

A Guide To Alvar and  
Grassland Species of the  
Napanee Plain

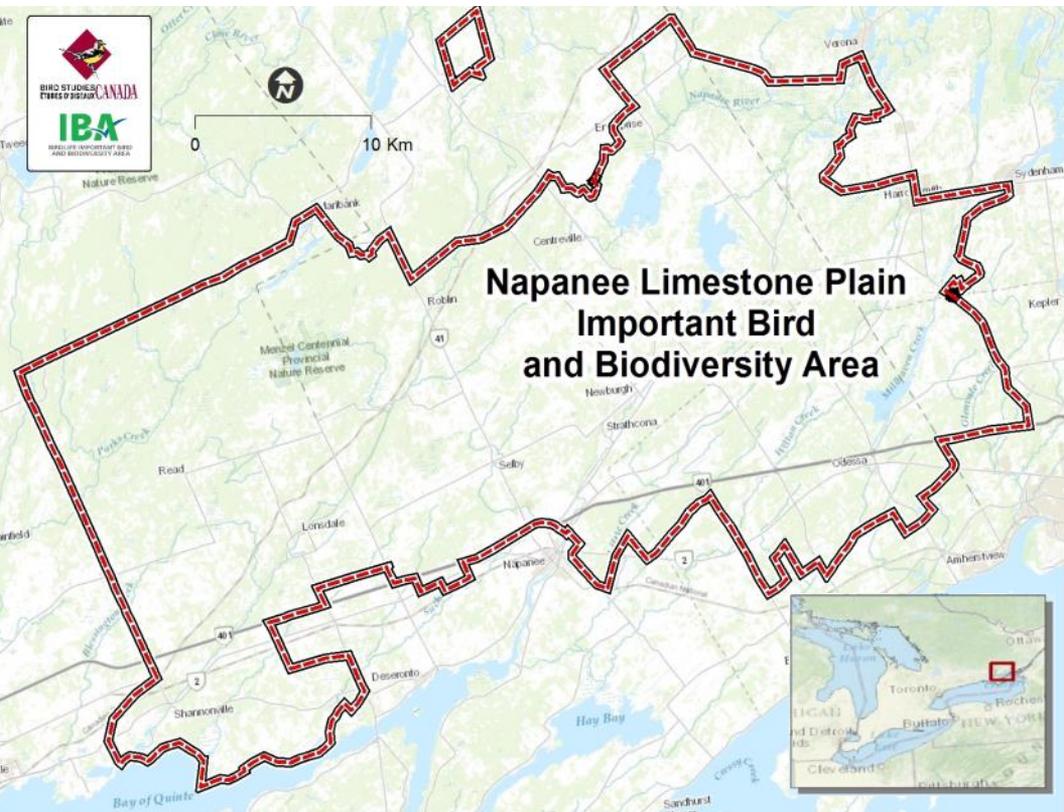
## The **Napanee Plain Joint Initiative** is a

collaboration of organizations working to preserve the unique diversity of the area, particularly the alvar and grassland environments.



## The **Napanee Limestone Plain Important Bird and**

**Biodiversity Area (IBA)** is situated in eastern Ontario, between (and north of) Belleville and Kingston. The area consists of a mosaic of shallow soil habitats such as savanna grasslands with scattered red cedar or hawthorn and small woodlots. Land uses in the area include cattle grazing, mixed farming, rural residential, and limestone and aggregate quarries.



**Alvar Communities** may look different from one community to the next due to local influences (such as fire, grazing or historical land use) though they share key characteristics:

- Flat areas of thin mineral soil over calcareous (limestone or dolostone) bedrock.
- Naturally open landscapes, with little to no tree cover.
- Subject to seasonal drought and flooding in the summer and exposed to deep frost (heave) in the winter.
- A distinctive set of plant species.
- Contain plant species that have adapted to fire and drought.
- May contain many species that are rare elsewhere in the Great Lakes basin.



## Types of Alvar

Almost all of North America's alvars are found within the Great Lakes basin. There are several types of alvar, most of which are globally imperiled and under stress.

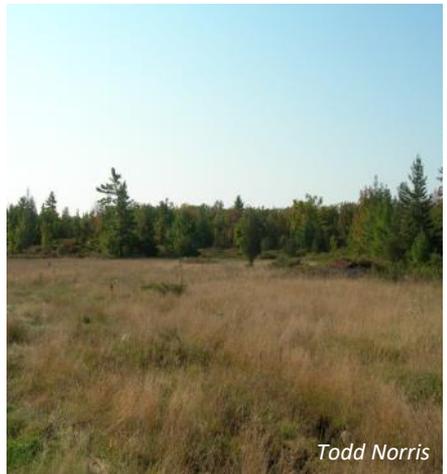
### Alvar Pavement and Grassland

- Less than 10% tree cover and less than 25% shrub cover
- High abundance of herbaceous plants or exposed bedrock (may be covered with lichens and mosses)



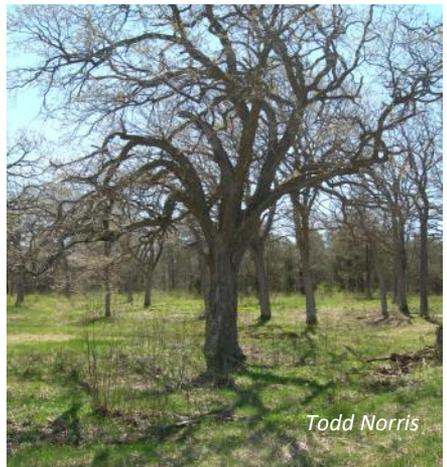
### Alvar Shrubland

- Less than 10% tree cover with moderate to high cover of shrubs
- Variable amounts of herbaceous, moss, and lichen cover



### Alvar Woodland and Savanna

- Partial canopy of trees; savannas: 10 - 25% cover and woodlands: 25 - 60%
- High cover of shrubs, with some trees, and some herbaceous, moss and lichen cover



**Cultural Grasslands** (grazed farm fields) are home to an incredible diversity of life, including hundreds of native plant and animal species. However, grasslands in Ontario are diminishing. Today, many of the species that inhabit these areas are under significant threat.

Timing of harvest can help protect species, such as Bobolink and Eastern Meadowlark birds, that commonly nest in cultural grasslands.

**Threats** to alvars and grasslands include:

- Urban expansion and development
- Changes in agricultural practices
- Encroaching forests
- Invasive species

Large-scale solar farms are becoming quite numerous and could represent an emerging threat to lesser known alvars and species at risk. Members of the Napanee Plain Joint Initiative are working with the industry and the Ministry of Natural Resources and Forestry to mitigate the impact of such projects on sensitive habitats and species.



# Protecting Alvar and Grasslands

The majority of alvar found in the Napanee Plain is privately owned. This means private property stewardship is essential to conserving these habitats. Landowners can easily help to protect and conserve these special areas.

## Conservation Methods Include:

- Avoid overgrazing these areas
- Restrict recreational vehicles
- Minimize disturbances
- Participate in research projects that focus on alvar ecology and management questions
- Consider inviting naturalists and scientists to gather field data, or collect your own and submit it to the Natural Heritage Information Centre
- Contact Conservation Agencies or local land trusts about Land Conservation projects

For more information, landowner resources, and available funding opportunities, please visit our website:

[www.napaneeplain.org](http://www.napaneeplain.org)



# Conservation Status Ranks

| Ontario Conservation Status Ranks (Subnational) |  |
|---|--|
| Ranks   | Definition   |
| S1 – Critically Imperiled                       | Extremely rare (often 5 or fewer occurrences) or steep declines making it especially vulnerable to extirpation.  |
| S2 – Imperiled                                  | Rare due to very restricted range, very few populations (often 20 or fewer). In steep declines and very vulnerable to extirpation.                       |
| S3 – Vulnerable                                 | Restricted range, relatively few populations (often 80 or fewer). Recent and widespread declines make them vulnerable to extirpation.                    |
| S4 – Apparently Secure                          | Uncommon but not rare. There is some cause for long-term concern due to declines or other factors.   |
| S5 – Secure                                     | Common, widespread, and abundant in the province.  |
| Breeding Status Qualifiers                      |  |
| B   | Breeding population of the species in the province.  |
| N   | Non-breeding population of the species in the province.  |
| Status In Canada (COSEWIC Rankings)             |  |
| Endangered                                      | Lives in the wild in Ontario but is facing imminent extinction or extirpation.   |
| Threatened                                      | Lives in the wild in Ontario, and is likely to <i>become</i> endangered if steps are not taken to address threatening factors.                           |
| Special Concern                                 | Lives in the wild in Ontario, and may <i>become</i> endangered or threatened, due to a combination of biological characteristics and identified threats. |

**This Guide** features some of the common, endangered, and rare species concentrated on the Napanee Plain of the Great Lakes region. These plants and animals contribute to the rich biodiversity of this unique alvar habitat.

## ONTARIO CONSERVATION STATUS: S4B

### BROWN THRASHER

*Toxostoma rufum*

**Size:** Slightly larger than a robin, 29 cm

**Description:** They have rufous wings and back, and whitish streaked underparts, yellow eyes, and a downturned bill.

**Song:** A seemingly random double phrases often mimicked from other birds.

**Fact:** A repertoire of over 1000 songs!



### FIELD SPARROW

*Spizella pusilla*

**Size:** Slightly bigger than a chickadee, 12 - 15 cm in length

**Description:** It has brown upperparts and greyish, unstreaked underparts. It has a rusty cap, pink bill and white eye ring.

**Song:** A series of whistled notes that speed up like a ping pong ball bouncing.

**Fact:** They have multiple nests in the breeding season; early on, they are on the ground, later, up in trees.



## ONTARIO CONSERVATION STATUS: S4B

### UPLAND SANDPIPER

*Bartramia longicauda*

**Size:** Like a long-legged mourning dove,  
28 - 32 cm

**Description:** Long yellow legs, upperparts are brown and dark spotted, underparts are pale. It has a white chin, neck and throat, with dark cap and very large dark eyes.

**Song:** Call is known as a wolf whistle, a long ascending whistle followed by a second descending call.

**Fact:** They scrape out multiple nests in the ground, but only use one.



## ONTARIO CONSERVATION STATUS: S4B STATUS IN CANADA (COSEWIC): Special Concern

### GRASSHOPPER SPARROW

*Ammodramus savannarum*

**Size:** Slightly smaller than a chickadee, 11 cm

**Description:** It has brown upperparts and paler, unstreaked underparts. It has a striped crown with a “flat” head and an orange patch in front of the eye.

**Song:** Buzzy sounding “tik tuk zeeeeeee” similar to a grasshopper.

**Fact:** Grasshopper Sparrows sound like, and eat grasshoppers!



**ONTARIO CONSERVATION STATUS: S4B**  
**STATUS IN CANADA (COSEWIC): Threatened**

## **BOBOLINK**

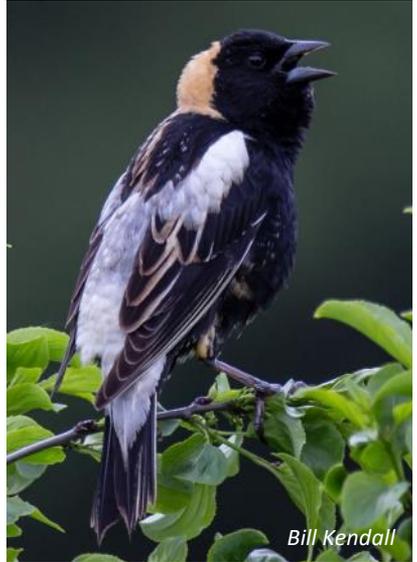
*Dolichonyx oryzivorus*

**Size:** Slightly smaller than a robin,  
15 - 21 cm

**Description:** Males are mostly black with a creamy to yellow hood. They have white shoulders and streaks on their back. Females are mostly light brown in colour with black streaks on back of their head.

**Song:** A metallic, bubbly, rambling song, "bob-o-link pink pank pink."

**Fact:** Bobolinks nest on the ground. An adults weighs the same as 8 quarters!



Bill Kendall

## **EASTERN MEADOWLARK**

*Sturnella magna*

**Size:** Similar to a robin in size, 19 - 28 cm

**Description:** It has a yellow throat, chest, and belly, black "V" across chest. Head has a black crown and eye stripes, yellow in front of eye.

**Song:** A pure, melancholic whistle (3 to 5 notes that drop in pitch); "see you see yer," "spring is here."

**Fact:** Meadowlarks are not larks at all, but blackbirds!



Larry Kirtley

**ONTARIO CONSERVATION STATUS: S2B**  
**STATUS IN CANADA (COSEWIC): Endangered**

**LOGGERHEAD SHRIKE**

*Lanius ludovicianus*

**Size:** Slightly smaller than a robin,  
20 - 23 cm

**Description:** It has grey upperparts  
with black wings, tail and mask.  
Underparts are white. It has a large  
head with a heavy, hooked bill.

**Song:** The song is rarely heard. Simple  
one or two mechanical calls.

**Fact:** *They can kill prey as large as  
themselves.*



**ONTARIO CONSERVATION STATUS: S2N**  
**STATUS IN CANADA (COSEWIC): Special Concern**

**SHORT-EARED OWL**

*Asio flammeus*

**Size:** Medium to large bird of prey,  
34 - 43 cm

**Description:** It is mottled tawny to  
brown, barred tail and wings with  
significantly streaked breast, round  
buff facial disk, and yellow eyes with  
a black colouring around them.

**Song:** It has several calls including a  
scratchy bark and raspy "waowk  
waowk" and "toot toot toot toot."

**Fact:** *They nest on the ground and line  
their nest with downy feathers.*



## ONTARIO CONSERVATION STATUS: S5



Todd Norris

### POVERTY OATGRASS

*Danthonia spicata*

**Size:** Up to 30 cm in height

**Description:** Clump-forming, cool-season grass. Basal leaves are curly.

**Habitat:** Dry and open fields.



Todd Norris

### CREEPING JUNIPER

*Juniperus horizontalis*

**Size:** Less than 30 cm in height

**Description:** Evergreen with opposite leaves: small, scale-like and overlapping. Cones (6 – 10 mm) are round, berry-like and become fleshy as they mature from brown scales to a blue berry.

**Habitat:** Moderate confinement to alvars (50 - 70%) and can be found in open alvar habitats including alvar pavements.



Todd Norris

### EASTERN RED CEDAR

*Juniperus virginiana*

**Size:** Up to 10 m in height

**Description:** Bluish-green leaves, sharply pointed needles and softer, more rounded scale leaves. Even though its common name is Eastern Red Cedar, it is a juniper, not a true cedar.

**Habitat:** Open areas and field edges.

## ONTARIO CONSERVATION STATUS: S5



### UPLAND WHITE GOLDENROD

Also known as: Upland White Aster

*Solidago ptarmicoides*

**Size:** Up to 60 cm in height

**Description:** Showy white flowers. Blooms July to September.

**Habitat:** Dry and open fields. Extremely confined to alvars with 86 – 100% of occurrences in the Great Lakes region.



### EARLY SAXIFRAGE

*Micranthes virginiensis*

**Size:** 10 - 25 cm in height

**Description:** Flowers are white; symmetrical with 5 petals. Blooms April to May.

**Habitat:** Open shallow soils and pavement edges; also occurs on granite. 50 - 70% of occurrences are in the Great Lakes region on alvars.



### WILD BERGAMOT

*Monarda fistulosa*

**Size:** 60 - 90 cm in height

**Description:** Flowers are pink to purple, irregular, and bloom in solitary clusters at the end of a branching stem. Blooms July to August.

**Habitat:** Commonly found on alvars, meadows with dry conditions, prairies, woodlands and savannas.

## ONTARIO CONSERVATION STATUS: S5



Todd Norris

### BICKNELL'S GERANIUM

*Geranium bicknellii*

**Size:** Up to 10 - 50 cm in height

**Description:** Flowers have 5 petals, are symmetrical and magenta-pink to whitish-pink. Petals are notched at their tips. Flowers are usually found in pairs on a long flower stalk. Blooms are from May to September.

**Habitat:** Open, rocky areas, dry meadows, rock outcrops, and open woods.



Todd Norris

### BALSAM GROUNDSEL

*Packera paupercula*

**Size:** 10 - 45 cm in height

**Description:** Flowers are yellow, symmetrical, with 7 or more petals. Flowers are in clusters and daisy-like. Blooms from June to August.

**Habitat:** Rocky areas and meadows. Moderate confinement to alvars; 50 - 70% of occurrences are in the Great Lakes region on alvars.



Todd Norris

### CANADA BLUETS

*Houstonia canadensis*

**Size:** 10 - 25 cm in height

**Description:** Perennial, thin narrow short basal leaves, opposite arrangement with a finer soft hair covering. White, four petalled flowers, lilac or purple.

**Habitat:** Found on rocky areas, limestone, in open areas. Can be found in fields, savannas.

## ONTARIO CONSERVATION STATUS: S4



### HAIRY BEARDTONGUE

*Penstemon hirsutus*

**Size:** 30 - 92 cm in height

**Description:** Flowers are light violet to violet in colour, trumpet-shaped and with 5 petals. Blooms from June to July.

**Habitat:** Found in shrub and tree alvars, and commonly found on the alvar habitat of the Napanee Plain and the Prince Edward Plain of the Great Lakes region.



### NARROW-LEAVED VERVAIN

*Verbena simplex*

**Size:** 30 - 60 cm in height

**Description:** Flowers are tube shaped, purple or lavender with 5 petals and arranged on a spike. Blooms from May to September.

**Habitat:** Open dry conditions. High confinement to alvars, 71 - 85% of occurrences in the Great Lakes region on alvars.



### EARLY BUTTERCUP

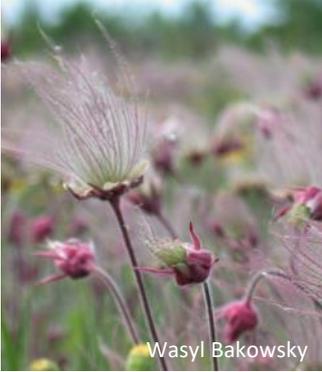
*Ranunculus fascicularis*

**Size:** 10 - 25 cm in height

**Description:** Flowers are single and yellow; 5 petals; symmetrical; shiny above and pale below. Blooms March to May.

**Habitat:** Found on open alvar grasslands.

## ONTARIO CONSERVATION STATUS: S4



### THREE-FLOWERED AVENS

Also known as: Prairie Smoke

*Geum triflorum*

**Size:** 15 - 45 cm in height

**Description:** Flowers are reddish-pink or purple, tubular in shape, with 5 petals. Flowers are in groups of 3 and nodding. Blooms May to June.

**Habitat:** Open rocky areas and grazed fields.



### FALSE PENNYROYAL

*Trichostema brachiatum*

**Size:** 15 - 50 cm in height

**Description:** Flowers are pale blue; showy; 5 petals; nearly symmetrical; long, bell-like; occur in leaf axils (between leaf and stem). Blooms July to September.

**Habitat:** Extreme confinement to alvars; occurrences in the Great Lakes region on alvars.



### SMALL SKULLCAP

*Scutellaria parvula*

**Size:** Up to 20 cm in height

**Description:** Flowers are irregular and tubular, purple with dark blue spots on the lower lip. The stem is square and densely haired. Blooms from May to July.

**Habitat:** Alvar pavement, and temporarily water-filled depressions. High confinement to alvars; 71 - 85% of occurrences in the Great Lakes region.

## ONTARIO CONSERVATION STATUS: S2



### TINY MOUSETAIL

*Myosurus minimus*

**Size:** 5 to 15 cm in height

**Description:** Narrow, linear, leaves occurring around the base of the plant only. Flowers and seed cones extend vertically. Symmetrical green-yellow flowers with 5 sepals. Seed cone 2 - 5 cm long.

**Habitat:** Found on limestone in open alvar areas.

## ONTARIO CONSERVATION STATUS: S1 COSEWIC (NATIONAL) STATUS: Endangered



### JUNIPER SEDGE

*Carex juniperorum*

**Size:** Up to 30 cm long

**Description:** Grows in tufted clumps or on its own. This plant has long thin leaves that are typically matted in the surrounding vegetation. A short few-flowered seed spike is present near the base of the plant.

**Habitat:** Found growing over limestone in grassy or red cedar dominated areas.

## ONTARIO CONSERVATION STATUS: S5



Kurt Hennige

### **BLACK SWALLOWTAIL** (female)

*Papilio polyxenes*

**Size:** Large; wingspan 52 - 94 mm

**Description:** It is black with rows of yellow spots on wing borders. The lower wings have blue spots. The spots are larger in females than males. It has a prominent tail, and orange "eyespot" at the center of the bottom wing.

**Caterpillar Host Plant:** Parsley family



Kurt Hennige

### **AMERICAN LADY**

*Vanessa virginiensis*

**Size:** Medium; wingspan 37 - 56 mm

**Description:** Their upper parts are tawny brown and orange, the underside is complex brown, with a white and pink pattern with large spots.

**Caterpillar Host Plant:** Asters



Kurt Hennige

### **COMMON RINGLET**

*Coenonympha tullia*

**Size:** Small; wingspan 27 - 39 mm

**Description:** They are highly variable, usually with brownish-orange upper wings and grey lower wings, with one dark-ringed spot on the upper wing.

**Caterpillar Host Plant:** Grasses such as bluegrass.

## ONTARIO CONSERVATION STATUS: S5



### MEADOW FRITILLARY

*Boloria bellona*

**Size:** Medium; wingspan 34 - 44 mm

**Description:** Its upper wings are light orange with black spots. Its underside is a brownish-purple with an irregular white spot.

**Caterpillar Host Plant:** Violets



### TAWNY-EDGED SKIPPER

*Polites themistocles*

**Size:** Small; wingspan 19 - 28 mm

**Description:** Brown-orange. Males have a brighter orange patch on the outer edge of their wing, females have a small orange patch or no patch at all.

**Caterpillar Host Plant:** Grasses such as a panic grass and crab grass.

## ONTARIO CONSERVATION STATUS: S4



### ACADIAN HAIRSTREAK

*Satyrrium acadica*

**Size:** Small; wingspan 24 - 32 mm

**Description:** It has a grey underside with a row of black dots, as well as an incomplete row of orange spots, and one long tail.

**Caterpillar Host Plant:** Willows

## ONTARIO CONSERVATION STATUS: S4



### GIANT SWALLOWTAIL

*Papilio cresphontes*

**Size:** Largest butterfly in Canada;  
wingspan 83 - 113 mm

**Description:** Their upper parts are dark brown to black with bands of yellow spots and underside is yellowish. It has a prominent tail with a spot. The larvae resemble a large bird dropping.

**Caterpillar Host Plant:** Prickly Ash

## ONTARIO CONSERVATION STATUS: S3



### JUNIPER HAIRSTREAK

*Callophrys gryneus*

**Size:** Small; wingspan 20 - 25 mm

**Description:** Underside of the wing is distinct apple green marked with white streaks. Its upperside is brownish-orange. It is unique to this area.

**Caterpillar Host Plant:** Eastern Red Cedar

## ONTARIO CONSERVATION STATUS: S5



### HAIRY SCREW MOSS

*Syntrichia ruralis*

**Description:** Tuft and mat forming with 4 - 6mm long, wide leaves that end in a rounded or blunt tip. Extending from the leaf tip is a white hair. When dry, the leaves fold up but when moist, they unfold and resemble a star.

**Habitat:** Found on limestone in open areas amongst lichen and vegetation.



### FRIZZLED TWISTED MOSS

*Tortella tortuosa*

**Description:** Colonies with 4 - 6 mm thin, long leaves and pointy tips. When dry, the leaves are contorted and spirally, curled upwards. When moist, they unravel but still display a spiral orientation like a tornado.

**Habitat:** Found on limestone in open areas amongst lichen and vegetation.



### GREEN-TONGUE LIVERWORT

*Marchantia polymorpha*

**Description:** Moss. Green, flat, 8 - 10 mm wide, growing directly on soil. Cup shaped "receptacles" located on the upper surface. Sometimes having an extending stalk and umbrella (male and female "flowers").

**Habitat:** Found on limestone soil in open areas amongst vegetation.

## ONTARIO CONSERVATION STATUS: S4S5



### ROSETTE PIXIE-CUP

*Cladonia pocillum*

**Description:** Lichen. Primary body forming ruffled circular patches 2 - 5 cm around with short vertical cups/goblets 1 - 2 cm tall. Cups have granular green patches on the surface inside the cup and on the stem.

**Habitat:** Found on calcareous soil in exposed areas amongst mosses and vegetation.



### SMOOTH PIXIE-CUP

*Cladonia magyarica*

**Description:** Lichen. Primary body forming scattered lobed patches on the soil with short vertical cups/goblets 1 - 3 cm tall. Cups have smooth green patches on the surface inside the cup and on the stem.

**Habitat:** Found on calcareous soil in exposed areas amongst mosses and vegetation.

## ONTARIO CONSERVATION STATUS: S3



### BLUSHING SCALE

*Psora decipiens*

**Description:** Lichen. Small, scattered, round 3 - 6 mm, smooth, pinkish-green patches on soil with a white margin and marginal black fruiting bodies.

**Habitat:** Found on bare calcareous soil in exposed areas amongst mosses and vegetation.

## ONTARIO CONSERVATION STATUS: S2



### JELLY-STRAP

*Thyrea confusa*

**Description:** Lichen. Star-shaped, black (gelatinous when wet), branching and lobed body growing attached or loose over rock. Bluish black in colour when dry resulting from a white powdering along lobe margins.

**Habitat:** Found directly on calcareous rock in vernal wet areas.

## ONTARIO CONSERVATION STATUS: S1S2



### SOIL RUBY

*Heppia adglutinata*

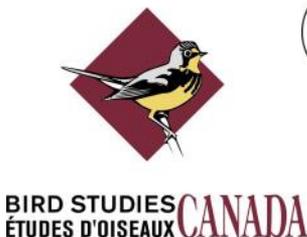
**Description:** Lichen. Small, scattered, flat, olive patches on soil, with a cracked upper surface and a central red smooth circular patch. 1 - 7 mm in size.

**Habitat:** Found on bare calcareous soil in exposed areas amongst mosses and vegetation.

# NAPANEE PLAIN

JOINT INITIATIVE

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**Canada**

