

Gardens Under a Hand Lens

By Frederick B. Essig

Mosses and liverworts are all around us. They commonly occur as a cushiony layer of green fuzziness on rocks, logs, and the like, particularly in damp environments. It may come as a surprise that there are thousands of different kinds of these tiny plants known as Bryophytes.

They all look the same at first, but a close look with a magnifying glass reveals fascinating tiny forests of “trees,” “shrubs,” and ground covers with leaves of different shapes, colors, and textures. Mosses have no flowers, but their reproductive structures can be colorful and of varied exquisite shapes. In fact, anyone willing to use that magnifying glass runs the risk of getting hooked on this microscopic world! Fortunately, a moss garden needs little space and maintenance.

Sphagnum moss is harvested from vast acidic peat bogs in Canada and Siberia. Highly resistant to decay, it is very useful in soil mixes and for potting certain orchids. Fresh sphagnum moss

has been used to dress wounds when antiseptics were not available. Because it is decay-resistant, it builds up over time, forming deep peat deposits that have also been used as fuel by indigenous peoples. Hard-coated seeds occasionally fall into peat



Marchantia is a common liverwort that is sometimes found as a weed in pots.

bogs and germinate thousands of years later. Human artifacts and an occasional unlucky stone-age hunter have also been dug out of peat bogs, perfectly preserved.



Ricciocarpus natans floats on water like duck weed. (See www.ricciafluitans.com/riccia.html)

Though not as widespread and conspicuous, we have sphagnum bogs right here in Florida, as well as a great many other native mosses and their cousins, the liverworts. Sphagnum is one of the larger mosses, and its unique structure can be appreciated without a hand lens. Stems are long and bear at their tips compact clusters of side branches, each covered with tiny scale-like leaves. They resemble little trees, forming elfin forests. They have no roots, but water creeps up along the stems through capillary action, much as it does in a paper towel.

Bryophytes live a lifestyle that is halfway between aquatic algae and terrestrial ferns. They require moisture for life, but many can go dormant and completely dry up with no harm, springing back to life again with the next rain. They reproduce in the ancient way of aquatic organisms, by releasing motile sperm cells that must swim through water to find an egg. This is obviously quite a trick in the terrestrial environment, and one reason why mosses and liverworts remain small and close to the ground.

Their closely-packed stems and tiny leaves together form a sponge-like matrix that holds drops or films of water sufficient for the sperm to swim through. Once sperm and egg unite, a small sporangium develops, which then produces tiny spores that can be dispersed by the wind and establish new colonies if they land in a suitable habitat.

The common local moss, *Leucobryum*, is found in semi-dry woodlands, forming cushiony masses on the ground, on semi-exposed tree roots, and on the creeping stems of saw palmetto. One of my favorite mosses is *Octoblepharum*. Grayish in color, it looks very much like a tiny bromeliad, but instead of brightly-colored flowers, it sends up sporangia on long slender stalks.

Dozens of mosses can be found in our state. A walk in the woods or in an older neighborhood will reveal many of them. Some grow only on sandy soil, some on roots or the base of trees, some higher up on trees. Some grow only on rocks, tombstones, concrete, or rotting wood. They can even be found in cracks in sidewalks or parking lots. Finding new bryophytes can become addictive!

Many liverworts are little



photo by Frederick B. Essig

Mosses of the genus Leucobryum are common in the woodlands of Florida.

more than prostrate, forking ribbons, while others have stems and leaf-like appendages and resemble mosses. Larger kinds, like *Marchantia* or *Conocephalum*, can be easily grown in pots or terraria. Leafy liverworts are much smaller, frequently growing as a microscopic understory in a "forest" of *Leucocephalum* mosses. They can be distinguished from true mosses in that their leaves are flattened in one plane.

Many mosses and liverworts can be easily grown in an aquarium. *Ricciocarpus natans* is a particularly attractive floating liverwort that separates into short segments as it grows. Aquatic bryophytes are available from aquarium suppliers.

Mosses and liverworts can be grown in a terrarium by paying careful attention to the natural habitat of each species. Those that grow on wood

or bark will not do well in sand, and vice-versa. Purchase them on-line from specialty growers or gather specimens from your backyard. You can simply expose your terrarium to open air, or dust it with a bit of outdoor soil. Moss spores are everywhere, and sooner or later you'll have some popping up in your terrarium.

You may have to enjoy your mosses without knowing their names, though. Identifying bryophytes is not easy; it involves microscopic examination and technical terminology. Of course, you can make up names of your own, just for fun.

Dr. Essig is an Associate Professor of Biology at USF in Tampa. He wrote about rock gardens in our last issue.

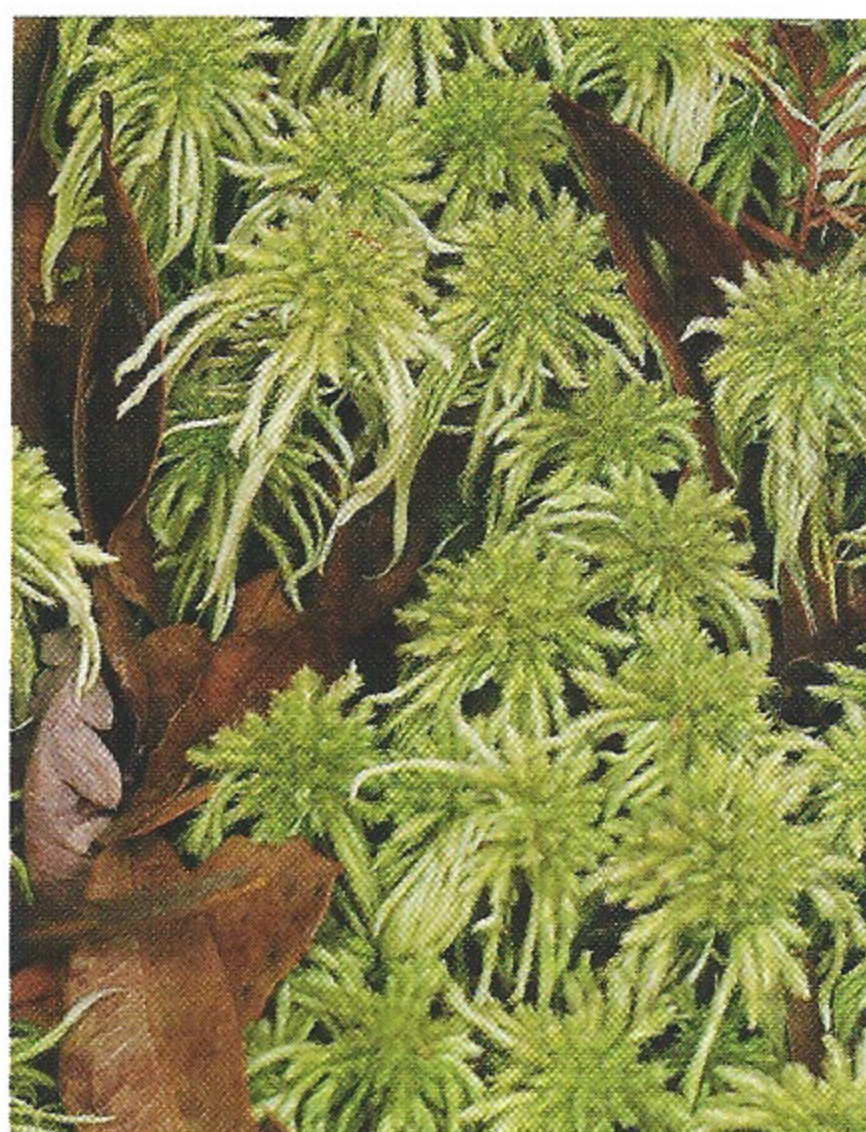


photo by Frederick B. Essig

Florida is home to several native species of Sphagnum moss.

Moss in Name Only

Spanish moss is actually in the pineapple family. Reindeer moss is a lichen. Club mosses are vascular plants, distant cousins of ferns and horsetails. And Irish moss is a red alga that grows in the marine environment.



photo by Frederick B. Essig

Octoblepharum mosses resemble bromeliads. Their "flowers" are actually sporangia.