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Lichenized and lichenicolous fungi from the valley ‘Ochsental’ (Eastern Alps, Vorarlberg, Austria)

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Abstract

A list of 100 lichen species and 4 lichenicolous fungi from the valley ‘Ochsental’ is presented. *Lecidea laboriosa* is new to Austria. *Lecanora swartzii*, *Orphniospora moriopsis*, *Protothelenella corrosa* and the lichenicolous fungus *Cercidospora stereocaulorum* are new to the province of Vorarlberg.

Introduction

Vorarlberg, the westernmost province of Austria, covers an area of about 2,600 km². The most significant mountain ranges are the Rätikon, the Silvretta and the Verwall. Ochsental, a high alpine valley south of the mountain pass Bielerhöhe, is situated in the Silvretta mountain range (Fig. 1). The majority of the peaks in the Silvretta are elevated above three thousand meters and are surrounded by glaciers. There are two glaciers in the south end of the valley: the Vermunt and the Ochsentaler glacier. The latter is situated at the foot of the Piz Buin (3,312 m above sea level), the highest mountain of Vorarlberg, at the border to the Swiss canton of Graubünden. Due to the screening effect of the surrounding mountains, the climate of the valley is less oceanic than in many other parts of Vorarlberg. The bedrock consists of siliceous rocks, thus the soils have an acid character.

Mayrhofer et al. (1989) provided a comprehensive list of 629 lichens and 21 lichenicolous fungi for Vorarlberg, as a result of the field meeting of the ‘Bryological and Lichenological Association for Central Europe (BLAM)’ in July 1986. Right after this meeting, the co-author together with Erika HINTEREGGER visited the valley ‘Ochsental’ for a one day excursion. Hinteregger (1994) recorded 20 lichen species on the stems of *Rhododendron ferrugineum* from this valley, including the saxicolous species *Bellemerea cinereorufescens*, *Lecanora cenisia*, *L. polytropa*, *L. subintricata*, *Rhizocarpon geographicum*, *R. grande* and *R. polycarpum*. The results of the field trip – not including the records published in Hinteregger (1994) – are presented in this paper.

A compilation of the lichens of Vorarlberg was presented by Pfefferkorn-Dellali & Türk (2005), listing 1069 lichen taxa based on literature data and field work. Since then, only a

few additions have been published, of which Kaufmann (2013) is the most comprehensive one.

Material and methods

Sampling location: Austria, Vorarlberg, Silvretta mountain range, valley 'Ochsental' south of 'Bielerhöhe', 46°52'26"–46°53'28"N, 10°05'40"–10°06' 26"E, 2100–2200 m above sea level, collected by Helmut MAYRHOFER, 31 July 1986.

Lichens were collected on plant debris or decaying terricolous mosses (deb), on silicious rocks (sil), on acid soil (ter-sil) and, exceptionally, on dead wood (xyl).

The specimens were identified with the aid of Wirth et al. (2013) and Ihlen & Wedin (2008), using routine light microscopy techniques. Some of the identifications required verification by using standardized thin-layer chromatography (TLC), following the protocols of White & James (1985) and Orange et al. (2001). The specimens are preserved in the herbarium of the Institute of Plant Sciences, University of Graz (GZU). The nomenclature mainly follows Wirth et al. (2013), or other modern treatments.

Results and discussion

Lichenized fungi

Acarospora badiofusca: sil

Acarospora fuscata: sil

Alectoria ochroleuca: ter-sil

Amandinea punctata: deb

Arthrorhaphis citrinella: on *Baeomyces rufus*

Aspicilia simoensis: sil

Baeomyces placophyllus: ter-sil

Baeomyces rufus: ter-sil

Bellemeria alpina: sil

Brodoa intestiniformis: sil

Bryonora castanea: deb

Caloplaca ammiospila: deb

Calvitimela armeniaca: sil

Candelariella vitellina: sil

- Catolechia wahlenbergii*: ter-sil
- Cetraria ericetorum*: ter-sil
- Cetraria islandica*: ter-sil
- Cetraria muricata*: ter-sil
- Cladonia arbuscula* subsp. *squarrosa*: ter-sil
- Cladonia chlorophaea*: ter-sil
- Cladonia* cf. *furcata*: ter-sil
- Cladonia gracilis*: ter-sil
- Cladonia pyxidata*: ter-sil
- Cladonia rangiferina*: ter-sil
- Cladonia stellaris*: ter-sil
- Cladonia uncialis*: ter-sil
- Cornicularia normoerica*: sil
- Dimelaena oreina*: sil – chemotype I (with fumarprotocetraric acid)
- Diploschistes scruposus*: sil
- Epilichen scabrosus*: on *Baeomyces placophyllus*
- Flavocetraria cucullata*: ter-sil
- Flavocetraria nivalis*: ter-sil
- Fuscidea kochiana*: sil
- Helocarpon pulverulum*: deb
- Icmadophila ericetorum*: deb
- Lecanora bicincta*: sil
- Lecanora intricata*: sil
- Lecanora polytropa*: sil
- Lecanora rupicola*: sil
- Lecanora swartzii*: sil – **new to Vorarlberg**

Lecidea fuscoatra: sil
Lecidea laboriosa: sil – **new to Austria**
Lecidea lactea: sil
Lecidea lapicida: sil
Lecidea silacea: sil
Lecidoma demissum: ter-sil
Lobaria linita: ter-sil
Melanelia hepaticum: sil
Melanelia stygia: sil
Micarea lignaria: deb
Miriquidica garovaglii: sil
Ophioparma ventosa: sil
Orphniospora moriopsis: sil – **new to Vorarlberg**
Parmelia omphalodes: sil
Parmelia saxatilis: sil
Parmeliella triptophylla: deb, sil
Peltigera leucophlebia: ter-sil
Pertusaria corallina: sil
Placynthiella oligotropha: deb
Pleopsidium chlorophanum: sil
Porpidia crustulata: sil
Porpidia macrocarpa: sil
Porpidia tuberculosa: sil
Protomicarea limosa: ter-sil
Protopannaria pezizoides: ter-sil
Protoparmelia badia: sil

Protothelenella corrosa: sil – **new to Vorarlberg**

Protothelenella sphinctrinoides: deb

Pseudephebe pubescens: sil

Psorinia conglomerata: sil

Psoroma hypnorum: ter-sil

Pycnothelia papillaria: ter-sil

Ramalina capitata: sil

Rhizocarpon copelandii: sil

Rhizocarpon geographicum: sil

Rhizocarpon lecanorinum: sil

Rhizocarpon polycarpum: sil

Rhizocarpon superficiale: sil

Rhizoplaca chrysoleuca: sil

Rhizoplaca melanophthalma: sil

Rimularia furvella: on *Fuscidea kochiana*

Rimularia gibbosa: sil

Rinodina conradii: deb

Rinodina mniaraea var. *mniaraea*: ter-sil

Schaereria fuscocinerea: sil

Solorina crocea: ter-sil

Sporastatia testudinea: sil

Stereocaulon alpinum: ter-sil

Tephromela atra: sil

Thamnolia vermicularis: ter-sil

Trapeliopsis granulosa: deb, ter-sil

Tremolecia atrata: sil

Umbilicaria crustulosa: sil

Umbilicaria cylindrica: sil

Umbilicaria deusta: sil

Umbilicaria leiocarpa: sil

Umbilicaria vellea: sil

Varicellaria lactea: sil

Xanthoria elegans: sil

Xylographa parallela: xyl

Lichenicolous fungi

Cercidospora stereocaulorum: on *Stereocaulon* sp. – **new to Vorarlberg**

Dactylospora urceolata: on *Protothelenella sphinctrinoides*

Muellerella pygmaea: on *Lecidea lapicida*

Rhagadostoma lichenicola: on *Solorina crocea*

A one day excursion to the valley ‘Ochsental’, situated in the Silvretta mountain range, yielded 100 lichen species and 4 lichenicolous fungi. All lichens found on *Rhododendron ferrugineum* were published earlier by Hinteregger (1994).

Lecidea laboriosa is new to Austria. In the Alps, this species was previously only recorded from the canton Valais in Switzerland (Clerc & Truong 2012). Because of the similarity to *Lecidea plana*, some specimens are probably filed under that species. Hertel (1995) presumed that *Lecidea laboriosa* is heterogeneous.

Lecanora swartzii, *Orphniospora moriopsis*, *Protothelenella corrosa*, and the lichenicolous fungus *Cercidospora stereocaulorum* on *Stereocaulon* sp. are new to the province of Vorarlberg.

The majority of the lichenized species (58) was collected on siliceous rocks. Twenty-nine species occurred on acid soil, eleven species on plant debris or decaying terricolous mosses. *Arthrorhaphis citrinella*, *Epilichen scabrosus* and *Rimularia furvella* grew on other lichens and *Xylographa parallela* on a dead stem of a dwarf-shrub.

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References

- Clerc, P.; Truong, C. Catalogue des lichens de Suisse. Jun 11. 2012 [http://www.ville-ge.ch/musinfo/bd/cjb/cataloguelichenversion 2.0](http://www.ville-ge.ch/musinfo/bd/cjb/cataloguelichenversion2.0)
- Hertel H. Schlüssel für die Arten der Flechtenfamilie Lecideaceae in Europa. *Bibliotheca Lichenologica*. 1995; 58:137–180.
- Hinteregger E. Krustenflechten auf den *Rhododendron*-Arten (*Rh. ferrugineum* und *Rh. hirsutum*) der Ostalpen unter besonderer Berücksichtigung der Gattung *Biatora*. *Bibliotheca Lichenologica*. 1994; 55:1–346. + 79 Abbildungen.
- Ihlen PG, Wedin M. An annotated key to the lichenicolous Ascomycota (including mitosporic morphs) of Sweden. *Nova Hedwigia*. 2008; 86:275–365.
- Kaufmann M. Seltene und bemerkenswerte Gesteinsflechten des Arlberggebietes (Vorarlberg, Tirol, Österreich). - *inatura*. *Forschung online*. 2013; 5:1–41.
- Mayrhofer H, Türk R, Wittmann H. Ein Beitrag zur Flechtenflora von Vorarlberg (Österreich). *Herzogia*. 1989; 8:207–247.
- Orange, A.; James, PW.; White, FJ. *Microchemical methods for the identification of lichens*. British Lichen Society; London: 2001.
- Pfefferkorn-Dellali V, Türk R. Die Flechten Vorarlbergs. *Vorarlberger Naturschau*. 2005; 17:7–247.
- White FJ, James PW. A new guide to microchemical techniques for the identification of lichen substances. *Bulletin of the British Lichen Society*. 1985; 57(Suppl.):1–41.
- Wirth, V.; Hauck, M.; Schultz, M. *Die Flechten Deutschlands*. Vol. 1. Vol. 2. Ulmer; Stuttgart: 2013.



Fig. 1.
Location of the valley "Ochsental" in Austria