

Pacific Southwest Research Station

Sierra Nevada Research Center

Plumas Lassen Administrative Study: Study Module on California Spotted Owl

The Research:

California spotted owls (CSO) have been at the forefront of debate and controversy surrounding forest management in the Sierra Nevada for the past 20 years. Work to date has largely focused on monitoring population trends and demographic parameters, and describing CSO habitat associations. Results to date suggest populations do not appear to have experienced any detectable range contractions across the Sierra Nevada. Concern based on evidence for declines in some CSO populations and uncertainty regarding the suite of habitat requirements necessary to promote viable CSO populations dictates that management should proceed with caution with CSO conservation and management efforts.

While information exists regarding general descriptions of CSO nesting and foraging habitat use associations, significant uncertainty exists regarding the amounts and spatial configuration of habitat associated with high quality CSO habitat in the Sierra Nevada. The amounts and spatial configuration of habitat within home ranges that is necessary to confer a high probability of occupancy and high fitness, as measured by CSO survival and reproduction, is unknown. Finally, no attention has been focused on the landscape scale to explore how habitat patterns and territorial spacing behavior of CSOs are associated with CSO density and distribution at larger spatial scales.

Objectives:

The CSO module of the Plumas-Lassen Study is designed to provide as much information as possible on the association between treatment effects and CSO population and habitat response. The module encompasses the ongoing Lassen Demographic Study that has been conducted between 1990-present and integrates it with broad landscape-scale surveys across the Plumas National Forest to continue to monitor CSO population trends and provide a solid baseline of information to develop multi-scale habitat association models. Our work focuses on CSO response variables and habitat associations at two levels of biological organization: population and individual pair responses. Within a passive adaptive management framework, our objective is to develop predictive models that project the effects of proposed treatments on CSOs and their habitat, directly monitor CSO response, and subsequently evaluate model predictions and reiterate model development or refinement as necessary to produce adaptive management tools that will be useful to land managers. We are also monitoring the status of Barred Owls and West Nile Virus, as these are two additional stressors that may affect CSO populations in the study area.

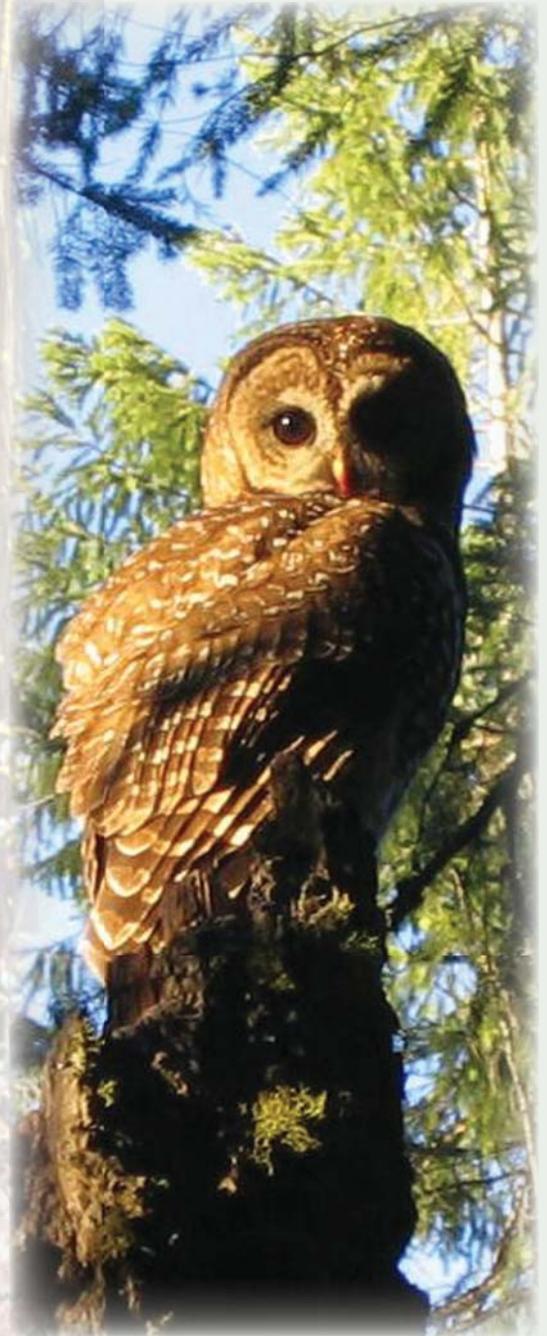


Photo: D. Hansen



Our Mission:

Sierra Nevada Ecosystems are complex and our knowledge of them is incomplete. As a result, the long term outcome of any given land and resource management strategy is uncertain. We will provide assistance to land managers and policy makers by addressing this management dilemma through targeted research, emphasizing an integrated, ecoregional approach to examine particular physical, ecological, and socio-economic issues, across a range of appropriate spatial and temporal scales specific to each issue.

This unit will represent the collective research expertise and interests of scientists located in Fresno, Davis and Albany as well as other scientists within the Pacific Southwest Research Station. With a full spectrum of research, from long term, fundamental research to short-term, tactical applications, this Center is intended to support conservation, restoration, and sustainable utilization of the lands within the Sierra Nevada ecoregion.



USDA Forest Service
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Application of Research Results:

Results from the Lassen Demographic Study have provided pivotal information in debates to list the CSO under the Endangered Species Act and continue to provide the best information available on CSO population trends and demographics. Information on CSO population status is necessary to guide the scope and acceptable level of risk associated with alternative management scenarios. Results of CSO landscape inventories have provided management with current information on the distribution and abundance of CSO territories that has guided in the development and location of proposed treatments. Predictive habitat association models will provide land managers with tools that will improve their ability to design, assess and evaluate the predicted results of alternative land management alternatives. These adaptive management tools can provide a foundation for learning from project implementation to inform future forest management practices. Models can be applied to new areas and owl response will be monitored to test the efficacy of the model and subsequently improve the predictive power of the models through testing with additional data. Work is being conducted in close coordination with National Forests in the Sierra Nevada.

Location:

CSO research is being conducted broadly across the HFQLG Project area in the northern Sierra Nevada. The Lassen Demographic Study is being conducted on the Almanor Ranger District of the Lassen National Forest, with additional landscape inventories and monitoring being conducted on the Mt Hough, Feather River and Beckwourth Ranger Districts of Plumas National Forest.



Photo: P. Stine

Future Directions:

The life history of the CSO, a species that is relatively long-lived with high adult survivorship and low reproductive rates, mandates long-term commitments to field work to discern patterns in population trends and develop an understanding of the factors that contribute to high quality CSO habitat. Intensive investments in research are beginning to show important results. Estimates of population trends from ongoing demographic studies continue to provide critical information for guiding CSO management and conservation efforts in the Sierra Nevada. By combining findings in population demographics with detailed habitat information we will be able to provide valuable insights into how CSO populations cope with different habitat conditions and enable forest managers to make more informed decisions on future land management activities.



Photo: P. Stine