
LICHENS

A PRELIMINARY REPORT OF THE LICHEN FLORA IN A PROPOSED LICHEN SANCTUARY SOUTH OF ESTEVAN, SASKATCHEWAN

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INTRODUCTION

A total of 31 lichens and three bryophytes are reported to date for the proposed lichen sanctuary including two rare species newly recorded for Saskatchewan: *Glypholecia scabra* and *Rhizoplaca peltata* (brown rock-posey).¹

Although most lichens can easily be observed, still they remain a somewhat underappreciated part of our native flora. This report is a first attempt to document the lichen flora of in this small but highly interesting locality, bringing awareness and understanding of our lichen flora as a valuable part of the biodiversity of this area, and informing the owner (SaskPower) and general public of the importance of protection and management for these two rare species, and their unique habitat.

STUDY AREA

The proposed lichen sanctuary located south of Estevan west of highway # 47 in southeast Saskatchewan is part of the

moist-mixed grassland ecoregion in the prairie ecozone. The property could best be described as a few acres of unstable habitat between the highway and an erosion-prone slope, scattered with calcareous and acidic boulders and shallow, parallel and at times sparsely vegetated draws caused by water erosion, with small vegetated gravelly or stony shoulders supporting patches of native grassland with some terrestrial lichens and bryophytes (Figure 1). The area is surrounded by an unstable slope, grassy meadow with some trees, highway #47 and a narrow open corridor leading to a grassy depression. A small sparsely vegetated floodplain is located east of the property between a fence-line and base of erosion draws.

An unusual discovery was a weathered baby shoe on the upper shoulder of an erosion draw close to prickly pear cactus (*Opuntia polycantha*), hoary sage brush (*Artemesia cana*), purple ball cactus (*Escobaria vivipara*)

and creeping juniper (*Juniperus horizontalis*) with some grasses and terrestrial lichens: *Fulgensia bracteata* (tundra sulfur lichen), *Cladonia pocillum* (rosette pixie-cup), *Peltigera rufescens* (field dog-lichen) and *Xanthoparmelia chlorochroa* (tumbleweed shield lichen). This shoe also provided an unusual habitat for some terrestrial, arboreal and saxicolous lichens, and one moss (* in the annotated lichen list). Where the baby shoe came from and how it became lost, remains a mystery.²

METHODS

Exploratory visits to the area were made between 2005 and 2008 to examine prospective habitat potential for lichen diversity, and plant communities. In each of the visits additional lichens and bryophytes were found (see appended list).²

Lichen samples were collected and examined using a dissecting and compound microscope, while common species were field identified. A very small section of the upper and lower parts of *Rhizoplaca peltata* (brown rock posey) showing apothecia and the characteristic net like pattern of white cracks was taken for study and deposited in the lichen herbarium of the University of Calgary, Alberta. Determinations

were also aided by comparison with voucher specimens kept at the author's private herbarium, now at the University of Calgary Herbarium (PMAE).

DISCUSSION and CONCLUSION

Glypholecia scabrata was first recorded for Saskatchewan by the late Jan Looman near Halbright-Lamond C.P. about 20 km southeast of Weyburn in southeast Saskatchewan on erratic calcareous rock in 1960.¹ This location has since been extirpated and the new record made from the SaskPower property on the upper surface of a calcareous boulder. The equally rare *Rhizoplaca peltata* was discovered and recorded for the same locality on the upper surface of an acidic boulder. To date neither species has been rediscovered for Saskatchewan outside this locality, and thus are ranked S1 (de Vries, 2005, unpublished).

It is possible that Thomson's³ distribution map for *Glypholecia scabra* was based on Looman's record. However, his record of *Rhizoplaca peltata* for southeast Saskatchewan (Estevan?) remains somewhat puzzling and could have been based on *Rhizoplaca melanophthalma* recorded by Looman for Estevan which superficially looks identical,

but differentiates in the lacking a lower white net-like pattern and the chemical component zeorin.

Although Brodo et al.⁴ presumably based the distribution of *Rhizoplaca peltata* on a record by McCure,⁵ no record of the species for Saskatchewan exists in the Canadian Museum of Nature Lichen Herbarium, only specimens for Alberta, British Columbia, Yukon, Montana, Utah, Nevada, Arizona and Europe (Freebury C. 2014, pers. comm.). The SaskPower property records then remain the only known for these rare species to date for Saskatchewan (de Vries 2005, unpublished).

It is interesting though that Thomson,³ McCure,⁵ and Brodo et al.⁴ noted *Rhizoplaca peltata* as presumably based on a previous record by Looman south of Estevan. Could this have been the proposed lichen sanctuary?. Colin Freebury in his recent study of lichens and lichenological fungi in Grasslands National Park did not record these species.⁶

Macrolichens were found on bark of scattered shrubs and trees, while microlichens commonly occurred on boulders and rocks. Terrestrial lichens were poorly represented due to an unstable habitat and were mainly found on gritty calcareous

soil on upper relatively stable vegetated shoulders of erosion draws.

This isolated proposed lichen sanctuary located in the moist-mixed grassland ecoregion of southeastern Saskatchewan, can be seen as an important refuge for lichens and other forms of life because of habitat loss due to agricultural and commercial activities.

Although the property is small compared to other larger nature sanctuaries in Saskatchewan, it does provide critical habitat not only for lichens and mosses, but also for vascular plants and their pollinators as well as other forms of life in this unique habitat.

The low number of lichens, especially terrestrial species, is not surprising, particularly in an unstable environment subject to water and wind erosion. The vegetated shoulders of erosion draws, and large boulders offered more or less stable substrates for lichen diversity.

Water erosion by heavy rains and melt water runoff is the greatest risk facing terrestrial lichens by altering draws and vegetated shoulders; rock lichens are at risk by wind and snow-drift abrasion. Equally,

invasions of non-native noxious plants especially leafy spurge (*Euphorbia esula*), crested wheat grass (*Agropyron cristatum*) and yellow clover (*Melilotus officinalis*) can quickly establish themselves, posing a serious threat to the native vegetation of the locality.

After several years of negotiations between SaskPower and the Author to give this unique property protective status for the

rare and vulnerable *Rhizoplaca peltata* (two very small specimens) and *Glypholecia scabra* (three specimens) now known for Saskatchewan only in this locality, no significant progress has been made so far. Although we are fortunate that these two rare species are on private property, positive action is still urgently needed. The author hopes that SaskPower will be encouraged to protect these rare species.

ANNOTATED LICHEN LIST

A total of 31 species including 17 saxicolous, 12 terricolous and 2 arboreal are alphabetically listed with synonyms, common name, occurrence and substrates following Brodo³. *Denotes lichens on baby shoe.²

This relatively low number is not surprising given the small and highly unstable habitat of the property and few shrubs.

Acarospora strigata (hoary cobblestone lichen). Common on upper surface of large calcareous rock in a deep erosion draw.

Amadinea punctata – *Buellia punctata* (tiny button lichen). Scattered on bark of various small shrubs.

Aspicillia cinerea (cinder lichen). Uncommon on upper east facing acidic rock at base of shallow erosion draw.

**Caloplaca cerina* (gray-rimmed fire-dot lichen). Small specimens scattered on bark of American elm (*Ulmus americana*) and canvas of upper surface of weathered baby shoe.

**Caloplaca holocarpa* (fire-dot lichen). Locally on branches of a low Saskatoon bush (*Amelanchier alnifolia*), as well as a few small specimens on canvas of upper body of weathered baby shoe.

Caloplaca trachyphylla (desert fire-dot lichen). Common on upper surface of calcareous rock in deep erosion draw.

**Candelariella aurella* (hidden goldspeck lichen). Uncommon on base of calcareous rock imbedded in deep erosion draw and some specimens on weathered leather and canvas of old baby shoe.

Candelariella terrigena (tundra goldspeck lichen). Locally scattered

over calcareous soil of upper vegetated shoulder of shallow erosion draw.

Candelariella vitellina (common goldspeck lichen). Scattered over upper surface of sandstone in shallow erosion draw.

Circinnaria contorta - *Aspicilia contorta* (chiseled sunken disk lichen). Locally on north-east facing sandstone at base of vegetated shoulder of shallow erosion draw.

Cladonia poccilum (rosette pixie cup). Uncommon with a few clubmoss (*Selaginella densa*) on gravelly calcareous soil of upper vegetated shoulder of shallow erosion draw.

Cladonia pyxidata (pebbled pixie cup). Scattered over gravelly calcareous soil of upper vegetated shoulder of shallow erosion draw.

Dimelaena oreina – *Rinidina oreina* (golden moonglow lichen). Scattered on upper surface of large calcareous rock embedded in deep erosion draw.

Diploschistes muscorum (cowpie lichen). Locally on upper surface of calcareous soil on upper shoulder of shallow vegetated erosion draw as a parasitic on *Cladonia* sp. and as scattered unattached specimens.

Endocarpon pusillum (scaly stipple lichen). Scattered over calcareous soil of vegetated shoulder of shallow sparsely vegetated shallow erosion draw.

Fulgensia bracteata (tundra sulphur lichen). Scattered over calcareous soil of upper vegetated shoulder of shallow erosion draw.

Glypholecia scabra (no common name). Locally on upper surface of large calcareous rock in deep erosion draw. This is the only location for this lichen in Saskatchewan (perhaps Canada?) to date and should have protected status.

**Lecanora hagenii* (Hagen's rim lichen). Locally on branch of a low Saskatoon bush (*Amelanchier alnifolia*) and a few individuals found on upper canvas margins of weathered baby shoe.

Lecanora muralis (stonewall rim-lichen). Locally on upper east facing calcareous rock imbedded in deep erosion draw near base of vegetated shoulder.

Lecidea tessellata (tile lichen). Locally on upper surface of non-calcareous rock imbedded in deep erosion draw.

Melanelia cfr. *disjuncta*-*Parmelia disjuncta* (mealy camouflage lichen). Locally on east facing granitic rock near base of vegetated shoulder of deep erosion draw.

**Placidium* cfr. *lacunculatum* – *Catapyrenium lacunculatum* (brown

stipplescale). Locally on soil of upper vegetated shoulder of shallow erosion draw. Small specimens of this species were also found on weathered leather of old baby shoe. Turns green when wet.

Psora decipiens (blushing scale). Locally on calcareous soil of lightly vegetated upper shoulder of shallow erosion draw.

Rhizoplaca chrysoleuca (orange rock posey). Scattered on upper surface of acidic rock partly imbedded in low vegetated area.

Rhizoplaca melanophthalma (green rock posey). Scattered on upper surface of calcareous rock near base of vegetated shoulder of shallow erosion draw.

Rhizoplaca peltata (brown rock posey). On upper surface of large calcareous rock in shallow erosion draw. Found once as two very small specimens. To date the species has not been recorded for the Province outside its present locality and needs urgent protection.

Xanthoparmelia chlorochroa (tumbleweed shield lichen). Uncommon on open calcareous soil.

Xanthoparmelia mexicana (salted rock-shield lichen). Locally on upper surface of large acidic rock imbedded in open grassy area.

Xanthoparmelia wyomingica (shingled rock-shield). Found once on soil in open area attached to base of small rock.

Xanthoria elegans (elegant sunburst lichen). Locally on upper surface of acidic rock near base of vegetated shoulder of deep erosion draw.

ANNOTATED BRYOPHYTES LIST

Ditrichum flexicaulis (slender stemmed hair moss). Locally, dry calcareous soil of stony shoulder.

Tortella fragilis (fragile screw moss). Locally, gravelly calcareous soil on upper shoulder of shallow draw. Associated flora: creeping juniper.

**Tortula ruralis* (sidewalk moss). Locally, calcareous soil at base of stony vegetated shoulder and a few occurring in a seam between the sole and body of a weathered baby shoe. Associated flora: creeping juniper.

REFERENCES

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6. Freebury C (2014) Lichens and Lichenicolous Fungi of Grasslands National Park (Saskatchewan, Canada). *Opuscula Philolichenum* 13:102-121.



Figure 1. The proposed rare lichen preserve south of Estevan, SK
- Bernard de Vries

