United States Department of Agriculture, Forest Service

Pacific Southwest Research Station

Sierra Nevada Research Center

Plumas Lassen Administrative Study:
Study Module on Landbird

The Research:

The 2001 Record of Decision (reaffirmed in the 2004 ROD) called for an administrative study to test the effects of various forest management techniques on California spotted owl populations and other components of old forests. In investigating this issue, we are also interested in determining how the full compliment of the avian community will respond to different forest management regimes, particularly at the landscape scale.

The core purpose of this research effort is aimed at investigating the response of selected old forest elements, especially the California Spotted Owl, to treatments intended to reduce fuels and re-introduce natural fire regimes. If forest management practices encourage old forest development and forests across landscapes trend towards larger trees and conditions of relatively high canopy cover, how will other members of the avian community respond?

We know the avian community is comprised of species associated with a wide range of forest seral stages, vegetative composition, and structure. This habitat, and hence avian diversity, is due in large part to the ecological dynamism of these forest systems. Though humans have altered these systems, they continue to undergo non-human mediated changes through biological, geological, and stochastic processes. Therefore, it is imperative that managers consider how these changes influence management actions temporally and spatially, and how ecological stability can be achieved in an inherently dynamic system.

Objectives:

- Using birds as ecological indicators help guide and evaluate forest management practices in order to promote an ecologically balanced Northern Sierra ecosystem.

- Determine how the avian community responds to changes in forest structure and composition at the local and landscape scales.

- Understand how other members of the avian community as whole will respond to a late seral forest focused management regime.

Fox Sparrow; Photo: R. Burnett

Evening Grosbeak; Photo: R. Burnett

Collaborators:

This study is being conducted by PRBO Conservation Science in collaboration with staff of the Sierra Nevada Research Center of PSW. We value these opportunities for collaboration that enables a broader understanding of key questions addressed by the Sierra Nevada Research Center.

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Application of Research Results:

We are measuring the relative abundance, spatial distribution, and community composition of landbirds as response variables over space and time. In a modeling context, treatments will be assessed in terms of how effective they are at providing the necessary vegetation structure and composition in order to ensure long term stable avian populations. We will attempt to correlate these responses with known habitat associations to explain the observed changes, in order to improve our ability to predict response at subsequent treatments.

We will be investigating a number of habitat features at the local and landscape scale in order to determine their influence in observed bird species abundance and distribution. We are specifically interested in determining bird interactions with a the following habitat features that we believe may have the greatest influence on the populations of a number of avian species: (a) snags; (b) early seral stage vegetation (montane shrub habitat), (c) frequency and abundance of hardwood tree species (primarily Black Oak), (d) frequency and extent of large tree stands, (e) canopy closure, and (f) forest structural heterogeneity.

Future Direction:

Our aim is to ensure our research is relevant to current forest management questions and can be applied to help guide and evaluate management direction. Under the Sierra Nevada Forest Plan Amendment, the U.S. Forest Service is emphasizing monitoring as part of an adaptive ecological-based approach to forest management. Birds are well suited as indicators of ecosystem health and can play a vital role in this effort. We have implemented several smaller scale focused studies in the Lassen National Forest investigating avian response to aspen, black oak, and riparian restoration. Results from these studies are being used to inform the next generation of restoration treatments to ensure the greatest benefit to birds and other wildlife.

Oregon Junco Nest; Photo: R. Burnett

Location:

The location for this study is on portions of the Plumas and Lassen National Forests, including much of the land base for the HFQLG Pilot Project within the westside coniferous forests. The HFQLG Pilot Project includes approximately 2.5 million acres within the Lassen, Plumas, and Tahoe National Forests.

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