

# Mosses, Lichens, and Liverworts

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# Moss Systematics and Temperate Rainforests

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- Mosses are non-vascular
- Remain small and grow in wet places
- They give the temperate rainforest its lush, rich, verdant appearance











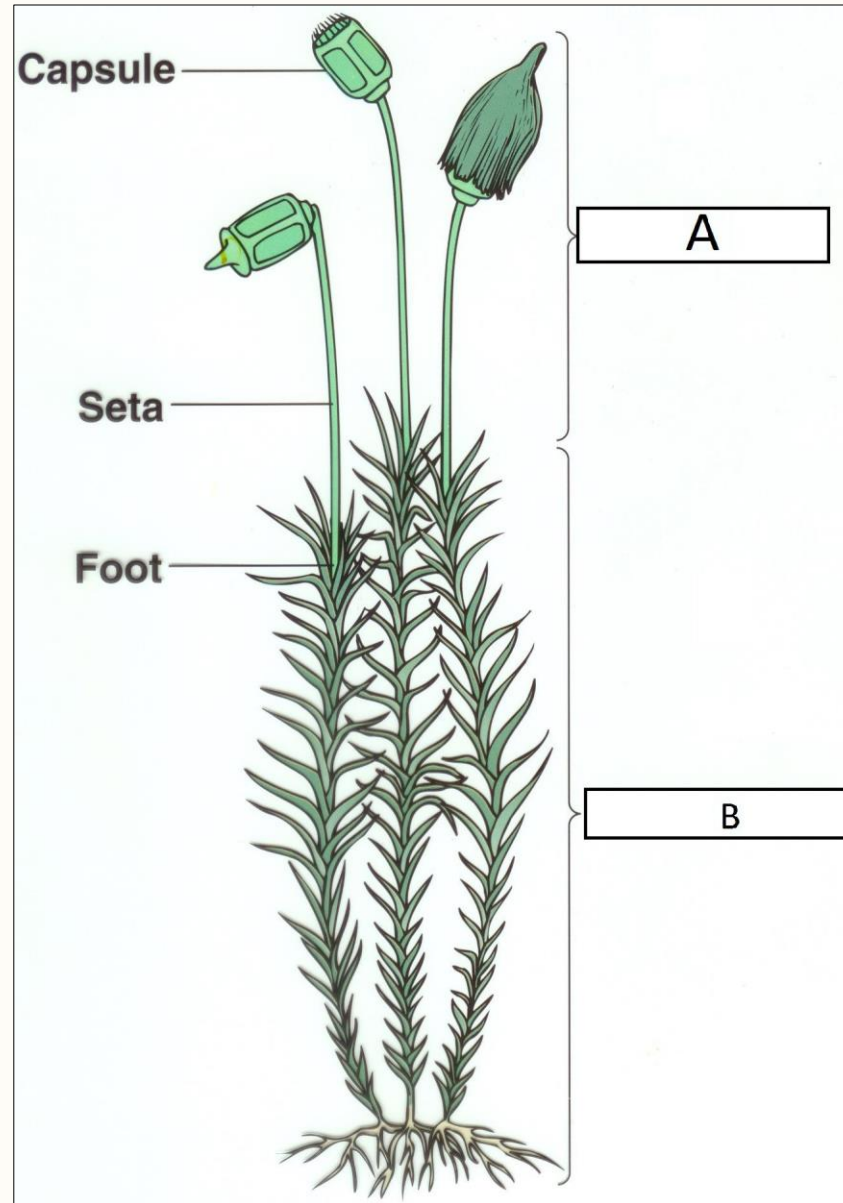


# Moss Systematics and Temperate Rainforests

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- Difference between seed and spore
- Rhizoid and substrate
- Peat mosses and true mosses



































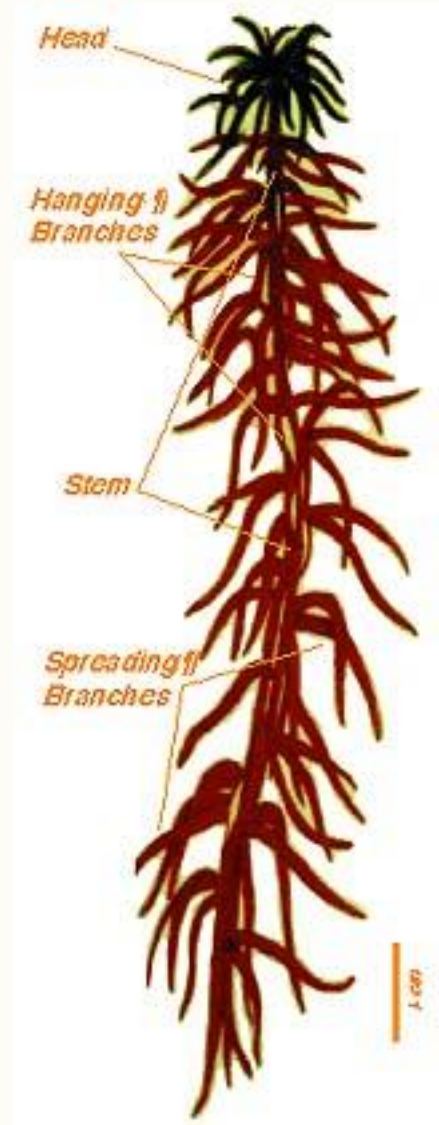




# Moss Systematics and Temperate Rainforests

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- Peat mosses (40 species native to PNW)







# Moss Systematics and Temperate Rainforests

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- True mosses vs. peat mosses
- 700 species of true mosses in PNW







# Liverwort Systematics and Temperate Rainforests

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- Sub-family of bryophytes
- 6000 species of liverwort worldwide
  - 220 native to PNW



# Lung Liverwort

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# Club Mosses, Spikemosses, and Quillworts

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- Families within fern and fern allies orders
- Club mosses and spikemosses are slow growing



# Clubmosses

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# Spikemosses

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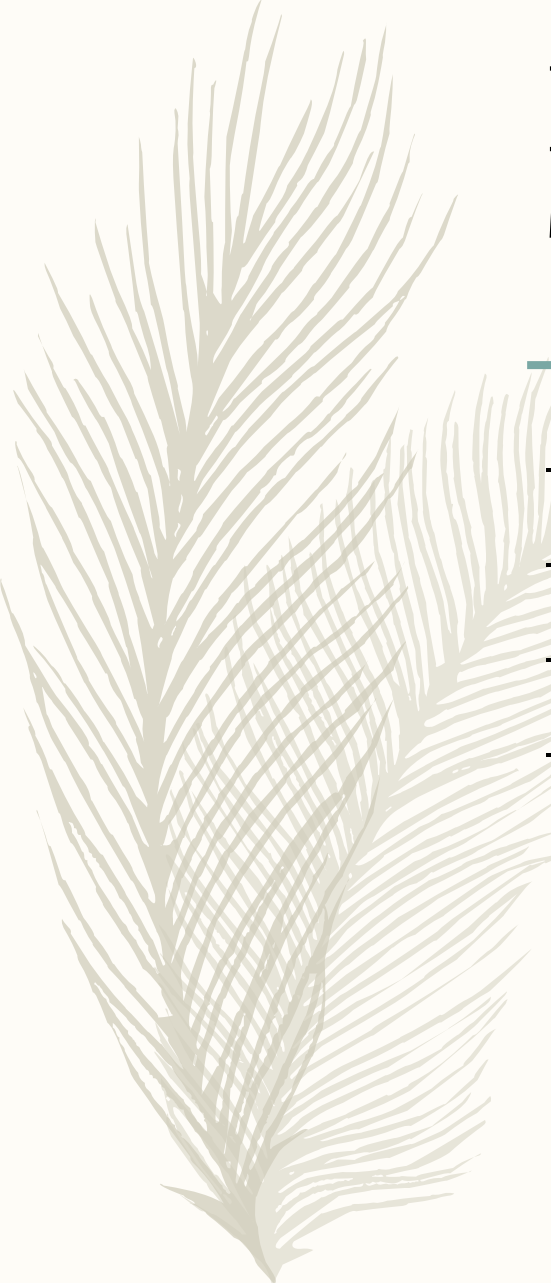


# Quillworts

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# Lichen Systematics and Temperate Rainforests

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- More than 1000 kinds in PNW
- Lichenology relatively new field
- Many species of lichen live in old growth forests
- Along the coastline
  - Rocky headlands
  - Ventilated forests
  - Alpine












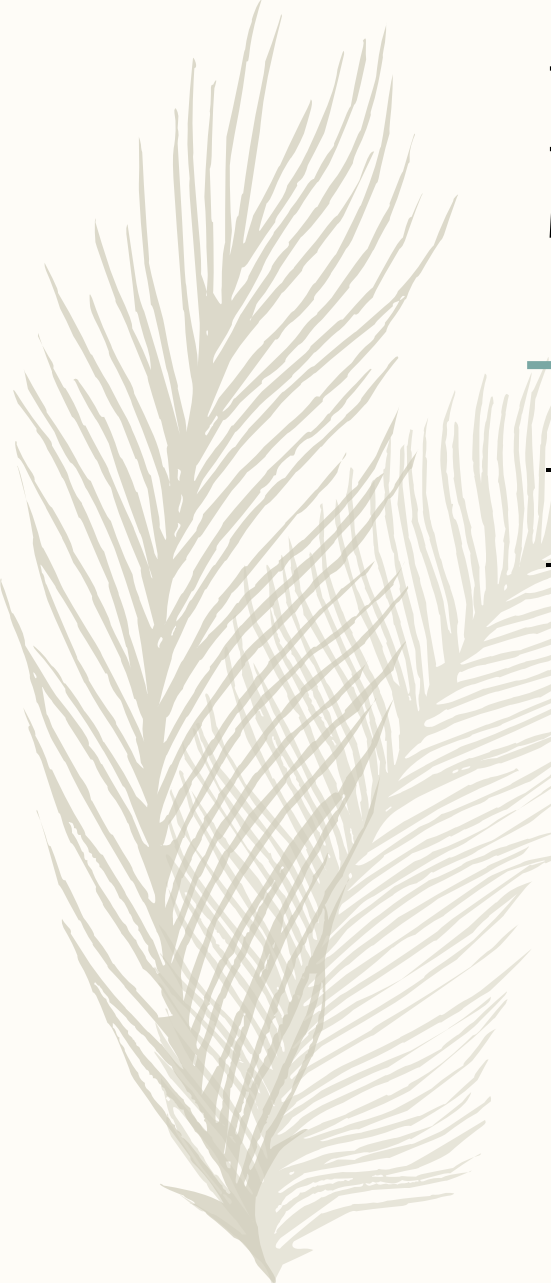




# Lichen Systematics and Temperate Rainforests

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- Technically classified in fungus kingdom
- Lichens are composite creatures
- Mutualistic relationships



# Lichen Systematics and Temperate Rainforests

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- What separates lichens from other members of the fungus kingdom?
- How to tell the difference between lichen:
  - That have mutualistic relationships with algae
  - That have mutualistic relationships with bacteria















# Lichen Systematics and Temperate Rainforests

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- Lichens reproduce in 3 ways

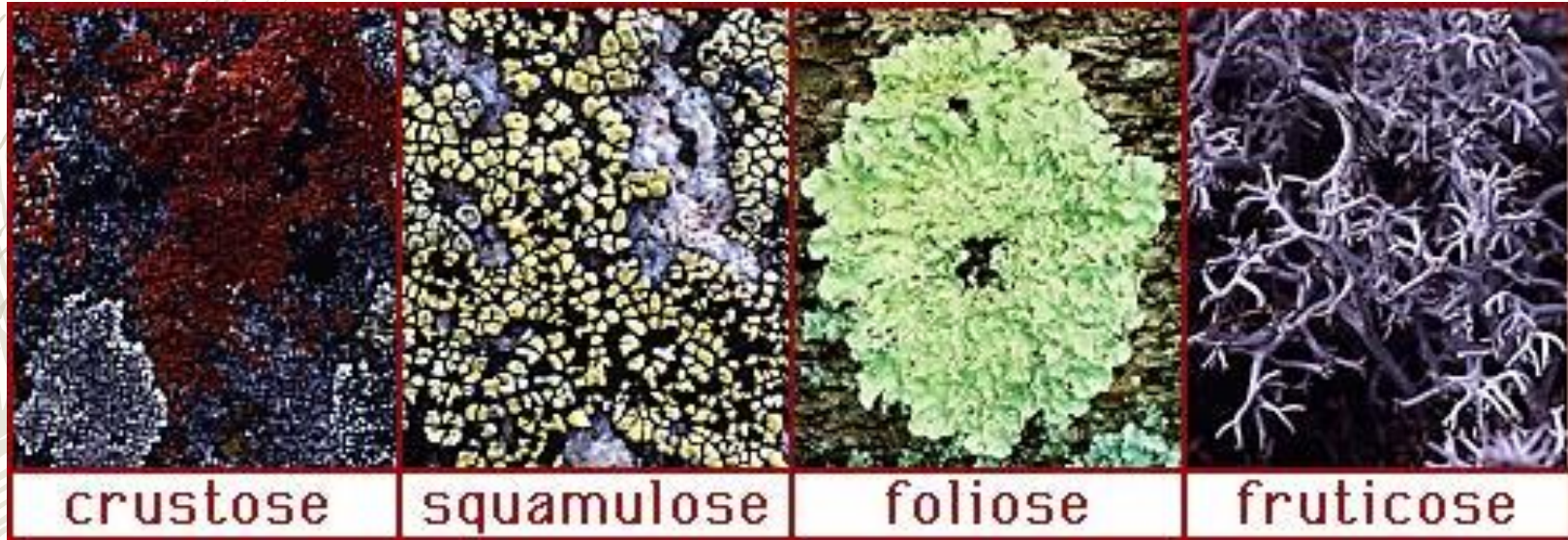


# Lichen Systematics and Temperate Rainforests

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- Many different shapes





# Rag Lichen

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# Rag Lichen

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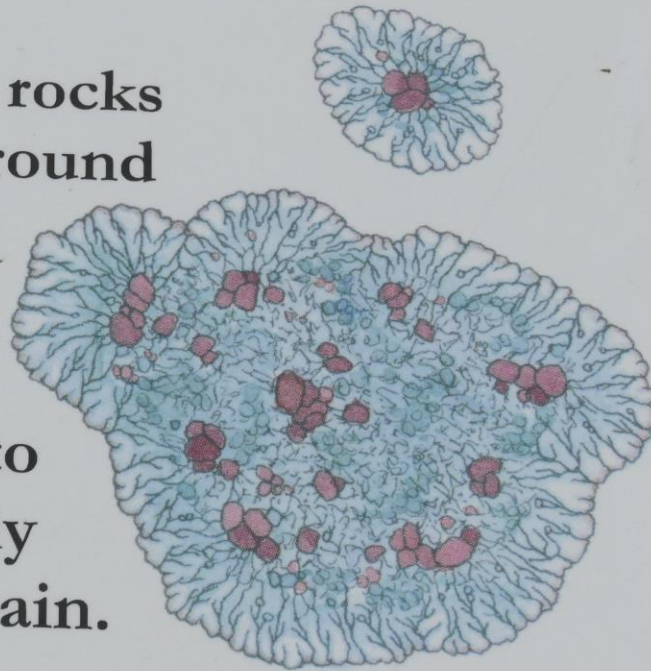




# ***Bull's-Eye Lichen***

***(Placopsis gelida)***

Clinging to the rocks  
and boulders around  
the visitor  
center, this  
lichen is one of  
the first plants to  
colonize recently  
deglaciated terrain.





## *Recolonizing Plants Create Patterns of Change*

As you look out from this vista point notice the change in forest patterns from right to left. Starting from the glacier, across the lake to the lake shore, the rocks and till are rather barren. Continuing your gaze to the left, small shrubs of willow and alder are growing on the gentle moraine.

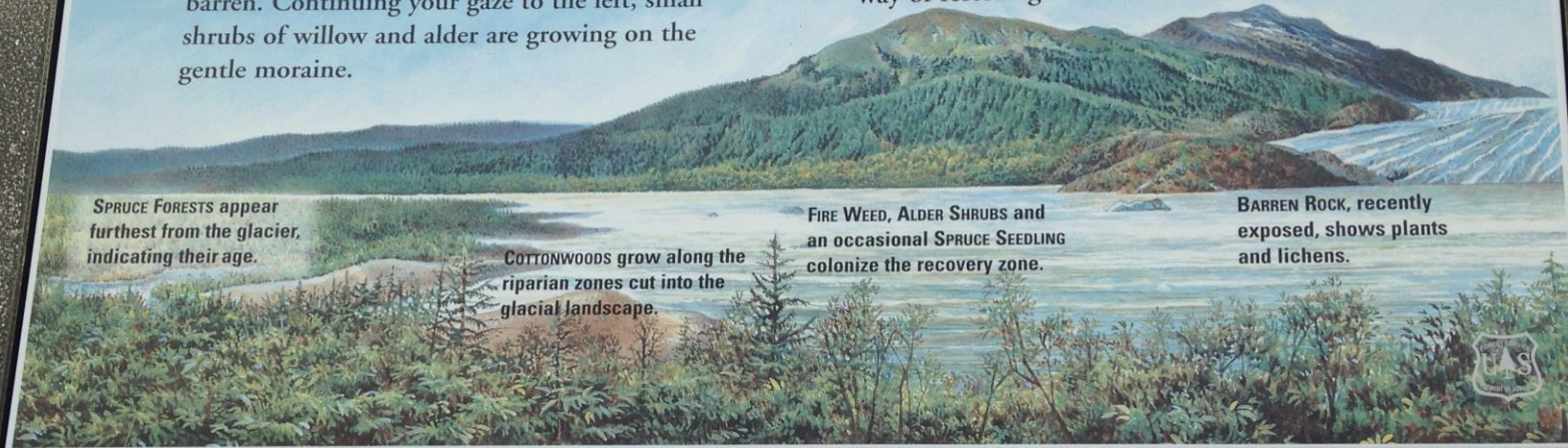
Further to the left, looking down the valley, the cottonwoods give way to taller and more mature spruce on the horizon. What you have discovered is the natural process of plant succession; nature's way of restoring life to a barren landscape.

**SPRUCE FORESTS** appear furthest from the glacier, indicating their age.

**COTTONWOODS** grow along the riparian zones cut into the glacial landscape.

**FIRE WEED, ALDER SHRUBS** and an occasional **SPRUCE SEEDLING** colonize the recovery zone.

**BARREN ROCK**, recently exposed, shows plants and lichens.













# Ethnolichenology

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- *Radical Mycology-A Treatise on Seeing and Working with Fungi*
- Peter McCoy
- Lichenologist Natassja Noell





# Ethnolichenology

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- Lichens as medicine
- Lichens as a dye source
- Lichens as food
- Lichen harvesting ethics and tips







# Ethnobotany of Mosses and Liverworts

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- Snake Liverwort
- Common Green Sphagnum

# Snake Liverwort

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# Cladonia Scales

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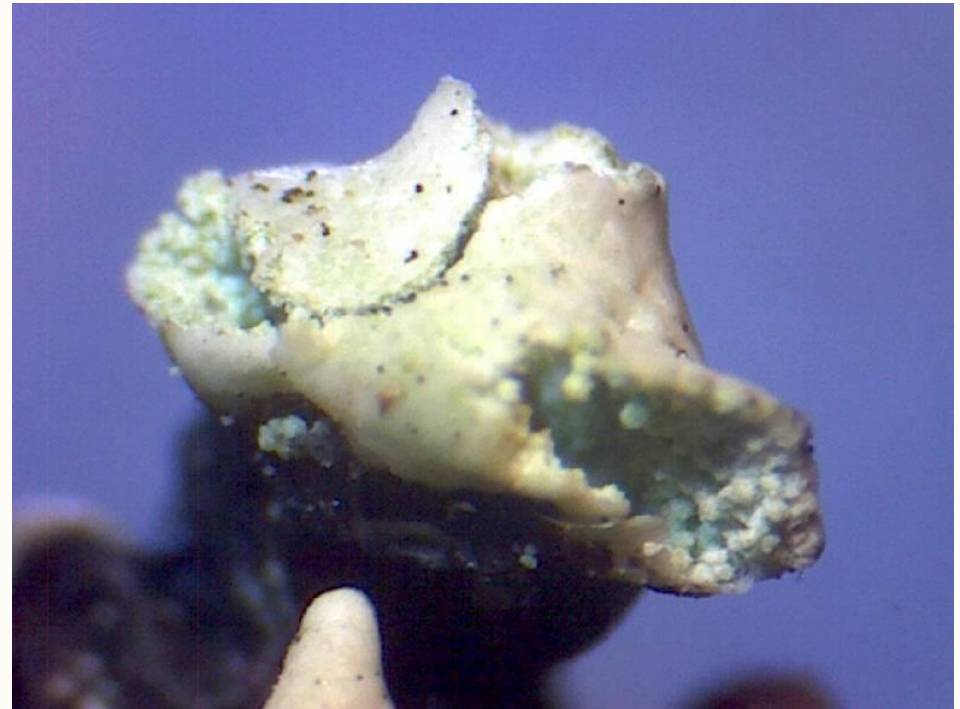


# Hooded Bone Hooded Tube Lichen

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2004, Richard Droker



2015, Craig Althen