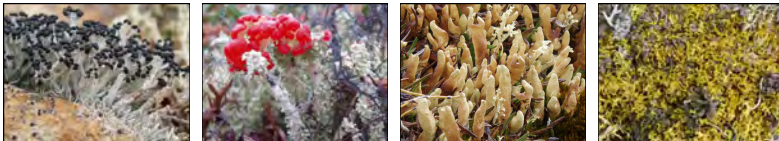
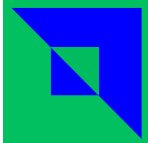




# A Field Guide to Common Fruticose Lichens in Western Alaska





# Acknowledgments

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**Produced By:**

USDA Natural Resources Conservation Service, Alaska

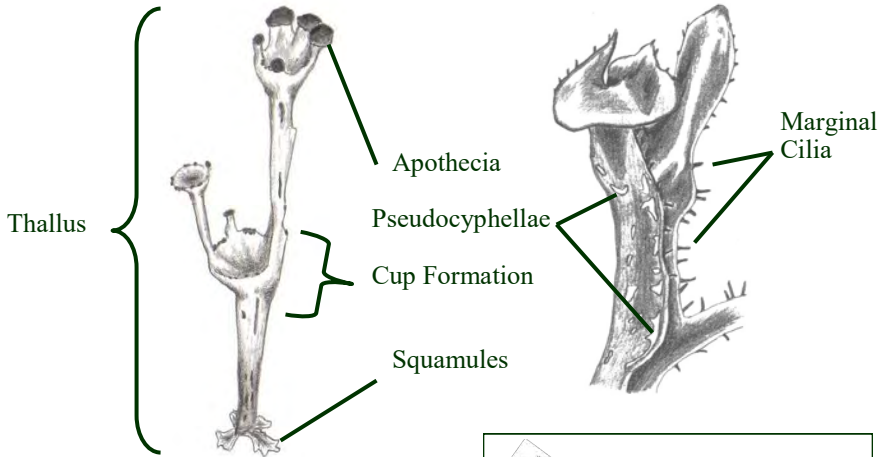
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# Lichen Anatomy and Terminology Used in this Guide



Indicates species preferred  
by *Rangifer* sp.



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# Cladina rangiferina Grey Reindeer Lichen



A favorite of reindeer and caribou, this lichen is extremely common. It tends to grow in mats and can constitute a high percentage of the overall lichen biomass of a site.

Color ranges from white to grey to tan to green. Tips are mainly in twos and threes and have a “combed” look with tips growing in the same direction. Under undisturbed conditions, this lichen will consist of 10 percent of the thallus live and 90 percent dead.

It can be confused with *Cladina stygia*, and *Cladina arbuscula/mitis*. *C. stygia* has a black interior and black decaying thallus. *C. arbuscula* has a more yellow color and tips in threes and fours. Coloring of the lichens changes with their moisture content and the sunlight intensity. Discerning species with similar form, based on color can be difficult. These three species often occur together, which helps in comparing them.





# Cladina stygia

## Black-Footed Reindeer



This species is a favorite of reindeer and caribou, and is extremely common. This lichen tends to grow in mats and can constitute a high percentage of the overall lichen biomass of a site.

*Cladina stygia* has a grey thallus with the top branches fading to tan. Variations in the general color can occur with humidity and sunlight intensity. This lichen is quite recognizable by the black in the interior and in breaks in the cortex on the older parts of the thallus.

Under long undisturbed conditions, this lichen will consist of 10 percent of the thallus live and 90 percent dead.

This lichen can be confused with *C. rangiferina*. The blackening of the dead thallus is the best way to distinguish these two lichens. *C. rangiferina* has consistent coloring throughout the length of the thallus.





# Cladina arbuscula-mitis

## Reindeer Lichen



These two closely related species (*Cladina arbuscula* and *C. mitis*) are found in western Alaska, and will intergrade. They are indistinguishable without chemical tests. These lichens are preferred by reindeer and caribou, and are extremely common. They tend to grow in mats and can constitute a high percentage of the overall biomass of a site, being important species for reindeer and caribou forage.

Color ranges from white to yellow to green. Tips are mainly in threes and fours.

Under long undisturbed conditions, this lichen will consist of 10 to 20 percent of the thallus live and 80 to 90 percent dead.

It can be confused with *Cladina rangiferina* and *Cladonia uncialis*. *Cladina rangiferina* has its tips mostly in twos and threes and has a combed look to the tips, with most bent in the same direction. *Cladonia uncialis* has much shorter tips and has a brighter color.





# Cladina arbuscula ssp. beringiana

## Reindeer Lichen



The reindeer lichens, *Cladina rangiferina*, *C. arbuscula*, and *C. arbuscula ssp. beringiana* are all preferred by reindeer and caribou and are important forage species.

The subspecies described here is very similar to *C. arbuscula* except it has a wider branching pattern and a brown color to the tops.

This lichen can be easily confused with *Cladina rangiferina* and *C. arbuscula*. The brown to tan color of the upper thallus, which changes to the very light green to almost white lower half of the thallus will distinguish this lichen. Just being aware of its existence will keep confusion down. For all forage and preference purposes, it can be included with *C. arbuscula-mitis*.





# Cladina stellaris

## Star-Tipped Reindeer Lichen



This species is considered to be the number one favorite lichen of reindeer and caribou, and is a late successional species.

It can grow in large quantities forming mats, thus contributing a high percentage to the overall biomass of a site. This species is considered to be one of the most important lichens for reindeer and caribou winter forage.

Color ranges from white to cream. Tips are short and widely extend in groups of three to five around a hole at the base of the whorl in the thallus.

This is a distinctive lichen, growing with a cauliflower-like, clumped look.





# Cladonia uncialis

## Thorn Cladonia



This species is a favorite of reindeer and caribou, and common in western Alaska.

Color ranges from pale yellow to yellow-green. Thallus is much wider than the branches, and the tips and branches are short. The lichen looks truncated. Tips are usually in twos, divergent, and darkened. Open holes are common where the lichen branches. Lichen length is not typically longer than six centimeters.

This species can be confused with *Cladina arbuscula*. *C. arbuscula* has longer branches and is not nearly as yellow as *Cladonia uncialis*.





# Cladonia nipponica

## Japanese Cup Lichen

This species is not a particularly common, but where it grows, it tends to grow in monoculture clumps.

This lichen is distinct, with holes in the axils and in other places on the thallus as well, looks like it is malformed or damaged. It can form distinct ropy webbing in the lower, older parts of the thallus where it appears the cortex has worn away.

This species could be mistaken for *C. uncialis*, as their colors and growth habits are similar with both having blunt growing tips. *C. nipponica* has a much wider thallus, and the webbing at the base along with the unfinished look should help distinguish the two.





## Sphaerophorus globosus Orange Coral Lichen

This species grows commonly on bare rock and soil, and large amounts of it growing in mats are indicative of past heavy grazing or disturbance. It is not a lichen that reindeer or caribou prefer to eat.

Color is variable, but usually light at the bottom of the thallus, becoming gradually more tan-orange toward the top. The tips are slightly rounded and are light in color, usually white.

This lichen is “stiffer” than the *Cladinas*, having a solid thallus as opposed to the hollow thallus the *Cladinas* have.

At first glance, the branching of this lichen might remind one of a *Cladina*, but upon close inspection it is distinguishable.





# Dactylina arctica

## Dead Man's Fingers

This species is found on many different upland, well drained ecological sites, however, it does not typically contribute a high percentage to the overall lichen biomass of a site.

Color varies from a light, straw-yellow color to a darker tan to brown where exposed to the sun.

*Dactylina arctica* has a wide and inflated cone shaped thallus which is hollow inside and occasionally will branch from a main thallus.

It is quite distinctive and not likely to be confused with any other species.





## **Dactylina ramulosa** **Frosted Finger Lichen**

This species is not particularly common and can easily be overlooked, being rarely taller than 2 to 3 cm. It is found on calcium rich soils in the arctic or alpine, on both moist and dry sites. It does not contribute a high percentage to the overall lichen biomass of a site.

Color is unique, having a brownish to pinkish and violet hue with a frosted look due to the pruina that cover it.

*Dactylina ramulosa* has a wide and inflated thallus which is hollow and webbed inside. It is quite distinctive and not likely to be confused with any other species.





## Masonhalea richardsonii Arctic Tumbleweed

This vagrant species is found on rocky, windy sites, commonly on sparsely vegetated mountain and ridge tops. It is a minor component of the lichen biomass on any given site, and as the common name infers, does not attach itself to anything, but blows from area to area.

This lichen has a dark brown color when dry and an olive green color when moist. It has a flattened, almost foliose growth form, branching irregularly. A white, broken line is found on the bottom side of this lichen; it will curl into a loose ball when dry and flatten out when moist.

At first glance, it resembles the *Cetraria* genus, but upon careful observation is it quite distinguishable.





## Bryocaulon divergens Northern Foxhair

This species is found mainly on windy, rocky ridges and mountain tops. It is not a lichen preferred by reindeer and caribou.

This lichen is reddish brown in color. Tiny white spots are visible on the shiny cortex. The growth form is highly branched and shrub like, looking like a “dish-scrubbing pad.”

*Bryocaulon divergens* can be confused with *Alectoria nigricans* and *Bryoria nitidula*. *Alectoria nigricans* is more of a dark grey-brown, whereas *B. divergens* is reddish in color. *B. divergens* also has raised pseudocyphellae (white spots on the cortex) and *Alectoria* does not. *Bryoria nitidula* has dark, elongate pseudocyphellae and is shiny dark brown to black rather than reddish brown.

(Previous name is *Cornicularia divergens*.)





## Alectoria ochroleuca Green Witch's Hair

This species is found mainly on windy, rocky ridges and mountain tops. It is not a lichen preferred by reindeer and caribou, and under some grazing scenarios can increase to become the dominant lichen species on a site. High coverage of this species can indicate past and present heavy grazing.

The tips of this hair lichen are darker than the thallus with color ranging from green to brown to black. The thallus is a yellow-green color.

It can sometimes be confused with *Alectoria nigricans*, however *A. nigricans* is a darker grey-brown, and does not have a yellow thallus.





## Alectoria nigricans Gray Witch's Hair

This species is found mainly on windy, rocky ridges and mountain tops. It is not a lichen preferred by reindeer and caribou.

This lichen is grey to green in color. The growth form is highly branched and shrub like, looking like a “dish-scrubbing pad.”

*Alectoria nigricans* can be confused with *A. ochroleuca*, *Bryocaulon divergens*, and *Bryoria nitidula*. *A. ochroleuca* will have a yellow thallus (sometimes this is dark and chemical tests are required to discern the species). *Bryocaulon divergens* is more reddish brown in color and has raised pseudocyphellae (white spots on the cortex), whereas the *Alectoria* species have flat pseudocyphellae. *Bryoria nitidula* has dark, elongate pseudocyphellae and is shiny dark brown to black rather than reddish brown.





## Evernia sp. Oakmoss lichen

This species has been found in lower elevation sites in southwestern Alaska, but it is likely to be found in many areas of western Alaska on a diversity of low and high elevation areas. It is not believed to be a lichen preferred by reindeer and caribou, and is typically found growing on trees in other parts of the world.

This lichen is yellow, with pits and ridges evident in the thallus. There are two species in western Alaska that can be discerned by their characteristics. *Evernia divaricata* typically grows in trees, but is also found in the tundra. It has a pale yellow, thin cortex, so is flexible and will bend without breaking. The other species, *E. perfragilis*, has a darker yellow, thick cortex, and is stiff and brittle.

*Evernia sp.* can be easily confused with *Alectoria ochroleuca*, but careful observations of the thallus and grooves present or absent will distinguish the two.





## **Pilophorus acicularis** **Devil's Matchstick**

This is an uncommon, but distinct lichen that usually grows on bare rock or tundra.

Thallus is a grey-green color and has a granular appearance. Thallus is mostly unbranched at the top, with each thallus having a black, rounded apothecia.

This lichen can be confused with its more common relative, *Pilophorus robustus*, Robust Nail lichen. *P. robustus* is similar in coloring and growth form, but is branched at the top.

This species is a nitrogen fixer, and a pioneer species in ecological succession.





## Pilophorus robustus Robust Nail Lichen

This is a rare, but distinct lichen that usually grows on bare rock or tundra in the western extremes of Alaska.

Thallus is a grey-green color and has a granular appearance. Thallus is extremely branched at the top, with each tip having a black, rounded apothecia.

This lichen can be confused with its more common relative, *Pilophorus acicularis*, Devil's Matchstick lichen. *P. acicularis* is similar in coloring, but does not have the pronounced branching at the top.





## Cetraria aculeata Spiny Heath Lichen

This species does not occur in great enough abundance to be considered a critical species for reindeer or caribou, but is found in western Alaska.

This lichen is a dark brown, mat forming species, that has irregular branching with spiny projections along its branches. The tops are blunt and rounded, and the lichen appears slightly inflated.

This lichen can be confused with other brown *Cetrarias* (*C. islandica*, *C. laevigata*) and *Cetrariella delisei* at first glance, however this species has a round thallus, whereas all the other species listed above are flattened. *Cetraria nigricans* is a similar species usually less than two centimeters tall, dark brown in color, and distinguished by its marginal cilia that are often branched.





# Cetraria laevigata

## Striped Iceland Lichen



This species is a moderately preferred forage of reindeer and caribou, and is common in western Alaska.

Color is a dark brown, and it can blend in with the vegetation on the tundra. The hair-like projections or cilia are found along all its margins, with a mostly unbroken line of pseudocyphellae along the outside margin of the curled thallus.

This lichen is 90 percent live, with the dead portion commonly a bright red and/or a pale tan color, characteristic of the *Cetrarias* and *Flavocetrarias*.

This lichen is easily confused with *Cetraria islandica*, but a careful examination for the white line of pseudocyphellae will distinguish the two. *C. islandica*, does not have this characteristic line.





# Cetraria islandica True Iceland Lichen



This lichen is common in western Alaska, and is moderately preferred by reindeer and caribou.

This is a variable lichen, in shape and color. Color ranges from light green to tan to dark brown. Cilia are usually found along its margins, with spotted pseudocyphellae found throughout the thallus.

This lichen is typically 90 percent live, with the dead portion a bright red and/or faded tan color, characteristic of the *Cetrarias* and *Flavocetrarias*.

It can be confused with *Arctocetrariella andrejevii*, but *Cetraria islandica* is typically more curved and has marginal cillia. *Arctocetrariella andrejevii* does not. It is also easily confused with *Cetraria laevigata*, which has a white, unbroken stripe of pseudocyphellae along the margins.





## Cetraria (or Vulpicida) tilesii Limestone Sunshine Lichen

A moderately preferred species, this lichen is found on the ridges and hilltops of calcareous, rocky sites in western Alaska. This lichen grows only on calcareous soils.

The bright mustard - yellow color of this lichen makes it distinguishable from others with similar form.

Like most of the *Flavocetrarias* and *Cetrarias*, this lichen is 90 to 100 percent live.

This lichen might be confused with *Flavocetraria nivalis*, but in comparisons of their color, side-by-side, they are easily discernable.





# Flavocetraria cucullata

## Curled Snow Lichen



This species is an important forage for reindeer and caribou, and is one of the most common lichens in western Alaska, growing alongside *Cladina rangiferina* and *C. arbuscula*, as well as forming monoculture mats.

Color is a pale yellow, and thallus is curled to nearly tubular. The uncommon apothecia is tan in color and causes the thallus to become widely flattened.

This lichen is 95 to 99 percent live, with the dead portion occasionally bright red or more commonly tan, characteristic of the *Cetrarias* and *Flavocetrarias*.

It can be confused with *Flavocetraria nivalis*, which is shorter and has a flattened thallus.





# Flavocetraria nivalis

## Crinkled Snow Lichen



This species is moderately favored by reindeer and caribou, and is common on high elevation, rocky sites in western Alaska

Color is a pale yellow, similar to the color of *Flavocetraria cucullata*.

This lichen is typically 90 to 100 percent live.

It can be confused with *Asahinea chrysantha*, but careful observation of both sides of the thallus will show consistent coloring in this lichen. *Asahinea chrysantha* will have black mottling on its underside.





## Asahinea chrysantha Arctic Rag Lichen

This is not a favored species of reindeer or caribou, but is common in western Alaska.

Color is a pale yellow, often with brown to black specs on the lobe margins. This lichen has a pouched appearance and is black underneath.

This species is typically 90 percent live.

It can be easily confused with *Flavocetraria nivalis*. The fastest way to discern these two species is to look underneath the lobes; this lichen will be black beneath and *Flavocetraria nivalis* will have consistent color on both sides of the thallus.





# Cetrariella delisei

## Snow-Bed Iceland Lichen



This species is not common in western Alaska, and can be found in low pockets at high elevations, where snow lingers into the spring, or in seasonally wet pockets in rocky tundra. It is a moderately preferred species by reindeer and caribou.

This lichen is light tan at its base to reddish brown at its tips, and has a flattened, highly dissected thallus, especially so at the tips. It has white, broken patches of pseudocyphellae along its margins. This species is often found in conjunction with *Arctocetraria andrejevii*.

This lichen typically consists of a 90 percent live thallus.

It can be confused with *Cetraria aculeata*, which is highly dissected as well, but has a large amount of marginal cilia, and is slightly inflated.





# Arctocetraria andrejevii

## Andre's Lichen



This species is not common in western Alaska, found in low pockets at high elevations where snow lingers into the spring, and occasionally on well drained tundra. It is a moderately preferred species.

This lichen is typically reddish brown and has a wide, wavy, flattened thallus. It is often found in conjunction with *Cetrariella delisei*.

This lichen typically consists of a 90 to 100 percent live thallus.

It can be confused with *Cetraria islandica*, and *Cetraria laevigata*. Both of those lichens generally have more distinct and regular, marginal cilia, and are curled instead of flattened and wavy.





## Stereocaulon sp. Grey Lady or Foam Lichen

The *Stereocaulon* lichens are common in western Alaska, and include several species that are quite similar. This lichen is not a preferred forage species sought out by reindeer, but they will eat it when little else is available. It is often indicative of past, moderate to heavy grazing.

Color ranges from grey to slightly pink, and it has a distinct, broken, granular covering over the thallus.

This lichen is nearly 100 percent live and is commonly found in rocky, harsh environments, as well as in dwarf shrub tundra and forested, lichen-supporting sites.

*Stereocaulon* with apothecia (uncommonly fertile)





## Thamnolia vermicularis White Worm Lichen

This species is not preferred by reindeer and caribou, and is a very common lichen in western Alaska.

Color is bone white, and it is usually unbranched unless large in size (as this one is to the right). It is found both standing upright and lying horizontally on the ground.

This lichen is generally 100 percent live.

The only lichen this species might be confused with is *Siphula ceratites*, a lichen found along the edges of wetlands and lakes, often partially submerged. *S. ceratites* is not hollow and has blunt tips, rather than the hollow stalks and pointed tips of *Thamnolia vermicularis*.





## Siphula ceratites Water Fingers

This species is not preferred by reindeer and caribou, and is not a common lichen, as it has a limited and distinct habitat it grows in.

Color is bone white, and it can be branched or unbranched. The tips of this lichen are blunt and it is typically found in clumps. It grows along the edges of ponds and lakes, or in soil or mud where pooling water is common, and can at times be submerged.

The only lichen this species might be confused with is *Thamnolia sp.*, a lichen found commonly throughout the upland tundra of Alaska. *Thamnolia* is hollow and has pointed tips, rather than the solid stalks and blunt tips of *Siphula ceratites*.





# Cladonia gracilis Smooth Cladonia



This species is common in western Alaska, but does not generally grow in thick mats. It is usually not a large contributor to the overall lichen biomass of a site, as are some of the *Cladina* species.

Color ranges from green to tan, and areas with the highest exposure to the sun are typically browned. The thallus is often elongated, narrow, unbranched, and pointed at the tip. The cortex is smooth and unbroken. This lichen grows upright and may be slightly curved, although its growth form can be extremely variable, at times branching and forming small cups.





## Cladonia cariosa Split-Peg Soldiers

This species does not occur in great enough abundance to be considered a critical forage species for reindeer or caribou, but is found in western Alaska.

This lichen's color is grey to tan, with dark brown apothecia at its tips. The thallus has elongated open gaps (thus the name, split-peg). Often the apothecia will grow from shallow cups formed in the thallus.

This species commonly grows on bare ground, and is distinct. A similar species in form is *Cladonia botrytes* which has a green thallus and tan apothecia.





## Cladonia bellidiflora Red Soldiers

This lichen is common in western Alaska, but does not occur in large quantities, and thus is not a critical forage species for reindeer or caribou. It is, however, certainly a conspicuous species of interest.

The color of the lichen's thallus is pale yellow-green, and is covered with squamules. The lichen is topped with bright red apothecia which give this lichen its common name.

This lichen could be confused with other *Cladonia* species that are topped with red apothecia, but the squamules on the thallus make this species distinct.





## Cladonia pleurota Red-Fruited Pixie Cup

This species is not highly preferred by reindeer or caribou, and is common in woodland areas, as well as in early to mid-seral conditions on the tundra.

This lichen's color is yellow with a granular looking, green, broken cortex. It grows in a broad cup form with its bright red apothecia developing along the rims, and growing up above the rims of the cups.

This lichen might be confused with *Cladonia deformis* when fruiting. *C. deformis* has much narrower cups and is covered with powdery soredia, giving it a distinct look.





## Cladonia deformis Lesser Sulphur-Cup

This species does not occur in great enough abundance to be considered a critical species for reindeer or caribou, but is found in western Alaska.

This lichen's color is yellow-green, and its ends are irregularly rounded and often have small apothecia which are red in color at its top. This lichen's cups are misshapen and sometimes unrecognizable as cups.

There are a few species that look similar to this one, the most similar being *Cladonia deformis*. *C. deformis* is usually shorter and does not have the extent of irregularly rounded and split cups as this species.





## Cladonia sulphurina Greater Sulphur-Cup

This species does not occur in great enough abundance to be considered a critical species for reindeer or caribou, but is found in western Alaska.

This lichen's color is yellow-green, and its ends are irregularly rounded with split openings around the misshapen edges of the cups. The cup formation is large in comparison with the rest of its thallus.

There are a few species that look similar to this one, the most similar being *Cladonia deformis*. *C. deformis* is usually shorter, with more narrow cups in comparison with the rest of the thallus, and does not have the extent of irregularly rounded and split cups as this species.





# Cladonia squamosa

## Dragon Cladonia

This species does not occur in great enough abundance to be considered a critical species for reindeer or caribou, but is found in western Alaska.

This lichen's color is a gray-green but can become browned with sun exposure. Scale-like squamules are found growing all the way up the thallus of this lichen. Small, red apothecia are sometimes found at the tips in somewhat of a cup formation.

*Cladonia scabriuscula* is a similar looking species, but has much fewer scales than *C. squamosa*. Generally, this lichen's scales are a different color than its thallus, giving it a distinct look as well, although chemical tests may be necessary for a definitive identification.





## Cladonia ochrochlora

### Smooth-footed Powderhorn

This species does not occur in great enough abundance to be considered a critical species for reindeer or caribou, but is found in western Alaska.

This lichen's color is a light green-gray, commonly with a darkened tip. Scale-like squamules are found around the base and part way up the thallus. The basal squamules are between 3 and 6 millimeters wide, which are considered large for squamules. The upper half is covered with soredia, which looks powdery.

*Cladonia squamosa* is a similar looking species, but has scales to the top of the thallus in more uniform size.





## Cladonia amaurocraea Quill Lichen

This species is common in western Alaska, but does not occur in great enough abundance to be considered a critical forage species for reindeer or caribou.

This lichen's color is yellow to tan to green, and often mottled as seen on the thallus in the picture shown. It is recognizable by its cup growth form, which branches and extends at the rims, sometimes forming another main stem leading to cups on top of cups.

The darkened growing tips could cause this lichen to be confused with *Cladonia uncialis* if no cups were present (usually, at least one cup is present on a thallus). *C. uncialis* is generally more pale yellow, grows in a tighter form, and can be definitively separated through chemical tests if the identity is in question.





# Cladonia ecmocyna

## Frosted cladonia

This species is common in western Alaska, but does not occur in great enough abundance to be considered a critical forage species for reindeer or caribou.

This lichen's color is green to tan to brown, and is typically darker around the cups. Apothecia are dark brown. Its form can vary from pointed with no cup to forming several cups.

This lichen can be confused with *Cladonia gracilis*, especially if the cups with dark apothecia are absent.





## Lobaria sp. Lung Lichens

This genus is common in western Alaska, but is not a high biomass producer, and is not considered a preferred forage species for reindeer or caribou.

This lichen's color is green to tan to brown, and with pouches and what appear to be veins throughout the thallus, bear a resemblance to lung tissue. Some may have a textured, sandy look to the margins of the thallus. The underside of the thallus is pale with brown, fuzzy tomentum in varying amounts depending on the species. Apothecia will appear on the upper side of the thallus in the middle or on the margins.

This genus can be confused with the other foliose genera common in the tundra. The distinct pouched look is unique to this genus. The lichen in the picture is *Lobaria linita*.





## Peltigera sp. Freckle Pelt Lichens

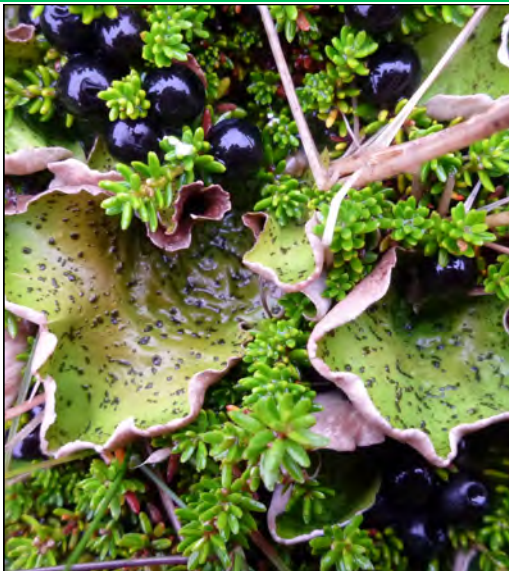
This genus is common in western Alaska, but is not a high biomass producer, and is not considered a preferred forage species for reindeer or caribou.

This lichen's color is green to olive to gray to tan, and has “freckles” which are packets of cyanobacteria called cephalodia. The lower side of the thallus is felt-like, with rhizines either rope-like or bunched.

Cyanobacteria can take nitrogen from the air and convert it into nitrogen that the lichen can use for growth. This is a great advantage to lichen, allowing them to grow in nutrient poor areas. Such lichen play an important ecological role as a pioneering species on areas devoid of vegetation or soil.

This genus can be confused with the other foliose genera. *Peltigera* have apothecia on the upper surface of the thallus at the margins, and a felt-like underside with rhizines.

The species in the photo is *P. aphthosa*.





## Nephroma sp. Kidney Lichens

This genus is common in western Alaska, but is not a high biomass producer, and is not considered a preferred forage species for reindeer or caribou.

This lichen's color is a light to dark green depending on the species and the moisture level. Apothecia are kidney shaped (thus the common name) and found on the lower surface of the lobes, which will often curl upward and be visible.

This genus can be confused with the other foliose genera. *Nephroma* species have apothecia on the lower surface of the thallus at the margins, and the underside of the thallus is smooth, without rhizines present.

The species in the photo is *N. arcticum*.





## Solarina crocea Chocolate Chip Lichen

This species is common in western Alaska, but is not a high biomass producer, and is not a preferred forage species for reindeer or caribou.

This foliose lichen has distinct color and reproductive structures that make it relatively easy to recognize. The thallus is green on top and the underside curls to show orange beneath. The lichen's reproductive structures called apothecia, are chocolate brown, giving the lichen its name.

This lichen contains cephalodia, which contain cyanobacteria that fix nitrogen from the air into a form the lichen can use for growth. It is an important pioneering species to the ecology and succession of a site.





## Omphalina sp. Mushroom Lichens

This genus is uncommon in western Alaska, and does not occur in great abundance but is distinct. Its preference rating for reindeer and caribou is unknown.

The colors in this genus range from pale yellow to orange.

*Multiclava* and *Omphalina* are considered lichens by some lichenologists and ignored by others. They have a unique fungal component (mycobiont) called a basidiomycete, which is unique from all the other lichens.

The lichenized thallus is located at the base, consisting of squamules or granules. The rest of the structure is considered fungal.





## Multiclavula sp. Club Mushroom Lichens

This genus is uncommon in western Alaska, and does not occur in great abundance but is distinct. Its preference rating for reindeer and caribou is unknown.

The color is pale yellow to opaque and has a thin layer of green algae over the thallus.

*Multiclavula* and *Omphalina* are considered lichens by some lichenologists and ignored by others. They have a unique fungal component (mycobiont) called a basidiomycete, which is unique from all the other lichens.





## Natural Resources Conservation Service

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