

Meet the Lichens Episode 2: Your Local Park

Welcome to our second episode of Meet the Lichens, a series of videos to help you learn to recognize common lichens! As I mentioned in the first video, this series is focused on the San Francisco Bay Area and Northern California, but many of these lichens have a global distribution.

Okay, first, a quick quiz on the lichens we learned last time, our city dwellers.

What's this yellow-green lichen, very common on street trees, that mostly reproduces via soredia?

Next up, how about this grey-green little guy, with tiny lobes, and often with dark brown apothecia?

Finally, how about this yellow-orange lichen, with dark orange apothecia?

Okay, if you guessed *Candelaria*, *Physcia*, and *Xanthoria*, you are right!

Today we have four new lichens to learn. They are also pretty pollution tolerant and very common in the Bay Area. While you're less likely to see them on your average urban street tree than you are the ones we learned last time, you are likely to find them in a local park. For example, I've seen most of these covering the trees in Leona Canyon Open Space Preserve, a park just behind the Merritt College campus popular with dog walkers.

These lichens all tend to form bigger thalli than our first three, with bigger and more obvious features that make them relatively easy to identify with the naked eye. Unlike last time, we will learn three out of four of these to species, since there is really only one species in the genus common to this area. These species are common elsewhere as well.

Let's get started.

First up is *Evernia prunastri*, also known as oak moss. It's one of the most common lichens in California, common in agricultural areas and hardwood forests alike, and grows mostly on the bark of trees and shrubs (not just on oaks, but mostly on hardwoods). A note: hardwood is a non-coniferous tree. Also known as deciduous trees, but in CA these trees may not actually lose their leaves, so hardwood is a better term.

Evernia prunastri is usually considered a foliose lichen, though it is sometimes grouped with fruticose lichens, because it is shrubby and three dimensional (in the Sharnoff book it is grouped with fruticose). But we consider it a foliose lichen because it has a distinct upper and lower cortex. The upper cortex is a pale green, while the lower cortex is whitish, paler than the upper cortex. The white can look thin, like it doesn't fully cover the green, but you can usually make out the difference between top and bottom. This is *Evernia's* most distinctive feature, a giveaway that it is *Evernia* and not one of its fruticose lookalikes, that have flattened lobes that are the same color on both sides.

Evernia has soft, fairly thin flattened branches that branch dichotomously--that is, if you look at any branch, that branch splits into two relatively even branches, which splits into two relatively even branches, and so on until the smallest branch. You can actually use these branches to age the lichen--it's thought to split once each year, so each junction represents a year.

Evernia often sometimes have gray or greenish soredia, but they are sparse, and not the most obvious character. Apothecia are very rare.

Evernia is probably the world's most economically important lichen, since it is used commercially to make a fixative in perfume, though that may be occurring less due to changes in the perfume industry. It's also used for dyeing.

Evernia's main lookalike in the Bay Area is the genus Ramalina. We'll talk about Ramalina menziesii, lace lichen, next week, which is very distinctive, but most Ramalinas are small, shrubby things, about the same size as Evernia, with similar flattened lobes. The easy way to tell them apart is to look for the two different colors on either side of the lobe. Ramalinas are the same on both sides. Their lobes are also a bit thicker and tougher. Niebla is also a Bay Area lookalike in some areas--it too is fruticose and doesn't have those distinct sides.

Next up is Usnea, sometimes called beard lichens or Old man's beard.

Usnea is actually a huge group of lichens, with many, many species that can have variable features. Some species are distinctive and easy to identify, because of their size and reproductive features. Others are very difficult to identify.. So we're just going to stick with Usnea here.

Usnea species are fruticose lichens distinguished by their round branches. They can look be small and shrubby, or they can be enormously long and pendulous, like the most famous Usnea species, Usnea longissima (old man's beard), a species that is found mostly in the Northwest but can be found in parts of northern California.

They are found mostly on bark and twigs, on both trees and shrubs. In general, the smaller, tuftier ones are more widespread and pollution tolerant, while the longer ones are found in areas with better air quality.

If you carefully break a branch open, you can see an elastic central cord, usually white. Elastic isn't exactly stretchy like a rubber band, but it has more give and take than the cortex. This is a distinguishing feature for the genus.

Most species are a pale yellow-green, due to usnic acid, but two species are reddish, including one that can be found in the Bay Area. A brief note here--if you remember the last video, I mentioned that yellow-green has a particular meaning in lichen world, especially in lichen keys, and it refers to this type of pale yellowish green color, from usnic acid.

The surface can be smooth or rough, with little bumps called papillae or short side branches called fibrils.

Soredia and isidia are common, but can be hard to distinguish from other little structures called papillae and fibrils. Apothecia are common in a distinctive species called *Usnea intermedia*, but absent in most California species. Most *Usneas* reproduce asexually through fragmentation.

As mentioned briefly before, *Usneas* contain usnic acid, which is a topical antibiotic, though some people are allergic to it. They are popular with birds as nesting material, and have been used as dyes and for tanning leather.

Usneas are pretty distinctive, but they do have some lookalikes. Two similarly hairy fruticose lichens are *Alectoria* and *Bryoria*. *Bryoria* is usually darker in color, and both of these other genera lack the distinctive central cord. From a distance, you might confuse *Ramalina menziesii*, lace lichen, with a long, pendulous species of *Usnea*, but up close they are very different--*Ramalina* has flat lobes, with tiny nets, instead of *Usnea's* round branches.

Our last two lichens are close lookalikes. They are both very common in the Bay Area and can grow side-by-side, making it difficult to tell them apart without a chemical test.

First up is *Flavoparmelia caperata*. *Flavoparmelia* is a medium to large, yellow-green foliose lichen with wide, round lobes, about 3-8 millimeters wide. Its color can change fairly dramatically when wet, from a pale yellow-green to a deeper green when wet. It is light yellow-green, similar to *Usnea* in color, because it contains the same substance, usnic acid.

It is very common on bark, especially oaks, sometimes on rocks. It's also common on fences and roof shingles.

The lower surface is black, with black rhizines.

It has granular or wartlike soredia, especially on the older, central parts of the thallus--the lichen grows outward from the center, so the middle is oldest. Apothecia are rare.

Our last lichen is, as I said before, very very similar. This is *Flavopunctelia flavientor*. *Flavoparmelia*, *Flavopunctelia*--similar names, similar lichens. It can be very confusing, so in the field it's great if you can just narrow it down to one of the two.

Like Flavoparmelia, Flavopunctelia is a yellow-green or green, medium to large, foliose lichen with wide lobes. It is also very common on bark and sometimes rocks. It also has a black lower surface with rhizines.

It also has granular soredia.

So far, these two sound pretty much identical. So how do you tell them apart?

There are two features Flavopunctelia has that can help you set them apart in the field, though they are not always obvious to the eye and so aren't that dependable. One is pseudocyphellae, small white breaks in the upper cortex. This is a relatively obvious feature, and I use it to remember which is which--Flavopunctelia has "punctures" in the cortex. But it can sometimes be hard to tell if markings are pseudocyphellae or just cracks, especially in older specimens, and not every specimen of Flavopunctelia will have them.

The other feature is that soredia are found on lobe margins, not just on the lobe surfaces. The color is sometimes a bit of a darker, bluer shade of green, but this isn't a very dependable feature unless you are comparing them side by side.

The most definitive way to distinguish the Flavos is with a chemical spot test. The chemical test for Flavoparmelia and Flavopunctelia is one of the easier ones to do, because the chemical is bleach. If you scrape off the cortex and put a drop of bleach on the exposed medulla of Flavopunctelia, it turns red. Flavoparmelia does not have these reactions.

The Flavos most important lookalikes are each other, but you may also confuse them with Parmelia, Parmotrema, or Punctelia species. Both Flavos tend to have wider lobes and form bigger thalli than these species. The Flavos are also more yellowish-green than these other species.

Okay, that's all for today:

Evernia--green on top, white on bottom

Usnea--round with central cord

And the Flavos--both big, yellow-green, but Flavopunctelia has pseudocyphellae and reacts with bleach, while Flavoparmelia does not.

Continue to go forth and lichenize!

See you next time.