



Klamath Network Featured Creature

April 2013

Peat Moss (*Sphagnum* spp.)

General Description:

Sphagnum species, also known as peat moss, are mosses (bryophytes) and arguably among the most important plant genera in the world. Members of the *Sphagnum* genera, often grow in mats, and cover more of the world's terrestrial surface than any other plant genus. Worldwide there are approximately 300 species of *Sphagnum* and about 100 in North America. Most *Sphagnum* mosses have two kinds of leaves-- those found on the branches and those found on the main stem. The two kinds of leaves are most easily differentiated under ideal growing conditions. Less-than-ideal conditions (such as insufficient moisture) can result in less differentiation between the branch and stem leaves. Plants that grow under conditions of fluctuating water levels can have branch and stem leaves that are undifferentiated. Since stem and branch leaves are most often used for species identification, the stem leaves of two different species that are in an undifferentiated form can be nearly identical, and thus species identification can be difficult to impossible in specimens from less-than-ideal moisture and mineral regimes.

Distribution and Habitat:

Sphagnum occurs mainly in the Northern Hemisphere. In the Southern Hemisphere the largest peat areas occur in Chile and Argentina, and are less abundant in Asia, Africa, New Zealand, Australia and Tasmania. *Sphagnum* grows in moderately to very wet areas, either in pools of water or where there is seepage. It is able to grow well in stagnant, nutrient poor areas. The habitats where *Sphagnum* primarily occurs are bogs, fens, conifer forests, and moist tundra areas.

Ecology:

Sphagnum species as a group are considered xerophytic hydrophytes, in that they are water-loving plants with adaptations for dealing with periodic drought conditions. Living *Sphagnum* plants have an impressive water holding capacity. Some species can hold 20 times their weight in water. In addition to holding large amounts of water, *Sphagnum* also tends to acidify the water in which it grows. *Sphagnum* cells selectively absorb mineral ions from and release hydrogen ions into the surrounding water. A growing *Sphagnum* plant is continuously creating sites at which this exchange of ions can take place.



<http://www.thecanadianencyclopedia.com/articles/moss>



<http://www.pomona.edu/news/2010/07/22-whitaker-mushroom-cloud.aspx>

Ecology cont.:

Because acidity is determined by the concentration of hydrogen ions, as *Sphagnum* pumps hydrogen ions into the water the pH drops. The water in *Sphagnum* wetlands can reach a pH as low as 3, about the same as the pH of orange or grapefruit juice. Vascular plants found on the perimeter of peat bogs are often stunted, and are often altogether absent near the center of bogs.

Where to see in the Network:

Sphagnum occurs at Crater Lake, Lassen Volcanic and Redwood National Parks. It is likely present at Oregon caves, and less likely to occur at Whiskeytown (most likely on Shasta Bally). *Sphagnum* is absent from Lava Beds.

Human Uses:

The varied uses of peat moss can be classified as ecological (good environmental status indicators, heavy-metal pollution monitoring and clean-up); economical (fuel as a source of coal); household (cushioning, lining, packaging and decoration); medicinal (antiseptic, antibiotic); and horticultural (soil supplement). However, *Sphagnum* is one of the most vulnerable plant groups and it may take years before a peat bog or a *Sphagnum* population can recover after harvest. Therefore, for conservation reasons, the sale and the use of *Sphagnum* peat is being deplored and the continuing loss of its unique habitat is a conservation issue.

Further Reading:

For more information on the moss life cycle see our Oct. 2012 featured creature (http://science.nps.gov/im/units/klmn/Outreach/documents/Feature_Creature/KLMN_Featured_Creature_201210.pdf)

Breemen, Nico. 1995. How *Sphagnum* bogs down other plants. Tree (10)7.

Ecology and Taxonomy of Washington *Sphagnum* Mosses--
<http://your.kingcounty.gov/dnrp/library/2001/kcr771/chapter4.pdf>