Y
ears ago, I was on a trail with WTA’s former director of trail maintenance, Greg Ball. Suddenly, I stopped and exclaimed to Greg, “Look! All the trees are exactly the same size!” Greg examined them a moment, and explained, “there must have been a fire here at one time.” Sure enough, we stepped off the trail, and Greg found old burned snags under the thick blanket of moss and forest litter—and explained a bit about forest succession to me. Greg answered my first forest question all those years ago.

I recently contacted Phyllis Reed, a biologist in the Darrington Ranger District of the Mount Baker-Snoqualmie National Forest, and asked her to wow me with some old-growth tidbits to share with readers. Reed indicated that old-growth stands are frequently described as stands more than 200 years old, with large diameter trees, snags, downed wood, and multi-layer canopies. But she doesn’t isolate old growth forests from other forest successions in the “wow” factor. “Whatever age class a forest is,” she told me, “it is cycling toward another development stage, and each stage is an important part of the landscape.” She also cautioned that there are as many definitions of old growth as there are people defining old growth. By some people’s definitions, many of the forests logged at the turn of the century are now approaching old-growth status.

Reed discussed the forest through which the Old Sauk Trail winds. On this trail, you see portions of a 110-year-old forest that developed after fire. There are also alders less than 30 years old next to the Sauk River, evidence of the shifting river initiating new growth.

When you hike among trees, you aren’t just walking among trees—you’re walking inside a forest, each part influenced by the life or death of another part. Each plant, bug, creature, stir of breeze, strike of sunshine, drop of rain, and flutter of lichen all have roles in helping a forest attain its next developmental status.

Floods, as well as fires, influence stand development. The recent floods of 2003 and 2006 stripped portions of forest from stream banks, leaving them bare. Huge trees were uprooted and carried downstream, and with them the top layer of the forest floor. Any disturbed area is a canvas for the next up-and-coming forest. The exposed soil awaits a falling leaf, a spore, or a seed dropped from the feces of a bird to

Above left: Centuries-old western red cedar and vine maple are two of the trees you’ll encounter in Washington’s forest ecosystems. Illustration by Ramona P. Hammerly (from the book Northwest Trees, reviewed on page 9).
take root.

The first vegetation to colonize a spot of ground is known as the pioneer community. This is the beginning of forest succession. Typical of pioneer communities are shrubs, small woody plants, red alder, and at times Douglas fir.

Walk the Suiattle River Road, the Old Sauk Trail, or along the river trails at Federation Forest State Park to see examples of a pioneer community. Recent floods have wiped the riparian slate clean, and alder saplings abound here. More distant flood events are evidenced by the full-grownalders that line the shores; and in Federation Forest, black cottonwood, another opportunistic species of the pioneer community, thrive. Islands within the Suiattle River are held in place by forests of alder.

Along the shores of a river is an excellent place to see pioneer communities of red alder. Alders are an example of mutualism—a beneficial relationship between organisms. Bacteria that live on the roots of alders release nitrogen back into the soil in which the alders live. This nitrogen then supports other plant life.

The subsequent stages of succession are seral communities, working toward the climax community—old growth—that stage in which a dominant species stabilizes and reproduces itself continually, barring disturbance. Because of the ever-changing conditions in a forest, this term is often debated. Rockport State Park has an excellent example of an old-growth forest with continual changes. Large, open canopy areas left by trees that have been recruited to the forest floor allow in pools of sunshine, making these areas conducive to the pioneering plants there.

Rain is a mechanism to promote forest habitat. Rain that sifts through the canopy of a forest and picks up nutrients is called throughfall and delivers nutrients to the forest floor that it otherwise would not receive. Nutrients are also disseminated into forests by epiphytic lichens such as lungwort, which releases nitrogen into the forest atmosphere. The symbiotic processes of mychorrizal fungi provide nutrients to plants that have no other way to obtain nutrients. Fungi also serve to halt the exodus of nutrients from downed logs, reserving those nutrients for plants, insects and animals that need them.

Look to the forest floor for more wonders. Saprophytes—plants that live off dead plants—such as the ghostly, flesh-colored pinesap, pinky-red pinedrops and the aptly-named candy-stick—have a spooky beauty. An excellent trail to see pinedrop is on the Chatter Creek Trail in the Wenatchee National Forest. The largest con-

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The concentration of candystick I have seen is on the Sulphur Mountain Trail off the Suiattle River Road (to be repaired in 2009). Gently white Indian-pipe, which do not produce chlorophyll and which survive on the kindness of fungi, can be seen in abundance on the first mile of the Suiattle River Trail.

Reed also explained that the composition of a forest stand may depend on the site conditions at the time the stand was established, as well as the cycle of cone crops, and moisture. For example, Douglas-fir often have abundant cone crops only every 6-7 years. If ground disturbance or a stand-replacing event occurs during a period when firs are not readily producing, fir may not be the dominate species in regenerating a stand. Reed told me of remnant Doug-firs near Segelson Pass (Darrington) that are within the Pacific Silver Fir zone. These Doug-firs succeeded in establishing themselves in conditions that favored a more open-grown, sun-loving species within a zone that is characterized as having cool, wet soils and climate, with dominant tree species of western hemlock or Pacific silver fir.

As you walk through the forest, observe nurse logs bristling with hemlock seedlings. The forest floor is a crowded place for the seedlings to compete, so they flourish on decayed logs that are not covered as thickly as the surrounding forest floor. Hemlocks are shade-tolerant trees and though they thrive in the sun, can bide their time in the shade of Douglas-fir, awaiting their opportunity for succession. See both hemlock and Douglas-fir competing for survival on the Shadow of the Sentinels interpretive trail in the Mount Baker-Snoqualmie National Forest.

Live trees are beautiful, but after they die they are still useful to the life of the forest. Downed logs account for about 25 percent of the forest's wood, and range from 130 to 276 tons per acre in forests 100 years and older. Snags and downed trees provide shelter for animals and baffle stream flow so that amphibians and salmonids can thrive. A log lying along a contour checks erosion of the slope; soil collects behind it, providing places for plants to grow. Rotting logs retain moisture in dry summer months, which allows decay to continue. The denseness of the forest keeps the moist air within, allowing for the moisture-loving plants to thrive. To learn more about the role of deadfall in a forest, please see the Forest Service publication The Seen and Unseen World of the Fallen Tree at www.treesearch.fs.fed.us/pubs/5625.

Once you learn to identify a few trees and see how various forest components interact, you'll be hooked.

**Western red cedar, left, and Sitka spruce, right. When you're hiking a forest, you aren't just among trees, but in a complete ecosystem. Mutualism is the process by which all parts of the forest, from the tiniest fungi to the tallest old-growth tree, benefit one another.**

Photo by Kim Brown