



Wildlife Thinning—Science and Adaptive Management on the Tongass National Forest

Background

The Tongass National Forest is the largest temperate rainforest in the world—one in which 92% of original old growth forests remain intact. It is home to bald eagles, Sitka black-tailed deer, bear, salmon and other fish and wildlife vital to the subsistence and cultural lifestyles of Native Alaskans and other rural Alaskans.

Wildlife also provides economic benefits for Southeast Alaska communities through guided hunting, wildlife viewing, and ecotourism.

Although the rate of today's timber harvest is greatly reduced from the past, large-scale logging occurred on the Tongass between the 1950s and 1990s. Thousands of these previously harvested acres are in need of thinning to return to valuable wildlife habitat more quickly—not only for the benefit of wildlife, but for the communities that depend on wildlife and natural resource values.

Current Situation

Past logging on the Tongass has resulted in tens of thousands of young growth stands in a state of regeneration after timber harvest. Initially after harvest, the abundance of sunlight in young growth stands supports a lush growth of grasses, shrubs, and other plants that provide food for deer, nesting for birds, cover for small mammals, and other valuable habitat.

Some young growth forests return to old growth conditions naturally, but many languish in the “stem exclusion” phase for decades, even up to 100 years. During this stage, which begins about 25-30 years after harvest, growing conifer trees crowd together, competing for space and resources. Their interlocking canopies completely shade the forest floor, causing understory plants to vanish due to lack of sunlight. Wildlife will avoid untreated young growth not only because of a lack of forage, but also since the dense vegetation makes travel difficult. (Figure 1)

Crowding also stunts tree growth, retarding long-term development of the stand toward the multi-layer structure that is favorable to wildlife, and reflective of old growth forests. Without thinning, these stands will continue to have little value as wildlife habitat for a lifetime.

The Science of Thinning

While there is ample science to support the benefits of thinning to improve tree growth, there is less science on thinning benefits for wildlife and other resources. Still, a growing body of science from both the Pacific Northwest and Southeast Alaska supports the potential for thinning to improve wildlife habitat for many species. Studies show that, with active management, young stands can contribute some values associated with old growth. Key features of old-growth forest include large, old decadent trees, multiple canopy layers, standing snags, down woody debris, and an abundant herb layer—features which can be created through active management of young, even-aged stands.



Young forest in stem exclusion phase. Crowding stunts tree growth and blocks sunlight.



Young Growth Stand after thinning allows understory growth for wildlife forage.

Research from Southeast Alaska indicates that both pre-commercial and commercial thinning of young-growth stands benefits black-tailed deer by opening up the forest and promoting the growth of understory vegetation (Figure 2). Research also indicates that active young-growth management has potential benefits to other species as well, including predators such as marten and goshawk, by increased small mammal populations. Small mammals such as red squirrels and red-backed voles are major prey for these species, and may benefit from more open forests with abundant understory and by speeding the succession of older young-growth stands toward old-growth condition. In riparian areas, thinning encourages the growth of large conifers, which can produce large woody debris to enhance stream habitat for coho salmon spawning and rearing fry. Studies by the Pacific Northwest Research Station and the Sitka Wood Utilization Center find that removing trees with commercial value (young growth aged 50-90 years) can re-establish understory and provide wood products as well.

Research on the effectiveness of young-growth management is on-going. Peer-reviewed results are not yet available for all of these benefits. Thus, there remains uncertainty about the true benefits of second-growth management to wildlife. Although active management will likely improve habitat conditions in young conifer stands, questions remain regarding the types of treatments, treatment timing, and cost/benefit tradeoffs.

Deciding What to Do Where

While there are still questions, the available science supports that thinning can benefit wildlife habitat. The remaining uncertainty can be addressed in an adaptive management framework. Adaptive management is a continuous process of planning, monitoring, research, evaluation, and adjustment with the objective of improving implementation and achieving desired management goals and objectives. So, we can implement new thinning treatments, and begin to monitor, learn, adapt and adjust. Continued research and monitoring programs such as Tongass-wide Young Growth Studies are designed with this framework in mind.

Deciding how and where to thin is site specific and objective driven. We use a variety of thinning prescriptions, depending on what the stand and landscape objectives are. Different prescriptions result in different habitat conditions for wildlife, timber growth and other resources. Therefore, it's critical that the objectives, both short and long term, are clearly identified. We have more insight on the benefits and trade-offs of prescriptions we have used for a long time, such as even spacing or strip thinning; and less insight on the benefits and trade-offs of other prescriptions such as gaps. Variable-density thinning is a new prescription in Southeast, though it has been used in the Pacific Northwest. Research indicates many benefits and ease of application. Skips (portions of the project area left unthinned) and gaps (openings in the forest canopy), creates a high degree of variability. This variability encourages horizontal and vertical diversity that more closely mirrors the physical and biological traits of old growth forest.

For wildlife, the greatest benefits are likely to occur in the most valuable wildlife habitats—deer winter range, the beach fringe, and other areas where the long term objective is old growth. Several projects are in the planning phase across the forest. The Ketchikan-Misty Fjords Ranger District is planning a project in beach fringe that will use variable-density thinning. Gaps open portions of the stand for more light penetration and understory growth; skips allow workers to avoid the safety hazards of removing snags, leaving those snags for wildlife habitat. This method has many habitat benefits, such as protecting older, larger residual trees; promoting large woody debris in stands; and protecting portions of stands to maintain security, snow intercept and thermal cover for wildlife.

The Tongass has been thinning to benefit wildlife habitat for many years. However, funding has limited the scale of our treatments. The ability to develop commercial markets for the small diameter trees that we remove will allow us to offset the cost of thinning and likely result in many more acres of wildlife habitat improved.

More Information

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