

THE MOSSES OF THE TIGER GLEN GARDEN

Johnson Museum of Art • Ithaca NY

The Mosses of the Tiger Glen Garden Text and photographs by Stephanie Stuber

Mosses are a different sort of plant; their lives are very different from their larger plant relatives, the vascular plants, or tracheophytes. Mosses are essentially non-vascular, which means they lack any internal vascular tissues to transport water and nutrients, or at least those tissues are poorly developed. This is why mosses are so small! They don't have the rigid internal structures that would allow them to grow taller like vascular plants. Mosses have been around for about 350 million years, that's over 200 million years longer than all other land plants have been around!

After being around so long, it is no surprise that mosses have successfully populated all seven continents in every ecosystem from deserts to the rainforests. The very same species you walk over every day, growing in the cracks of the sidewalks or parks in the cities, are growing in Antarctica too! These tiny, ancient plants are often mistaken for other small green organisms growing in similar habitats. Lichens, for example, are a fungus partnered with an algae or cyanobacteria. Lichens do not have leaves, but are often flattened and crusty, flakey or shrubby in appearance. They come in various colors like grey, orange, yellow, blue or pale green, but rarely are as vivid green as mosses can be. Mosses, on the other hand, look just like tiny plants with miniature leaves arranged in a spiral along their stems and branches.

Occasionally you can find tall wiry stalks growing from the moss shoots (they can also be short and inconspicuous). These are called sporophytes and are nearly equivalent to the flowers of vascular plants. The capsule at the tip of the stalk holds tens to tens of millions of spores waiting to be released at the right time. New moss plants will grow from germinating spores, but mosses also have an amazing ability to grow new plants just from broken off pieces of themselves, so don't forget to stop and pet the moss, it can benefit from it!

At first glance you might only notice only two distinct moss species in this garden, but there are actually twelve! The list below describes each species and the corresponding images taken directly from this garden illustrate the incredible diversity in color, size, texture and form found in mosses. Over time the species composition will change as these species acclimate to the garden and compete with each other. It is also very possible that new species will find their way in and establish themselves here as well.

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Atrichum angustatum (a-trick-um angus-ta-tum)

A common soil-dwelling species with long leaves that are sharply pointed at the ends. It sends up dark red sporophytes with blackish, curved, pointed, cigar-shaped capsules. Their leaf color varies from bright green to dark red depending on the season and light.



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Brachythecium laetum (brak-ee-thee-seum lay-tum)

This common species is green or yellow-green in color. It forms long stems with long branches that give the mat a soft and fluffy texture when growing densely.



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Bryum argenteum (bry-um ar-gen-teeum)

“Silvery bryum” lives on all seven continents and is commonly found in sidewalk cracks. It is distinguished by its silver or light green cast and very compact caterpillar-like stems. Fragments of this species were scattered in bottom of the dry river bed. Over time they will grow and fill in the spaces between the “river stones”.



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Climacium dendroides (cly-mase-eeum den-droid-eez)

The “tree moss” is a large, conspicuous species growing in wet habitats, looking like a miniature tree in its form. It is light green to yellow in color and grows from underground horizontal stems. Its large size and unique shape lent itself to be used in decorating womens’ hats centuries ago.



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Dicranum fulvum (dye-cray-num ful-vum)

This is one of the species growing on the stones here. In fact it grows almost exclusively on stone. It is larger and has much longer leaves than the garden's other rock species, *Homomallum adnatum*. When it is dry the leaves curl and contort giving it a woolly appearance, but when wet, the long leaves will straighten out.



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Homomallum adnatum (homo-malum ad-nay-tum)

This is the other species growing on the stones in this garden. It is a rather small species whose specific epithet, *adnatum*, refers to way it tightly adheres to its substrate; it can be hard to scrape off!



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Hypnum fertile (hip-num ferti-lee)

A small, beautiful yellow-green or gold moss with highly branched stems. The leaves are very curly, shiny and have a braided appearance along the stems. Here it is growing in the soil, but also likes rotten logs and rocks.



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Leucobryum glaucum (loo-ko-bry-um glaw-cum)

A very common woodland species known as “pincushion moss”. *Leucobryum* means “white moss” because it frequently is very pale green in color. It grows in very tight, dense cushions on the forest floor. They are pale because the leaves are relatively thick with clear, empty cells that hold extra water.



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Plagiomnium cuspidatum (plagio-nye-um cuspid-a-tum)

This species makes up the majority of the moss turf in this garden. It comes in two forms: upright with its rounded, large leaves arranged like flower petals and also cascading in long trailing stems with the same broad leaves. Sporophytes will emerge from the upright forms.



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Pleurozium schreberi (ploo-roz-eeum shree-ber-eye)

The “red stem moss” is one of the most common species in the world. It is characterized by its distinctive red stems that show through translucent yellow-green leaves. The stems give this species a very rigid feel.



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Polytrichum commune (po-litrick-um commun-ee)

The “common hair cap moss” is the largest species of moss in this garden, growing in tall turfs. This species is found all over the world growing on soil. It is so common its stiff stems were used in making baskets and brooms. It is a close relative of the *Atrichum* species, but is taller and much more rigid. It will send up tall wiry sporophytes with a large, pale yellow, hairy capsule at the tip.



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Thuidium delicatulum (thoo-id-eeum delica-tulum)

A very attractive, large species known as the “fern moss” for obvious reasons. It resembles miniature fern fronds with its very finely cut branches and extremely tiny leaves. It is dull and dirty green in color and forms expansive, intricate, loose mats near water.

