée en France du bud blast du *Rhododendron* et d'une cicadelle jouant le rôle de vecteur. Agronomie, EDP Sciences 1 (2) 87-92.
- Wijayawardene, N. N., Hyde, K.D., Dai, D.Q., Sánchez-García, M., Goto, B.T., Saxena, R.K., Erdoğan, M., Selçuk, F., Rajeshkumar, K.C., Aptroot, A., Blaszowski, J., Boonyuen, N., da Silva, G.A., de Souza, F. A., Dong, W.,

Ertz, D., Haelewaters, D., Jones, E.B.G., Karunarathna, S.C., Kirk, P.M., Kukwa, M., Kumla, J., Leontyev, D.V., Lumbsch, H.T., Maharachchikumbura, S.S.N., Marguno, F., Martínez-Rodríguez, P., Mešić, A., Monteiro, J.S., Oehl, F., Pawłowska, J., Pem, D., Pfliegler, W. P., Phillips, A.J.L., Pošta, A., He, M. Q., Li, J. X., Raza, M., Sruthi, O.P., Suetrong, S., Suwannarach, N., Tedersoo, L., Thiyagaraja, V., Tibpromma, S., Tkalčec, Z., Tokarev, Y.S., Wanasinghe, D. N., Wijesundara, D.S.A., Wimalaseana, S. D. M. K., Madrid, H., Zhang, G. Q., Gao, Y., Sánchez-Castro, I., Tang, L.Z., Stadler, M., Yurkov, A. and Thines, M. (2022). Outline of Fungi and fungus-like taxa – 2021. *Mycosphere*, 13 (1) 53-453.