

WILDLIFE HABITAT RELATIONS
AND HABITAT FRAGMENTATION



IV



Wildlife Habitat Relations and Habitat Fragmentation in California's Hardwood Rangelands¹

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The nine papers in the following section on wildlife habitat relations and habitat fragmentation in hardwood rangelands from this symposium illustrate the wide diversity of these two research topics. With increasing human-induced changes to California's hardwood rangeland habitats, it is important that we understand how wildlife relate to these habitats and how wildlife are affected when habitat fragmentation occurs. This section provides some key sources of information in these areas.

Wildlife Habitat Relations

Three papers on bird communities (by Aigner and others, Tietje and others, Verner and others) and one paper on mammal communities (by Laudenslayer and Fargo) are excellent examples of the complexity of these communities and the difficulty in studying them. The papers by Aigner and others and Verner and others resulted from studies in which assessing the impacts of land management activities on birds was a major objective. While Verner and others reported on these impacts, both papers discussed many of the methodological problems associated with these types of studies. Furthermore, Verner and others noted that bird communities in a single grazed plot were relatively similar to those in a single ungrazed plot, although populations of two problematic birds, the brown-headed cowbird (*Molothrus ater*) and starling (*Sturnus vulgaris*), appeared to have increased with grazing.

Two papers provided basic natural history information on nesting habitats of two raptorial birds, the red-tailed hawk (*Buteo jamaicensis*) (by Tietje and others) and California spotted owl (*Strix occidentalis occidentalis*) (by Steger and others). These two natural history studies provide extremely useful information to wildlife scientists and managers recommending and implementing actions intended to conserve these two important raptors.

Structural components of hardwood rangeland habitats, such as logs and snags, are rarely studied, so the paper by Tietje and others on downed woody debris helps fill an obvious data gap. Data gaps for habitat components are particularly onerous because most conservation recommendations are directed at habitat components, not wildlife populations and communities.

Habitat Fragmentation

Habitat fragmentation is any process that reduces habitat continuity (Lord and Norton 1990). Oak (*Quercus* spp.) woodland habitats are fragmented by environmental processes and human activities across a wide range of spatial scales. To date, there has been very little research into either the spatial pattern of

¹Presented at the Symposium on Oak Woodlands: Ecology, Management, and Urban Interface Issues, March 19–22, 1996, San Luis Obispo, Calif.

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fragmentation in hardwood rangelands or the effects of habitat fragmentation on the distribution and abundance of wildlife species. Of the two papers presented in the Habitat Fragmentation section, one focused on fragmentation patterns and processes, and one was more concerned with wildlife effects.

Stephenson and others [these proceedings] considered regional trends in oak woodland habitats in southern California and described a coordinated regional planning effort to conserve remaining habitats. Garrison and Standiford combined plot data and growth model projections to characterize habitat changes due to tree cutting at 19 ranches in Shasta and Tehama counties. Habitat relationships models for 21 species predicted that only one species would be negatively affected by woodcutting, while seven would be positively affected and 13 would be unaffected.

Acknowledgments

Funding for the staff time of Barrett Garrison to write this paper was provided by the Pittman-Robertson Federal Aid in Wildlife Restoration Act.

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