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NATURE NOTES AND LETTERS

FIRST RECORD OF LICHENS FOR HASBALA LAKE, SASKATCHEWAN

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The purpose of this paper is to document 39 lichens, including 2 subspecies, 1 form, and 2 rare taxa for Hasbala Lake of Saskatchewan.

No earlier lichenological studies for Hasbala Lake (59 57 N 102 00 W) are known. A first detailed survey of the Hasbala Lake region ecosites, including lichens, was made by the Forest Ecosystem Classification Survey in 1997.¹¹ A subsequent botanical survey of the southwest Hasbala Lake region was made by de Vries³ as a supplement to Argus.¹ During this survey a few lichens were observed and incorporated in this paper, denoted with an asterisk (*).³

Location of Hasbala Lake

Hasbala Lake lies well within the subarctic section of northeastern Saskatchewan and is part of the taiga ecozone, which supports open subarctic lichen woodlands with mixed forest-tundra.^{6,7}

This ecozone is dominated by coniferous taiga vegetation. The predominant tree species is Black Spruce (*Picea mariana*) both in upland sites and in the very extensive poorly-drained peatlands where it commonly grows with tamarack (*Larix laricina*). White Spruce (*Picea glauca*)

is restricted to sheltered valley bottoms and lake shores. A minor broad-leaved component is found in some upland sites in the form of scattered White birch (*Betula papyrifera*). The area is also characterized by ericaceous shrubs and occasional Willow (*Salix*).

Lichen woodlands is the dominant forest type in the uplands, characterized by an open canopy structure and extensive mats of terricolous lichens, e.g. Reindeer lichens (*Cladonia*), Foam lichens (*Stereocaulon*) and Iceland lichens (*Cetraria*) in order of dominance, partnered with a diverse assemblage of epiphytic lichens attached mainly to tree bark. Feather mosses (*Pleurizium schreiberi*) and (*Hylocomium splendens*) are also common in upland forests.

Lowland forests are characteristically very open with a predominant ground cover of Peatmoss (*Sphagnum*), and other bryophytes, although lichens are sometimes an important component of the ground and epiphytic flora in peatlands.⁵

As more sampling is done, the rate at which new species are acquired falls off, because all but the rarest species have been collected.¹¹

Lichens Of Hasbala Lake

Each species have their scientific and common names followed by habitat, and geographic distribution. Nomenclature follows that of Esslinger⁴, while distribution is that of Brodo et al.²

Terrestrial Lichens

Cetraria ericetorum Opiz, Iceland lichen . On earth in open woodlands. Circumpolar boreal and arctic-alpine.⁹

Cladonia amaurocraea (Flörke) Schaerer, Quill lichen. Forest floor. Circumpolar, arctic and boreal.

Cladonia arbuscula ssp. *mitis* (Sandst.) Ruoss, Yellow reindeer lichen, Open dry sandy soil. Circumpolar, arctic to temperate.

Cladonia borealis S. Stenroos, Boreal pixie-cup. Open xeric sandy soil. Circumpolar, low-arctic.

Cladonia botrytes (K.G. Hagen) Willd., Wooden soldiers. Decaying tree stump in Black Spruce forest. Circumpolar, boreal
Cladonia cariosa (Ach.) Sprengel, Split-peg lichen. Open sandy soil. Circumpolar, arctic to temperate.

Cladonia cenotea (Ach.) Schaerer, Powdered funnel lichen. On earth of forest floor. Circumpolar in the northern hemisphere, low-arctic, boreal.

Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel,* Mealy pixie-cup. Open xeric sandy soil. Circumpolar, boreal.

Cladonia coccifera (L.) Willd. Madame's pixie-cup. In open muskeg. Circumpolar, northern boreal, arctic

Cladonia coniocraea (Flörke) Sprengel Common powderhorn. Shaded Forest.

Circumpolar, boreal to south temperate.

Cladonia cornuta (L.) Hoffm. ssp. *cornuta*, Bighorn cladonia. Open soil. Circumpolar, boreal, low-arctic.

Cladonia crispata (Ach.) Flotow var. *crispata*, Organ-pipe lichen. Open soil. Circumpolar, boreal, low-arctic.

Cladonia cristatella Tuck., British soldiers. Open forest location on soil. Boreal, temperate

Cladonia deformis (L.) Hoffm., Lesser sulphur-cup. On soil in open woodlands. Circumpolar, low arctic, boreal.

Cladonia fimbriata (L.) Fr.*, Trumpet lichen. On soil in open forest. Circumpolar, low-arctic, boreal.

Cladonia gracilis ssp. *turbinata* (Ach.) Ahti, Smooth cladonia. On exposed soil. Cosmopolitan, low-arctic, boreal, temperate.

Cladonia gracilis f. *floripara* (Flörke) Flörke, Smooth cladonia. On exposed soil. No geographic range known. Presumably that of the species.⁸ (see later discussion).

Cladonia pleurota (Flörke) Schaerer., Red-fruited pixie-cup On forest soil. Circumpolar, arctic, boreal.

Cladonia rangiferina (L.) F.H. Wigg., Grey reindeer lichen. Open dry sandy soil. Circumpolar, arctic to temperate.

Cladonia sulphurina (Michaux) Fr., Greater sulphur-cup On forest floor. Circumpolar, low arctic.

Cladonia uncialis (L.) F.H. Wigg., Thorn cladonia. On bare soil. Circumpolar, arctic, temperate.

Flavocetraria nivalis (L.) Karnefelt & Thell, Crinkled snow lichen. On earth with mosses in open location. Arctic-alpine, boreal.

Uromyces ericetorum (L.) Zahlbr., Candy lichen. Over mosses in forest. Circumpolar, boreal.

Peltigera aphthosa (L.) Willd., Common freckle pelt. On mossy ground in forest. Circumpolar, boreal.

Peltigera rufescens (Weiss) Humb.* , Field-dog lichen. On xeric sandy soil. Circumpolar, arctic, boreal

Stereocaulon paschale (L.) Hoffm., Easter lichen. On open soil. Circumpolar, arctic, boreal.

Stereocaulon tomentosum Fr.* , Woolly foam lichen. On open soil. Circumpolar, northern boreal.

Epiphytic Lichens

Bryoria lanestrus (Ach.) Brodo and D. Hawksw., Brittle horsehair lichen. On Black Spruce branches. Circumpolar, but mainly a boreal species.

Bryoria nadvornikiana (Gyelnik) Brodo and D. Hawksw., Spiny grey horsehair lichen. On Black Spruce bark in muskeg. Southern edge of the tundra and a peripheral species for northern Saskatchewan. Probably circumpolar. (see later discussion).

Evernia mesomorpha Nyl., Boreal oakmoss lichen. On Black Spruce bark. Circumpolar, boreal, temperate.

Hypogymnia physodes (L.) Nyl., Monk's-hood lichen. On Black Spruce bark. Circumpolar, arctic, temperate.

Lecanora circumborealis Brodo and Vitik,

Black-eyed rim-lichen. On Black Spruce branch. Circumpolar, boreal

Melanohalea olivacea (L.) O. Blanco et al. (*Melanelia olivacea*), Spotted camouflage lichen. On Black Spruce branch. Circumpolar, arctic, boreal.

Melanohalea septentrionalis (Lyngé) O. Blanco et al. (*Melanelia septentrionalis*), Northern camouflage lichen. On Black spruce bark. Circumpolar, low arctic, northern boreal.

Parmeliopsis ambigua (Wulfen) Nyl., Green starburst lichen. On Black Spruce bark. Circumpolar in the boreal forest.

Parmeliopsis hyperopta (Ach.) Arnold, Gray starburst lichen. On Black Spruce bark. Circumpolar in the northern forest.

Tuckermannopsis americana (Sprengel) Hale, Fringed wrinkle-lichen. On Black Spruce bark. Low arctic, boreal forest.

Tuckermannopsis sepincola ((Ehrh.) Hale, Chestnut wrinkle-lichen. On Black Spruce bark. High arctic, northern boreal.

Vulpicida pinastri (Scop.) J.E. Mattsson and M.L. Lai, Powdered sunshine lichen. On Black Spruce bark. and as litter on forest floor. Circumpolar, arctic, boreal

Discussion

As no previous lichenological surveys are known for Hasbala Lake, prior to the 1997 forest ecosystem classification survey, the recorded lichens can be seen as new to its lichen flora. These lichens are common boreal forest species with a circumpolar and arctic to sub-arctic distribution pattern, e.g. belonging to the arctic element such as *Cladonia coccifera*⁹ and the boreal element as *Melanohalea septentrionalis*.²

First Records For Hasbala Lake

Cladonia gracilis f. *floripara* (Flörke) Flörke. Only as a form of the species

on an exposed upper ridge of esker on mineral soil, among Black Spruce and *Cladonia gracilis* ssp. *turbinata*. The form has short podetia and cup-margins thickly set with a continuous ring of dark apothecia. However, one must be cautious in accepting such forms, as these could very well be genetically or environmentally caused. The form could be considered as rare for Saskatchewan.⁸

Second Record For Hasbala Lake

The occurrence of *Bryoria nadvornikiana* (Gyelnik) Brodo and D. Hawksw. Synonym: *Alectoria nadvornikiana* Gyelnik remains controversial. It was previously reported from this vicinity by Thomson⁹ as new to northern Saskatchewan, and again recorded by Wright¹⁰ on Black Spruce on a gravelly esker at Hasbala Lake.

The species is common in northern Europe, and documented for North America as low-subarctic peripheral reaching the north-central Saskatchewan and Northwest Territory's boundary and in eastern Canada.²

Comments

The presence of a significant arctic-subarctic element in the lichen flora of northeastern Saskatchewan is not surprising, since the surveyed area is part of the northwest transitional section of Rowe⁷ with close proximity of open subarctic woodlands with a mixed forest-tundra vegetation and the majority of species have an arctic to low-arctic distribution pattern.

Summary

Thirty-nine taxa are new to the lichen flora of Hasbala Lake including two subspecies, and one form. Two species are reported as rare to Saskatchewan.

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Acknowledgement

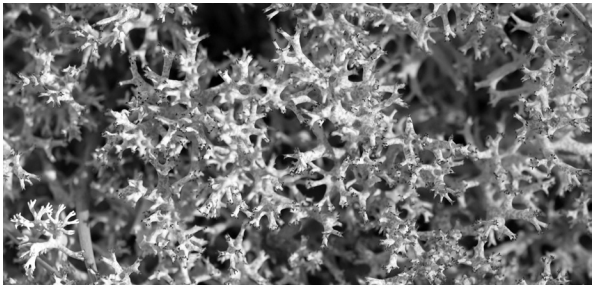
I would like to thank Dr. Rob Wright for his valued comments and suggestions for this paper, and Steve Porter for his help in providing a map for the area.



Cladonia cristatella Bernard de Vries
(see front cover for colour)



Vulpicida pinastri Bernard de Vries
(see inside back cover for colour)



Cladonia arbuscula Bernard de Vries
(see inside top - front cover for colour)



Stereocaulon tomentosum Bernard de Vries
(see inside bottom - front cover for colour)

