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Washington Forest Landscape Management Project—A Pragmatic, Ecological Approach to Small-Landscape Management

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With increasing and often competing demands being placed on our region's forests, policymakers continue to seek creative and efficient ways to maximize an array of economic and ecological benefits and reduce current conflicts. One such effort, the Washington Forest Landscape Management Project, was charged by the U.S. Congress to explore the advantages of simultaneously managing forests for multiple species of threatened, endangered, and sensitive wildlife over large landscapes and across land ownerships. More specifically, the Project explored ways to meet the needs of wildlife associated with late-seral forests while minimizing impacts on commodity production from Washington's forests. This publication, *A Pragmatic, Ecological Approach to Small-Landscape Management*, is the report of a working group that developed forest management strategies to enhance biodiversity at the scale of the small landscape.

Beginning with the premise that conservation of biodiversity is a foundation for sustainable forestry, the authors present an approach that is implemented through landscape management and that produces regional, long-term benefits. The overall goal of the study was to provide information on some ecological and societal benefits that might be achieved, and costs that might be incurred, by public policy initiatives designed to stimulate management for conservation of biodiversity across all land ownerships. A companion report, *Economic Analysis of Forest Landscape Management Alternatives* (also reviewed in this issue of *Northwest Science*), evaluates financial incentives for motivating landowners to include nontimber objectives along with timber objectives in managing private lands.

The body of the Report is organized into six major sections. The first section introduces the study's objectives, scope, terminology, and concepts. The second section outlines the approach for ecological management of biotic communities. The authors apply their analytical approach in a hypothetical test case, using the Clallam River landscape in the western Olympic Peninsula, which is introduced in section III. Sections IV, V, and VI present the methods, results, and discussion of the test case. The study used a simulation model to project changes in the landscape over 300 years, using real data to start the simulation. Three general approaches to forest ecosystem management were evaluated: the protection-no manipulation pathway, the timber and fiber production pathway (maximization of net present value), and the biodiversity pathway (joint production of ecological and economic goods and services). The most significant result was that maximizing biodiversity through forest management achieved older forest habitat more quickly than other management strategies, and produced significant economic benefit. The study also found that protecting an area by excluding management after a timber harvest appeared to delay the forest's development into older forest significantly longer than if thinning or other management techniques had been allowed. Wildlife diversity was found to differ among stages of forest development and management scenarios, with the lowest diversity found in stages immediately following closure of new forest canopy. Managing to maximize net present value resulted in the highest economic value and the most risk to species. The authors conclude that there is great potential for conserving biodiversity in managed landscapes without maintaining large upland or wide riparian reserves. Important caveats, assumptions, and weaknesses of the analysis are covered in the Discussion.

This study makes several important contributions to the ongoing debate over forest management in the Pacific Northwest, and to applied ecology in general. First, the authors translate ecological concepts that are accepted but often ill-defined into principles, terminology, and approaches that can be used by managers and policymakers. Such practical methods and quantitative measures of ecological values are especially needed for integrated analysis of trade-offs with commodity values. The authors—who include some of the region's most noted experts in

forestry and ecology—develop a conceptual model of landscape management, an expanded conceptual model of forest ecosystem development specific to westside western hemlock/Douglas-fir forest, “biodiversity pathways” for forest ecosystem management, four new indices of forest ecosystem health, and several economic measures.

Secondly, the study focuses needed attention on opportunities to increase ecological and economic benefits from the managed, second-growth forests that dominate much of the Pacific Northwest. As the authors point out, no one yet knows how to conserve biodiversity on intensively managed lands—yet the question is not whether to manage landscapes or not, but whether to manage consciously and purposefully or not. The study’s emphasis on managed lands complements strategies for biological conservation that emphasize regional networks of reserves managed primarily for natural values. Indeed, the authors’ eight stages of forest ecosystem development recognize old-growth as a unique, natural legacy not achievable through management.

Interdisciplinary approaches are essential to addressing today’s critical issues in forest management and policy. In this study, Carey et al. overcame several scientific and practical challenges in integrating biophysical and socioeconomic considerations. Their approach also employs a needed long-term perspective (several centuries). Carey et al. reinforce the reality that optimal solutions will require that decisionmakers adopt this long-term view despite a policy arena that operates on a much shorter cycle. Although the approach also is designed to produce regional, long-term benefits through implementation at the scale of the small landscape, it is unclear how policymakers will “scale up” information from

several unique landscapes to assess regional impacts.

Overall, *A Pragmatic, Ecological Approach to Small-Landscape Management* will provide useful guidance to policymakers for formulating incentives to conserve biodiversity on large-landscape and physiographic province bases. Forest managers will find general principles that can be adapted to fit their particular landscapes, rather than a set of analytical tools that can be used straight “out of the box.” Carey et al. do a commendable job of synthesizing a large amount of complex information into a conceptual framework and procedures for evaluating the ecological and economic consequences of management and policy alternatives. The approach is applicable to second-growth forests now managed primarily for wood products, as well as to upland and riparian forests managed as late-successional reserves. Scientists will find the report an interesting case study for the application of ecological theory and concepts to a real-world problem. The report will be useful to both general and professional readerships, and in graduate-level courses in ecosystem management. By demonstrating several ways that ecological and economic benefits are not mutually exclusive, the study represents an important step forward from the current polarized debate over forest management. With companion reports, the study points to several incentive-based rather than legislative or regulatory solutions to current forest policy issues.

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