

# APPENDIX F

## Port-Orford Cedar Risk Key

### Final Environmental Impact Statement

#### Motorized Vehicle Use on the Rogue River-Siskiyou National Forest

**Frank Betlejewski**  
**September 1, 2009**

Port-Orford-cedar (*Chamaecyparis lawsoniana*) is native to an area along the Pacific Coast from Coos Bay, Oregon, to the mouth of the Mad River near Arcata, California. Its range extends from the coast to about 50 miles inland. There is also a small disjunct population in the Scott Mountains of California.

Port-Orford-cedar (POC) program objectives are to maintain POC as an ecologically and economically significant species on National Forest (NF) lands. Port-Orford-cedar management provides cost-effective mitigation for controllable activities creating appreciable additional risk to important uninfected POC, not to reduce all risk to all trees at all cost (USDA-FS 2004). Port-Orford-cedar management slows the spread of the non-native pathogen, *Phytophthora lateralis* (PL), enough to maintain POC's significant ecological and economic functions, without the cost of the management strategy exceeding its effect on the value of these functions.

The Port-Orford Cedar Risk Key is a site-specific analysis to help determine where risk reduction management practices would be applied. Changes in motorized vehicle use were analyzed (as associated with FEIS Alternatives 3, 4, and 5). **Only those roads or trails that trigger the POC Risk Key are analyzed.** Not all of the proposed activities are part of every alternative. The Risk key follows the format required by USDA-FS USDI-BLM 2004: Record of Decision and Final Supplemental Environmental Impact Statement – Management of Port-Orford-Cedar in Southwest Oregon.

**1a.** Are there uninfected POC within, near<sup>1</sup>, or downstream of the activity area whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?

**YES**

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<sup>1</sup> In questions 1a and 1b, "near" generally means within 25 to 50 feet downslope or 25 feet upslope from management activity areas, access roads, or haul routes; farther for drainage features; 100 to 200 feet in streams.

**1b.** Are there uninfected POC within, near<sup>1</sup> or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological, Tribal, or product use or function measurably contributes to meeting land and resource management plan objectives?

**YES**

**1c.** Is the proposed activity area within an uninfested 7th field watershed?<sup>2</sup>

**YES – 10C03W**

If the answer to all three questions, 1a, 1b, and 1c, is NO, then risk is low and no POC management practices are required. If the answer to any of these three questions is YES, continue.

**2.** Would the proposed activities introduce appreciable additional risk<sup>3</sup> of infection to uninfested POC watersheds?

**YES**

**Gold Beach Ranger District**

**Gold Beach Ranger District Fifth Field Analytical Watersheds Affected by Proposed Activities:**

Fifth Field Analytical Watersheds					
	Hunter Creek	Illinois River / Klondike Creek	Illinois River / Lawson Creek	Lower Rogue River	Siskiyou Risk Region
Acres POC	10,316	2,788	6,533	21,487	116,374
Acres PL	956	60	358	3,296	12,800 <sup>1</sup>
% Infested	9.3	2.2	5.5	15.3	11.0

<sup>1</sup>High risk sites only

**Woodruff Trail**

Appreciable additional risk would occur during the construction and use of the approximately 0.5 miles of new motorized trail in Township 36 South, Range 13 West, section 9. This new motorized trail is located in an area that has had POC mapped in the past and is modeled to show that this area contains one or more of the Measurably Contributing Plant Association Groups (PAGs).

<sup>2</sup> Uninfested 7th field watersheds are defined above and are those with at least 100 acres of POC stands, are at least 50% federal ownership, and are free of PL except within the lowermost 2 acres of the drainage.

<sup>3</sup> Appreciable additional risk does not mean "any risk." It means that a reasonable person would recognize risk, additional to existing uncontrollable risk, to believe mitigation is warranted and would make a cost-effective or important difference

## Required Management Practices:

### 1) Roadside Sanitation

Remove POC from both sides of the proposed new motorized trail for a minimum width of 25 feet above the proposed new motorized trail and 25 to 50 feet below the proposed new motorized trail. All sanitation areas should be burned to reduce activity fuels.

### 2) Dry Season Scheduling

Schedule trail construction during the dry season, generally between June 1 and September 30, when conditions are dry and temperatures typically exceed 68 degrees F.

### 3) Wash Project Equipment

Wash project equipment prior to beginning work in uninfested project areas, when leaving infested areas to work in uninfested areas, and when leaving the project area to minimize the transportation of infested soil to uninfested areas. Equipment includes maintenance and harvest equipment coming in contact with soils, and project vehicles, including trucks and crew vehicles, leaving surfaced roads or traveling on other roads deemed at risk for spreading the pathogen (generally project area secondary roads around diseased POC).

Washing areas should be placed at optimum locations for minimizing spread, such as at entry/exit points of the road system with Federal control. Washing should take place as close as possible to infested sites. Wash water will be from uninfested water sources or treated with Chlorox® bleach. Wash water should not drain into watercourses or into areas with uninfested POC. Ideally, equipment should not travel for any substantial distance prior to being washed unless being transported on surfaced roads. Equipment moving into uninfested areas may be washed miles away as long as they do not travel through infested areas to reach their destination.

### Change to Mixed Use on Road 3313

Opening the 3313 road to mixed use would allow ATVs to operate on the road. While the intention is that the ATVs remain on the road surface, off road operation could occur. There is one road segment that intersects one area of measurably contributing POC (118 acres).

FID	ARC_RTE_NO	TMP_TYPE	PROPOSED_A	CUR_CON	Length
21990	3313	Road-FS3	PM	PN	0.21

There is one modeled POC polygon that measurably contributes to meeting management objectives intersected by the 3313 road.

FID	Modeled Measurably Contributing POC Acres
781	118

**Required Management Practice:**

**1) Roadside Sanitation**

Remove POC from both sides of the 3313 road for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels.

**Maintenance Level 1 with *Phytophthora lateralis* to Motorized Trails**

These roads are currently closed to vehicular use. Authorizing use as a motorized trail would introduce appreciable additional risk to POC that measurably contributes to meeting management objectives.

FID	ARC_RTE_NO	PROPOSED_A	CUR_CON	Length
4390	3313110	MT1	Road-FS1	0.4
4392	3313110	MT1	Road-FS1	0.4
4930	3313103	MT1	Road-FS1	0.2
14927	3680195	MT1	Road-FS1	0.2
21644	3313110	MT1	Road-FS1	0.7
21952	3313110	MT1	Road-FS1	0.2

Mapped polygons infested with *Phytophthora lateralis*

FID	INFECTED	NFC	ACRES
202	Y	SIS	55.8
205	Y	SIS	10.1
214	Y	SIS	2.8
307	Y	SIS	2.0
371	Y	SIS	15.0

**Required Management Practice:**

**1) Road Management Measures**

Rock (add surfacing) areas with PL in the road prism

**2) Roadside Sanitation**

Remove POC from both sides of the roads for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels.

**Maintenance Level 1 to Motorized Trails**

These roads are currently closed to vehicular use. Authorizing use as a motorized trail would introduce appreciable additional risk to POC that measurably contributes to meeting management objectives.

FID	ARC_RTE_NO	PROPOSED_A	CUR_CON	Length
4812	3313110	MT1	Road-FS1	0.1
4822	3313117	MT1	Road-FS1	0.8
5017	3680190	MT1	Road-FS1	0.4
14917	3680195	MT1	Road-FS1	0.5
14918	3680195	MT1	Road-FS1	0.2
21554	3313110	MT1	Road-FS1	0.2

Modeled polygons with POC that measurably contribute to meeting management objectives:

FID	Acres
804	7.9
819	4.2
825	14.2
875	861.8
1054	636.9

**Required Management Practice:**

**1) Roadside Sanitation**

Remove POC from both sides of these roads for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels

**Seventh Field Watersheds**

There is one travel route that intersects a seventh field watershed (10C03W):

FID	ARC_RTE_NO	TMP_TYPE	PROPOSED_A	CUR_CON	Length
25	3680409	Road-FS1	MT1	Road-FS1	0.792992

**Required Management Practice:**

**1) Roadside Sanitation**

Remove POC from both sides of the road for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels

The **3318-310 road** has a small PL infestation in the ditchline and on the fill slope behind an existing POC gate. Use of this road as a motorized trail would not introduce appreciable additional risk to adjacent measurably contributing POC, but is identified for treatment.

Partial roadside sanitation (removal of POC less than 6 inches dbh will be completed by October 1, 2009 as part of a separate project. Work will only be done on the first half mile of road behind the gate.

The use of road segments 3313-103 (**FID# 4940**) and 3680-220 (**FID#s 4988 and 5001**) as motorized trails would not introduce appreciable additional risk to adjacent measurably contributing POC, but are identified for future treatment. Remove POC from both sides of these roads for a minimum width of 25 feet above the roads and 25 to 50 feet below the roads. All sanitation areas should be burned to reduce activity fuels.

The use of road segments 3313-103 (**FID# 5016**) and 3680-220 (**FID# 21686**) as motorized trails would not introduce appreciable additional risk to adjacent measurably contributing POC, but are identified for future treatment. Rock (add surfacing) areas with PL in the road prism or remove POC from both sides of the roads for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels.

**Powers Ranger District**

**Powers Ranger District Fifth Field Analytical Watersheds Affected by the Proposed Activities:**

Fifth Field Analytical Watersheds			
	South Fork Coquille River	West Fork Cow Creek	North Coast Risk Region
Acres POC	68,990	1,303	126,248
Acres PL	3,858	634	18,900 <sup>1</sup>
% Infested	5.6	48.7	15.0

<sup>1</sup>High risk sites only

**Changing the 3348 Road to Mixed Use**

Opening the 3348 road to mixed use would allow ATVs to operate on the road. While the intention is that the ATVs remain on the road surface, off road operation could occur. There are seven road segments that intersect areas of POC root disease.

FID	ARC_RTE_NO	TMP_TYPE	LABEL	PROPOSED_A	CUR_CON	Length
14	3348	Road-FS3	3348	PNM	PN	0.3
15	3348	Road-FS3	3348	PNM	PN	0.7
22	3348	Road-FS3	3348	PNM	PN	0.2
25	3348	Road-FS3	3348	PNM	PN	0.1
27	3348	Road-FS3	3348	PNM	PN	0.4
28	3348	Road-FS3	3348	PNM	PN	0.2
29	3348	Road-FS3	3348	PNM	PN	1.6

2008 mapped polygons with PL that are intersected by the 3348 road:

FID	ACRES	UNIQUE_ID	DISEASE	LIVE_POC_CC	SURVEY_DAT
95	11.9	14	66	6 to 20%	9/20/2007
104	0.5	25	66	6 to 20%	9/20/2007
109	7.8	3	66	2 to 5%	9/20/2007
110	2.4	30	66	6 to 20%	9/20/2007
112	6.9	7	66	6 to 20%	9/20/2007
114	1.2	13	66	2 to 5%	9/20/2007
115	0.1	24	66	2 to 5%	9/20/2007
119	0.2	21	66	2 to 5%	9/23/2007
125	0.1	16	66	2 to 5%	9/23/2007
126	0.2	17	66	2 to 5%	9/23/2007
272	0.2	49	66	2 to 5%	9/23/2007
273	0.4	13	66	6 to 20%	9/23/2007

There are nine road segments that intersect areas of measurably contributing POC:

FID	ARC_RTE_NO	TMP_TYPE	PROPOSED_A	CUR_CON	Length
14	3348	Road-FS3	PNM	PN	0.3
15	3348	Road-FS3	PNM	PN	0.7
16	3348	Road-FS3	PNM	PN	0.1
21	3348	Road-FS3	PNM	PN	0.2
22	3348	Road-FS3	PNM	PN	0.2
23	3348	Road-FS3	PNM	PN	0.5
25	3348	Road-FS3	PNM	PN	0.1
27	3348	Road-FS3	PNM	PN	0.4
29	3348	Road-FS3	PNM	PN	1.6

Mapped polygons with measurably contributing POC that are intersected by the 3348 road:

FID	Area Acres	UNIQUE_ID	DISEASE	LIVE_POC_CC	SURVEY_DAT
2	31.3	26	0	6 to 20%	9/20/2007
3	32.2	28	0	6 to 20%	9/20/2007
6	7.1	32	0	6 to 20%	9/20/2007
7	37.9	12	0	6 to 20%	9/20/2007
8	8.3	14	0	6 to 20%	9/20/2007
11	22.0	6	0	6 to 20%	9/20/2007
75	45.7	14	0	6 to 20%	9/23/2007

### Required Management Practice:

#### 1) Roadside Sanitation

Remove POC from both sides of the road for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels. In areas of POC root disease, remove all live POC within three crown radii from the last infected tree. Remove all POC snags. Burn the treated area.

One 0.62 mile long segment of road 3353320 (**FID# 2812**) passes through a 1.6 acres pocket of PL (**FID# 386**). This area is inside the recently designated Copper Salmon Wilderness Area. Use of this trail would not introduce appreciable additional risk to adjacent measurably contributing POC, but it is identified for future treatment. Export of PL off this site could promote new areas of POC root disease. Trailside sanitation similar to that for the 3348 road or rerouting the trail away from the infested area is recommended.

### **Wild Rivers Ranger District**

None of the proposed activities trigger the POC Risk Key on the Wild Rivers Ranger District. There would be no appreciable additional risk to POC that measurably contribute to meeting management objectives on the Wild Rivers Ranger District.

One 1.85 mile long segment of trail 1184 (**FID# 20770**) passes through a 1.7 acres pocket of PL (**FID# 12**). Two segments of road 4300-011 (**FID# 16344, 0.7 miles and FID# 7326, 0.8 miles**) intersect a 2.6 acre PL polygon. Use of this trail and road would not introduce appreciable additional risk to adjacent measurably contributing POC, but it is identified for future treatment. Export of PL off this site could promote new areas of POC root disease. Remove POC from both sides of the road for a minimum width of 25 feet above the road and 25 to 50 feet below the road. All sanitation areas should be burned to reduce activity fuels. In areas of POC root disease, remove all live POC within three crown radii from the last infected tree. Remove all POC snags. Burn the treated area.

While the proposed activities would not add appreciable additional risk to POC that measurably contribute to meeting management objectives, a **seasonal closure** (generally between June 1 and September 30, when conditions are dry and temperatures typically exceed 68 degrees F) of the **Biscuit Hill Trail** (4402-494) is recommended.

### **Factors Affecting Pathogen Spread**

When evaluating the likelihood of long-distance spread to and establishment of PL into a new area, consideration needs to be given to the probabilities that: (1) viable inoculum will be picked up at an infested source; (2) the inoculum will be carried to a particular uninfested area; (3) the inoculum will remain viable during transit; (4) the inoculum will be deposited in the new site; and (5) the inoculum deposited will infect a POC and disease establishment will result. A number of factors influence inoculum accession, spread, and establishment of PL, especially:

**Character of site of origin:**

The potential for carriers of PL entering a possible inoculum source area varies, and is dependant upon the characteristics of the site entered. Inoculum clearly will not be available on a site with no infection. Areas with obvious infection of POC and where certain kinds of wet conditions prevail are the most likely places for inoculum to be acquired.

**Type of carrier:**

Vehicles (both motorized and non-motorized), equipment, humans on foot, and animals (especially cows, horses, and elk) have been implicated in carrying PL. Probability of successful spread is greater with the larger carriers, those that transport greater amounts of soil, carriers most likely to access infested areas, and those that can rapidly travel to new sites.

<b>Time of year of transport event:</b>	Likelihood of acquiring inoculum, successfully transporting it, and establishing disease at a new site are greatly favored by cool temperatures, and probability of infection is much greater during wet periods than dry periods. Also, inoculum is most likely to be picked up from an infested site during a wet period when infested soil is muddy and prone to adhere to the carrier. Probability of spread and establishment of new infections is greater with soil movement in late fall, winter, and early spring than summer, and is greater in rainy rather than dry weather.
<b>Distance traveled and associated time elapsed:</b>	Probability of successful delivery of viable inoculum from one site to another decreases with distance traveled and associated time elapsed since inoculum was picked up.

### **Port-Orford-Cedar Management and Mitigation of Pathogen Spread**

A number of management techniques are recommended for preventing spread of PL or protecting uninfested areas:

- a) Roadside sanitation (includes eradication treatments);
- b) Re-routing roads and trails;
- c) Prescribed burning;
- d) Refraining from building roads into uninfested areas
- e) Public education

### **Factors Affecting Risk of Infection**

Jules et al. (2002) showed that the incidence of new POC infection was positively associated with 3 factors:

#### **1) Distance to the nearest POC**

In infested streams, the mean distance from a road crossing a stream to the nearest POC was 10.5 meters. In uninfested streams, the mean distance from a road crossing a stream to the nearest uninfested POC was 117.7 meters.

#### **2) Host abundance**

In infested streams, the mean number of trees in proximity to the road crossing was 18.5 POC. In uninfested streams, the mean number of trees in proximity to the road crossing was 6.3 POC.

#### **3) Catchment area**

Catchment area is most directly an indicator of streamflow in the creek. Crossings with high catchment area were more likely to have flowing water during summer months while low catchment areas were seasonal. Mean catchment area, for infested streams, was 3,924.5 square kilometers compared to 1,759.3 square kilometers for uninfested streams.

Knowing which factors are associated with incidence of new infection sites is an important tool in reducing the potential for spread of the pathogen and occurrence of new infection. There is an important distinction that must be made when reviewing the information provided by Jules et al. The first incidence of infection in this study was dated as 1977. This is several years before the 1988 completion date of the Region 5 -Region 6 Port-Orford-Cedar Root Disease Action Plan. Exactly which type(s) of mitigation were employed (if any) in the study area from 1977 to the adoption of the Action Plan is unclear. The paper's conclusions do not account for the more rigorous and routine mitigation required under the March, 2004 management direction.

The question of finality of infestation of *Phytophthora lateralis* is an open one. Preliminary (3 year) monitoring from the Biscuit Fire has shown the following: Twenty-one of twenty-two plots planted in spring 2004 had mortality caused by *Phytophthora lateralis*. *Phytophthora lateralis* mortality in the fall 2004 planting has declined from that seen in spring, 2004. Fewer plots showed *Phytophthora lateralis* caused seedling mortality and fewer seedlings overall were infected. *Phytophthora lateralis* mortality declined to thirteen, nine, and six plots respectively in 2005, 2006, and 2007 (Betlejewski 2009).

## **References**

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