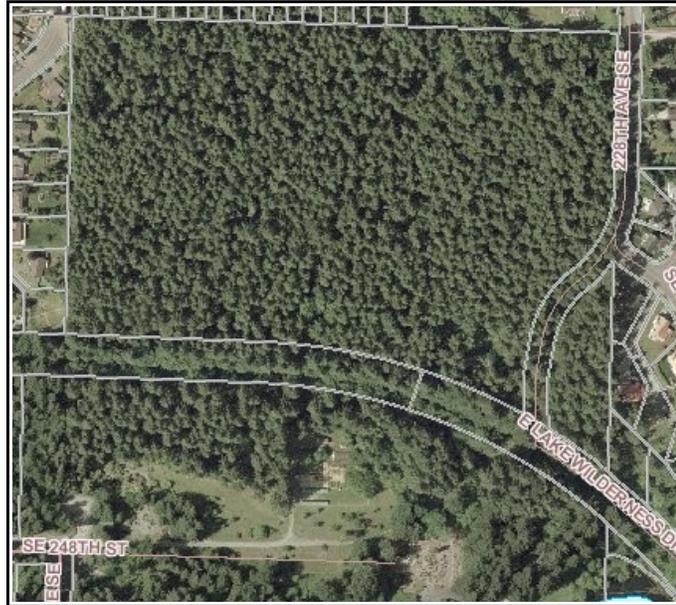


The Arboretum Forest Stewardship Plan

John Neorr

This article provides an overview of the Arboretum Foundation's Forest Stewardship Plan as well as a more detailed discussion of one of its key proposals – an ecological thinning of the forest. Many people think of the Arboretum as only our cultivated gardens and meadow area readily accessible from the Arboretum's entrance off of SE 248th or from the entrance leading down from Lake Wilderness Lodge. As it turns out, this area represents only a small part of the Arboretum. As noted on our website, the Arboretum consists of cultivated gardens *and an "urban forest."* This "urban forest," comprising 26 acres of the Arboretum's 40 acre total, is found on the North side of the King County trail as it approaches the North side of Lake Wilderness.



Arboretum forest occupies 26 acres north of trail.

In 2005, I wrote a forest stewardship plan for the Arboretum forest as a result of attending a WSU extension service Forest Stewardship course. The plan, which benefited from on-site visits to the forest by a Washington State Native Plant Steward, a DNR forest pathologist, a DNR wildlife biologist, and a King County Forester was approved by the King County Forester, Kristi McClelland in early 2006 and was also approved at that time by the Arboretum Foundation Board.

What is Forest Stewardship?

The Forest Stewardship Plan is a plan about "caring for and managing forest resources, functions, and utilization to insure forest health, usefulness, and enjoyment now and in the future." As noted in the description, the first aspect of forest stewardship is *caring*. Not only is there the important emotional element of caring but the actual caring for or nurturing, as in parenthood. There is also the element of what we might call "structured caring." That is, we need to take care of things in an orderly manner – thus the word or idea of *managing*. So what do we care for and manage? Forest management is not just about taking care of trees. The forest is an ecological system having *resources* (trees, plants, critters, water, fungi, etc) that interact via a set of processes or *functions*

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(photosynthesis, absorption, decay, etc). Not only do we need to care for and manage these resources and natural functions, we need to take care of and manage a special

function called *utilization*. This refers to use of the forest by the most complex of critters – us.

The Plan

The contents of the Foundation’s Forest Stewardship Plan provide a broad overview of the Arboretum forest. The document recounts the history of the Arboretum and contains several maps that show important aspects of the forest such as its location relative to the rest of the Arboretum, soil type, elevation, and neighboring properties. It describes the Foundation’s mission and then specifically presents the goals of the Forest Stewardship Plan. These goals include:

1. Measure, monitor, and enhance forest health.
2. Preserve and protect forest wildlife.
3. Increase community awareness of, and involvement in, forest stewardship.
4. Work closely with the City of Maple Valley to insure efficient and effective decision making beneficial to the community at large.

Based on these goals the plan proposes activities “to improve the health of the Arboretum’s forest, make it more attractive to visitors, and provide more opportunities for exploring and learning.” Activities proposed in the stewardship plan include invasive removal, improvements and additions to the trail system, and the creation of a wildlife corridor to facilitate wildlife movement between Lake Wilderness and the forest. Invasive removal began in 2006 (and still continues) and the wildlife corridor was established in October of 2007. Several improvements to forest trails have also occurred.

A forest inventory

An inventory of the forest was also conducted as part of the stewardship plan. This inventory involved counting and sizing trees in the forest as well as determining the varieties of plants in the understory. We found that the forest consists primarily of even-aged (about 65 years) Douglas-fir. Dominant trees are about 17" in diameter and 100' tall although several larger specimens, 35" in diameter and 120' tall, are present. We have been unable to determine the age of these strikingly large specimens. They may be older than their compatriots in the forest, or they simply may have received more sun and water in the past 65 years. Although most of the conifers in the forest are Douglas fir, some Western red cedar and Western hemlock are also present along with at least 3 Pacific Yews.



Even-aged Douglas-fir forest.

The understory of the forest has a wide *variety* of native plants including Salal, Short Oregon grape, Sword Fern, Bracken Fern, Cascara, Vine Maple, Ocean Spray, Baldhip Rose, Red Huckleberry, Creeping Blackberry, Twinflower, and Indian Plum. Although there is a large variety of plants in the understory, the *bulk* of the understory is dominated by salal which in places is 6' tall. This is fairly typical of a western Washington Douglas-

fir forest where over-crowding of the forest canopy limits the amount of light reaching the forest floor.

Like many other urban forests, the Arboretum forest is under stress. In addition to the impact of invasive plants, the over-crowding of trees in the forest is clearly impacting the health of individual trees. Also several large areas of the forest are infected with laminated root rot fungus (*Phellinus weirii*) which kills Douglas-fir. The density of the forest is over 200 trees per acre (TPA), whereas, a healthy forest of its age should be around 100 TPA. This over-stocked condition limits an individual tree's ability to grow healthy branches and increases the rate at which root rot can spread.

A proposal

To help improve the health of the forest, the plan proposes an “ecological thinning” of the forest. Ecological thinning would remove weak and diseased trees and provide additional room for healthy trees to grow, and provide space for planting disease-resistant species such as Western red cedar and Western hemlock in areas currently infected with root rot. Ecological thinning tries to mimic nature by creating a “patchy” landscape in the forest wherein some areas (1/4” -1 acre) have very few trees and other areas have more. The size and density of each patch is determined on a patch by patch basis based on factors such as prevailing winds, current tree density, tree sizes, disease presence, and moisture. Creating a patchy environment helps move the forest towards an environment like that found in old-growth forests.

Ecological thinning is a type of logging operation also called “variable density thinning” and is becoming common in forestry where the primary purpose of the operation is not economic gain, but maintenance and enhancement of forest health. It has been successfully employed in the Cedar River watershed, Agren Park on Whidbey Island, and at Northwest Trek in Eatonville. The Arboretum Foundation's forestry web page (<http://lakewildernessarboretum.com/arboretum/forest.asp>) provides several references to these types of operations and their benefits. In the publication, *Restoring Complexity: Second-Growth Forests and Habitat Diversity*, author Valerie Rapp states “Studies show that when variable-density thinning is used, thinned stands usually have better developed understories, higher shrub densities, a greater richness of understory plant species, and more plant cover than unthinned stands.”

Careful planning required

Any logging operation in an urban environment is a sensitive issue. Accordingly, an ecological thinning of the Arboretum forest would require a significant amount of careful planning, coordination, and communication among the Foundation, the City of Maple Valley, and the community at large. The operation would only go forward at the appropriate time when it was determined that it was in the best interest of the City and its citizens. This article is only the first step in a process that hopefully will continue forward, leading to a healthier Arboretum forest.