

Pseudocyphellaria mallota Surveys in High Probability Habitat
on the Willamette and Umpqua National Forests
2009 ISSSSP Project

Introduction

The purpose of the project is to (a) test the predictability of models developed for *Pseudocyphellaria rainierensis* and *Nephroma occultum* and (b) conduct surveys for *Pseudocyphellaria mallota* and other sensitive lichens in high probability habitat as determined by models.

Methods

In January 2009, the Regional GIS Team took the raster files developed by the Umpqua National Forest models and created a set of overlay shapefiles (see maps) for *Nephroma occultum* only habitat (green squares), *Pseudocyphellaria rainierensis* only habitat (purple squares) and where both overlap (red squares). We hypothesized that overlapping sites would be high probability habitat for *Pseudocyphellaria mallota*. We mapped these on 1"/mile District maps so we could visualize distribution of high probability habitat across the Forest.

On February 18, 2009, the surveyors met to discuss high probability habitat and choose where to conduct surveys. Alice Smith shared her experience of finding the species between 2000-3100 feet in elevation in transitory habitats such as small fine branches that fall off conifer trees. Substrates have ranged from Douglas fir to western red cedar, Pacific silver fir and yew. Survey areas were selected in the north (on Sweet Home and McKenzie River and the extreme northern part of Middle Fork) from high probability overlapping habitat. On the Middle Fork District, some survey areas were only high probability for *Nephroma occultum*. Survey areas were selected to represent the locations along a longitudinal gradient on each District.

Survey areas were mapped on digital orthographic quads to determine whether habitat still existed (some had been harvested and was no longer potential habitat). The largest extant stands were chosen to survey within these sites (see Tables below and circled survey areas on raster maps).

Selection of survey sites on the Umpqua was similar except that the modeled suitable habitat for *P. rainierensis* had to be buffered prior to being intersected with the *N. occultum* model because of the paucity of habitat in this area. Three areas were selected for survey based on high concentration of overlapping habitat and reasonable proximity to roads for accessibility.

All selected locations (approx 20 acres/location) were surveyed using the intuitive controlled survey method; surveyors concentrated on fine branches and litterfall.

Results

Sweet Home

Twelve stands were surveyed in the spring of 2009. Three new occurrences were located during the course of the surveys: two new sites of *Pseudocyphellaria rainierensis* and one new site of *P. mallota*. Surveys were conducted by Alice Smith and Krista Lopez.

Date Surveyed	Location of Survey	Predicted Species	Located Species
2/20/2009	Ridge above Trout Creek Trail – Menagerie Wild. T13S, R4E, Sec 28	<i>Nephroma occultum</i>	<i>Pseudocyphellaria rainierensis</i>
3/13/2009	Rooster Rock Trail in Menagerie Wilderness T13S, R4E, Sec 26	<i>Nephroma occultum</i>	None, not good habitat for cyanolichens
3/13/2009	Santiam Wagon Road east of Mountain House T13S, R4E, Sec 36	<i>Nephroma occultum</i>	None, not good habitat for cyanolichens
5/21/2009	Ram Creek south of Hwy 20; T13S, R5E, Sec 28	<i>Pseudocyphellaria rainierensis</i>	None, but good habitat
5/21/2009	Burnside Road; first patch of old-growth T13S, R5E, Sec 35	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
5/21/2009	Off spur on Burnside Road 247; T14S, R5E, Sec 2	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
5/28/2009	Elbow Creek T15S, R4E, Sec 3	<i>Pseudocyphellaria rainierensis</i>	<i>Pseudocyphellaria rainierensis</i>
5/28/2009	East of Elbow Creek T15S, R4E, Sec 3	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
5/28/2009	Canyon Creek T15S, R4E, Sec 2	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	<i>Pseudocyphellaria mallota!</i>
6/2/2009	Two Girls off Rd 251 T14S, R4E, Sec 23	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
6/2/2009	Two Girls II off Rd 251 T14S, R4E, Sec 26	<i>Pseudocyphellaria rainierensis</i>	None, not good habitat for cyanolichens
6/2/2009	Two Girls off Rd 210 T14S, R4E, Sec 27	<i>Pseudocyphellaria rainierensis</i>	None, not good habitat for cyanolichens

McKenzie River

Eight stands were surveyed in the fall of 2009. One new occurrence of *Pseudocyphellaria rainierensis* was documented in HJ Andrews Experimental Forest. It was found in adjacent surveyed stands; therefore only a single sighting form will be submitted to NRIS. Surveys were conducted by Burtchell Thomas, Jenny Lippert, Crystal Durbeca and Gina Bono.

McKenzie River District

Date Surveyed	Location of Survey	Predicted Species	Located Species
9/21/2009	Lookout Creek, HJ Andrews Experimental Forest, off Rd 1506 T15S R6E Sec 30	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	<i>Pseudocyphellaria rainierensis</i> near water, not good habitat away from riparian
9/21/2009	Unnamed Creek, HJ Andrews Experimental Forest, off Rd 1506 T15S R6E Sec 30	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	<i>Pseudocyphellaria rainierensis</i> near water, not good habitat away from riparian
9/28/2009	Horsepasture/O'Leary Mtn. T16S, R5E, Sec 1,6	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/29/2009	Horsepasture/O'Leary Mtn. T16S, R5E, Sec 5, 4	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/29/2009	Bunchgrass Creek near Smith Reservoir T14S R6E Sec 35	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/29/2009	Bunchgrass Creek near Smith Reservoir T14S R6E Sec 27	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/29/2009	Fritz Creek T 14S R6E Sec 3	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/29/2009	Deer Creek T14S R6E Sec 1	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	Good cyanolichen habitat, none found

Middle Fork

Seven stands were surveyed in fall 2009. One population of *Nephroma occultum* and one population of *Peltigera pacifica* were located. Surveys were conducted by Molly Juillerat, Jayme Selig and Kate Richards.

Date Surveyed	Location of Survey	Predicted Species	Located Species
9/9/2009	Furnish Creek 2417 T20S R5E Sec 25	<i>Nephroma occultum</i>	None
9/14/2009	Christy Creek 1927/606 T18S R5E Sec 31	<i>Nephroma occultum</i>	None
9/15/2009	Hiyu Ridge North of Rd 1927/607 T19S R5E Sec 10	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/15/2009	Hiyu Ridge South of Rd 1927/607 T19S R5E Sec 10	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/24/2009	SW Grasshopper Mt. 1929/766 T19S R5E Sec 22	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, not good habitat for cyanolichens
9/25/09	Halo Creek 2417/101 T20S R4.5E Sec 31	<i>Nephroma occultum</i>	<i>Peltigera pacifica</i>
9/25/09	Joe Goddard's Grove T21S R5E Sec 26	<i>Nephroma occultum</i>	<i>Nephroma occultum</i>

Umpqua National Forest

Three areas were surveyed in late summer 2009. No populations of target species were located. Surveys were conducted by Richard Helliwell, Marty Cox and Katherine Zacharkevics.

Date Surveyed	Location of Survey	Predicted Species	Located Species
8/27/2009	Little Rock Creek 3827 T24S R1E Sec 12	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, but good habitat
9/2/2009	Sharps Creek 2460 and 23 T23S R1E Sec 7 and 18	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, but good habitat
9/10/2009	Canton/McKinley Creeks 23-600/602 T24S R1E Sec 18	<i>Pseudocyphellaria rainierensis</i> and <i>Nephroma occultum</i>	None, but good habitat

Conclusion

Did the model predict rare lichen occurrences?

Alice Smith checked known sites of *Pseudocyphellaria rainierensis* and *Nephroma occultum* against the modeled habitat. On Sweet Home District, the model only predicted 3 out of 17 occurrences of *Nephroma occultum* and 12 out of 49 occurrences of *Pseudocyphellaria rainierensis*. Two *P. mallota* were located in predicted *Nephroma occultum* habitat on Sweet Home and two were found where *Nephroma* and *P. rainierensis* overlapped on McKenzier River. If the models for *Nephroma occultum* and *P. rainierensis* are to be used in the future, further refinement (using new site information and more refined meteorological data) would be useful.

Were new populations of *Pseudocyphellaria mallota* located?

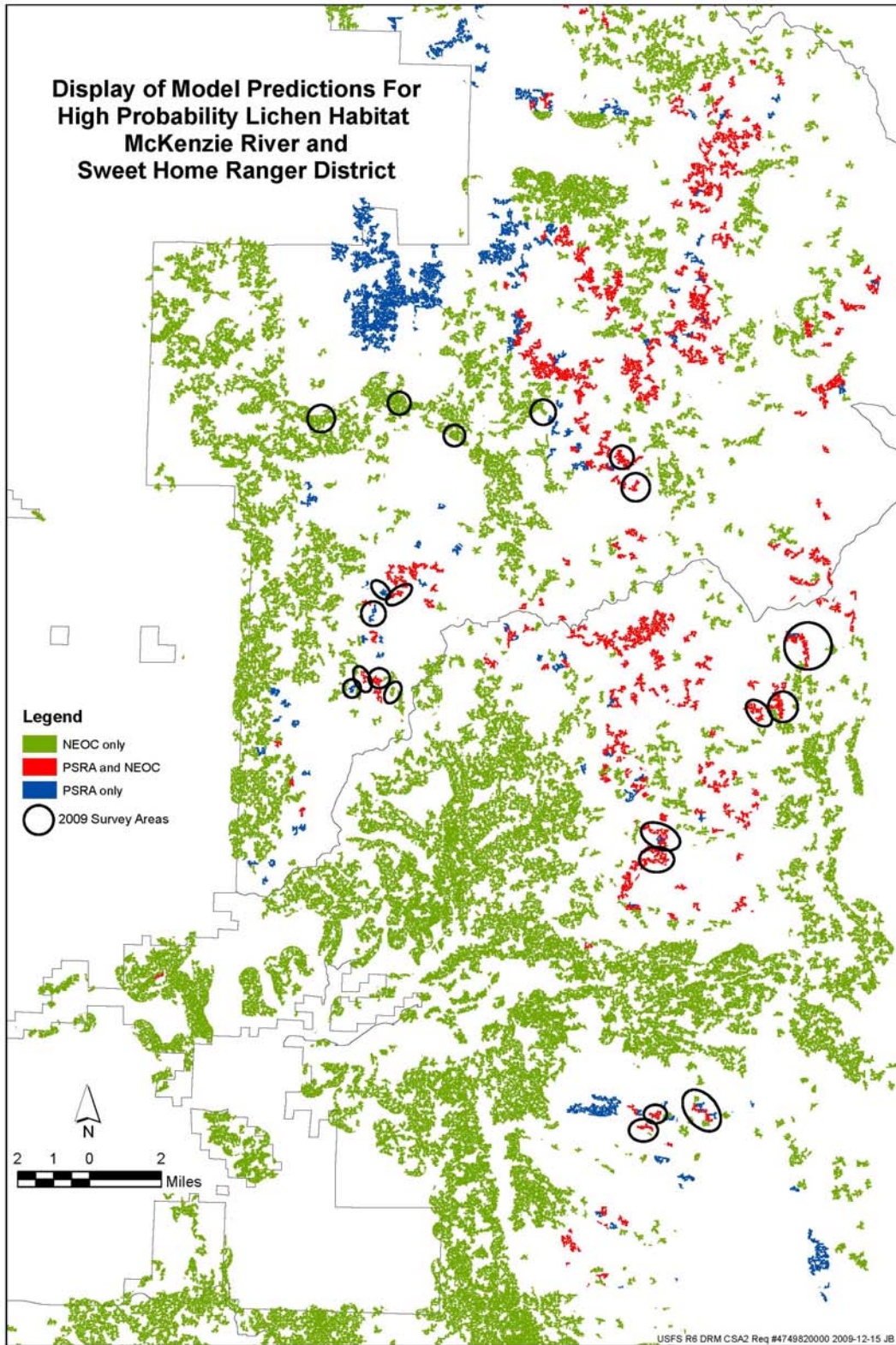
We did find several occurrences of rare lichens during our surveys- more than we would have had we just picked out stands by chance. The original hypothesis that occurrence of *Pseudocyphellaria mallota* could be modeled by overlapping models for habitat of other lichens is not correct all the time, but we did use it to locate one new population.

The lichen *Pseudocyphellaria mallota* seems to be truly rare; its occurrence was less predictable than other cyanolichens such as *Pseudocyphellaria rainierensis* in this survey effort. However, *P. mallota*'s diminutive size and location of populations (in denuded twigs of suppressed understory trees) means that there is a lot of potential habitat out there and it is hard to find!

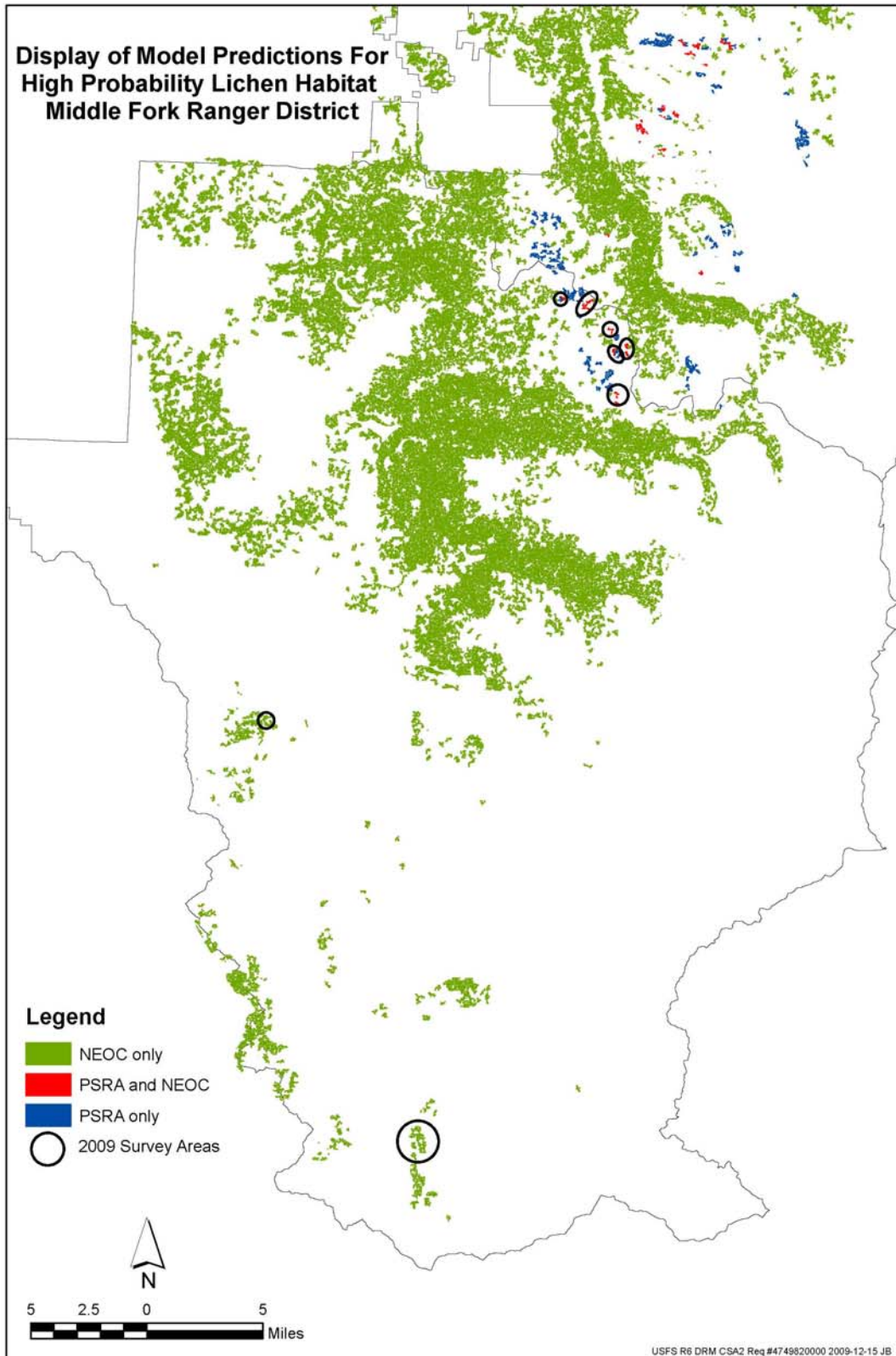
More populations of lichens were documented in spring surveys (Sweet Home), so perhaps detections could have been improved if all Districts had done spring surveys when there is an abundance of litterfall with fresh lichens.

All specimens have been sent for verification of identification and will be entered in NRIS once confirmed.

Willamette National Forest



Willamette National Forest



Pseudocypbellaria mallota habitat

