Madrona blight

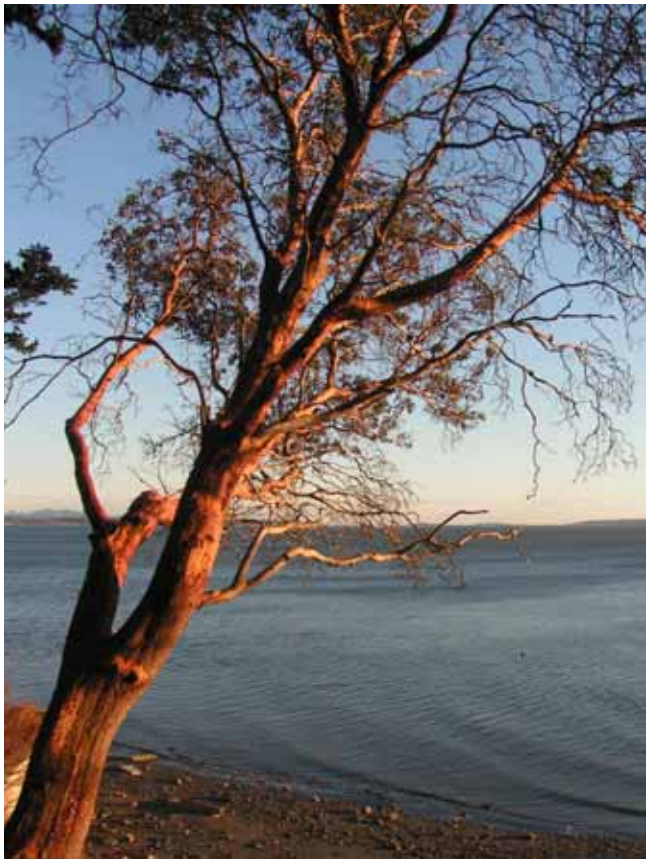
By Gloria Williams
March 7, 2008

A Pacific Northwest favorite, madrona trees face climate realities that could threaten their existence.

Many believe the most beautiful of all the native evergreen trees in the Pacific Northwest is the *Arbutus menziesii*, more commonly called madrona. It has broad, shiny leaves and smooth, red bark, quite different from all the other needled evergreens native to our landscape.

Madronas belong to the family *Ericaceae*. Other members of that family include the strawberry tree, sourwood trees, manzanita and rhododendrons. Madronas can grow to a height of 80 feet with a trunk diameter of 1½ to 2 feet. They range from Southwest British Columbia south through Western Oregon and as far as coastal Southern California. They are also found in the Sierra Nevada mountain range and on Santa Cruz Island.

In recent years, this attractive tree has begun to show signs of stress, such as dying branches, cankers on stems and branches, root problems and foliage diseases. They are plagued by a myriad of pathogens. Scientist believe there may be as many as 21 fungal species responsible for Madrona problems. Fungi that attack the leaves are generally not a serious threat, as long as total defoliation does not occur repeatedly.



One of our more beautiful native evergreen trees, *Arbutus menziesii*, or madrona, has in recent years begun to show signs of stress, such as dying branches, cankers on stems and branches, root problems and foliage diseases. Photo by Pascale Michel

Fungi that cause cankers and branch die back are more likely to kill a tree. Two of the most prevelant are arbutus canker, *Nattrassia mangiferae* and madrona canker, *Fusicoccum aesculi*. Nattrassia cankers are found on the main trunk as discolored patches on the bark. As the bark peels away, it reveals masses of fungal spores and vertical cracks in the wood. A vigorous tree can counteract the spread of this canker by surrounding it with a callous ridge. Often this ridge is raised and knobby. This canker occurs most commonly on trees that are exposed to strong sunlight or are injured by pruning or other mechanical causes.

Madrone canker begins in the tip of branches and moves downward. The red bark turns black and looks burned as the branch dies. Healthy trees are less likely to fall victim to this pathogen. It attacks trees that are stressed by enviromental causes, such as lack of water. Madronas do not require a lot of moisture, but become weakened under prolonged drought conditions. Photosynthesis decreases, weakening the tree and creating an opportunity for the pathogen to enter.

The most common root disease in mature madrona trees is a rot caused by *Phytophora cactorum*. Cankers appear at the tree base or sometimes high up on the trunk. Trunk cankers can look water-soaked. The infected bark is discolored brown, which contrasts with the light cream color of the inner bark. The sapwood also may be discolored. Symptoms in the crown include loss of upper foliage and unusually small leaves with curled margins. Trees growing in poorly drained soil are more susceptible to this disease. Madrona seedlings can be subject to Phytophora root rot and damping off.

Madrona trees also are susceptible to several different types of foliar diseases, including leaf spot, rust and speckled tar spot.
Photo by Kathleen Olson

Madronas thrive in well drained, sandy soils. They seem to prefer areas where humidity is high, along coastal bluffs where fog precipitation is the norm or in sheltered ravines where wind desiccation is low. They will suffer in waterlogged soils and in areas where they are not protected from extreme climate conditions. In their natural surroundings they grow in a community of many different plant species, which may provide mutual benefits. Not enough is understood about the relationship of the madrona to species such as Douglas fir, Western hemlock, red alder, big leaf maple, as well as a variety of native shrubs. However, it appears that if all the surrounding trees are removed and the madrona is left to stand alone, it quickly becomes stressed

Climate and expanding population and increased development of woodlands are putting more and more pressure on these magnificent trees. Madronas are also very intolerant of soil disturbances, even changes in soil grade can have serious effects. They are also very sensitive to pesticides and fertilizers.

It is sad to think that these trees may be destined to disappear from the wild. There are efforts being made to save madronas, especially in the Seattle area, by replanting seedlings and sponsoring research into madrona culture. It is a challenging task, but well worth the effort to keep this beautiful tree in our landscape.

Leaf spot on madrona.
Photo by Becky Williams