Caloplaca phaeocarpella new to Finland

INKA KUUSISTO

Kuusisto, I. 2024. *Caloplaca phaeocarpella* new to Finland. *Graphis Scripta* **36** (5): 106–108. Oslo. ISSN 2002-4495.

Caloplaca phaeocarpella is reported first time in Finland from the biogeographical province Enontekiön Lappi in NW Finland. It was growing on reindeer droppings and had an untypical coloration (dull orange-yellow). An ITS sequence for the species is provided.

Inka Kuusisto, Herbarium (TUR) and Kevo Subarctic Research Station, Biodiversity Unit, University of Turku, Finland). E-mail: ihmkuu@utu.fi.

Introduction

Caloplaca phaeocarpella (Nyl.) Zahlbr. (Zahlbruckner 1930–1931) has a wide bipolar distribution (Andreev et al. 1996, Etayo et al. 2021, Hansen 2006, Kristinsson et al. 2010, Søchting et al. 2008, Søchting et al. 2004, Søchting & Olech 1995). From Fennoscandia, it has been found in several provinces in Sweden and one province in Norway (Westberg et al. 2021). Typically, *C. phaeocarpella* grows on wood, twigs and plant debris (Søchting et al. 2008, Westberg et al. 2021). Here *C. phaeocarpella* is reported in Finland for the first time. The species was found from the biogeographical province Enontekiön Lappi in NW Finnish Lapland; it was growing on reindeer droppings.

Material and Methods

The specimen was collected from Mt Ritničohkka, biogeographical province Enontekiön Lappi, NW Finnish Lapland (69.2850°N, 21.3337°E, 1200 m a.s.l.). Mt Ritničohkka reaches from the middle oroarctic to upper oroarctic vegetation zone and its vegetation is hence typically dominated by cryptogams (Oksanen & Virtanen 1995). Vegetation (including lichens) was studied in 1990 and 2022 from five 15-meter-long transects (1175–1275 m a.s.l.) comprising a total of 76 plots (40 plots in 2022, 36 plots in 1990). Specimens from cryptogam species on the plots were collected and studied in the laboratory in 2022; also, specimens collected in 1990 were re-studied in 2022. Summer´s 2022 field work was conducted as a part of the project "National monitoring of snowbed species and habitats for their improved red list assessment" funded by the Finnish Ministry of the Environment within a PUTTE 2 research program.

Collected specimens were studied using a dissection microscope and a compound microscope. In addition, the *Caloplaca phaeocarpella* specimen was ITS sequenced as part of the Finnish Barcode of Life project (FinBOL). The molecular work took place in the Canadian Centre for DNA Barcoding (CCDB) where the sampled specimen was sent. The molecular tasks were conducted following the CCDB´s standard protocols (see https://ccdb.ca/resources). The sequence was sent to Dr. Ulf Arup (Lund University), who aligned and compared it with other *Caloplaca* ITS sequences. The sequence is available in GenBank. The *Caloplaca phaeocarpella* specimen is deposited in the Turku University Herbarium (TUR). The specimen information is available in the Collection

Figure 1. *Caloplaca phaeocarpella* (TUR 76732).

Management System Kotka of Finnish herbaria and through that in the Finnish Biodiversity Information Facility (FinBIF).

The Species

Description of the Finnish specimen: Thallus thin, formed of diffuse areoles, whitish. Apothecia 0.3–0.4 mm diameter. Disk dull orange-yellow, with margins the same color as the disk to blackish (Fig. 1). Excipulum 30 µm wide with some algal cells. Hymenium hyaline, c. 60 µm high. Asci 50 × 20 µm. Ascospores 8 per ascus, hyaline, ellipsoid, 16–18 × 7–10 µm with distinct, on average 5 µm (range 3–7 µm) thick septum.

Occurrence and ecology: The species occurred on one of the 76 studied plots, and it was found only in the 2022´s collections. The specimen was collected at 1200 m a.s.l. *Caloplaca phaeocarpella* was growing on reindeer droppings in bryophyte- and *Ranunculus glacialis*-dominated snowbed (i.e. *Ranunculus glacialis*−*Gymnomitrion* type of Oksanen & Virtanen 1995).

Specimens examined: **Finland**. *Enontekiön Lappi*: Enontekiö, Käsivarsi wilderness area, Ritničohkka, on reindeer droppings on bryophyte−*Ranunculus glacialis* snowbed, 69.2850°N, 21.3337°E, alt. 1200 m, 10 August 2022, coll. I. Kuusisto, det. U. Arup, 2024 (TUR 76732; http://mus.utu.fi/TLC.76732; GenBank acc. nr. PP776818).

Discussion

Based on the literature and Dr. Ulf Arup's expertise, the Finnish specimen has untypically colored apothecia: they are dull orange yellow, with disk and margins having mostly the same coloration, whereas apothecia of *C. phaeocarpella* are typically blackish brown with a yellow tone to red orange with darker sometimes blackish margin. However, the ITS sequence of the Finnish specimen showed that it is *C. phaeocarpella*. Usually, *C. phaeocarpella* grows on twigs and plant debris in polar environments (Søchting et al. 2008, Westberg et al. 2021) and the nutrient-rich substrate (reindeer droppings) can be the reason for its abnormal coloration. Because of its small size, the species is easily overlooked. However, upper oroarctic mountains, such as Mt. Ritničohkka, are scarce in Finland and thus it is likely that the species is rare in Finland.

Acknowledgements: I´m extremely grateful to Ulf Arup (Lund University) for the molecular identification of the species, viewing the morphological material, and making valuable notifications about the manuscript. Juha Pykälä (Finnish Environment Institute) is acknowledged for sampling the specimen to FinBOL and reviewing the manuscript. The field work in 1990 was conducted by Risto Virtanen (University of Oulu) whereas the field work in 2022 was performed during the research project "National monitoring of snowbed species and habitats for their improved red list assessment" funded by the Finnish Ministry of the Environment within a PUTTE 2 research program. The DNA barcoding of Finnish lichens is part of the FinBOL project financially supported by the Academy of Finland (2020–) through the Finnish Biodiversity Information Facility (FinBIF) infrastructure project on the national roadmap.

References

Andreev, M., Kotlov, Y. & Makarova, I. 1996. Checklist of lichens and lichenicolous fungi of the Russian Arctic. *Bryologist* **99**: 137–169.

Etayo, J., Sancho, L. G., Gómez-Bolea, A., Søchting, U., Aguirre, F. & Rozzi, R. 2021. Catalogue of lichens (and some related fungi) of Navarino Island, Cape Horn Biosphere Reserve, Chile. *Anales del Instituto de la Patagonia* **49**: 1–110.

Hansen, E. S. 2006. New or interesting Greenland lichens X. *Cryptogamie, Mycologi*e **27**: 271–277.

Kristinsson, H., Hansen, E.S. & Zhurbenko, M. 2006. *Panarctic lichen checklist*. CAFF -Flora Group.

Oksanen, L. & Virtanen, R. 1995. Topographic, altitudinal and regional patterns in continental and suboceanic heath vegetation of northern Fennoscandia. *Acta Botanica Fennica* **153**: 1–80.

Søchting, U. & Olech, M. 1995. The lichen genus *Caloplaca* in polar regions. *The Lichenologist* **27**: 463–471.

Søchting, U., Lorentsen, L. B. & Arup, U. 2008. The lichen genus *Caloplaca* (Ascomycota, Lecanoromycetes) on Svalbard. Notes and additions. *Nova Hedwigia* **87**: 69–96.

Søchting, U., Øvstedal, D. O. & Sancho, L. G. 2004. The lichens of Hurd Peninsula, Livingston Island, South Shetlands, Antarctica. *Bibliotheca Lichenologica* **88**:607–658.

Westberg, M., Moberg, R., Myrdal, M., Nordin, A. & Ekman, S. 2021. *Santesson's Checklist of Fennoscandian Lichen-Forming and Lichenicolous Fungi*. Museum of Evolution, Uppsala University, 938 pp.

Zahlbruckner, A. 1930–1931. *Catalogus Lichenum Universalis. Band VII*. Gebrüder Borntraeger, Leipzig, 784 pp.