*Phytotaxa* 191 (1): 099–114
www.mapress.com/phytotaxa/


**Article**

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.191.1.6

# Lichens from the Utsteinen Nunatak (Sør Rondane Mountains, Antarctica), with the description of one new species and the establishment of permanent plots

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## Abstract

In order to establish baseline environmental conditions at the Utsteinen Nunatak (Sør Rondane Mountains, Antarctica) chosen for the installation of the new Belgian Antarctic research station, a detailed survey of the different lichen species was performed in 2007. The establishment of permanent plots will allow the accurate monitoring of possible future impacts of human activities on the biodiversity and, on a long-term scale, to detect future climate changes. A complete survey of the lichen species was made for each of the 23 permanent plots of the Utsteinen Ridge. The abundance of each species within each plot was also evaluated. Exhaustive lists of lichens were also completed for other parts of the Utsteinen Nunatak. Additionally, historic collections from the same area were revised.

A total of twenty-three lichen species and two lichenicolous fungi was detected in the recent samples whereas the historic material yielded three additional species. These results raise the total number of known taxa for the Sør Rondane Mountains from ten to 28, despite the small area investigated. *Trapelia antarctica* is described as new to science. *Buellia bastini* is synonymized with *Buellia nelsonii* and *Lecidea autenboeri* is synonymized with *Carbonea vorticosa*. The lichen flora of Utsteinen is made of a high percentage (48%) of Antarctic endemics.

Lichens were abundantly present on the Utsteinen Ridge. The numbers of species per plot varied from one to 18 with an average of ten. The detailed grid map for the Utsteinen Ridge will be useful in monitoring future changes in lichen population and diversity. Five plots presented the richest lichen flora and need therefore careful protection against any future human activities.

**Key words:** Dronning Maud Land, monitoring, Princess Elisabeth Station, taxonomy, *Trapelia*

## Introduction

The Sør Rondane Mountains (SR Mountains, Figs 1–2, 71°–72° S/20°–30° E) form a typical coastal margin mountainous area, composed of a series of Nunataks, in the eastern part of Dronning Maud Land (East Antarctica). The SR Mountains are part of a series of mountain ranges, running from the Borg Massif (72°45'S/3°30'E) in Western Dronning Maud Land to the Yamato Mountains (also called Queen Fabiola Mountains) (71°30'S/35°40' E) in Eastern Dronning Maud Land. The area follows the Antarctic coastline 200 km land inwards (Van Autenboer 1964), stretching over a distance of 220 km in an east-west direction, culminating at ca. 3000 m (Ohyama *et al.* 1991). The Utsteinen Nunatak (Figs 2, 4 & 5) located a few kilometres north of the SR Mountains, (71°57'S/23°20'E), is composed of granite rocks and consists of two peaks with a maximum elevation of 1564 m. Several blue ice fields and some surface lakes, frozen till the beginning of the summer, surround the nunatak. The south-eastern side of Utsteinen has a large wind scoop (Belgian Science Policy 2007). Climatic data were available from an automatic weather station installed during 2005 at Utsteinen with results analogous to the 1987–91 series from Asuka station, situated 55 km further north-east and 466 m lower in elevation. Average annual temperature at Utsteinen is -18°C, varying between -8°C (December) and

*Accepted by Thorsten Lumbsch: 10 Nov. 2014; published: 30 Dec. 2014*

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