Pacific Northwest Cooperative Ecosystem Studies Unit
National Park Service

Project Summary Report

Prepared by
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TASK AGREEMENT NO.:	MODIFICATIONS	COOPERATIVE AGREEMENT NO.:	EFFECTIVE DATES:
J8W07100039	02	H8W07060001	08/30/2010 to 4/30/2014

COOPERATOR: Southern Oregon University

PROJECT TITLE: Vegetation Monitoring Site Reconnaissance, Monumenting, and Description in the Klamath Network Parks

PRINCIPAL INVESTIGATOR: Dr. Alissa Arp

AGREEMENT TECHNICAL REPRESENTATIVE: Dr. Daniel Sarr

FISCAL YEAR FUNDING:	ACCOUNT #:		NOT TO EXCEED:
2010	2131-1000-NII (411C)		**$77,340**
2012	2131-1201-NII (411C)		$15,815.50
		TOTAL:	**$93,155.50**

PROJECT OVERVIEW

The implementation of long-term vegetation monitoring requires that sampling sites be located in places that are safe and feasible for sampling. Site reconnaissance, monumenting (i.e., creating permanent markers), and descriptions of sampling sites at six National Park Service (NPS) units provided an important preliminary effort to support and refine the spatial sampling design for vegetation monitoring by the Klamath Network Inventory & Monitoring Program (KLMN). This project pertains to the KLMN parks, including Crater Lake National Park, Lava Beds National Monument, Lassen Volcanic National Park, Oregon Caves National Monument, Redwood National and State Parks, and Whiskeytown National Recreation Area. This was a collaborative effort between Southern Oregon University (SOU) and NPS in establishing permanent vegetation plots for the KLMN parks. SOU scientists were closely involved in the development of the KLMN Vegetation Monitoring Protocol, and student and research staffs have knowledge of the region and field monitoring methods. Site reconnaissance was important because establishment of permanent plots is an unpredictable and time-consuming process that will be difficult to accommodate during an intensive sampling season of formal monitoring. This project laid a foundation for future monitoring and provided essential information about the site conditions, including guidelines for navigating to the field sites. In addition, this project provided educational opportunities to SOU students and staff in back country navigation, reconnaissance, and monumenting techniques. The results of this project were be shared with the public through KLMN newsletter articles, reports, and resource briefs.

PROJECT DELIVERABLES

Personnel and Timing

Beginning in late August 2011 we hired two employees through SOU to assist with monumenting of our permanent vegetation plots at Redwood National and State Parks (Redwood). One was a SOU alumni, the other a University of Oregon alumni. The SOU alumni (Katelyn Detwiler) continued to work for us the following two seasons, and assisted in compiling the final site dossiers. For 2012 we hired another SOU alumni, to assist with plot monumenting at Whiskeytown National Recreation Area (Whiskeytown) and Lassen Volcanic National Park (Lassen). In 2013 we hired a SOU student intern to assist with plot monumentation at Oregon Caves National Monument (Oregon Caves) and Crater Lake National Park (Crater Lake). In summary we hired two employees through SOU each of our three monumenting seasons.

Field Work Overview

Southern Oregon University employees assisted us with site scouting, plot monumenting, and, to a lesser extent, completing plot measurements. Site scouting entailed navigation to sites using maps, compass, and a GPS unit. Once the site was located, the site was evaluated for safety and suitability. Safety suitability considerations included: sustained slopes of greater than 30 degrees, excessive down fall (particularly in riparian sites), talus slopes, excessive off trail travel time (more than 1.5 hrs). While this list is not exhaustive, it serves to show the majority of reasons a plot would be considered unsuitable, and as a result rejected. Once the crew visited a plot and determined it to be suitable, they would monument the site, and if time permitted assist the other crew members with completing plot measurements. Site monumenting entailed installing rebar, tagging trees > 15cm diameter at breast height, and photographing from permanent photo points. For full instructions on site monumenting and measurments see Odion et al. (2011).

Monumenting Summary

Redwood—The SOU crew assisted in scouting, monumenting, and measuring 21 riparin sites. We reached our target number for monumenting and measuring sites.

Whiskeytown—The SOU crew assisted in scouting, monumenting, and measuring 21 matrix, 15 riparian, and 10 high elevation sites. We reached our target number for monumenting and measuring sites, for the matrix and high elevation sites. We still need to scout, monument, and measure 5 riparian sites. An injury to a NPS employee caused us to fall short of our goal

Lassen— The SOU crew assisted in scouting, monumenting, and measuring 18 matrix, 14 riparian, and 10 high elevation sites. We reached our target number for monumenting and measuring sites, for the high elevation sites. We still need to scout, monument, and measure, at minimum, 2 matrix and 6 riparian sites. The Reading Fire in Lassen caused us to fall short of our goal, as we could not access a large portion of the park that was on fire.

Oregon Caves—— The SOU crew assisted in scouting, monumenting, and measuring 10 matrix, sites. We reached our target number for monumenting and measuring sites.

Crater Lake—The SOU crew assisted in scouting, monumenting, and measuring 26 matrix, 20 riparian, and 20 high elevation sites. We reached our target number for monumenting and measuring sites.

Final Product

The final stage of this project was to develop site dossiers, to assist future crews in locating the site and elucidate what they might expect on the way to, and at, the sites. Katelyn Detweiler prepared site dossiers for Lava Beds, Redwoods, Lassen and Whiskeytown from November 2013-January 2014. Katelyn's position was terminated when the money in the agreement ran out, early January 2014. An example site dossier is provided in the appendix.

References

Odion, D. C., D. A. Sarr, S. R. Mohren, and S. B. Smith. 2011. Monitoring vegetation composition, structure and function in the parks of the Klamath Network Parks. Natural Resource Report NPS/KLMN/NRR—2011/401. National Park Service, Fort Collins, Colorado.

Appendix 1. Example site dossier from Redwood National and State Park.

Site Name: **REDW01** **Sample Frame:** Matrix **Date Monumented:** 06/26/2011
UTM Data: Average error +/- 6.4 m; **Accuracy Notes:** N/A
C- 406440, 4628802; **1-** 406420, 4628779; **10-** 406452; 468777; **6-** 406458, 4628826; **5-** 406442, 4628829
Elevation 160; **Avg Slope** 11; **Avg Aspect** 113; **Slope Shape** Concave; **Center Line Azimuth** 14
Visit Notes: N/A

Witness Tree: # 19, SESE; **DBH** 264.5cm; **Azimuth** 270; **Distance** 8.11m
Witness Tree: #21, PSME; **DBH** 133.3cm; **Azimuth** 336; **Distance** 3.3m

Location Notes: 1-10 rebar just NW of huge Redwood with 3 tops. This tree should be visible even over the tall shrubs.
Travel Directions: Park at the pullout where GPS indicates closest to the site. Stay on the left side of the draw. Enter near the east guardrail, jump the guard rail and continue on being sure to stay east (above) the draw at first. **Travel Time:** 25min
Map Location: Extreme North along 199.

Figure A. Location of REDW01.

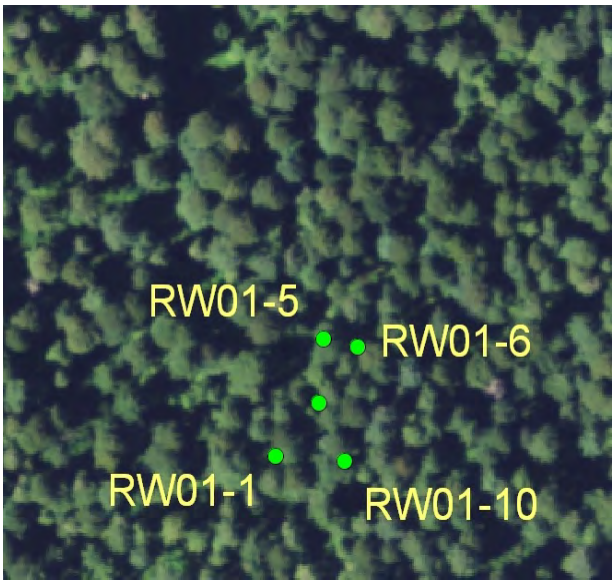

Figure B. Aerial photo of REDW01.

Species List:

Table. Species present at REDW01 (n=16).

Code	Scientific Name	Cover Avg (%)
BLSP	*Blechnum spicant*	0.275
FRPU7	*Frangula purshiana*	R
GASH	*Gaultheria shallon*	0.025
GATR3	*Galium triflorum*	0.075
OXOR	*Oxalis oregana*	0.325
POMU	*Polystichum munitum*	16.75
POSC4	*Polypodium scouleri*	0.025
PSMEM	*Pseudotsuga menziesii var. menziesii*	37.5
SESE3	*Sequoia sempervirens*	18.75
TROV2	*Trillium ovatum*	0.1
TSHE	*Tsuga heterophylla*	43.75
unkFern	unkFern	0.025
unkGalium	unknown *Galium*	0.025
VAOV2	*Vaccinium ovatum*	73.3
VAPA	*Vaccinium parvifolium*	0.55
VISE3	*Viola sempervirens*	0.325

Figure C. REDW01 1-10 long.

Figure D. REDW01 5-6 long.