



Klamath Bird
Observatory

Birds in Mixed-conifer Hardwood Forests

Managing fire-adapted ecosystems in southwestern Oregon

Decision Support Tool

DSTs present relevant information from regional research and monitoring efforts and applicable literature to inform land management decisions.

DST Framework

Klamath Bird Observatory DSTs convey science-based information to stakeholders who can implement strategies that benefit birds and their habitats. Our DSTs identify links between management challenges and bird conservation objectives.

Why Birds?

Birds are excellent ecological indicators. Their habitat associations are well known and they respond quickly to changes in habitat. Many species can be easily and inexpensively detected using standard monitoring methods. Partners in Flight has identified conservation focal species that are strongly associated with important habitat attributes. These focal species demonstrate measurable responses to management that alters their habitat attributes. Therefore bird monitoring can be used as a cost-effective tool for evaluating the effectiveness of management actions within an adaptive management framework.



Mixed-conifer Hardwood Forest

Ecological diversity is high in mixed-conifer hardwood forests of southwestern Oregon. Some of the dominant tree species in this habitat are Douglas-fir, true firs, ponderosa pine, oaks, and Pacific madrone. This forest type is found at elevations from sea level to ~6,000 feet. Unlike the wetter climates in much of western Oregon, the climate conditions in parts of southwestern Oregon tend to be much milder and drier as characteristic of a Mediterranean Climate.



Conservation Concerns

Partners in Flight has developed a series of regional bird conservation plans that identify habitat conservation objectives for birds that are associated with specific habitat types. The Oregon-Washington Partners in Flight plan titled *Habitat Conservation for Landbirds in Coniferous Forests of Western Oregon and Washington* identifies important conservation issues and needs in the mixed-conifer hardwood forests of southwestern Oregon's Klamath Mountains:

- This habitat supports the highest coniferous forest bird diversity in all of western Oregon and Washington.
- This biodiversity is associated with structural complexity and a high diversity and abundance of hardwood trees.
- This diverse forest composition and structure, historically maintained by frequent mixed-severity fires, has been altered by a combination of timber and fire management.



Mixed-conifer hardwood forest in the Klamath Mountains of southwestern Oregon.



Conservation Focal Species and Habitat Objectives

The Oregon-Washington Partners in Flight coniferous forest conservation plan identifies focal species that are associated with important habitat attributes in functioning coniferous forest ecosystems. By managing landscapes for habitat attributes that are important for these species, many other species and elements of biodiversity benefit. Habitat objectives for focal species that occur in mixed-conifer hardwood forests of southwestern Oregon include a mix of the following attributes.

- Mature forest conditions including:
 - ◊ large snags
 - ◊ deciduous canopy trees
 - ◊ mid-story tree layers
- Younger stands including:
 - ◊ closed canopy
 - ◊ open mid-story
 - ◊ deciduous understory
 - ◊ forest floor complexity
 - ◊ deciduous canopy trees
- Sapling/seedling habitats including:
 - ◊ residual canopy trees
 - ◊ snags
 - ◊ deciduous vegetation
- Mixed forests including:
 - ◊ pine-oak canopy/subcanopy
 - ◊ dense shrub understory
 - ◊ shrub-herbaceous interspersion
 - ◊ forest canopy edges
 - ◊ post-fire conditions



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Monitoring

As management in mixed-conifer hardwood forests is implemented, bird monitoring can be used to evaluate the ability to meet multiple land management objectives within an adaptive management framework. Bird monitoring provides information about species composition, abundance, and fitness (e.g., productivity). Monitoring the response of birds to land management allows us to evaluate its effectiveness. Results can be used to inform future management and identify opportunities to tie bird conservation objectives with priority management objectives, such as fuel reduction.

Sponsors

Joint Fire Sciences Program

National Fish and Wildlife Foundation

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Partners in Flight is a voluntary coalition dedicated to "keeping common birds common."
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Land Management Challenges and Conservation Opportunities

The mosaic of structurally diverse mixed-conifer hardwood forests in southwestern Oregon was historically maintained by frequent mixed-severity wildfires. A century of fire suppression has increased the risk of uncharacteristically severe wildfires. To address this management challenge various projects involving a variety of forest treatment prescriptions are being implemented to restore these fire adapted forest ecosystems and reduce risks associated with stand replacing fires.

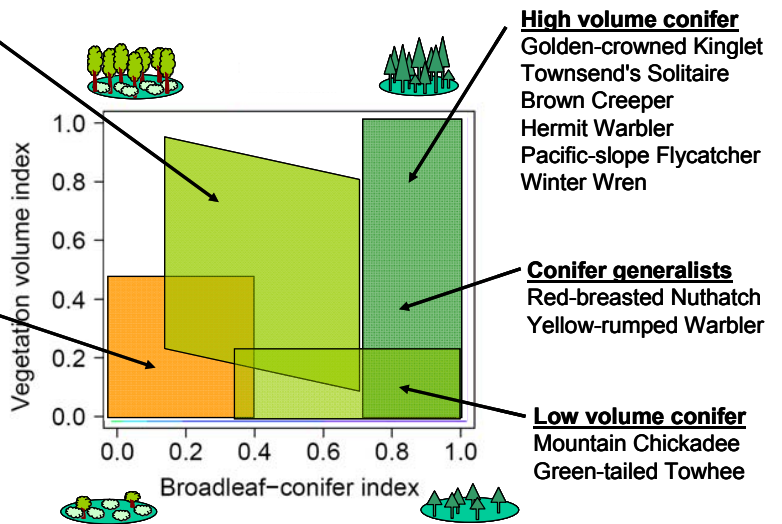
Bird monitoring efforts in southwestern Oregon have resulted in models that predict the occurrence of birds, including conservation focal species. Using simple forest characteristics, such as vegetation volume and conifer-hardwood composition, bird occurrence can be predicted across varying forest conditions. Forest characteristics can also be used to describe the diverse mosaics typically found in fire-adapted mixed-conifer hardwood forests, as well as forests that have become less diverse as a result of fire suppression.

Broadleaf-conifer mix

- Bushtit
- Lazuli Bunting
- Spotted Towhee
- Black-headed Grosbeak
- Black-throated Gray Warbler
- Nashville Warbler

Chapparral and Oak woodland

- Bewick's Wren
- Bullock's Oriole
- California Towhee
- Lesser Goldfinch
- Western Scrub-Jay
- Western Wood-pewee
- White-breasted Nuthatch



Without fire, high volume conifer stands become more abundant. A variety of restoration techniques are being designed to simulate the effects of mixed-severity fire and increase lower volume mixed-conifer hardwood conditions across the landscape. These changes in vegetation can cause bird species composition to shift from a high volume conifer community to a mixed-conifer hardwood community. Black-throated Gray Warblers are expected to benefit from treatments that result in recruitment of broadleaf hardwoods into the forest canopy, while Hermit Warblers are less likely to use this habitat.

Combined with information from the Partners in Flight Oregon-Washington coniferous forest conservation plan, results from local bird monitoring efforts are being used to inform management planning associated with fuel reduction programs in southwestern Oregon. By predicting the response of focal species to management activities and then monitoring the results of various restoration techniques within an adaptive management framework, the ability of such projects to meet desired conditions and bird conservation objectives is being measured.

References (Abbreviated)

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