

## Tree of the Month, May 2014: Red alder (*Alnus rubra*)

Red alder (*Alnus rubra*) thrives on destruction. Following landslides, forest fires, and clearcutting, you'll see little alder seedlings shooting up from the exposed ground – their growth triggered by the sudden abundance of sunlight. Red alder is a pioneer species, able to quickly colonize disturbed areas. It can also survive periods of flooding by growing adventitious roots, specially adapted for low-oxygen waterlogged soil.

If you dig up a red alder seedling, you will see little bumps on the roots, called nodules. The nodules are home to nitrogen fixing bacteria of the genus *Frankia*, and they have a symbiotic relationship with the tree. In exchange for shelter and sugar, the bacteria convert atmospheric nitrogen ( $N_2$ ) into ammonium ( $NH_4$ ), which the alder can metabolize. When the tree loses its leaves in the autumn, the nitrogen is added to the soil where other plants can access it.

The logging industry has treated *Alnus rubra* as a weed in managed forests because it competes with planted seedlings of more desirable species like Douglas-fir. Foresters are now recognizing the important role that red alder has in the forest ecosystem, and are starting to plant them amongst their conifers to help improve the soil. They can also harvest the mature alders for their wood, which has become quite valuable.

*Alnus rubra* only lives for 100 years, at the most. They grow very quickly as juveniles, gaining 1 to 3 meters in height each year. Their growth slows down as they reach maturity at around 50 years, with a maximum height of about 40 meters.

The outer bark is gray-brown, but is often so encrusted with lichens that it turns white. Lichens are sensitive to air pollution, so the more lichens on the bark, the fresher the air. The inner bark is rich orange-red, hence the name "red alder". This inner bark can be used to make dye, and native peoples used it to dye their fishing nets dark orange to make them less visible underwater.

Like many members of the beech family (betulaceae), red alder has serrated green leaves and catkins. Female (pistillate) catkins come out in late winter to early spring, and male (staminate) catkins come out in late winter.

Red alder grows along the coast from southeastern Alaska to southern California. It likes temperate climate with lots of rain. In drier areas at the southern end of its range, it is often found along lakes and streams where the roots have a constant supply of water.

At VanDusen, we have a large *Alnus rubra* growing along the edge of Livingstone Lake. It was a volunteer seedling that was allowed to mature, and officially became a part of our collection in 1991.