

LICHENS

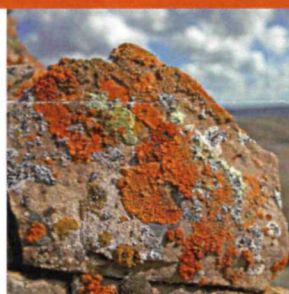
HERE ARE A FEW OF THE LICHENS FOUND IN THE WEST BLOCK,
 GRASSLANDS NATIONAL PARK.



Carpet pixie-cup

Cladonia pocillum

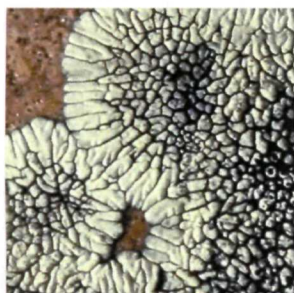
Small goblets on olive-green lobes. Among mosses and short grass on the open prairie.



Desert firedot lichen

Caloplaca trachyphylla

Orange-yellow, radiating lobes with orange spore-producing bodies. On rock.



Golden moonglow lichen

Dimelaena oreina

Pale yellow, flat lobes with black, round spore-producing bodies. On smooth rocks on the open prairie.



Orange rock-posy

Rhizoplaca chrysoleuca

Pale green-grey lobes with clustered, orange spore-producing bodies. On prairie boulders.



Powdered beard lichen

Usnea lapponica

Pale yellowish filaments with deposits of soredia (see over page). On Juniper.



Tumbleweed shield lichen

Xanthoparmelia chlorochroa

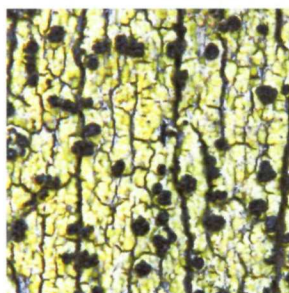
Yellowish green, in-rolled lobes. Loose over soil and among short grass and mosses.



Tundra saucer lichen

Ochrolechia upsaliensis

Pale yellow crust with round spore-producing bodies. On grassland slopes.



Notaris' soot lichen

Cyphelium notarisii

Bright yellow crust with round, black spore-producing bodies. On Juniper.



Tomin's orange lichen

Caloplaca tominii

Orange crust on soil in the river valley.



Subdecipiens rock-shield

Xanthoparmelia subdecipiens

Yellowish green lobes with brown spore-producing bodies. On prairie rocks.



Upper cortex

Algal layer

Medulla

Lower cortex

Rhizines

WHAT'S INSIDE A LICHEN?

If you slice through a lichen and examine it with a microscope, you will typically find a layer of algae sandwiched between two layers of specialized fungus cells.

AT THE TOP

The **upper cortex** is thin and allows light and moisture through while blocking harmful ultra-violet radiation.

IN THE MIDDLE

The **algal layer** absorbs light passing through the outer cortex, and uses the solar energy to convert carbon dioxide and water into food (photosynthesis).

ON THE BOTTOM

A network of fungal cells called the **medulla** provides space for the exchange of gases produced by the algal layer during photosynthesis. Some lichens also have a **lower cortex** layer with hair-like growths called **rhizines** that allow the lichen to hold on to a surface such as rock, soil or bark.

Foliose lichens are leaf-like, with a lower cortex as in the figure above. *Crustose* lichens are crust-like and closely attached to rock, soil or wood. *Fruticose* lichens are often attached at a single point and are shrub-like, either standing up or hanging down.

WHAT ARE LICHENS?

A lichen is comprised of two organisms:

A **photosynthetic partner** (green algae and/or cyanobacteria) uses the sun's energy to make food for both partners.

A **fungus partner** provides a home, protection from weather and harmful solar radiation, and reproductive ability.

WHAT ABOUT LICHEN COLOURS?

The bright colours of some lichens are the result of special chemicals they produce that, among other things, protect the photosynthetic partner from the harmful effects of ultraviolet rays. For example, the yellow colour of some lichens is provided by usnic acid. Other chemicals derived from lichens have been used for centuries as traditional fabric dyes.

HOW DO LICHENS REPRODUCE?

Many lichens produce fungal spores, which are dispersed through air and water and must then associate with algal or cyanobacterial cells to start a new lichen. Others reproduce by developing and dispersing small bundles of fungal threads wrapped around algal cells. Once re-established, these lichen bundles (soredia) will form clones of the parent plant. Some species develop both spores and composite packages, which presumably increases their chances of reproducing successfully.

TREAT WITH CARE

Some of the 194 species found in the Park are rare and some are susceptible to trampling. Please help protect them. Note that specimens may not be collected without a permit.

Photos:

Colin Freebury © Canadian Museum of Nature

Diagram courtesy of the Biodiversity Institute of Ontario, University of Guelph

Golden moonglow lichen with Spiny phlox flowers

