

LICHEN SERIES - LICHENS OF OUR GRASSLANDS

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During our rambles over native prairie, we marvel at its wild flora and bird life which are important elements of prairie biodiversity. But there is another important element; our grassland lichen flora. Seemingly insignificant, terrestrial lichens are pioneer species. Growing on calcareous to gravelly open, disturbed soils often caused by wind erosion, cattle wallows or overgrazing, they slowly decay and create humus. In time seeds of vascular plants can germinate in the humus and stabilize such soils.

The most noticeable of these pioneer species are: 1. gray-green carpet pixie-cup, (*Cladonia pocillum*; Photo 1); 2. the greenish-gray to almost white cowpie lichen (*Diploschistes muscorum*; Photo 2), which becomes established as a parasite on *Cladonia* and other lichens, before becoming independent upon maturity, and; 3. the sulfur yellow tundra sulphur lichen (*Fulgensia bracteata*; Photo 3). Other interesting soil lichens are blushing scale (*Psora decipiens*; Photo 4) which has pale red to brick red scale-like lobes with frayed white margins and tumbleweed shield lichen (*Xanthoparmelia chlorochroa*; Photo 5) which is a vagrant species

with in-rolled pale greenish-white lobes. Most lichens display various hues of gray, green, orange, red or yellow, we do have a blue-grey species, blue blister lichen (*Toninia sedifolia*; Photo 6) on calcareous soil in open grassland. Although most ground lichens are common and wide spread throughout the grasslands, there is one rare species with the interesting name of brain scale (*Psora cerebriformis*; Photo 7), which has pale yellowish-brown convex squamules with deep lines resembling a brain, and occurs on exposed soil in open grassland.

Next are rock lichens. The colourful and common species can be found scattered across the grasslands on calcareous or acidic boulders, outcrops, large rock fragments, pebbles and rock piles. The most eye-catching are desert fire-dot lichen (*Caloplaca trachyphylla*; Photo 8) and elegant sun burst lichen (*Xanthoria elegans*; Photo 9) which form large, almost round circles of red or reddish-orange lobes with small, closely attached central fruiting bodies (apothecia). These lichens are the most common and widely dispersed rock lichens you can't miss seeing them, even from

a distance. Equally showy are orange rock posy (*Rhizoplaca chrysoleuca*; Photo 10) which has abundant orange to dark pink apothecia, sharply contrasting with the pale yellowish-green lichen body (thallus), common goldspeck lichen (*Candelariella vitellina*; Photo 11) a vivid yellow lichen on non-calcareous or granitic rock, the more greenish-yellow golden moonglow lichen (*Dimelaena oreina*; Photo 12), and gold cobblestone lichen (*Acarospora contigua*; Photo 13). Less colourful and not as common are the pale yellowish-grey hoary cobblestone lichen (*Acarospora strigata* Photo 14), green rock posy (*Rhizoplaca melanophthalma*; Photo 15) with characteristic crowded pale yellow brown to black apothecia, and the grey salted rock-shield lichen (*Xanthoparmelia mexicana*; photo 16) with dense central vegetative reproductive structures (isidea) and often forming large circles on calcareous rock.

A minor component of grassland lichens are those found on bark of trees and large shrubs. The most common is the pale to dark grey hoary rosette lichen (*Physcia aipolia*; Photo 17) with white spotted lobes and often frosted apothecia, and the more showy yellow to yellow-orange hooded lobed hooded sunburst lichen (*Xanthomendoza fallax*; Photo

18). Interestingly, these two often form a species pair on tree bark.

Colour variation among lichens is caused by differences in concentration of pigments from one species to another, but also due to age, genetic structure, exposure to sunlight and others factors. A careful observer may also notice that lichens exposed to open sunny locations tend to be more coloured than lichens in a boreal forest where sunlight is more subdued. It has been said that the pigments in the upper layer of the lichen body protects the delicate algae from harmful ultra violet radiation. The name given to a lichen is that of its fungus (micobiont), while its partner the green or blue-green algae (photobiont) have their own scientific names.

When you compare a mushroom with a lichen, you will notice that both lichens and mushrooms have one thing in common, both their bodies contain a mass of tightly woven fungal threads (hyphae).

The difference is that mushroom spores, upon germination, form an underground network of hyphae (mycelium) and later on produce mostly upright fruiting bodies, while lichen fungus spores must find a suitable green or blue-green algal cells to germinate, a complex process known as lichenization. Also the fungi of lichens have formed associations

of controlled parasitism with different species of the photobiont, where the photobiont is a victim, not a partner, of the mycobiont as it uses some of the nutrients manufactured by the photobiont. Both mushrooms and lichens have species that are edible and/or have medicinal properties.

So, on your next nature outing enjoy these grassland lichen species and observe their important environmental niche in the prairie. You be amazed by what you learn about lichen biodiversity, and the important part they are of the biological web that links us all together.



Photo 1 - Carpet pixie-cup Cladonia pocillum



Photo 2 - Cowpie lichen Diploschistes muscorum

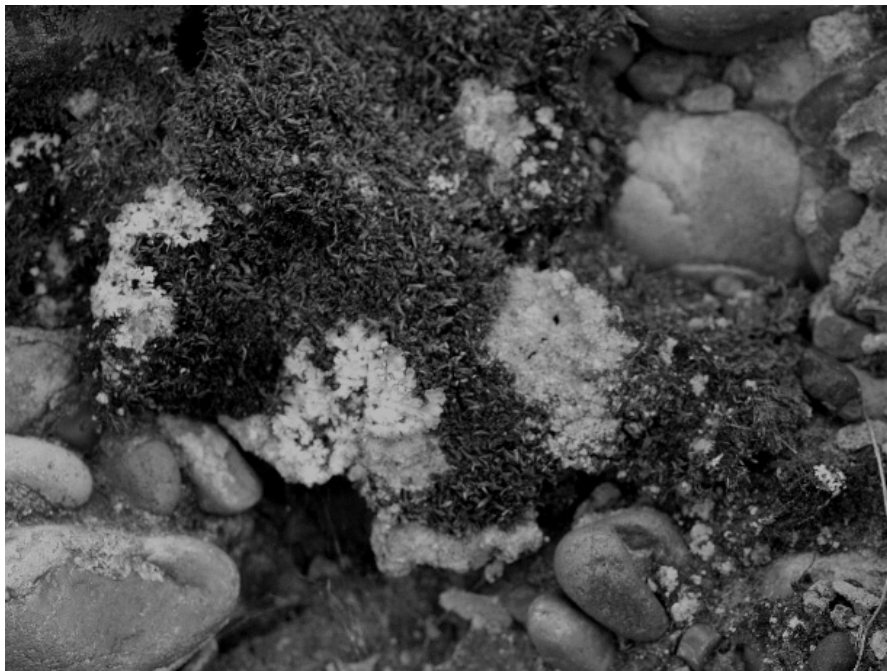


Photo 3 - Tundra sulphur lichen *Fulgensia bracteata*



Photo 4 - Blushing scale *Psora decipiens*



Photo 5 - Tumbleweed shield lichen Xanthoparmelia chlorochroa



Photo 6 - Blue blister lichen Toninia sedifolia



Photo 7 - Brain scale Psora cerebriformis

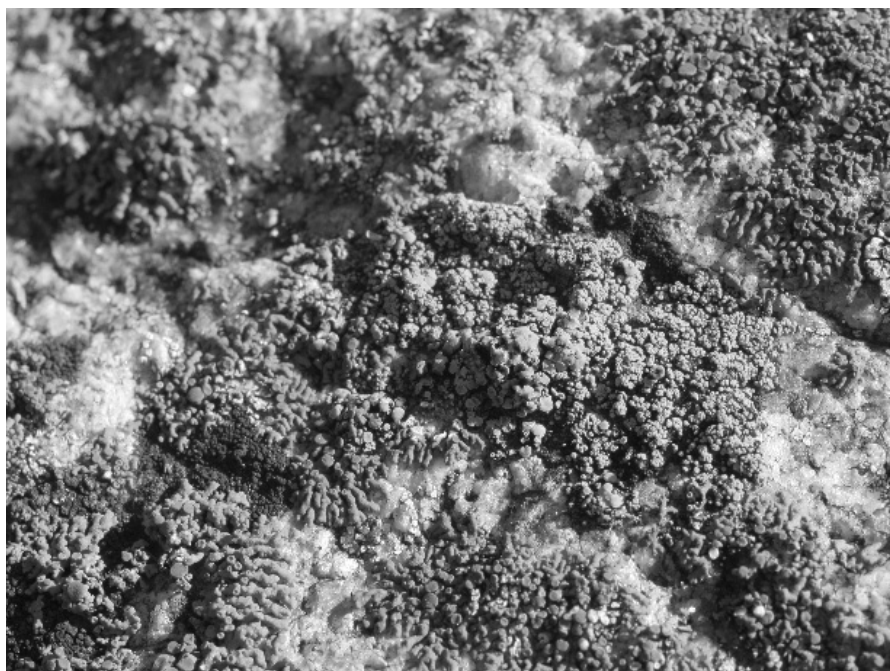


Photo 8 - Desert fire-dot lichen Caloplaca trachyphylla

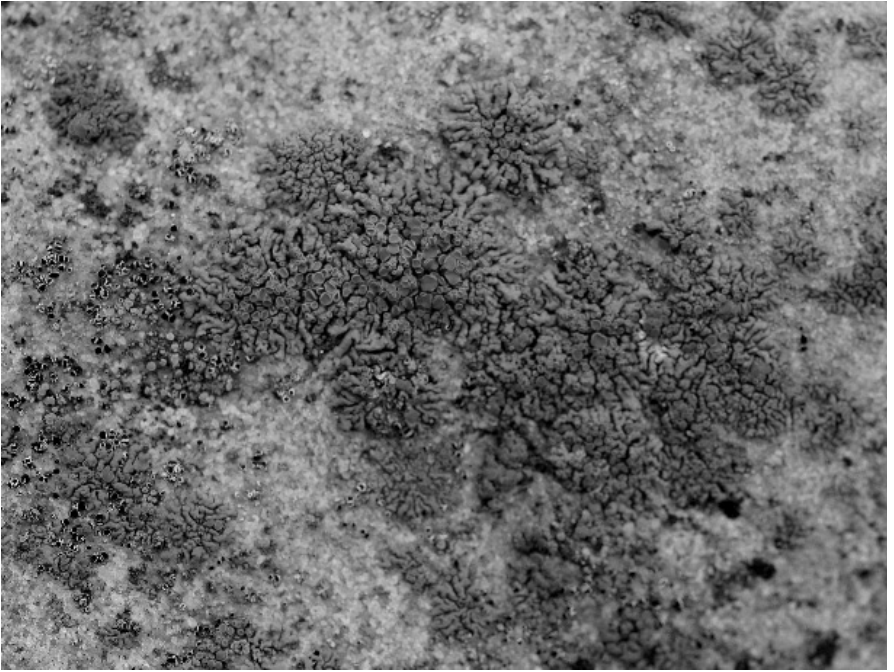


Photo 9 - Elegant sun burst lichen Xanthoria elegans

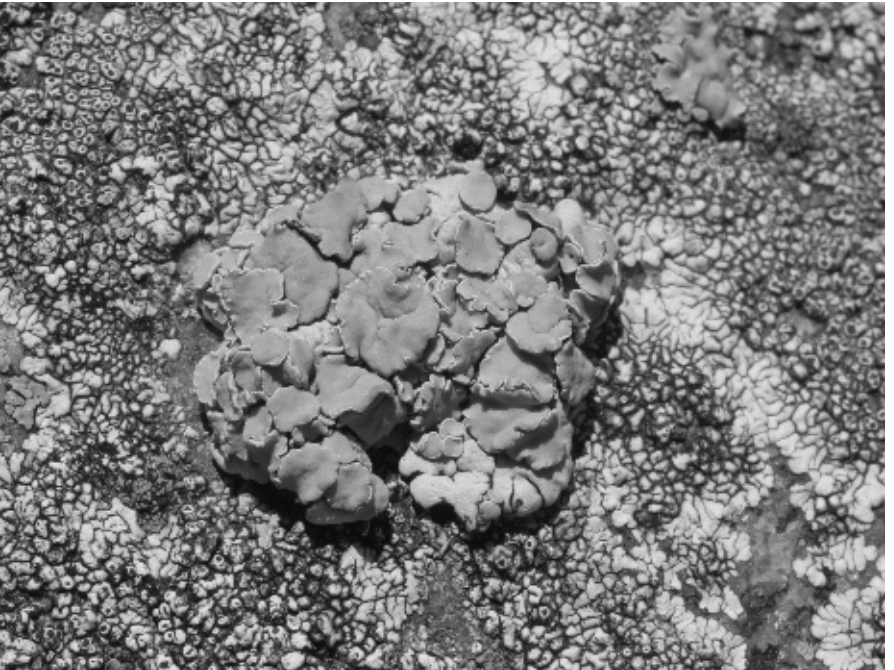


Photo 10 - Orange rock posy Rhizoplaca chrysoleuca

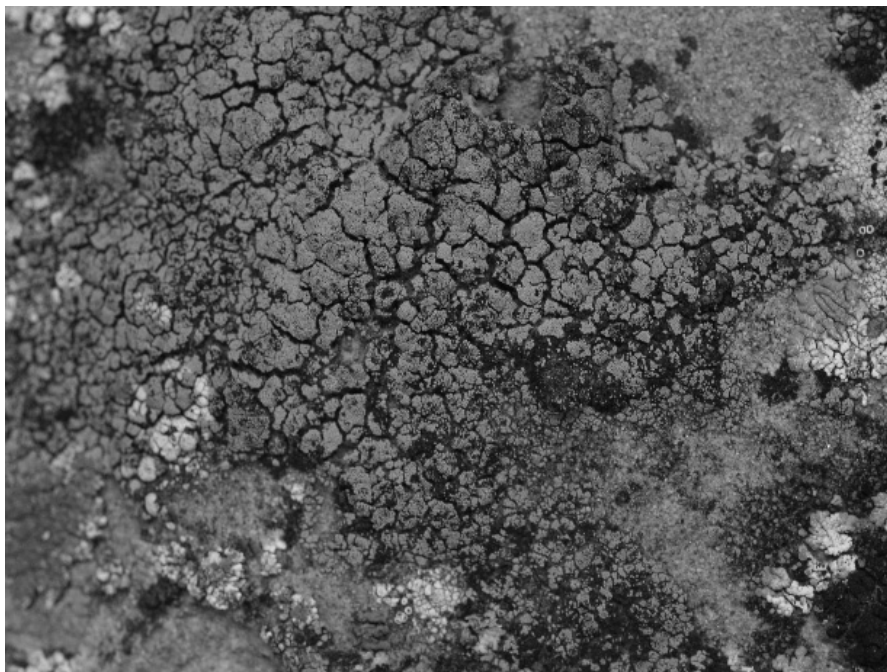


Photo 11 Common goldspeck lichen Candelariella vitellina



Photo 12 - Golden moonglow lichen Dimelaena oreina

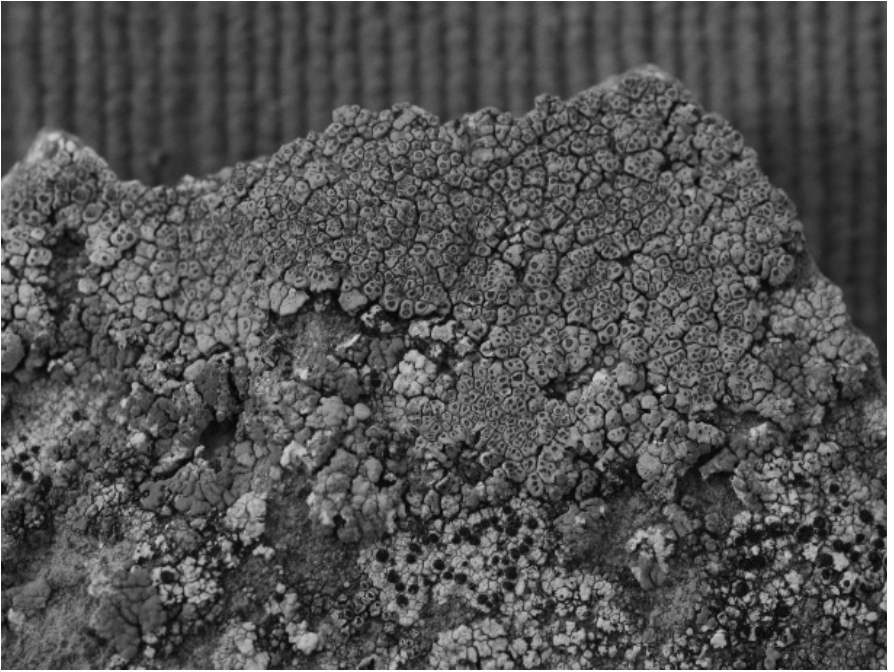


Photo 13 - Gold cobblestone lichen Acarospora contigua



Photo 14 - Hoary cobblestone lichen Acarospora strigata

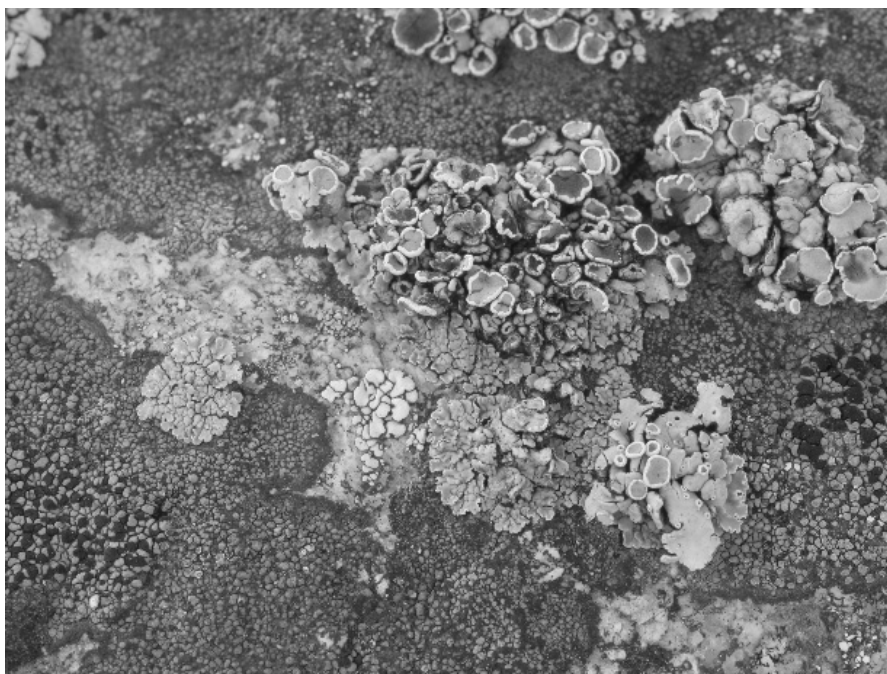


Photo 15 - Green rock posy Rhizoplaca melanophthalma



Photo 16 - Salted rock-shield lichen Xanthoparmelia mexicana



Photo 17 - Hoary rosette lichen Physcia aipolia

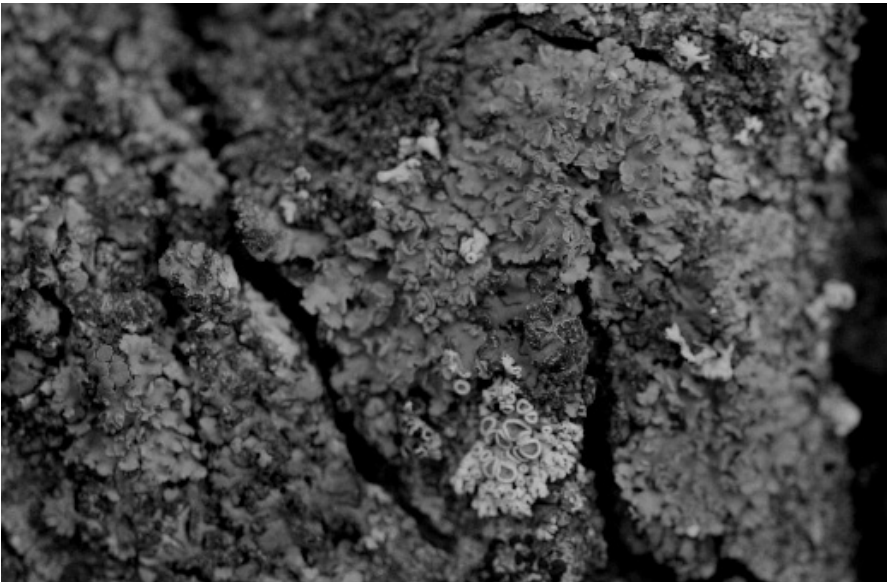


Photo 18 - Hooded sunburst lichen Xanthomendoza fallax

Editor's note: This is the last article of the lichen series. Thanks to Lichenologist Bernard de Vries for his enthusiasm in sharing the world of lichens with us. The author hopes you enjoyed learning more about these interesting plants. Next issue we will begin a series on fungi.

