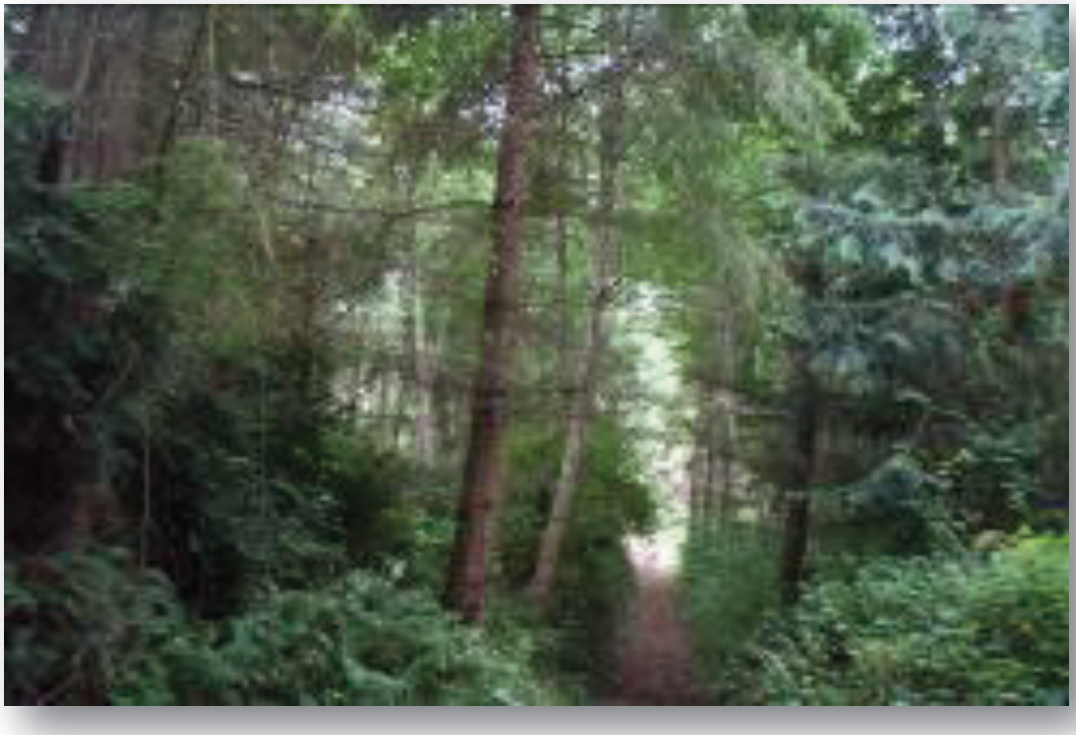
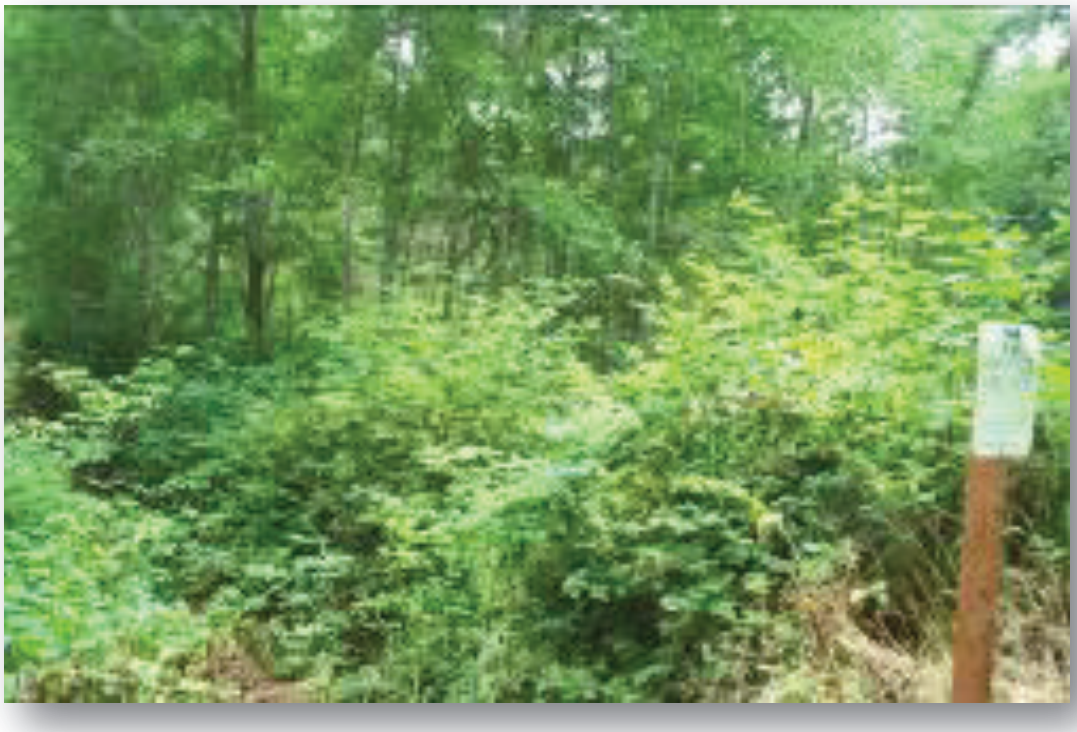
Trail Segment 3 – Fully stocked stand, 60% forest canopy is 80-100 year old western red cedar and red alder. The remainder of the canopy is clumps of 40 year old cedar and red alder.



Trail segments 8 & 10 (to west) – Moderately stocked mixed stand of 60% red alder and 30% conifer that is 40 years old with other scattered older, poor to fair quality trees.



Trail segments 5 & 9 (to south) – Logged areas not planted to trees with dominance of brush

Vegetation

Pope Resources owns the forest stands within the trail easement that constitutes this stewardship area, and the County has no say in use and management of these stands (except perhaps within critical areas). Because forest stands could conceivably be removed by Pope Resources, they won't be described in further detail.

Understory vegetation beneath conifer tree canopies is mostly sword fern, shield fern, salal and Indian plum, with the degree of plant cover depending on the intensity of light reaching the forest floor. In areas of dense shade understory is nearly absent.

Understory vegetation beneath both mixed and pure alder stands is mostly salmonberry, elderberry, sword fern, salal, and trailing blackberry. This cover is densest and most vigorous in areas of greatest light.

Most stands have more than 5 downed logs > 12 inches in diameter and more than 4 snags > 20 inches in diameter/acre for wildlife. The immature alder and conifer stands usually have abundant small diameter snags and downed trees. There are generally more than 6 relict, old growth stumps and logs/ acre in all units, with the greatest density being in the unit along trail segment 3. This unit also has the greatest numbers of trees which have blown down. Openings created by recent logging along trail segments 5 and 9 have abundant recent stumps and downed wood and a dense stand of early successional vegetation, which includes mostly salmonberry, elderberry, Himalayan blackberry, thimbleberry, blackcap, trailing blackberry and volunteer red alder, as well as remnant salal and sword fern. Vegetation beneath openings of moderately stocked forest stands are similar to recently logged areas, except young red alder reproduction is generally absent. Natural reproduction of trees younger than 40 years old was rare in established stands, except for western red cedar in the 10-40 year old age class.

Some conifer trees in the stand along trail segment 1 have root rot, as evidenced by high incidence of snags, and wind thrown trees with only stubs of roots exposed.

Bear damage was observed as stripped bark and gnawing on cedar trees along trail segment 3. Deer usage was common throughout.

Wildlife

The vegetative units within this stewardship area provide considerable diversity of habitat for upland wildlife. There is also limited but important habitat for wetland wildlife in small streams and wetlands. The fact there are different forest stand types in close proximity, and small streams and associated wetlands intermingled in this area creates a synergism of wildlife habitat value. Human presence probably has a muting effect though, limiting use somewhat by larger mammals. Any disturbances both inside and outside the 40 foot wide easement could also have a negative effect.

While standing, the 40 year old and older red alder in stands provide roosting and perching habitat for numerous species of birds, and a limited food source comprised mostly of seeds. These trees also provide cover for numerous species. Leaves provide food source for aphids, caterpillar stage of insects, etc. Fallen leaves enrich the soil and provide food and habitat for decomposers like fungi, bacteria, earthworms, slugs and insects, and the numerous terrestrial species which feed on them. The alder in stands will be breaking apart and dying over the next 30-40 years, and considerable downed wood, snags and holes in the canopy will be created if this is allowed to occur. These

openings will be extensive in stands that have a significant percentage of alder, like those along trail segments 1-4, 8 and 10. The downed wood and snags of alder will provide habitat for up to 100 terrestrial species. Insects will thrive in the decaying wood, and woodpeckers and small mammals will seek them out for food. Primary and secondary cavity nesting birds will use the snags. Fungi will thrive as well, creating food for small rodents, etc. These openings plus existing openings in logged areas adjacent to trail segments 5, 7 and 9 will be populated by early successional plant species. These species will increase in abundance with increasing light and will be used by wildlife species such as band tail pigeons, grouse, black bear, deer and song birds seeking berries and browse, and hummingbirds, butterflies and bees seeking nectar.

The openings will probably last a long time, because only shade tolerant trees like western hemlock, grand fir and western red cedar are apt to invade these dense brush patches. The establishment of trees will be slow, and expected stocking will probably be poor, due to dense shading by the canopy of brush. Crown closure of scattered conifer overstory won't be achievable with trees being widely spaced, and the stand of brushy species should survive long term without human intervention. The existing cedar with fill most holes created in the stand along trail segment 3, but some of the larger holes will remain long term. The individuals and clumps of existing cedar trees in all stands will provide long-term thermal and hiding cover for numerous species, perching and roosting for numerous species of birds (including bald eagles when trees are older), and a food source for species such as squirrels. The scattered 60-100 year old Douglas-fir and western hemlock scattered in all stands will create sources for enduring snags and downed logs, and while standing will provide habitat similar to that described for cedar. There is potential for invasion of Himalayan blackberry. If this occurs it should be controlled to prevent crowding out of native species.

The 40 year old Douglas-fir plantation along trail segment 6, young red alder, and the western red cedar in all stands will provide hiding and thermal cover, and lots of sources for downed wood and snags as the progression of natural thinning occurs. The small diameter wood will rapidly decay and have limited use, but the source will be ongoing, and diameter will increase over time. In alder areas the dense understory dominated by brushy species will provide the wildlife benefits outlined in the preceding paragraph. Eventually the red alder will mature and die over time and wildlife benefits will be similar to those described above for the mature red alder components of stands. Wooded wetlands and streams will be havens for amphibians.

The young conifer will provide habitat for small forest raptors such as sharp-shined and Cooper's hawks, which feed on small birds feeding on brush and nesting in small trees. The fully stocked Douglas-fir stand and clumps of conifer of mixed species or cedar should continually be closed canopy. Scattered conifer inter-mixed with alder will eventually become dominant, as shorter lived alder dies off. Crowns of conifers will expand as adjacent trees die off. Scattered cedar will grow rapidly after adjacent alder die, due to increased sunlight, but will be unable to fill most openings. Long term habitat will be that of a mature second growth forest, with upper crowns providing habitat for canopy dwellers like Douglas squirrels, owls and bald eagles. Bats will probably roost in the deeply grooved bark of old trees. Rodents and insects will live on the forest floor in the relict downed logs and stumps, and the on-going supply of downed wood. Snags as they occur will be used by wood peckers and primary and secondary cavity nesting birds. Some trees will get heart rot, creating cavities for dens for bear and other mammals. Generally the conifer stand will not provide significant food source for most species, but will be used mainly for thermal cover, a travel corridor and safe haven. There will be a long term shrub component due to openings created by dying alder, which will retain an important food source for song birds and other animals.

The small streams and springs and adjacent wetlands along trail segments 3 and 9 provide potential habitat for fish, amphibians, waterfowl, beaver, etc. They are a source for drinking water for all wildlife. The relict logs and stumps in all stands provide habitat for insects and small mammals. Black bear signs have been observed in this area in the past, and there is apparent bear damage to several cedar trees along trail segment 3.

Refer to Appendix I in this report for a more complete listing of wildlife species present.

Objectives/Alternatives

- Note - Pope Resources, the owner of this 40' wide trail easement, retains control of use and management of forest stands in this stewardship area. Hence, objectives/alternatives listed below for the County may not be realized if not in concert with those of Pope Resources.
- This stewardship area is functioning as a diverse wildlife habitat area. The vegetation provides breeding, foraging, refuge and nesting cover for numerous wildlife species. Maintaining cover in this stewardship area will be increasingly important as housing developments are constructed in the area.
- Minimize disturbance to streams and wetlands.
- Allow natural succession to occur within forested areas, with the eventual resultant climax community of moderately stocked western red cedar dominated forest intermixed with small openings of brush. Stand 6 will probably be a long term Douglas-fir stand due to successful plantation of fir.
- In openings in the forest canopy in wetlands, streams and buffers, consider planting conifer seedlings on an ongoing basis. When logging and natural tree mortality of overstory trees occurs in these critical areas, it is important to re-establish and maintain fully stocked forest cover. Consider planting open areas with full sun exposure and well drained soils to Douglas-fir. Shaded areas with wet soils should be planted to western red cedar and Sitka spruce, and with drier soils should be planted to western red cedar, Sitka spruce, western hemlock and yew. Before planting, clear brush from a 6 foot diameter area at each planting site. Plant young conifer trees on a twelve foot spacing in winter or early spring in openings in the forest canopy, beyond the drip lines of existing trees. Control competing vegetation until planted trees over-top competition. This will effectively maintain a fully stocked forest stand within the buffers of the streams and wetlands along trail segments 3 and 9.
- Control noxious weeds, Himalayan blackberry and holly as they occur. Control invasive vegetation along existing trails to keep them open.
- Minimize disturbance to relict old stumps and downed, decayed old growth logs.
- Avoid any new trail placement within stream and wetland buffers to maintain a low level of human disturbance.
- Consider making short snags of mature and old red alder in proximity of trail to reduce the safety hazard. These snags should be cut no taller than the distance they are from the trail, with a minimum height of 6 feet.
- Consider surfacing the trail with crushed rock or hog fuel on steep sloped areas to minimize the potential for erosion.

Field Observation Notes

1. Along trail segment 3 note the numerous springs in the concave areas and the small stream emanating from them at the lowest point.
2. Along trail segment 3 note the magnificent relict old-growth stumps and downed logs. Numerous downed logs almost entirely cover the stream. Note also how these logs are acting as nurse logs.
3. Along trail segment 3 note the 80-100 year old, unusually large red alder (20-32 inches DBH) that are breaking apart due to old age.
4. Along trail segments 1 and 3 note the closely spaced 40 year old western red cedar groves.
5. Along the west end of trail segment 3 note the stripped bark and gnaw marks made by bear at the base of several cedar trees.
6. Along trail segment 1 there is a 40 year old Douglas-fir tree that fell down due to root rot. Note the absence of intact roots at the base of the tree.
7. Along trail segment 1 beside Hansville Road note the 150 year old Douglas-fir tree with a DBH of 42 inches.
8. Observe the areas logged in 2008 without replanting, and the dense stand of early successional brushy species that have populated the sites.
9. Observe in most stands of this stewardship area that naturally seeded red alder vigorously invaded
10. 40 years ago into a Douglas-fir plantation, shading out much of the fir.
11. Note the fully stocked Douglas-fir plantation along trail segment 6.