

LIVING LABORATORIES

Improving Management at Two University of California Natural Reserves

Members: Rebecca Payne, Tia Kordell, Elizabeth Chen, Christin Palmstrom
Client: University of California Santa Barbara Natural Reserve System



1 BACKGROUND

The University of California Natural Reserve System (UCNRS) is a network of preserved natural areas in California that serve as a "library of ecosystems" for science and educational purposes. The 39 reserves in the UCNRS have the mission to foster research and university-level education, practice wise stewardship, and support public service.

SEDGWICK RESERVE	VALENTINE CAMP
LOCATION Santa Barbara County	LOCATION Mono County
SIZE 5,896 acres	SIZE 156 acres
HABITAT TYPES oak woodland, grassland, coastal sage scrub, chaparral	HABITAT TYPES montane forest, montane chaparral, Great Basin sagebrush

Within the UCNRS, UC Santa Barbara (UCSB) manages seven reserves including Sedgwick Reserve and Valentine Camp, two sites with valuable habitats, species, and other natural resources to be used for research, education, and public service. However, UCSB faces challenges in managing these sites and adhering to the UCNRS mission. Specifically, Sedgwick and Valentine face ecological problems of high fire risk and invasive species, have low research and educational use, and seek better community relations.

2 OBJECTIVES

Contribute to four pillars of the UCNRS mission by investigating and recommending adaptive management actions that:

<p>Foster resilient native habitats on-site, lessen risk of fire, and reduce invasive plant species.</p> <p>Wise Stewardship</p>	<p>Increase the number of university-level classes taught at the reserves.</p> <p>Education</p>	<p>Increase the number of research projects conducted at the reserves.</p> <p>Research</p>	<p>Shift to science and environment-based public use by expanding partnerships with these community groups.</p> <p>Public Service</p>
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3 SIGNIFICANCE



Every management action either directly or indirectly affects each of the four pillars of the UCNRS mission – wise stewardship, research, education, and public service. Because of this, we evaluated how management strategies could specifically affect the individual objectives that they target, and how they could affect other management objectives.

By increasing research and education, shifting public use, and improving wise stewardship, Sedgwick and Valentine reserves better fulfill the UCNRS mission. Doing so can allow them to reach their potential as natural reserves and contribute more fully to a healthy planet

4 OUR APPROACH

Data Collection and Evaluation	Scorecard Development																																				
<ul style="list-style-type: none"> To improve wise stewardship of the reserves, we developed management recommendations by reviewing literature, interviewing experts, and creating fire return interval deviation maps to compare the impact of various methods on the reserve habitats. To increase the amount of university-level teaching and research projects at the reserves, we developed management tactics by reviewing literature, compiling reserve use data, interviewing experts and faculty members, analyzing UCNRS social media, and using a survey instrument. To foster positive community relations, we developed general recommendations for the reserves based on reserve use data and surveys distributed to community organizations. 	<p>Using the data we collected, we assessed each management action for its ability to support the UCNRS mission by achieving wise stewardship, research, and education objectives. Management actions were "scored" on management scorecards. On the scorecards, "sub-scores" show the level of impact each action has to the individual objectives. Sub-scores were weighted and combined into a final score, which determined the recommendation level for each management action.</p> <table border="1"> <thead> <tr> <th>Score</th> <th>Color</th> <th>Level of Impact</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>Dark Green</td> <td>High</td> </tr> <tr> <td>3</td> <td>Medium Green</td> <td>Medium</td> </tr> <tr> <td>2</td> <td>Light Green</td> <td>Low</td> </tr> <tr> <td>1</td> <td>Yellow</td> <td>Neutral</td> </tr> <tr> <td>(-)</td> <td>Red</td> <td>Negative</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Score</th> <th>Color</th> <th>Recommendation</th> </tr> </thead> <tbody> <tr> <td>6.1 - 8</td> <td>Dark Green</td> <td>Strongly Recommend</td> </tr> <tr> <td>4.1 - 6</td> <td>Medium Green</td> <td>Moderately Recommend</td> </tr> <tr> <td>2.1 - 4</td> <td>Light Green</td> <td>Weakly Recommend</td> </tr> <tr> <td>1 - 2</td> <td>Yellow</td> <td>Neutral</td> </tr> <tr> <td>< 0</td> <td>Red</td> <td>Do Not Recommend</td> </tr> </tbody> </table>	Score	Color	Level of Impact	4	Dark Green	High	3	Medium Green	Medium	2	Light Green	Low	1	Yellow	Neutral	(-)	Red	Negative	Score	Color	Recommendation	6.1 - 8	Dark Green	Strongly Recommend	4.1 - 6	Medium Green	Moderately Recommend	2.1 - 4	Light Green	Weakly Recommend	1 - 2	Yellow	Neutral	< 0	Red	Do Not Recommend
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5 RESULTS

Wise Stewardship	Research and Education	Public Service																																																																																																																																																								
<p>Sedgwick</p> <ul style="list-style-type: none"> Coastal Sage Scrub: High risk of conversion to grasslands with prescribed burns. Grasslands: Fire and grazing are potential treatment methods to reduce invasive plants. Oak Woodlands: Fuel clearing could reduce invasive plants and lower fire risk to oak trees. <p>Valentine</p> <ul style="list-style-type: none"> Tree Density: Tree density is currently double natural conditions. Thinning and Pile Burning: Mechanical thinning and pile burning are optimal methods to reduce forest density. Prescribed Fire: Potential for prescribed fire to improve forest health once tree density is at a natural level. 	<p>Average Annual Reserve Use</p> <p>Valentine Camp: 83% Class, 13% Research, 3% Public</p> <p>Sedgwick Reserve: 75% Class, 17% Research, 8% Public</p> <p>The majority of survey respondents indicated that distributing more information about the reserves would increase use. Current users predominantly learned about the reserves from colleagues, web searches, and research publications.</p>	<p>Public use is the highest category of use. Overall, survey respondents were satisfied with the reserves' current public service, though some indicated a need for increased public outreach to spread awareness. Email, local news, friends and colleagues, and web searches were listed as the best forms of communication.</p>																																																																																																																																																								
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Further Information

If you have any further questions about our project, feel free to contact us or visit our website:
Email: gp-uclivinglabs@bren.ucsb.edu
Website: <https://uclivinglabs.weebly.com>

To learn more about the reserves, please visit their websites:
Sedgwick Reserve: <http://sedgwick.nrs.ucsb.edu>
Valentine Camp: <http://vesr.nrs.ucsb.edu>

References

University of California Natural Reserve System. (2018). The nature of UC. Retrieved February 11, 2018, from <https://ucnrs.org/>
UC Santa Barbara Natural Reserve System. (2018). Sedgwick Reserve. Retrieved February 11, 2018, from <http://sedgwick.nrs.ucsb.edu/>
UC Santa Barbara Natural Reserve System. (2018). Valentine Eastern Sierra Reserve. Retrieved February 11, 2018, from <http://vesr.nrs.ucsb.edu/>