

# Lichens



A lichen is a composite organism made up of a fungus and an alga growing in symbiosis. The fungus provides the structure. The alga (singular form of “algae”) contains chlorophyll and provides nutrition for the organism through photosynthesis. Lichens are classified as part of the fungus kingdom. Each species is given its scientific name from its fungal component. Lichens are not parasites; they do not draw nutrients from their hosts.

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## SHIELD LICHEN FAMILY (PARMELIACEAE)

Parmeliaceae is the largest family of lichens, with 87 genera and more than 2,000 species worldwide in a variety of climates and habitats.

### **Usnea genus**

*Usnea*, commonly known as beard lichen, is one of the largest genera in the Shield Lichen family, including over 600 species worldwide. It is a grayish-green, fruticose lichen that hangs like a beard from the branches of hardwood and evergreen trees throughout the temperate forests of the world. *Usnea* is one of those plants, like eucalyptus, whose scientific name is also its most-used common name.

### USNEA

#### *Usnea californica*

**Other common names:** California beard lichen, old man's beard

**Origin:** Native

**Habitat:** Oak and coniferous forests

**Related species in California:** Several, including warty beard lichen (*Usnea ceratina*) and Methuselah's beard (*Dolichousnea longissima*; formerly *U. longissima*), now considered rare

**Related species globally:** Old man's beard (*U. barbata*); found worldwide

**Conservation status rankings:**

**IUCN Red List:** Not listed

**CNPS Rare Plant Rank:** Only *U. longissima* is listed (as 4.2).

**NatureServe State Rank:** SNR

**Uses:** Antimicrobial, antifungal

**Parts used:** Whole lichen

**Edibility:** Edible in small amounts, preferably first soaked in water



Beard lichen, probably *Usnea californica*  
KYRA EPSTEIN

### Description

*Usnea* is a grayish-green, fruticose lichen that hangs like a beard from the branches of hardwood and evergreen trees throughout the temperate forests of the world. *Usnea* can be found in Northern California in cool, damp forests on old-growth oaks, Douglas-firs, pines, and other conifers. Although it generally avoids direct sun, *usnea* is often found on dying trees, presumably because the loss of canopy allows more sun to reach it and stimulate its growth. There are several very similar species of *Usnea* in California, with *Usnea californica*

among the most common. Even some lichen experts have trouble telling the various usneas apart.

On top of that, usnea resembles other tree-dwelling lichens, such as oak-moss (*Evernia prunastri*) and lace lichen (*Ramalina menziesii*), the California state lichen. What distinguishes usnea from other lichens is the white, elastic “cord” running through it. This filament stretches when gently pulled, whereas other lichens will break apart. Any *Usnea* species can be used for the purposes described below.

### Conservation Status

Usneas and lichens in general are susceptible to excess nitrogen, sulfur dioxide, and other toxic chemicals in air pollution. Once common and widespread, the population of the related lichen species Methuselah’s beard (*Dolichousnea longissima*) has declined severely due to air pollution. The USDA Forest Service has a National Lichens & Air Quality Database and Clearinghouse to help them assess the ecological impacts of air pollutants.

Even in the best conditions and where plentiful, this lichen grows very slowly, so please be extra careful not to harvest more than you need. An ecological way to harvest usnea is to pick it up off the forest floor after a storm and dry it thoroughly before storing.

### Traditional Uses

The Nitinaht of Vancouver Island, British Columbia, use usnea as a wound dressing and for bandages.<sup>1</sup> California tribes use it as diaper material. Over time, they probably observed its antifungal effect on diaper rash. Usneas have a long history of use in Europe and Asia as antibacterial and antifungal remedies.

### Modern Uses

The American Botanical Council (ABC) reports that local species of *Usnea* are used by American herbalists as an infusion or a diluted alcoholic tincture to treat lung infections, tuberculosis, urinary tract infections, *Candida albicans*, and strep throat. Based on its longtime use by European herbalists for mucus membrane infections, the German Commission E studied *U. barbata* and reported antimicrobial activity. They approved it for mild inflammation of the oral and pharyngeal mucosa. It is usually taken in lozenge form.<sup>2</sup> Usnea ointments are commonly sold in Europe for treating topical fungal infections such as athlete’s foot and ringworm.

In 1986 California herbalist Christopher Hobbs wrote a book that is still the ultimate resource on all aspects of usnea, including its uses and phytochemistry. The book is now out of print, but he has made it available online.<sup>3</sup> The

Kaiser Permanente website includes usnea in a list of “herbs that directly attack microbes.” The list includes several other herbs covered in this field guide: creosote bush, eucalyptus, sage, and St. John’s wort.<sup>4</sup>

### Phytochemicals/Mechanisms of Action

All *Usnea* species contain lichenic acids, including usnic acid, a secondary metabolite (a by-product of plant metabolism produced for some purpose other than growth). Usnic acid may possibly protect the lichen from unwanted effects of sunlight exposure and deter grazing with its bitter taste. Usnea’s antimicrobial and antifungal chemicals probably inhibit the growth of harmful microorganisms on the lichen. According to a study mentioned on the ABC website, *U. barbata*, the common species of commerce, has demonstrated a broad antibiotic spectrum.<sup>5</sup> Studies have shown that usnic acid is effective against Gram-positive bacteria such as *Streptococcus* and *Staphylococcus*.

A species of *Usnea* was cultured in a laboratory in India with a goal of generating enough material for pharmaceutical research. Researchers were looking for evidence of its antioxidant potential but also found it to be antibiotic, antimycobacterial, antiviral, anti-inflammatory, analgesic, antipyretic, antiproliferative, and cytotoxic.<sup>6</sup>

### Cultivation

While lichenologists have been able to transplant other Shield family lichens, such as oakmoss, I am not aware of any attempts to transplant usnea. If it’s even possible, it would be very difficult to simulate the unique conditions in which usnea chooses to grow in the wild.

### Cautions

Lichens accumulate airborne toxins, such as mercury in ocean fog, so it’s important to keep up with research on local air quality if you plan to collect usnea. Although a few cases of liver toxicity were reported from ingesting a weight-loss product containing usnic acid, usnea is considered safe to take internally in the traditional manner as a tea. Despite its bitterness and mild acidity, some people eat small amounts, usually first soaking it in water. More than a small amount could cause digestive upset.

### Notes

Usnea can be mistaken for other fruticose lichens hanging on trees. The pull test on the tough and elastic central cord will distinguish it.

A tincture of usnea is a common way to preserve it as a liquid for external use. See “Recipes” for Usnea Antibacterial Double Extraction.