

Western Ecological Research Center

Publication Brief for Resource Managers

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An Approach for Monitoring Bird Communities to Assess Development of Restored Riparian Habitat

A common goal of riparian restoration is to create habitat for bird species threatened by habitat loss. Birds are readily detected and monitored and thus useful in evaluating the progress of restored sites towards achieving structural and functional attributes of “natural” habitat. However, riparian bird communities are large and diverse, and simple comparisons of typical measures, such as species richness, between natural and restored sites can be uninformative and even misleading. USGS scientists Dr. Barbara E. Kus and Peter P. Beck sought to identify a subset of riparian species that best reflect habitat changes at developing restoration sites by examining changes in guild structure and abundance over time at a southern California restoration site. The results of their research are published in a new book on California riparian systems.

The researchers compared breeding season richness and abundance of bird guilds defined by habitat type preference, structural association, and foraging style from 1998–2000 at a 17-hectare restoration site and adjacent natural reference site, and quantified vegetation structure at both sites annually. They found that the guilds showing the greatest response to increases in foliage cover and height included woodland species and, to a lesser extent, willow riparian specialists; species requiring high canopy or a stratified canopy with both high and low cover; and foliage gleaners and aerial foragers. In contrast, habitat generalists, the most abundant species at restoration sites, were uninformative with regard to changes in vegetation structure as the site matured. The scientists identified a list of 13 species, roughly one-tenth of the species typical of southern California woodlands, that collectively serve as an “indicator” guild for tracking habitat change: black-chinned hummingbird, Pacific-slope flycatcher,

Management Implications:

- Analyzing riparian bird communities by guilds allows reduction of a large number of species to a tractable number of subdivisions, and avoids pitfalls of single-species comparisons or simple comparisons of species richness across sites.
- Foliage gleaners and willow/woodland species associated with high canopy complexity are the most responsive to vegetation development at restoration sites, while habitat generalists, open country and shrubland species are least responsive.
- The indicator guild of 13 species presented here provides a basis for more specificity in the development of success criteria and monitoring programs for restoration projects.

willow flycatcher, Bullock’s oriole, American goldfinch, black-headed grosbeak, Hutton’s vireo, least Bell’s vireo, orange-crowned warbler, yellow warbler, yellow-breasted chat, Wilson’s warbler, and Swainson’s thrush. They suggest that focusing monitoring effort on this subset of species, half of which are sensitive, will not only promote more efficient use of scarce time and resources, but will provide a standardized and quantitative means for using bird community development to track restoration success.

Kus, B. E., and P. P. Beck. 2003. An approach for monitoring bird communities to assess development of restored riparian habitat. Pages 396–406 in P. M. Faber (ed.). California Riparian Systems: Processes and Floodplain Management, Ecology, and Restoration. Riparian Habitat Joint Venture, Sacramento, Calif.