Chapter 10. Rare and Exotic Plants and Tree Diseases

Non-forest plants and pathogens affect the Forest landscape in various ways. Tree diseases, through growth loss or mortality, may impact forest structure, susceptibility to fire and windthrow, species composition, and the direction of vegetative succession. Rare plants are usually found on microsites, such as serpentine soils and debris paths, or in other uncommon habitats, such as wet meadows. These plants are affected by watershed- and local-scale processes (e.g., landslides and sediment deposition), and also may indicate the past geomorphological history of a specific area. Similarly, introduced species (invasive species or noxious weeds) also are indicative of land use and history.

RARE PLANTS

Norma Kline, ODF Forester, has compiled information on the occurrence of rare plants on the Forest for use in the new HCP. The information here is a paraphrase of her work. In addition to this summary, individual timber sales are surveyed prior to sale for the occurrence of rare plants.

The ODF has four criteria for determining if a plant is considered "rare" for management purposes: (1) listed as threatened or endangered by federal statute; (2) listed as threatened or endangered by state statute; (3) identified as a candidate for the state threatened and endangered list by the Oregon Department of Agriculture; and (4) identified under policy by ODF as a special concern plant. To determine if any plants meeting these criteria occurred on the Forest, the Oregon Natural Heritage Program database (ONHP 2001) was queried for plant species in Coos and Douglas Counties that fit one or more of the above criteria. The results were then compared to the habitat characteristics of the plants to identify their possible occurrence on the Forest. Of the 25 species that matched one of the four criteria, only the 3 species discussed below live in habitats found on the Forest. Currently, there are no records of these three plant species ever occurring on the Forest.

<u>Bensonia (*Bensoniella oregona*), state-listed candidate species</u>. This plant occurs in wet meadows and moist streamside sites in pre-cretaceous meta-sedimentary rock at elevations above 2,500 feet. Possibly found on the Forest, but no known sites exist. Signal Tree, above Camas Valley, is the furthest northern and lowest elevation location.

<u>Tall bugbane (*Cimicifuga elata*), state-listed candidate species</u>. This plant occurs in Douglas-fir forests with maple and sword ferns. Possibly present in the Forest, but no confirmed site locations.

<u>Howell's montia (*Montia howellii*), state-listed candidate species</u>. This plant occurs in moist lowland areas, vernally wet sites, often on compacted soils less than 1,300 feet in elevation. Could be present in the Forest but no locations have been confirmed.

INTRODUCED PLANT SPECIES

Introduced plant species (many of which are known as noxious weeds) have significant effects on vegetative diversity and watershed management objectives. These plants are generally invasive (rapidly colonize areas), are pernicious (difficult to remove), and typically form monocultures. Information on introduced plant species was obtained from Roger Johnson, Reforestation Unit Leader for the Elliott State Forest. At present, the ODF does not have a "weed" policy at either the state or the district level. Personnel of the Reforestation Unit carry out weed monitoring and eradication with the assistance of inmate crews from the Shutter Creek Correctional Institution. Weed surveys have been conducted during flowering seasons for two species (gorse and Scotch broom), with sites located by Global Positioning System and entered into an ArcView database. Map 10.1, located in the map section, shows the distribution of introduced plants on the Forest. While the database is somewhat dated (last updated in October 2001), it does allow for an assessment of patterns of introduced plant species of concern. The three introduced species of most concern on the Forest are Himalaya blackberry, Scotch broom, and gorse.

Himalaya blackberry (*Rubus armeniacus*) is an introduced species of blackberry (genus *Rubus*) with a weak stem. It may grow erect, but more frequently clambers and spreads over other plants, crushing and smothering them (Taylor 1990). It spreads laterally largely through tillering and is transmitted at greater distances from the source plant by birds, bears, and other animals eating the berries and excreting the seeds. The extent and distribution of this species has not been surveyed or mapped by Forest staff. Himalaya blackberry generally occurs in areas that were previously homesteaded and subsequently incorporated into the Forest. From these source areas, it has spread up ridgelines. It has become a regeneration problem in some plantation areas by smothering newly planted trees. There is limited control of Himalaya blackberry on the Forest, with most efforts occurring in harvest units where it is controlled until trees are free to grow.

Scotch broom (*Cytisus scoparius*) is a member of the pea (legume) family. Scotch broom was introduced into California from Europe as an ornamental in the nineteenth century, subsequently escaped cultivation, and moved northward (Taylor 1990). It is an extremely aggressive weed that invades non-wooded areas (Taylor 1990). While most Scotch broom surveys have been conducted by road during the flowering season (see Map 10.1), its import and spread throughout the Forest is considered to have resulted from roads in two ways. First, vehicular traffic spreads seeds that are attached to mud or other parts of the vehicle. Secondly, and perhaps more perniciously, Scotch broom seeds may be incorporated into gravel when plants are adjacent to quarries. This gravel is then carried into and distributed throughout the Forest during road construction and maintenance. The seeds of these roadside plants spread by wind to adjacent areas. Scotch broom is considered the major weed species of concern by Forest staff, and is controlled chemically as time and funding are available. The most common control measure is spraying roadside plants with the herbicide Garlon. The most effective, but labor-intensive, control method is painting stems using a combination of Garlon with tree oil as a binder.

Another member of the broom family, gorse (*Ulex europaeus*) is a European transplant with vicious spines that otherwise resembles Scotch broom. At present, it is known in only three locations on the Forest (see Map 10.1). When found, it is aggressively controlled by physical and chemical means.

TREE DISEASES

Staff from the ODF provided information on the occurrence of tree diseases on the Elliott State Forest. This discussion focuses on the most common tree diseases observed on the Forest. In comparison to other state forestlands in the Coast Range, the Forest generally has low levels of tree diseases (personal communication, Alan Kanaskie, ODF pathologist).

Swiss needle cast (*Phaeocrytopus gaeumannii*). There is severe damage from Swiss needle cast in scattered plantations and natural stands along the Oregon and Washington coasts. The disease mostly affects Douglas-fir plantations, with most growth impacts occurring to younger stands. Over the last decade, there has been an increase in both the total land area impacted and the severity of the disease in Oregon (Filip 2002). Most stands with severe needle discoloration occur within about 18 miles of the Oregon Coast in the fog belt or spruce/hemlock zone. The Tillamook State Forest in the northern Coast Range has extensive areas impacted by the disease.

On the Forest, Swiss needle cast mostly affects young plantations (with ages less than 30 years) on the west side of the Forest and some scattered stands in other areas. Recent inventories indicate that extent of the disease is increasing on the Forest, but it does not appear to have impacted stands with the same severity or extent as locations in the northern Coast Range (personal communication, Alan Kanaskie, ODF). More needle loss occurs on stands on southern or western slopes or ridge tops, which are exposed to winds or have more moisture stress. Increased moisture levels, sheltering from winds, and the diverse mix of species in riparian areas appears to contribute to less extensive disease damage in streamside forests (personal communication, Alan Kanaskie, ODF).

Silvicultural methods are used to manage the stands impacted by Swiss needle cast on the Forest. In areas where the disease is causing needle discoloration, the emphasis is on shifting the stand composition away from Douglas-fir to other tree species (personal communication, Alan Kanaskie, ODF). Plantations in susceptible areas are now planted with a mix of tree species.

Swiss needle cast also can affect stand management activities such as thinning. Pre-commercial thinning allows an opportunity to shift stand species composition away from Douglas-fir toward increased diversity and resilience to Swiss needle cast and other diseases (personal communication, Alan Kanaskie, ODF). Commercial thinning severely damaged stands does not make the disease worse, but response to thinning in these stands may be poor because of the disease. The ODF participates in the Swiss Needle Cast Cooperative and funds specific projects to understand the interaction between Swiss needle cast and thinning.

Laminated root rot (*Phellinus weirii*). Laminated root rot is widespread in the Coast Range. The disease can occur in almost all commercially important conifers in coastal stands (Thies and Goheen 2002). Laminated rot root occurs at very low levels on the Forest and is very rare in riparian areas where resistant species such as red cedar are more common (personal communication, Alan Kanaskie, ODF).

Black stain root disease (*Leptographium wageneri)*. In coastal forests, Douglas-fir is the most common host of black stain root disease. The disease appears in 10- to 25-year-old Douglas-fir plantations or in younger, dense natural stands (Thies and Goheen 2002). The disease occurs at low levels on the Forest, mostly confined to young trees experiencing stressful growing conditions along roads (personal communication, Alan Kanaskie, ODF).

Stem decays (various heart-rot fungi, including *Phellinus pini*). Although stem decay, particularly heart rots, can cause considerable loss of merchantable timber volume, it also provides important substrate for cavity nesting animals. Occurrence of heart rots varies considerably across the forest, but few data exist to describe its frequency and distribution. Decay tends to increase with tree age and the amount of wounding (personal communication, Alan Kanaskie, ODF). Decay can be artificially introduced to living trees to created suitable substrate for cavity nesters.

RECOMMENDED ACTIONS AND MONITORING

Recommended actions and monitoring:

- Rare plants: Continue current practices.
- Introduced plant species: Continue current practices and develop a strategy for weed control.
- Tree diseases: Continue current practices and continue to support ongoing research.