Ancient Plants in our Forests

In the world of plants there are a bewildering number of types and forms. There are vascular and non-vascular plants, plants that reproduce via spores and those that reproduce via seeds, and leaves of all shapes. There are so many different architectures that one might wonder if there really is only one plant kingdom in the Linnaeus classification system. This variety has led to a debate among scientists as to which plants were the first to colonize land. This might seem academic, but the question is very much involved with our own appearance on Earth, since plants helped create the oxygen that we air breathing animals rely on. Before our species could inhabit the planet, there had to be a significant number of photosynthesizing plants.

Although fossil evidence is spotty, it is generally agreed that vascular plants, plants with structures that provide for the transport of water, minerals and carbohydrates, began to colonize land about 400 million years ago. Among the first were a group of small, leafless plants that reproduced via spores rather than seeds. These plants adapted to land and grew in size and importance until becoming the huge, tree-size plants that dominated forests throughout the planet during the Carboniferous Period, about 300 million years go. The vast coal seams we exploit today are the proof of their once prolific existence. As climate conditions changed these ancient plants declined. Although many became extinct, there is an interesting group of ancient plants with living relatives today. They are called fern allies.

Examples of fern allies are quillworts, scouring rushes (horsetails) and clubmosses. Historically they were classified as members of the fern division within the plant kingdom, although they look very different from our concept of what a fern should look like. Like ferns, they are photosynthesizing vascular plants, they do not produce flowers, and they reproduce via spores rather than seeds. Unlike ferns they have unique leaf structures and the spore cases are distributed differently.

The leaves of fern allies are tiny and they contain only a single vein. The fronds of ferns, and in fact the leaves of most plants today, contain complex venation consisting of more than one vein. Furthermore, the spore cases of ferns are distributed in regular patterns on the undersides of fronds and are easy to see. Not so with the spores of fern allies, they are pretty much hidden and are hard for the casual woods walker to find.

Of the fern allies, clubmosses are the most commonly seen plants in our woods. Clubmoss leaves are tiny, shiny green, narrow, pointed needles. The needles remain green all year. They are unique in that they resemble the leaves (needles) of trees such as pines and hemlocks. The plants can easily be mistaken for first growth evergreen trees that will someday