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FACT SHEET

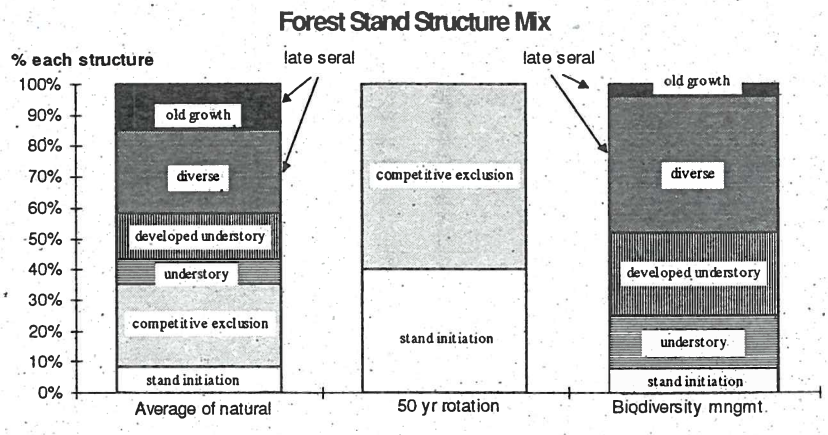
Managing Forests for Biodiversity: The Economic Issues

Saving endangered species and restoring wildlife habitat depends upon at least partial restoration of the biodiversity lost through human intervention. An economic analysis of management options to restore forest biodiversity and habitat shows that current regulations are counterproductive and motivate the elimination of suitable habitat. Yet win/win solutions may exist through the creation of incentives to improve biodiversity, much like product markets create incentives for the production of timber.

The Cost of Regulations Designed to Increase Non-timber Outputs

Current and proposed regulations to preserve forests result in high economic activity losses. Forest harvest constraint guidelines to protect spotted owls, still under review after several years, have been estimated to produce annual economic activity losses of up to $4 million per owl pair for state and private lands in Washington State. While the losses may be lower on federal lands and in states that have higher density owl populations such as California, attempts to preserve 2,000 owls in marginal owl habitat regions may result in up to $160 billion in lost net present value. The proposed regulatory approaches attempt to save existing habitat, but an unfortunate side effect of these regulations may be the loss of future habitat because timber landowners, acting in their best financial interests, elect to harvest forest stands earlier to avoid any land becoming habitat and therefore subject to regulation. While large forest preserves may be a partial alternative, all market value of growing timber is lost when land is preserved.

Management alternatives have been developed that restore biodiversity and simultaneously allow for the production of high-quality timber. Because these alternatives both increase economic activity and enhance biodiversity in commercial forests, they provide a potential win/win solution to the region's most important forestry dilemma.



Following a stand replacement disturbance or timber harvest, forest structures develop from a stand initiation stage to a vigorous stand of trees competing for sunlight after about 20 years. Understory species important for wildlife habitat emerge after natural aging begins to open up the stands between 80-100 years. Thus, short commercial rotations at about 50 years eliminate many of the diverse characteristics found in older natural forests. Even natural disturbances (fire, wind, disease) that previously provided important treatments to the older forest structures are now constrained by human intervention, reducing the reliability of no-management alternatives to restore biodiversity. The Washington State Forest Landscape Management Project (and other research) has developed management alternatives that include heavy thinnings and debris and snag retention to provide the functional equivalent of these older forests more rapidly than natural processes while also providing larger diameter wood of higher quality much like that found in older forests.

Biodiversity Management—The Landowner's Loss

Compared with current commercial rotations, forests managed to produce habitat and improve biodiversity result in a reduced number of more mature trees that are larger in diameter and have more understory growth and woody debris. The required rotation age under biodiversity management is longer, but part of the economic loss due to a delayed

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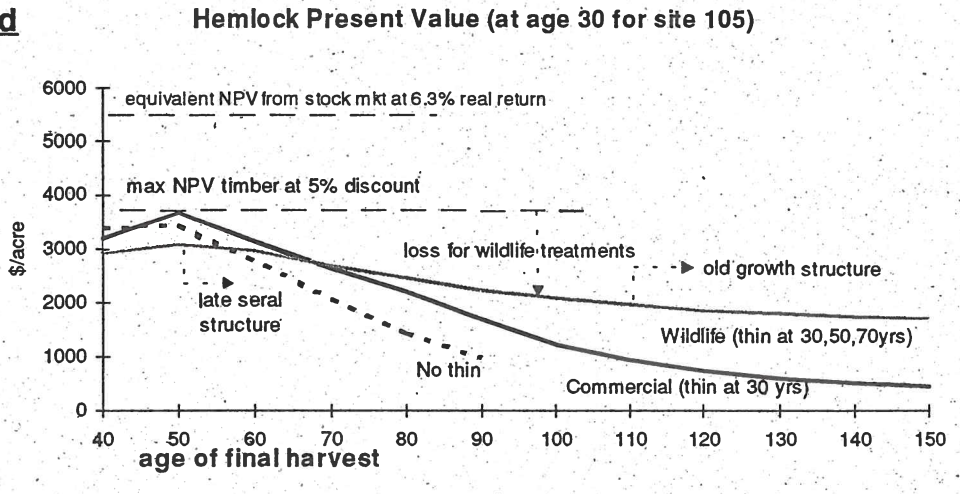
harvest is offset by increased returns possible from higher-quality wood yields. The economic loss to landowners depends on many site-specific elements, but is substantial enough that a prudent investor would likely invest elsewhere unless there exists an incentive to manage for biodiversity as well as produce timber for markets. While the lost present value to landowners from longer rotations is partially offset by the higher-quality and higher-valued wood, the remaining benefits flow to others.

Economic Activity and Non-timber Benefits

The societal benefits of biodiversity management include not only enhanced habitat, but also increased carbon storage on the forest floor, reduced reliance upon substitute building materials like steel that are fossil fuel-intensive, and a better aesthetic balance in stand structures and related amenities supporting recreation. These alone may justify incentive payments, but the increased investment in forest management also contributes toward economic development in rural timber dependent areas that in turn increases tax receipts and reduces unemployment compensation—far exceeding the loss to landowners. Only a portion of the fiscal budget gains is needed to create landowner incentives to produce diverse forest structures. At the time of the first thinning and commitment to a biodiversity management regime (stand age 30), the lowest-cost incentives to treat 25% of the acres harvested annually in western Washington are estimated to be $28 million. The increased economic activity is estimated to produce increased state and local tax receipts of $32 million, federal tax receipts of $54 million, and short-term rural unemployment compensation reductions of as much as $49 million. By the time long-term rotations are reached and high-quality wood is harvested, increased economic activity raises the fiscal budget surplus by several times.



Some reductions in economic activity may be expected in the mid-term as stands that would be ready to harvest are deferred to longer rotations. Since the 30+ year age structure that needs to be thinned now to start biodiversity management is larger than other age cohorts, at least some increased thinnings could be implemented and would also stabilize sustainable harvest levels in the future.

Implementation Issues

Studies of the economics of managing forests to restore biodiversity cannot be considered absolutes. While the correlation between stand structural change and habitat creation is predictable and the treatment technology is known, no complete field tests of such treatments or tests of landowners' willingness to enter long-term agreements to manage for biodiversity exist. The approaches do represent directional strategies that may lead to the continuous refinement of methods to improve biodiversity and restore habitat while still producing timber for markets and sustaining local economies. The research suggests that the problem no longer rests with inadequate technical understanding of the key relationships between management technology and the ecosystem, but rather with the social, economic, legal and political climate to adapt new techniques and market mechanisms which can efficiently produce both timber and non-timber outputs without inequitable impacts.

For more information, see the following Washington Forest Landscape Management Project reports:
Economic Analysis of Forest Landscape Management Alternatives (1995) CINTRAFOR Special Paper 21
A Pragmatic, Ecological Approach to Small-Landscape Management--available soon.

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