

1 Executive Summary

Forest management to restore fire-adapted ponderosa pine ecosystems is a central priority of the Southwestern Region of the USDA Forest Service. Appropriately-scaled businesses are apt to play a key role in achieving this goal by harvesting, processing and selling wood products, thereby reducing treatment costs and providing economic opportunities. The manner in which treatments occur across northern Arizona, with its multiple jurisdictions and land management areas, is of vital concern to a diversity of stakeholder groups. To identify a level of forest thinning treatments and potential wood supply from restoration byproducts, a 20-member working group representing environmental non-governmental organizations (NGOs), private forest industries, local government, the Ecological Restoration Institute at Northern Arizona University (NAU), and state and federal land and resource management agencies was assembled. A series of seven workshops supported by Forest Ecosystem Restoration Analysis (ForestERA; NAU) staff were designed to consolidate geographic data and other spatial information and to synthesize potential treatment scenarios for a 2.4 million acre analysis area south of the Grand Canyon and across the Mogollon Plateau. A total of 94% of the analysis area is on National Forest lands. ForestERA developed up-to-date remote sensing-based forest structure data layers to inform the development of treatment scenarios, and to estimate wood volume in three tree diameter classes of <5", 5-16", and >16" diameter at breast height (dbh, 4.5' above base). For the purposes of this report, the group selected a 16" dbh threshold due to its common use within the analysis landscape as a break point differentiating "small" and "large" diameter trees in the ponderosa pine forest type. The focus of this study was on small-diameter trees, although wood supply estimates include some trees > 16" dbh where their removal was required to meet desired post-treatment conditions.¹ There was no concurrence within the group that trees over 16" dbh should be cut and removed from areas outside community protection management areas (CPMAs).

Participants successfully defined desired post-treatment conditions within five landscape management areas that included: communities, municipal and aquatic species

¹ Desired post-treatment conditions refer to the working group's preferred conditions following restoration treatments. They are not equivalent to desired conditions defined in the National Forest Management Act.

watersheds, Mexican spotted owl (MSO) restricted habitat and wildlands. Consensus was reached across two-thirds of the analysis area. The group unanimously agreed that 26% of the 2.4 million acre analysis area should not be considered a source of wood supply from mechanical restoration treatments, due to institutional and biophysical constraints. Consensus was also reached on the appropriateness of restoration treatments involving mechanical thinning across 41% of the landscape, resulting in a total of 850 million ft³ of wood byproducts from tree boles alone (defined as the tree's main stem, from the ground to top of tree), and an additional 8.0 million green tons from branches and other tree crown biomass. All mechanical thinning treatments were assumed to be followed by controlled burning for ecosystem restoration and maintenance of fire-adapted conditions. The amount of potential wood byproducts from restoration treatments and small-diameter trees from this analysis exceeds current market demand. In 2006 existing wood products businesses in the analysis area removed and utilized 1.2% of the bole biomass (or 12% extrapolated over 10 years) that would potentially be generated from consensus scenario treatments.

There is a high level of agreement, but not consensus, that an additional 33% of the analysis area might also be available as a source of wood supply from mechanically-based restoration treatments. When added to the byproducts from the consensus scenario, this would result in a total of 1,015 million ft³ from boles and 9.6 green tons from tree crowns. The difference between the two scenarios was relatively small in terms of wood volume and largely driven by preferences for varying levels of restoration treatments, such as the preference of some stakeholders for prescribed burn-only treatments, wildland fire use² and non-commercial thinning (or thinning that would not add to wood supply). The analysis also revealed that where wood harvest included only trees under 16" in diameter, 19% of the landscape with restoration treatments would not fully achieve desired post-treatment conditions, as identified by the working group. These thinning areas were primarily within CPMA's where objectives called for more aggressive thinning.

² "Wildland fire use is the management of naturally ignited fires to achieve resource benefits, where fire is a major component of the ecosystem" (source: http://www.fs.fed.us/fire/fireuse/wildland_fire_use/use_index.html).

The group considered incorporating future tree growth in wood supply assessments, but ultimately did not pursue this analysis, however a review of forest growth models was conducted to assist with future projections. Consequently, the numbers presented in this report represent a “snapshot” of currently available wood supply. Lack of complete data on current road access, the presence of archeological sites, and other site-scale considerations introduce some uncertainty in wood supply estimates. Potential changes to future wood supply due to climate change and disturbances such as wildfire, insect outbreaks, and drought-related mortality were also acknowledged. The results of this study will be used to assist in the development of multi-year forest stewardship contracts to attract new industrial users and to supply wood fiber to existing local wood product businesses.

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