



FYI

INFORMATION

*A Research
Summary
From the
Washington
Forest
Protection
Association*

Research Shows That Thinning—A Common Technique in Managed Forests—Can Promote Bird Abundance and Species Diversity

In Washington's forests—where hundreds of vertebrate species—mammals, birds and amphibians—use some sort of forest cover for breeding, nesting or foraging—scientists are learning more about promoting a healthy and viable wildlife community. Professional foresters follow this research closely because they are often in a position to improve habitat through a variety of silvicultural techniques. One of

these techniques—thinning—has been the subject of recent research indicating that it promotes the diversity and abundance of bird species in the forest environment. “From a wildlife perspective, thinning can result in changes in habitat quality, much of which is positive,” said Jennifer Weikel, a monitoring specialist, Forest Health and Monitoring, Private and Community Forests Program, Oregon Department of Forestry, in a recent issue of *Western Forester*.

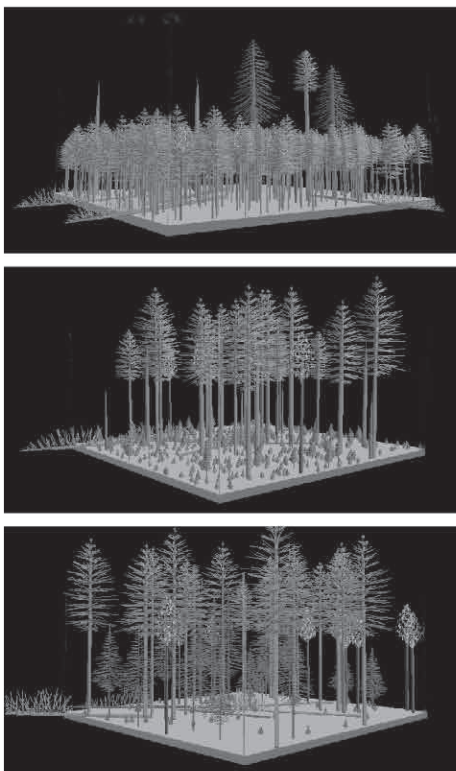
Forests are dynamic ecosystems where change is constant. In addition to the periodic natural events like fire, earthquakes, windstorms and glaciers that had and have obvious, large-scale effects on the forest, forests themselves go through

natural cycles of growth, decay, death and regeneration. When commercial logging began over a century ago, timber harvests became another of the many events that shaped and changed the forest. Within this ever-changing mosaic of forest types, wildlife species—including birds—select habitat with the structural characteristics that offer them needed food and shelter.

Structure Fosters Habitat Diversity

Naturally, different bird species use different types of forests. Some people are surprised to learn that many bird species seek out the open forest areas created by fire, clearcut, or other events rather than older, more mature stands. Goldfinches and many warblers, for example, thrive in the open areas created by clear-cuts.

As a result, wildlife biologists agree that the ideal situation is to provide a healthy mix of forest structures in order to maximize habitat variety. Scientists have also learned that forest age alone is not a good predictor of wildlife habitat. Wildlife ecologist and bird expert John Hayes of Oregon State University says, “Older forest habitat is critical to a number of species, but even if it were possible, maintaining the whole landscape in an old growth state would not be beneficial for all species.” What foresters call stand structure is much more important, and



In the cycle of forest regeneration and growth, foresters create habitat diversity through thinning. The top illustration shows a young, unthinned, closed-canopy stand—perhaps 15–20 years after regeneration—where the lack of light excludes understory vegetation. In the middle illustration, following thinning, more light penetrates to the forest floor and promotes the growth of understory vegetation. The lower illustration shows how thinning promotes vertical layering of shrubs and understory trees. All these stages create diverse vegetative and wildlife habitat.

“From a wildlife perspective, thinning can result in changes in habitat quality, much of which is positive.”

—Jennifer Weikel

modern forestry has reached a point where foresters can create desired forest structure through specific silvicultural treatments.

The Potential of Thinning

Thinning is one of the silvicultural treatments used regularly in managed forests, but until recently there have been few studies examining its effect on birds and other vertebrates. After every harvest in Douglas-fir forests, new seedlings are planted. Once a new stand of trees has reached an age of about 15 to 20 years, foresters often thin out trees to control density, promote growth and maintain the general health of the stand. Thinning may occur again in another 15 years or so, depending on the landowner's management objectives.

Essentially, thinning allows more light to penetrate to the forest floor, which in turn increases the amount of understory vegetation. For birds nesting and feeding in shrub and mid-story tree foliage, for example, habitat variety increases as a result of the vertical layering of vegetation. Increased ground cover benefits birds that nest or forage on the ground. This increase in the structural complexity of vegetation increases the availability and diversity of the niches that birds and other species use.

Definitive Study Shows Bird Response to Thinning

Despite the fact that thinning has been a common silvicultural technique in managed forests for some years, not much research has actually quantified its effects on wildlife. Now a definitive study has measured the effects of thinning on birds. Dr. John Hayes and two of his colleagues recently published a scientific paper on a

For those interested in reading more on the subject, the following papers and articles will be of interest:

John P. Hayes, Jennifer M. Weikel, Manuela M.P. Huso, "Response of Birds to Thinning Young Douglas-fir Forests," *Ecological Applications*, 13(5), 2003

B.A. Haveri, A.B. Carey, "Forest management strategy, spatial heterogeneity, and winter birds in Washington," *Wildlife Society Bulletin*, 28:3, 2000

Jennifer Weikel, "Wildlife Responses to Thinning," *Western Forester*, July/August 2004



Photos by Peter Murray

The Dark-eyed Junco (left) and American Robin are two of a number of bird species whose presence increased in thinned forest stands. A recent major study of thinned, Douglas-fir forests typical of those found in the managed forests of Western Washington found that thinning enhances habitat suitability for several species of birds.

seven-year research study they conducted in young, Douglas-fir forests in Oregon. The researchers found that detections increased for 8 of the 22 species studied and decreased for 9 of the species. There was no appreciable effect on 5 species.

Hayes said that as suspected, some species detections increased and a roughly equal number decreased as a result of the thinning, and a few did not change at all. Any change in forest conditions, either natural or man-made, creates "winners and losers" in relation to wildlife. That is why biologists and ecologists see value in having a variety of forest types and management regimes across the landscape.

Research in Washington State

In Washington State, small, family forest landowners have nearly as many acres of forest land as those owned by large industrial forest companies. The variety of parcel sizes and management objectives provide a varied landscape that helps ensure forest diversity, ultimately benefiting birds and other wildlife species. There has also been some interesting research done here on thinning. Dr. Andrew Carey of the Forest Service's Pacific Northwest Research Station in Olympia, has been studying the potential of variable density thinning to increase bird diversity. Carey says that providing a range of stand densities may ensure habitat that supports a greater number of species.

A Forest Ecosystem Study begun here in 1991 studied bird response to various forest management strategies. In a recent issue of *Science Findings*, wildlife biologist Todd Wilson of the Pacific Northwest

Research Station, said the research indicated, among other things, that "thinning as a forest management strategy produced stands that supported more winter birds and more species of winter birds than legacy retention."

Thinning's Positive Effects

In a recent issue of *Western Forester*, researcher and monitoring specialist Jennifer Weikel of the Oregon Department of Forestry, said, "Overall, commercial thinning seems to have positive to neutral effects on wildlife. Of those species responding negatively to thinning, many are expected to demonstrate a recovery or reversal in response, eventually becoming more abundant in thinned than in unthinned stands."

It is clear that different birds use different habitats on forested land, and to the extent that thinning—a common practice in the cycle of contemporary forest management—increases stand diversity and varies the forest landscape, birds benefit both in species diversity and abundance.



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