Improving Management at Two University of California Natural Reserves

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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 scientific 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.

Within the UCNRS, UC Santa Barbara (UCSB) manages seven reserves including Sedgwick Reserve and Valentine Camp. Five 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:

- Foster resilient native habitats on-site, lessen risk of fire, and reduce invasive plant species.
- Increase the number of university-level classes taught at the reserves.
- Increase the number of research projects conducted at the reserves.
- Shift to science and environment-based public use by expanding partnerships with these community groups.

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 reserve 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

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 strategies 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.

5. RESULTS

Wise Stewardship

Sedgwick Reserve

- High risk of conversion to grasslands with prescribed burns.
- Tree density is currently double natural conditions.
- Mechanical thinning and pile burning are optimal methods to reduce forest density.
- Potential for prescribed fire to improve forest health once tree density is at a natural level.

Valentine Camp

- Fire and grazing are potential treatment methods to reduce invasive plants.
- Fuel clearing could reduce invasive plants and lower fire risk to oak trees.
- Wise stewardship recommendations for Sedgwick and Valentine are as follows:
  - Sedgwick Reserve: Wise stewardship recommendations include low-intensity treatments, prescribed burns in non-native grassland, mechanical thinning and pile burning, and prescribed burns in coastal sage scrub.
  - Valentine Camp: Wise stewardship recommendations include low-intensity treatments, prescribed burns in non-native grassland, mechanical thinning and pile burning, and prescribed burns in coastal sage scrub.

Research and Education

Sedgwick Reserve

- Average Annual Reserve Use:
  - Research: 61%
  - Public: 39%

Valentine Camp

- The majority of survey respondents indicated that distributing more information about the reserves would increase use. Current users predominately learned about the reserves from colleagues, web searches, and research publications.

Public Service


When identifying public stakeholders for potential partnership reserves, should focus on the organizations that best support the components of public service in citizen science, community leadership, K-12 environmental education, ecosystem collaborations, and public access and events.

Acknowledgements

If you have any further questions about our project, feel free to contact us or visit our website:

Further Information