



Forest Service
U.S. DEPARTMENT OF AGRICULTURE



Rocky Mountain Research Station Science You Can Use *(in 5 minutes)*

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Taking Stock of Old Growth: The First Nationally Consistent Inventory Method using FIA Data

On Earth Day, 2022, the White House issued an [executive order](#) requiring federal agencies to inventory the mature and old-growth forests on Federal lands, to complete this inventory within a year of the order, and to make it available to the public. This order extended from the 2021 Bipartisan Infrastructure Law (i.e., the Infrastructure Investment and Jobs Act 2021), which invested \$5.5 billion over 5 years to address some of the USDA Forest Service's most pressing issues, including the increased risk of wildland fire, ecosystem restoration, and the conservation of old-growth forests. To comply with the order and complete

this inventory, Rocky Mountain Research Station scientist Kristen Pelz and other Forest Service researchers and collaborators developed an approach to consistently estimate the extent of these forests using National Forest System (NFS) regional old-growth definitions. They then used this approach to estimate the extent of old-growth forests in the United States using already-available data from the Forest Inventory and Analysis (FIA) program.

The order acknowledged that any method for estimating the extent of old-growth forest on public lands must account for regional and

ecological variations. In the 1990s, most of the National Forest System (NFS) regions developed their own old-growth definitions and criteria that are still used today. Pelz and collaborators worked with NFS regional experts to develop and further refine the criteria that could be applied to existing FIA inventory data. Although the criteria varied widely across regions, most had shared elements, with the most common being a minimum number of large trees.

Applying the regional definitions and criteria to the FIA inventory data, the researchers estimate that approximately 17 percent

Rocky Mountain Research Station researchers have developed the first nationally consistent method for estimation of old-growth forest in the National Forest System such as these old-growth ponderosa pines in the Deschutes National Forest in Oregon. USDA Forest Service image



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(10 million hectares) of the forests on NFS land would be classified as old growth. This number represents the first nationally consistent estimation of old-growth forest in the NFS system. Because it is repeatable, it can be applied to other areas (e.g., Bureau of Land Management land) and managers can apply the method to future FIA data to monitor changes in old-growth forest over time. Pelz explains: “This assessment can give people a sense of how much old-growth forest is in their region. Scientists and managers can further investigate these areas and use these findings to refine their old-growth definitions for local inventories and think about best management practices.”

The inventory of old-growth forest is a launching point for further work by the Forest Service to conserve these areas, as directed by the executive order. Ongoing work includes an analysis of threats to mature and old-growth forests on Federal lands—including from wildfires and climate change—and the development of policies to institutionalize climate-smart management and conservation strategies.



Researchers estimate that approximately 17 percent (10 million hectares) of the forests on NFS land would be classified as old growth. This number represents the first nationally consistent estimation of old-growth forest in the NFS system. USDA Forest Service photo by A. Neukirch

Key Findings/Management Implications

- A consistent approach to estimate old-growth forest extent using National Forest System regional definitions and existing FIA data has been developed.
- Using this method, the researchers estimated that approximately 17 percent (10 million hectares) of the forests on NFS land would be classified as old growth.
- The inventory provides a repeatable method applicable to other areas outside of Forest Service lands, enabling future monitoring and refinement of old-growth definitions.

Further Reading

Pelz, K.A.; Hayward, G.; Gray, A.N.; Berryman, E.M.; Woodall, C.W.; Nathanson, A.; Morgan, N.A. 2023. [Quantifying old-growth forest of United States Forest Service public lands](#). Forest Ecology and Management. 549: 121437.

Woodall, C.W.; Kamoske, A.G.; Hayward, G.D.; Schuler, T.M.; Hiemstra, C.A.; Palmer, M.; Gray, A.N. 2023. [Classifying mature Federal forests in the United States: The forest inventory growth stage system](#). Forest Ecology and Management. 546(4): 121361.

Gray, A.N.; Pelz, K.; Hayward, G.D.; Schuler, T.; Salverson, W.; Palmer, M.; Schumacher, C.; Woodall, C.W. 2023. [Perspectives: The wicked problem of defining and inventorying mature and old-growth forests](#). Forest Ecology and Management. 546(4): 121350.

Contributors

Kristen Pelz is a Analysis Team Leader with the Rocky Mountain Research Station whose work focuses on applying forest inventory information to inform management decisions that increases ecosystem resilience to natural and human-caused stressors.

Andy Gray from the USDA Forest Service, Pacific Northwest Research Station, **Erin Berryman** from Rocky Mountain Research Station, and **Chris Woodall** from the Northern Research Station made significant contributions to the research paper.

Sue Miller is the author of this Science You Can Use in 5 minutes.

The Rocky Mountain Research Station is one of seven units within USDA Forest Service Research & Development. RMRS maintains 14 field laboratories throughout a 12-state geography encompassing parts of the Great Basin, Southwest, Rocky Mountains, and the Great Plains. While anchored in the geography of the West, our research is global in scale. RMRS also administers and conducts research on 14 experimental forests, ranges and watersheds and maintains long-term research databases for these areas. Our science improves lives and landscapes. More information about Forest Service research in the Rocky Mountain Region can be found here: <https://www.fs.usda.gov/rmrs/>.

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