Forest Stewardship Plan
For
Fancy Frog Forest

Prepared by: *The Geil-Marso Family Trust* (J. Marso, G. Marso, & J. Geil)
10987 Chardonnay Place, San Diego, CA 92131-1509
(858)696-6505

October 2011

FOREST STEWARDSHIP PLAN

LANDOWNER INFORMATION

Geil Marso Family Trust
10987 Chardonnay Place
San Diego, CA 9231-1509

PROPERTY LOCATION

Legal Description: W 728.96' S2 Lying S HWY SR 292
and W 800.53' E 1701.99' S2 Lying S HWY SR 292
and W 703.90' E 3134.85' S2 Lying S HWY SR 292
Township 30N
Range 40 E Section 25

Street Address: Fancy Frog Forest, 4333 Highway 292, Loon Lake, WA 99148-9606

PLAN PREPARED BY

The Geil-Marso Family Trust
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DATE: October 2011

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Range 40 E
Section 25

Street Address: Fancy Frog Forest, 4333 Highway 292, Loon Lake, WA 99148-9606
See: Property Location Map

DESCRIPTION OF LANDOWNER'S OBJECTIVES

The objectives for management of the property have been identified as follows:

1. Responsible stewardship based on long-term ownership and sound forest management.
2. Maintain a high aesthetic value and vigorous forest.
3. Through good stewardship and sound forest management, provide optimum habitat for wildlife species.
4. Reduce the risk from wildfire in all areas of the property.
5. Re-introduce native plants and grasses into area.

GENERAL PROPERTY DESCRIPTION

Acreage

The property referred to as Fancy Frog Forest, is comprised of 3 lots. Each lot is 22 acres. Two acres per lot is reserved for roads and improvements with the remaining 60 acres designated as forest land. The acreage has been divided into 3 Stands. See Stand Locations: Aerial View.

Accessibility

The property is accessible via a private graveled road from HWY 292. Also available throughout the property are old logging roads requiring 4 wheel drive vehicles. (See: Easements and Access Roads)

Topography

Fancy Frog Forest (4333 HWY 292) is located on the south side of Highway 292 between Loon Lake and Springdale. The slopes range from 5-40% with the average slope of 10%. The steepest portion of the property is located along the west side. The elevation ranges between 2400 and 2500 feet.

Weather

The approximate annual precipitation is 21 inches and the average annual air temperature is approximately 46 degrees Fahrenheit. The frost-free season ranges from approximately 105 to 125 days per year.

Location

The property is located at mile marker 2 on HWY 292 between Springdale and Loon Lake.

Modified from Google Maps

Land Use History

Prior to European settlement, many ponderosa pine forests contained widely spaced, large diameter trees. Today it is difficult to find these types of forests. Continuing effort to control wildfires during the last 90 years has allowed forests to become crowded with younger trees. Fire resistant, large diameter pine and larch trees were removed during timber harvests as the area was settled.

The structure and species composition of pre-European ponderosa pine forests was strongly influenced by forest fires. Fires occurred approximately every 5 to 15 years. These fires were mostly low intensity fires which burned only the grasses, brush, and small trees. A fire maintained forest is open and appears park-like. When these low intensity fires occurred, the thick bark of the mature ponderosa and western larch protected the trees from serious heat damage. Most large trees survived these periodic fires. As debris accumulated in the forest, the fire intensity increased and mature trees and small groups of larger trees would also burn, which resulted in openings in the forest. Sunlight loving ponderosa pine and western larch seedlings would regenerate in these newly created openings.

In the absence of forest fires, young trees, grasses, and shrubs proliferate beneath mature trees. As the forest became denser, there was competition between the trees for light, water, and nutrients. This competition

results in stress and stressed trees are less resistant to damage from insects and disease. Moisture was adequate, and shade was available, therefore Douglas Fir became established. Ponderosa pine and western larch do not reproduce well in full shade.

Improper harvesting practices have also removed the mature ponderosa pine and western larch leaving younger trees. Over time this leaves a forest populated by smaller diameter trees. In a fire free environment, with the absence of harvesting, grand fir will eventually dominate a stand and the mature and over-mature ponderosa pine and western larch will die out.

The subject property was harvested commercially in 2002 leaving behind minimal mature trees.

Current Conditions

Recent management activities include creating fire breaks around the building, and the beginning efforts to trim and thin the over-grown property. Slash piles left on the property after it was harvested are being buried, chipped, and burned. A management plan is needed to improve the overall health of the forest and a long term plan to restore the forest to optimum condition.

Surrounding Land Use

The property is located approximately 3.5 miles west of the town of Loon Lake, Washington. Loon Lake is primarily a high-density recreational area. The surrounding areas are primarily used for recreation, residential housing, and agricultural properties. Bordering the property to the south is DNR forest land. Bordering the property to the north is HWY 292 and 22 acre parcels. Approximately 2 miles to the west of the subject property is the town of Springdale. Springdale is a small residential/farming community.

RESOURCE CATEGORY I: FOREST HEALTH

Forest Health Condition

The primary health issue in this forest is over-stocking (too many trees per acre). The over-stocking in this forest is causing tree stress because neighboring trees are competing for light, water, and nutrients. Branches from adjacent trees touch or overlap each other in an estimated 70% of the forest.

Insects and Disease

There are several forest health agents common to the region; dwarf mistletoe, western gall rust, root rot, pine bark beetles, and pine engraver beetles. (See APPENDIX A for identifying insects and disease)

Dwarf Mistletoe: Dwarf mistletoes are small, leafless, parasitic plants that grow on branches and stems of conifers. They are usually 1 to 5 inches tall and mostly green, yellow, brown, or orange in color. A host tree is typically infected by only one species of mistletoe. Bunched growths of branches (witches' brooms) and swollen branches are frequently caused by mistletoe so they are good places to look for mistletoe shoots. No evidence of mistletoe was found in the Stands.

Western Gall Rust: Western Gall Rust is a fungus that infects Ponderosa Pine and Lodgepole Pine. This fungus can be identified by looking for galls (round swellings) or cankers (deformities) on the branches and bole of infected trees. This disease mainly causes stem malformation, breakage, reduced growth, and tree killing.

Currently, there is a minor amount of gall rust scattered in small pockets throughout the Stands. The impact from the disease is considered minimal. This disease is windborne. Removal of infected trees during thinning is recommended.

Pine Bark Beetles: Four different pine bark beetles affect the pine trees in this area. The four types are: western pine beetle, mountain pine beetle, red turpentine beetle, and pine engraver beetle. The most important bark beetle enemy of Douglas Fir is the Douglas Fir beetle. Beetles generally favor trees that are water stressed. Signs include pitch tubes, boring dust, or frass on the bark of trees. The western and mountain pine beetles are considered major tree killers in eastern Washington. They prefer trees greater than 6inches in diameter. Pine engraver beetles are slash-breeding insects. They attack primarily fresh, green material on the ground. To minimize engraver beetle problems the following is recommended:

- Pile and burn or chip material greater than 2 inches within 6 weeks.

Root Rot: Root diseases are the damaging group of tree diseases. Diagnosis and identification is based on:

- Circular groups of dead and dying trees. Root diseases tend to kill a few trees each year, look for dying trees and the edges of a group with dead trees toward the center.
- Thinning tree crowns. Crowns of root diseased trees fade in color, thin from the inside of the tree crown toward the edge.

It is recommended that during thinning, resistant tree species are encouraged. No evidence of root rot was found in any Stands.

Fire Protection

The property is in Stevens County Fire District #1. The easement between Hwy 292 and the property is kept cleared and mowed to lessen fire danger. The property contains several logging roads which will be maintained for fire vehicle access to the forest property from the highway to the rear of the property. A 100' fire-safe area around the building will be maintained for fire safety. Thinning and pruning of the entire forest area is planned with all slash to be chipped.

Environmental Factors and Animal Damage Potential

Most of the mechanical damage found on the property was due to snow breakage and minor damage from animals. Some was due to logging equipment.

Snow breakage occurs when the air temperature says low enough that the snow cannot melt and slough from the tree crowns. The trees become brittle from the cold temperatures and the weight of a significant snowfall can fracture the main stem of the tree. Falling trees can damage other trees growing nearby.

Some animal damage was found in small trees. This damage occurs when deer rub their antlers or browse on the small trees. Also, porcupines can kill the tops of pine trees. The damage at this property is minimal and no recommendations are needed.

Forest Health Protection

Thinning and pruning was chosen as opposed to commercial harvesting to protect the health of the forest and prevent damage to soil and natural grasses and shrubs. On site wood chipping and burying of slash was started with a long term plan to chip all slash on site immediately after trimming and returning mulch to forest floor.

Forest Health Enhancement Plan

Thinning for both forest health and aesthetics is part of the long term plan for this property. Individual selection of the strongest pines as leave trees and removal of the weaker and damaged trees is the objective with emphasis on allowing an increase in the number of Ponderosa Pine and Western Larch trees. Monitoring for insect damage and disease is planned by undertaking a yearly inspection of the property.

RESOURCE CATEGORY II: TIMBER AND WOOD PRODUCTS

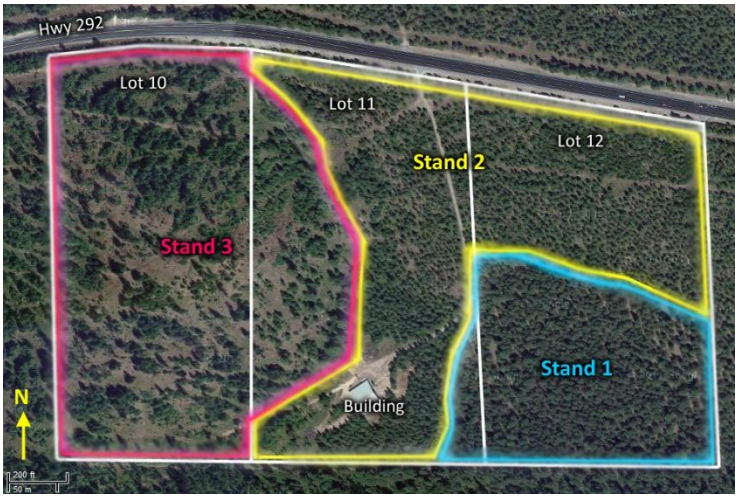
Species Composition

Age, Size, Quality

The average age for trees on this property is between 15-25 years with over-crowding of young Douglas Fir. The size of the Ponderosa Pine and Western Larch range between saplings and mature trees over 130 feet with the average height being less than 70 feet. With the exception of over-crowding, the quality is good to excellent.

Stand Summary and Management Plan

This section describes each of the 3 identified Stands and the management plan for each.



Modified from Google Maps – See Stand Locations: Aerial View

STAND 1: Resource Condition

Stand 1 is located on the south eastern portion of the property. This Stand is comprised mainly of medium aged Ponderosa Pine and some Douglas Fir. This Stand was heavily harvested in 2001 and the forest floor is littered with logging debris. The age of this stand ranges from 5 to 20 years with a few older trees. The average DBH is 5 inches. The DBH in this Stand ranges from 1.5" to 10". The spacing of trees in the Stand ranges from 6' to 14'. The Ponderosa Pine in the Stand require major pruning and the forest floor needs to be cleared of slash left from the 2001 commercial harvesting.

The silvicultural prescription for this Stand was developed with special consideration to the health of the trees and aesthetics.

Stand 1 Protection Measures

- Improve the health of the forest through the removal of broken, damage, and dying timber.
- Enhance wildlife habitat qualities of the Stand, primarily by retaining some areas of thick shelter and improving the diversity and forage value of the shrub layer.
- Reduce wildfire fuel loading to acceptable levels.
- Evaluate need for fertilization.

Stand 1 Enhancement Recommendations

- Thin over-crowding with consideration for allowing an increase in Ponderosa Pine and Western Larch whenever possible to maintain an average 14' spacing.
- Remove slash/debris to reduce fire hazard by on site chipping and burning.
- Prune young trees implementing a chipper to return clippings to the forest floor.

STAND 2: Resource Condition

Stand 2 is located in the center of the property. This Stand is dominated by small to medium Douglas Fir, Ponderosa Pine, and Western Larch. The average age of the trees in the Stand is between 10 and 30 years. The average DBH is 7 inches. The DBH in this Stand ranges from 1.5" to 12". The spacing of trees in the Stand ranges from 2" to 14'. Thick undergrowth covers 80% of the forest floor in this Stand. Two large slash piles are located in this Stand each measures approximately 30'x20'x10'. This Stand is relatively level with 10% or less slope. No disease or root rot was found in this Stand.

Stand 2

Stand 2 Slash

The silvicultural prescription for this Stand was developed with special consideration of the thick crowding and fire safety of the building located within this Stand.

Stand 2 Protection Measures

- Improve the health of the forest through the removal of broken, damage, and dying timber, while protecting the natural privacy screens provided by this Stand.
- Enhance wildlife habitat qualities of the Stand, primarily by retaining some areas of thick shelter and improving the diversity and forage value of the shrub layer.
- Reduce wildfire fuel loading to acceptable levels producing a fire-safe stand of timber and 100' fire-safe zone around storage building.
- Maintain the old growth component in the Stand.
- Reintroduce natural grasses and other native plants to the area.

Stand 2 Enhancement Recommendations

- Thin over-crowding with consideration for allowing an increase in Ponderosa Pine and Western Larch whenever possible to maintain an average 12' spacing (with the exception of those areas designated as privacy screens and fire safety zone around building.)
- Remove slash/debris to reduce fire hazard by on site chipping and burning.
- Prune young trees implementing a chipper to return clippings to the forest floor and reduce unwanted weed growth in open areas.
- Replant cleared slash areas with native grasses.

STAND 3: Resource Condition

Stand 3 is located in the western 1/3 of the property. The overstory is dominated by 30-50 year old Ponderosa Pine and Western Larch with some Grand Fir but they are not common. The trees range in size from 5 to 20 inch DBH with the average of 13 inches. Spacing of the overstory trees is somewhat patchy particularly at the highest elevation near the center of Stand 3. Several large snags were located in this Stand. The regeneration and sapling components of this stand are dominated by Douglas Fir. No insect or disease problems were found in

Stand 3. Because of the slope (25-40%) this area was not harvested as heavily as the remaining 2 Stands. Future management activities should promote the establishment of Western Larch and Ponderosa Pine. Commercial harvesting was done in this stand in 2001. No forest management activities have taken place since that time.

The silvicultural prescription for this stand was developed considering the following objectives:

Stand 3 – 20 to 40% slope

Stand 3 Protection Measures

- Improve the health of the forest through the removal of broken, damage, and dying timber.
- Enhance wildlife habitat qualities of the Stand, primarily by retaining some areas of thick shelter and improving the diversity and forage value of the shrub layer.
- Reduce wildfire fuel loading to acceptable levels.
- Evaluate need for fertilization.

Stand 3 Enhancement Recommendations

- Thin over-crowding with consideration for allowing an increase in Ponderosa Pine and Western Larch whenever possible to maintain an average 14' spacing.
- Remove slash/debris to reduce fire hazard by on site chipping and burning.
- Prune young trees implementing a chipper to return clippings to the forest floor.

Competing Vegetation

Young Douglas Fir trees are crowding out the predominant Ponderosa Pine.

Density/Stocking

Approximately 80% of the forest land is over-crowded with an estimated 400 trees per acre. This number should be reduced to 70 per acre or at a desired spacing of at least 10' between crowns. Crown Competition Factor (CCF) is 100 in some areas reflecting complete crown closure. The Basal area is unknown at this time but the obvious crowding needs to be addressed immediately.

Economic Considerations

No economic considerations. Fancy Frog Forest is a noncommercial property with no plans to harvest for profit.

Operability Class

8-Noncommercial

Silvicultural Alternatives

The forest is over-crowded with an abundance of small to medium sized Douglas Fir and Ponderosa pine trees throughout the property. No planting is recommending or necessary and no regular harvesting is planned in the future. Thinning areas that are overstocked, selecting the best quality trees will enhance the growth of the leave trees. The increase in fuels from trimming can be eliminated by hand piling and chipping on site.

RESOURCE CATEGORY III: SOILS

See Soils Map: Aerial View(Map and data from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

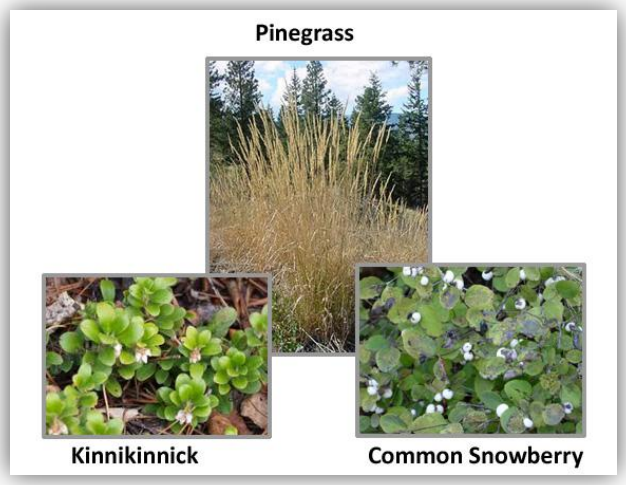
Five soil types are found on the property: Bonner silt loam, Laketon silt loam, Martella silt loam, Raisio shaly loam, and Hartil silt loam. The following paragraphs explain the 5 types and how they affect the overall forest health and future planning efforts.

Bonner silt loam is found in lot 12, Stands 1 and 2 where the slope is 0-10 percent. The soil was examined in this area and the following information was gathered: From 0-0.3 inches, fresh coniferous needles and twigs. From 0.3 to 1.1 inches, partially decayed needles and twigs. From 1.1 to 1.3 inches; well decayed organic matter mixed with light gray Mt. St. Helen's volcanic ash. From 1.3 to 5 inches; the soil was pale brown, gravelly ashy loam, dark brown when moist, many fine and medium roots, 15% pebbles. Bonner soils are commonly

found on terraces and terrace escarpments at elevations from 2,000 to 3,200 feet. This soil type formed in glacial outwash material derived predominately from granite, gneiss, and schist. They have a mantel of volcanic ash and loess. The vegetation in this area is mainly Douglas Fir, Ponderosa Pine, and Western Larch, with an understory of pine reedgrass, myrtle pachystima, baldhip rose, common snowberry, longtube twinflower, American trailplant, piper anemone, goldthread, sedge, and common princess pine. The health of the trees in this low-moisture area will benefit from thinning.

Laketon silt loam is found on the southern end of lot 11, Stand 2 where the average slope is 5 to 15 percent. The soil in this area was examined and the following information was gathered. 0 to 1 inch, soil was dark grayish brown, partially decomposed litter of pine needles, leaves, twigs, bark, and cones. 1 to 3 inches, light brownish gray ashy silt loam, dark brown when moist, fine granular structure, soft, very friable, slightly sticky and slightly plastic, many fine roots and irregular pores. 3 to 8 inches, pale brown ashy silt loam, medium subangular blocky structure, slightly hard, very friable, many fine roots, approximately 5 percent gravel. This soil is well drained with medium runoff, moderately slow permeability. In the location the natural vegetation includes; Douglas Fir, Ponderosa Pine, Western Larch, pine grass, common princess pine, and various grasses. The soil in this area is preferable for the introduction of native grasses and plants because it is well drained and not prone to runoff if irrigation is used to get native grasses started.

Martella silt loam is found on the northern half of lots 10 and 11, Stands 2 and 3 where the slope ranges from 5 to 15 percent. This soil consists of very deep, moderately well drained soils formed in glacial lake sediments with a mantle of volcanic ash and loess. This soil type is generally found on lake terraces. The soil for this area was examined and the following information was gathered. From 0 to 2.5; inches, very dark grayish brown, slightly moist, partially decomposed organic litter composed of needles, leaves and twigs. 2.5 to 3 inches; light gray, ashy very fine sandy loam, dark gray when moist, fine granular structure, soft, very friable, nonsticky and nonplastic. 3 to 8 inches; pale brown, ashy silt loam, dark brown when moist, medium subangular blocky structure, soft, very friable, slightly sticky and slightly plastic, many roots, many fine pores, and less than 5 percent gravel. The soil in this area is well drained and very slow to runoff. Vegetation in this area includes; Douglas Fir, Ponderosa Pine, Western Larch, white spirea, pippisisewa, pachystima, kinnikinnick, meadow rue, and various grasses including pinegrass. This area is acceptable for the reintroduction of native plants.



Raisio shaly loam is found in the southern portion of Lot 10, Stand 3, where there the southern slope ranges from 20 to 40 percent. Raisio shaly loam consists of moderately deep, well drained soils formed in residuum and colluvium from shaly rocks modified in places by glacial till and volcanic ash. The vegetation found in this area included: Douglas Fir, Ponderosa Pine, Western Larch, common snowberry, bluebunch wheatgrass, pinegrass, and lomatium.

Hartil silt loam is found on the western edge of lot 10, Stand 3, where the slope ranges between 25 and 40 percent. This soil type consists of moderately deep, well drained soils that formed in colluvium and residuum derived from shale, phyllite, graywack, or quartzite and a mantle of volcanic ash. This is a common woodland soil composition. The soil in this area was examined and the following information was gathered. 0 to 1 inch; pine needles, leaves, and twigs. 1 to 5 inches; partially decomposed needles, leaves, and twigs, very fine sandy loam, dark gray, fine granular structure, soft, very friable, nonsticky and nonplastic, many fine roots and fine pores. Vegetation found in this area includes: Douglas Fir, Ponderosa Pine, Western Larch, and Grand Fir, with an understory of common snowberry, willow, huckleberry, redstem ceanothus, pinegrass, creambush oceanspray, white spirea, and pachystima

Soil disturbances in any of the 5 areas can lead to the growth of non-native noxious weeds. It is recommended that maintenance and thinning activities strive for minimal disturbance on hillsides. Due to low moisture availability, planning any regeneration of the Stands will need to be carefully considered to avoid problems in some areas.

RESOURCE CATEGORY IV: WATER QUALITY, RIPARIAN AND WETLAND AREAS

The area does not contain any wetlands, streams, lakes or ponds.

RESOURCE CATEGORY V: FISH AND WILDLIFE HABITAT

Wildlife captured on night cam, young buck and coyote. September 2011

A forest study was undertaken in 2009 to discover the diversity of wildlife at this property. Several wildlife cameras were positioned at various locations throughout the forest and a walk-through was conducted to discover which varieties of wildlife were using the forest. The results indicate at least one moose, a dozen or more deer, elk, wild turkeys, snakes, a variety of frogs, porcupines, hawks, owls, woodpecker, squirrels, chipmunks, coyotes, and quail are all present on the property. Deer beds were found, nests, and natural animal trails throughout the forest area.

Various snakes were found in the Forest including this small worm snake.

A family of wild turkeys frequents the forest and can often be found roosting on fallen trees.

Wildlife Protection Measures

- Maintain a diverse mixture of trees and shrub species, sizes, and age classes, as well as dead and dying trees in the form of snags and course woody debris to increase wildlife diversity and abundance.
- Enhance wildlife habitat qualities of the Stand, primarily by retaining cover areas of thick shelter and improving the diversity and forage value of the shrub layer.
- Locate and preserve undercover vegetation that serves as food, and ground nesting.
- Signs are posted throughout the 66 acres prohibiting hunting.

Wildlife Enhancement Recommendations

- Seed with natural grasses all sites disturbed by thinning and clearing of slash.
- Re-introduce berry producing shrubs to the area (blueberry, serviceberry, and elderberry).
- Prune young trees implementing a chipper to return clippings to the forest floor.
- Erect several small nesting boxes per acre, and a hawk nest platform in the top of a defective tree.
- During thinning operations consider a variable density thinning pattern to mimic natural events. Apply uneven spacing between trees as well as retention of different sizes and species of trees. Maintain some patches at least 50' in diameter should be thinned heavily to favor the development of shrubs and ground cover and some patches also at least 50' in diameter should be thinned very lightly or not at all to retain shelter and cover.

RESOURCE CATEGORY VI: THREATENED AND ENDANGERED SPECIES AND CULTURAL RESOURCES

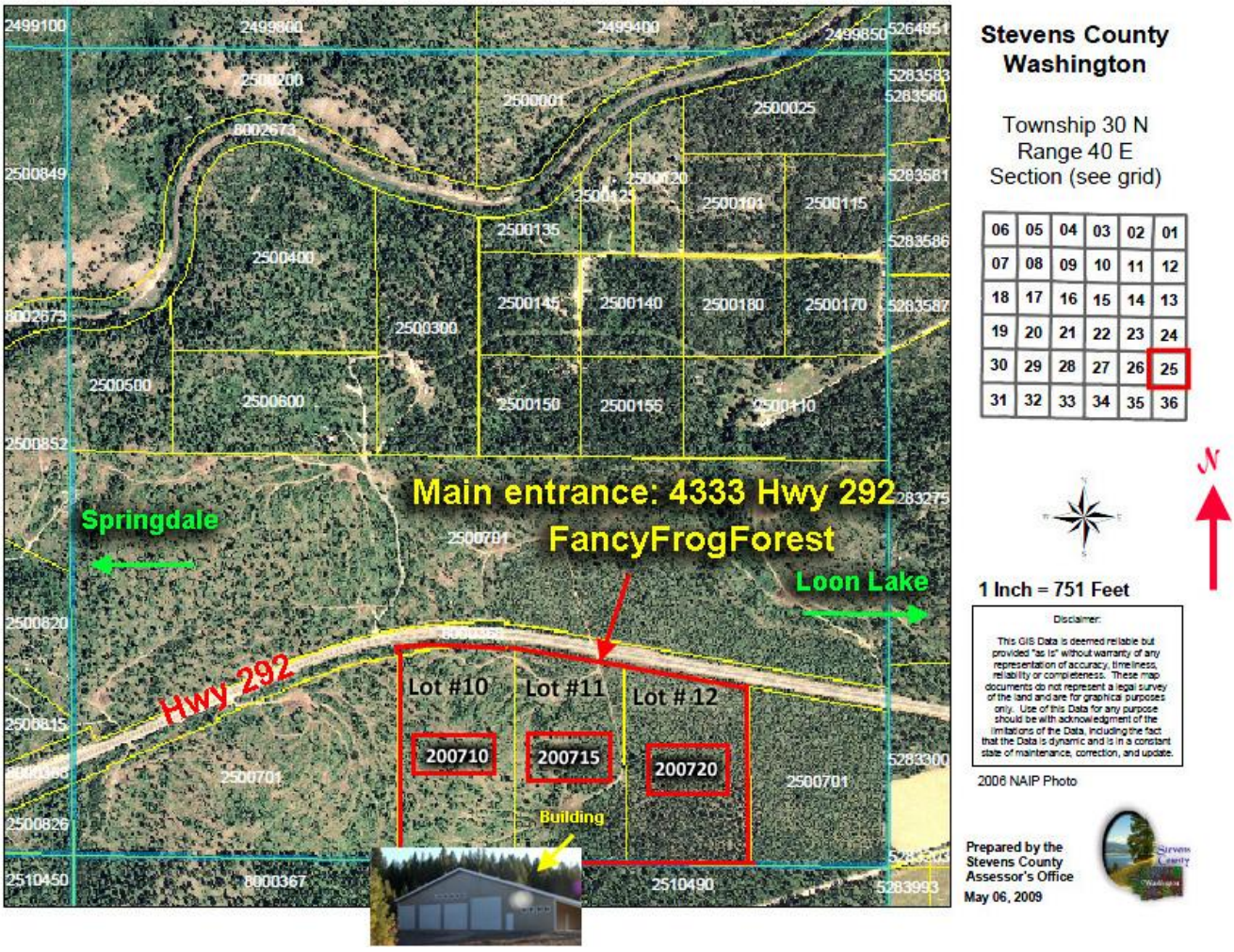
The U.S. Fish and Wildlife Services Report (http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=53065) provides a list containing several threatened species for Stevens County. The following animals are currently on this list: Grizzly bear, Gray wolf, Canada Lynx, and the North American wolverine. There is no evidence that any of these animals are on the property. At this time, there are no cultural resources located at the property.

RESOURCE CATEGORY VII: AGRO-FORESTRY/SPECIAL PRODUCTS

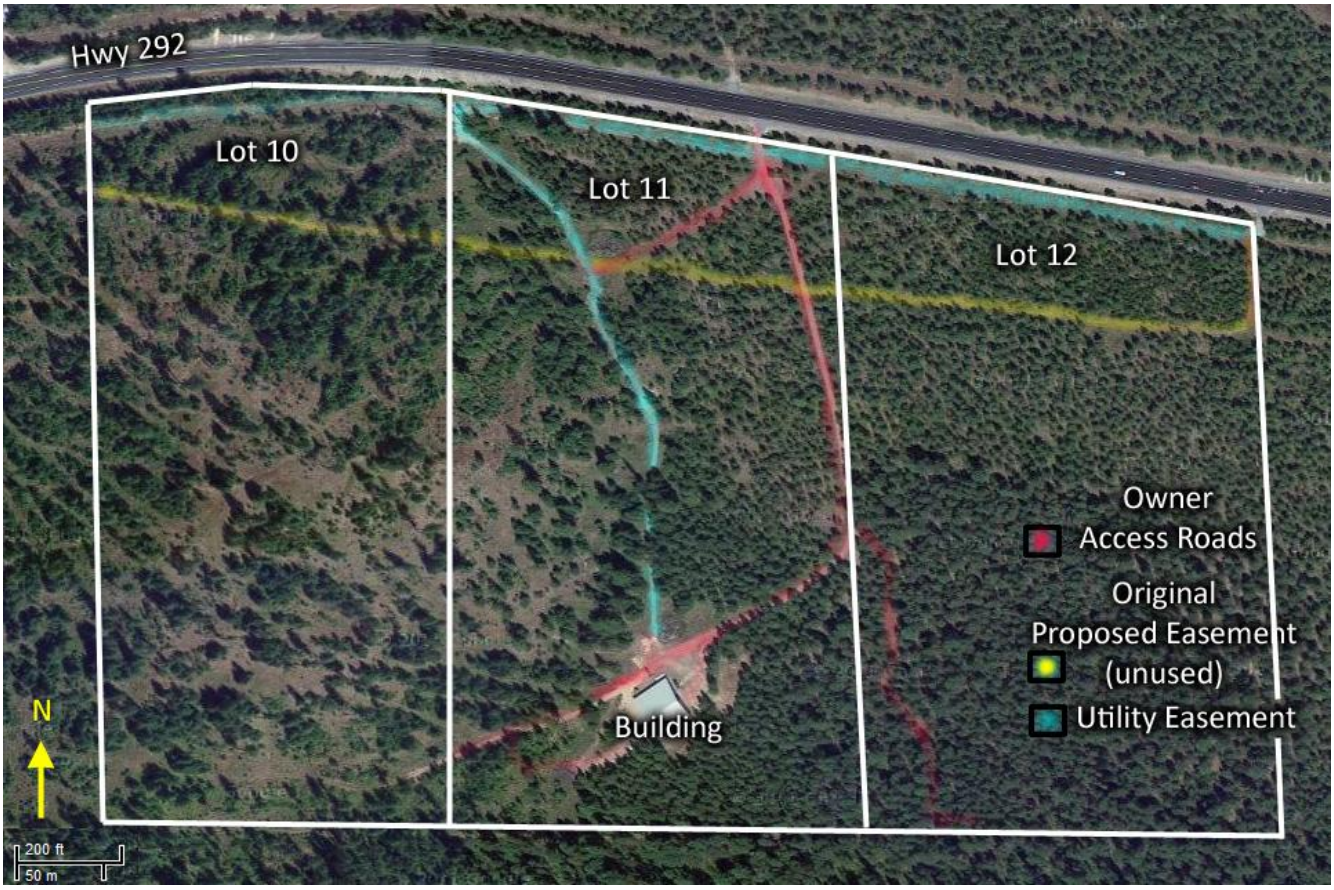
No significant special forest products are known on the property.

MAPS

Property Location

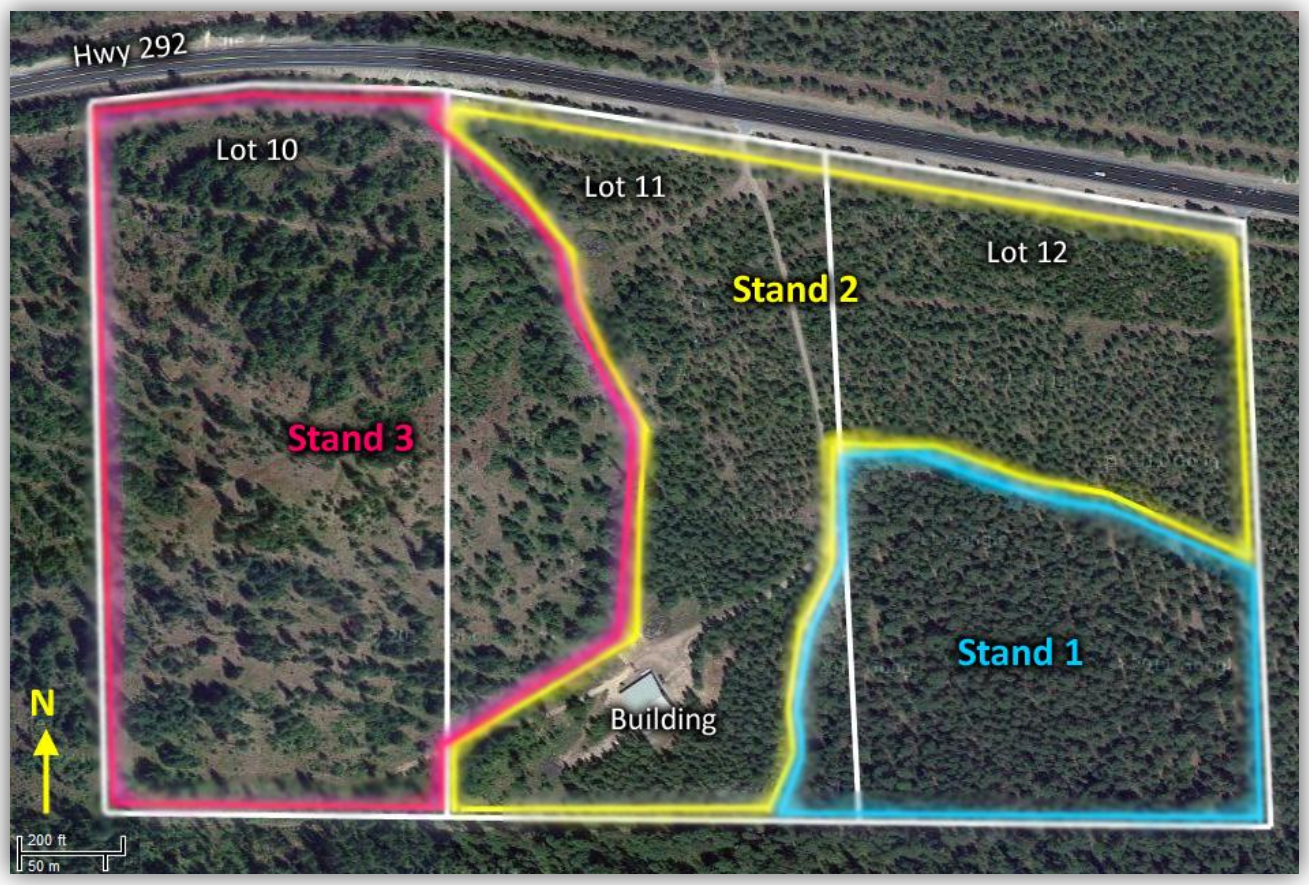


Easements and Access Roads



Note: The original Proposed Easement (marked in yellow) was never used and is being allowed to fill in with natural growth. The roads marked "Owner Access Roads" (marked in red) will be maintained for normal access and emergency/fire vehicles. The Utility Easement road (marked in blue) is also maintained and could provide adequate access for emergency vehicles.

Stand Locations: Aerial View



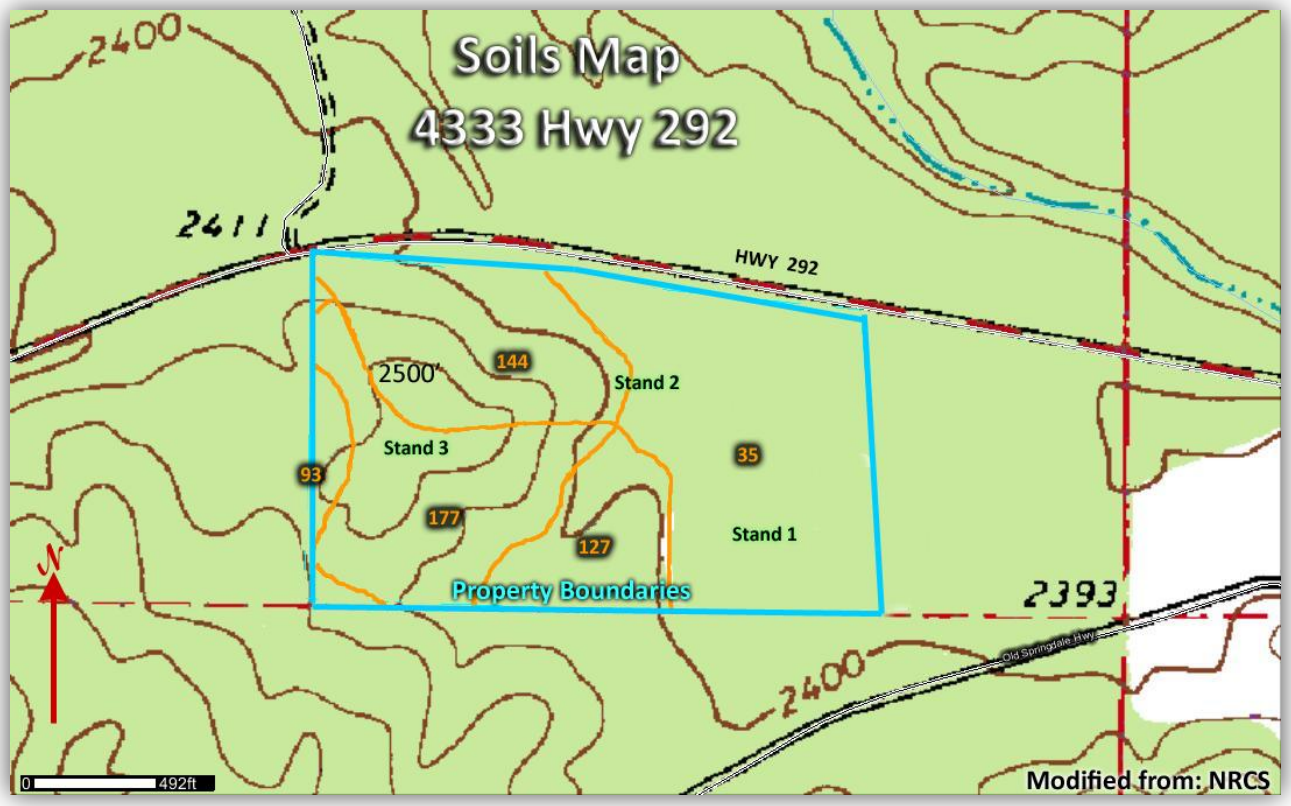
Map Modified from Google Maps

Soils Map: Aerial View

Map and data from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Stevens County, Washington (WA065)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
35	Bonner silt loam, 0 to 10 percent slopes	27.0	40.3%
93	Hartill silt loam, 25 to 40 percent slopes	2.6	3.9%
127	Laketon silt loam, 5 to 15 percent slopes	8.1	12.0%
144	Martella silt loam, 5 to 15 percent slopes	14.3	21.3%
177	Raisio shaly loam, 20 to 40 percent slopes	15.0	22.5%
Totals for Area of Interest		67.0	100.0%

Soils Map: Topography View



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144	Martella silt loam, 5 to 15 percent slopes	14.3	21.3%
177	Raisio shaly loam, 20 to 40 percent slopes	15.0	22.5%
Totals for Area of Interest		67.0	100.0%

MANAGEMENT TIMETABLE

Check List

Forest Stewardship Plan Summary Checklist/10 Year Management

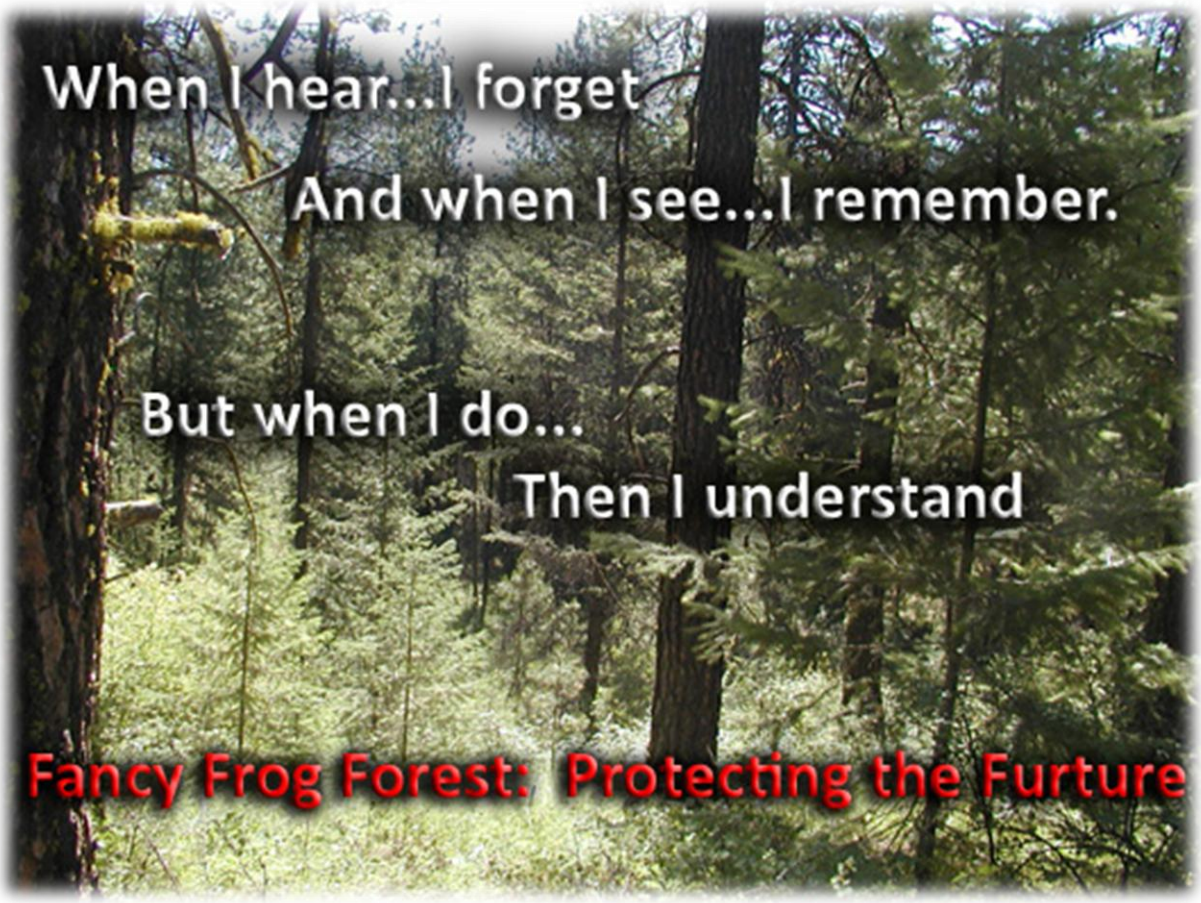
This summary check list describes resource protection and/or enhancement practices for the next 10 years, as summarized below.

Resources	Protective Measures					Enhancement Practices					Comments
	No Action	0-3 yrs	4-7 yrs	7-10 yrs	Not Applicable	No Action	0-3 yrs	4-7 yrs	7-10 yrs	Not Applicable	
Forest Health		X	**X**	**X**			X	X	X		Reintroduce native grasses and plants, monitor for disease control
Timber Wood Products		X	**X**	**X**			X	X	X		Thinning, pruning, slash removal
Soils Erosion Water Quality					X					X	
Riparian Areas					X					X	
Fisheries Habitat					X					X	
Threatened Endangered Species					X					X	
Agro-Forestry Special Products					X					X	

Schedule of Management Activities

Schedule of Management Activities for Fancy Frog Forest *note: the property has been divided into 7 acre increments for thinning activities	
Approximate Schedule Date	**Activity**
2011	Finish Forest Stewardship Plan, Apply for DNR cost share funding, Establish start area for thinning first 7 acres. Slash removal. Plant 1year old wild ginseng rootlets for transplanting in 2 years.
2012	Thinning, pruning, slash removal of first 7 acres – South 1/3 of Lot 11, Stand 2 and small portion of western border of Stand 1. Plant native grasses in disturbed areas, reintroduce native plants. Install nest boxes. No Hunting signs for Stand 3. Plant fruit bearing trees.
2013	Thinning, pruning, slash removal of second 7 acres – Center 1/3 of Lot 11, Stand 2 and eastern portion of Stand 3. Harvest for transplanting the mature ginseng roots. Clean nest boxes. Maintain fire breaks. No Hunting signs for Stand 2.
2014	Thinning, pruning, slash removal of third 7 acres – Northern most 1/3 of lot 11, Stand 2, clean nest boxes. Maintain fire-safe area around building; remove new growth from 100' fire break area.
2015	Thinning, pruning, slash removal of forth 7 acres – Area to be decided – Monitor forest health. Maintain fire access roads to rear of property.
2016	Thinning, pruning, slash removal of fifth 7 acres– Area to be decided – Evaluate reintroduced shrubs and plants. Clean nest boxes.
2017	Thinning, pruning, slash removal of sixth 7 acres– Area to be decided. Maintain 'no hunting' signs. Evaluate fire breaks.
2018	Thinning, pruning, slash removal of seventh 7 acres– Area to be decided. Clean nest boxes.
2019	Thinning, pruning, slash removal of eighth acres– Area to be decided. Maintain fire breaks and access roads for emergency vehicles.
2020	Thinning, pruning, slash removal of the ninth and final 7 acres. Evaluate overall forest health and nutrient needs, clean nest boxes
2021	Update Forest Stewardship Plan, Clean nest boxes, maintain fire breaks

FOREST STEWARDSHIP PLAN SIGNATURE PAGE



FOREST STEWARDSHIP PLAN SIGNATURE PAGE

Signature *Date*

Print Name Jaime R. Marso

Title Owner

Agency/Company

Address 10987 Chardonnay Place, San Diego, CA 92131

(858) 695-6505 Cell: (858) 442-6060

Phone

Plan Preparer is:

- ❑ Private Natural Resource Professional
- ❑ Agency Representative
- ❑ Landowner who completed a coached stewardship planning course
- ☒ Landowner who is a natural resource professional

List other professionals and their affiliations who contributed to this plan. If this was a Coached Plan, list the natural resource professionals who served as coaches.

LANDOWNER SIGNATURE: The contents of this plan are acceptable to me/us. I/We intend to manage this property in a manner consistent with the objectives of the Forest Stewardship Program and to implement this plan to the best of my/our ability.

Landowner Signature(s) *Date*

James E. Geil and Ginger L. Marso

Print Landowner Name(s)

APPROVAL SIGNATURE: I have reviewed this plan and approve it as meeting the standards for a Forest Stewardship Plan.

Signature of Designated Service Representative *Date*

Print Name of Designated Service Representative

Title *Agency*

Address

( )

Phone

APPENDIX A

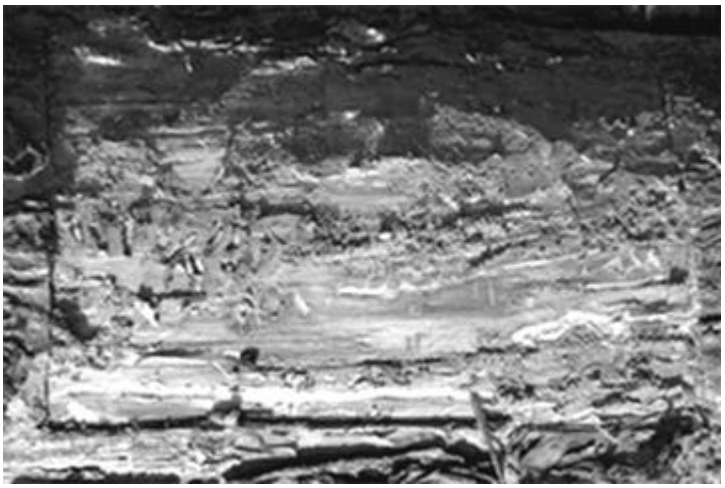
PINE BARK BEETLES

Pine bark beetles cannot invade healthy pine trees that have sufficient internal water pressure. However, due to many years of drought conditions in the Inland Northwest, these beetles attack and kill weakened trees that are out of water balance. In spring they bore into trees and emit pheromones (substances that affect behavior of other insects) that attract masses of additional bark beetles.

Bark beetles damage trees by tunneling between the bark and the wood (cambium layer) to lay eggs. Developing larvae continue tunneling as they feed. This damage under the bark prevents water and nutrient movement within the tree. In addition, bark beetles carry a fungus that clogs the water **Red Turpentine** transport system. All these factors pose a serious threat to the survival of our pine trees.

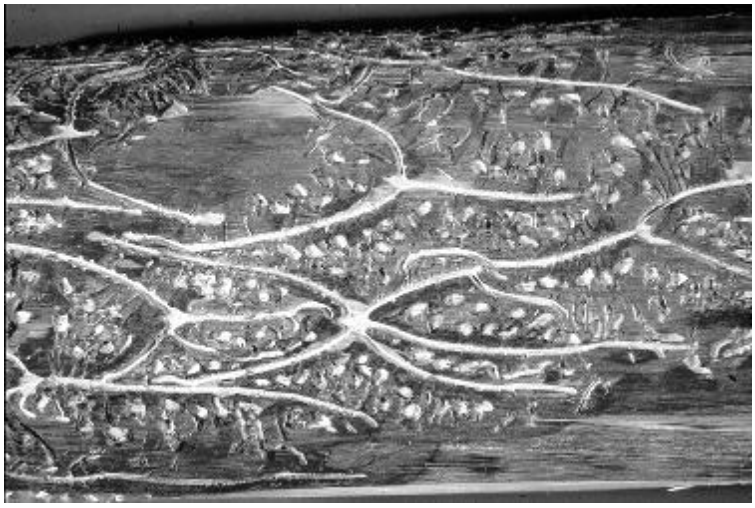
These are the four most common bark beetles attacking pines in our area:

Red Turpentine Beetle

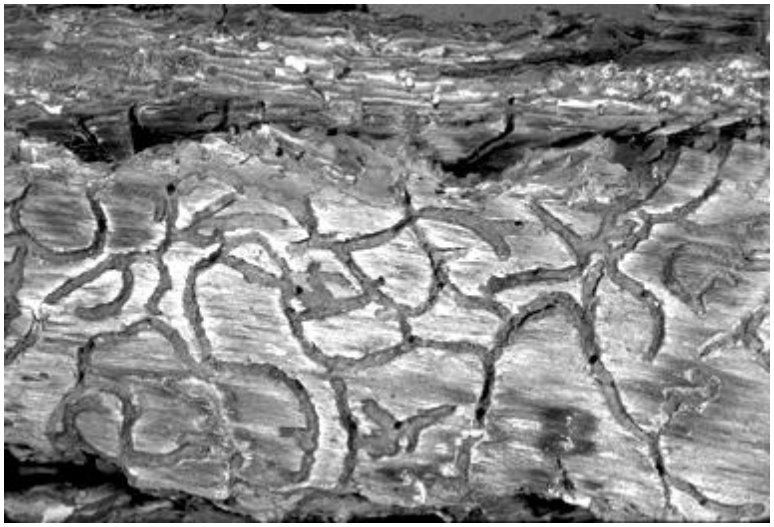


Western Pine Beetle

APPENDIX A continued



Pine Engraver Beetle



Mountain Pine Beetle

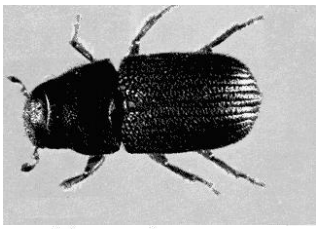
PINE ENGRAVER BEETLES, *Ips spp.*

Damage/Description: Pine engravers attack many pines but prefer ponderosa and lodge pole pines. Pine engravers are secondary pests that attack trees already weakened by disease or other bark beetles. Engravers typically attack the tops of trees and prefer younger or smaller trees.

They create unique galleries, usually Y- or H-shaped. (See Figure 1) Infestations are indicated by reddish-orange boring dust on bark of tree. Adult beetles are cylindrical, dark red-brown to black and 1/8 to 3/16 inch long. There are two or more generations per year depending on species and precipitation. The drier the year, the more generations are produced.

MOUNTAIN PINE BEETLE, *Dendroctonus ponderosae*

Damage/Description: Mountain pine beetles attack all native and introduced pine species but prefer ponderosa, lodge pole, and western white pines. They also prefer larger, more mature trees. This pest is not as prevalent in urban/suburban locations as the Ips or Western pine beetle.



D. ponderosae

The beetles are cylindrical, black and about 3/16 inch long. (Figure 2) Mountain pine beetles make obvious pitch tubes, 1/2 to 3/4 inch across, which are scattered over the trunk. A pitch tube is an accumulation of pitch exuded by a tree around a bark beetle hole to prevent beetle's entrance.

Boring dust collects on bark and at the base of the tree. Fading needles are seen, beginning yellow-green and turning red-brown. The galleries under the bark are somewhat vertical with a crook at the bottom. They can extend as much as 30 inches. (Figure 1) There is one generation per year, spent nearly the entire year as larvae beneath the bark.

WESTERN PINE BEETLE, *Dendroctonus brevicomis*

Damage/Description: Western pine beetles prefer ponderosa pines. They usually attack middle-sized to large mature trees with a diameter of 6 inches or more. The infestation begins midway down the tree with further attacks above and below.

D. brevicomis

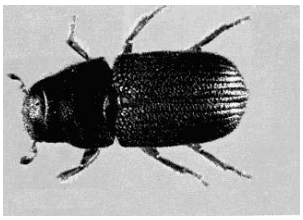
Red-brown boring dust appears and small pitch tubes are present. Western pine beetles are unusual in that they also feed in the bark. Their galleries wind up and down, crossing and recrossing each other. (Figure 1) The beetles are dark brown to black and a little less than 1/4 inch. (Figure 2)

RED TURPENTINE BEETLE, *Dendroctonus valens*

Damage/Description: Turpentine beetles can infest any pine species but prefer ponderosa and lodge pole pines. They usually attack large, weak trees.

Turpentine beetle are the largest in the genus averaging 1/4" inches long and are distinctively red-brown. (Figure 2) They leave very large red pitch tubes around the basal three feet of the tree.

Larvae feed in a mass from June to October creating large fan-shaped galleries. (Figure 1) Some galleries actually extend below the soil line. Beetles fly and attack trees from spring to mid-summer.



PREVENTION and CONTROL

There is no control for pine bark beetles once they have entered and infested trees. Carbaryl can be used as a protective measure on highly valued trees but this is a preventative measure only and is not effective once beetles have entered trees.

Bark beetles cannot successfully invade healthy pine trees. Therefore the best and most practical method of control is preventing their attack.

- Keep trees sufficiently watered. This is of key importance, especially under drought conditions.
- Overnight soakings are recommended. Deep irrigation in late fall is important.
- Fertilize trees if growth is poor or tree is yellowing.
- Remove diseased or injured trees.
- Thin overly dense stands of trees to reduce competition.
- Cut down infested trees during the dormant season or before beetles emerge.
- Remove downed trees and any slash before beetles produce new broods.
- If wood is to be used for firewood, cut into lengths and cover completely with plastic. This prevents beetles from moving to other trees. The heat created by the plastic will kill beetles and larvae.

Appendix A: Compiled by Tonie Fitzgerald. For more information, contact Master Gardeners at (509) 477-2181.

Revised January 2005

APPENDIX B

Identifying the Trees at Fancy Frog Forest

Ponderosa Pine:

Needles in bunches of two and three, 5 to 11 inches long, stout, dark yellowish-green.

Longest needled pine

Bark is brown or cinnamon-red, irregularly divided into plates. (young fast growing trees have nearly black bark)

Cone is 3 to 6 inches long, rounded asymmetrical, yellow-brown, the scales armed with prickles.

Common names: western yellow pine, yellow pine, bull pine, and blackjack pine.



Lodgepole Pine:

Needles grow in clusters of two needles each, 1 to 3 inches long, often twisted.

Bark is reddish brown to nearly black, covered with loosely attached scales.

Cone: asymmetrically oval cone ¾ to 2 inches long



Western Larch: (Tamarack)

Needles are deciduous, scattered singly or in clusters on short spurs, triangular, 1 to 1 ½ inches long, light green, fine tipped and soft.

Bark is dark to reddish-brown, broken into oblong, scaly plates.

Cone is upright, oblong, 1 to 1 ½ inches long; bracts are much longer than the scales and terminate in a long spike.



Douglas Fir:

Needles are scattered singly over the twigs, often in rows on opposite sides of the twigs, ¾ to 1 ¼ inches wide and mostly blunt at the apex, yellow-green or blue green.

Bark is smooth on young trees, dark gray-brown and often has resin blisters. It later becomes thick and reddish-brown and divided by deep, irregular fissures. Layers of light colored, corky material are mixed with the reddish-brown.

Cone is 3 to 4 inches long, oblong-cylindrical, pendant, with three-lobed bracts.



Western Hemlock:

Needles are scattered singly on twigs and are usually arranged in flat rows on each side of the twig, about 1/4 to 3/4 inch long and 1/16 inch wide, on short petiole (leaf stem), rounded at apex, dark green and shiny above, marked below with white bands of stomata.

Bark is dark brown tinged with dark red, divided into broad flat ridges with scales, thinner than that of the Douglas Fir, and no corky layers.

Cone is a pendent cone, ovoid-oblong, ½ to ¾ inches long and light brown in color.

Forms a pyramidal crown with a drooping leader.



Subalpine Fir:

Needles are scattered singly, 1 to 1 1/2 inches on, blue-green, flattened, marked on both sides by white rows of stomata.

Bark is reddish-brown, divided into broad scaly plates by shallow fissures.

Cone is an upright, oblong-cylindrical cone, 2 1/2 to 4 inches long, and dark-purple to nearly black. Cone scales fall off at maturity.

IMPORTANT CHARACTERISTICS are single needles scattered on twigs; upright cones, usually forms a dense, spire-like crown.




Grand Fir:

Needles are scattered singly on twigs, 3/4 to 2 1/4 inches long, usually in two rows along the sides of the twig; dark green, marked on the lower side only by white bands of stomata.

Bark is grayish-brown, smooth on young stems, becoming deeply divided into flat ridges. Resin blisters are present on smooth bark. It is purplish-brown in cross-section.

Cone is an upright, cylindrical cone, 2 to 4 1/2 inches long, greenish-purple. Cone scales fall off at maturity

IMPORTANT CHARACTERISTICS are single needles, arranged on the twig to give a flattened appearance, the cone is upright. Sometimes mistake for Hemlock but the needles are longer.