

Larry D. Harris. 1984. The fragmented forest, Island biogeographic theory and the preservation of biotic diversity. Univ. Chicago Press, Chicago and London, xviii, 211 p. With foreword by Kenton R. Miller.

As years pass our commercial forest lands have become ever more simplified and monotonous. Decades of timber harvest have brought about forest conversion to plantation-like monocultures or young successional stands, one after another without break. Adjacent cutting blocks seldom present any forest older than about 100 years. As remnants of older forests become ever more constricted and isolated, Professor Harris has produced this needed and timely book. He and colleagues, who contributed to several of the 11 chapters, present managers with an appealing alternative, which proposes continuance of "non-declining even flow" timber for consumption while systematically maintaining a high level of wildlife diversity.

To accommodate both commodity and diversity from our forests in the future means, however, that we must begin *now* to plan for all stages of forest succession, up to and including old-growth, in tomorrow's landscape. In Dr. Harris's words "the thrust of this work is not directed at a system of nature preserves, but rather a forest management strategy that depends heavily upon, and in turn conserves, the unique character of old-growth ecosystems."

And what is so special about old-growth forest? Notwithstanding its intrinsic qualities of beauty and appeal to many people, without provision for old-growth maintenance we cannot assure an acceptable level of wildlife diversity over the forested landscapes. We must plan for diversity before it is too late.

Arguments for maintaining old-growth or late successional forests are not new. In a paper in *Science* in 1969 ecologist E.P. Odum looked at both "production" (or early successional communities) and "diversity" (later successional communities) ecosystems,

and reasoned that an intelligent society would plan to accommodate both in the regional landscape. But are we doing this? Dr. Harris proposes that large areas of preservation (such as National Parks and Wilderness) and equally large areas of unmitigated production landscapes (such as commercial forest lands) will not do the job. We can do much better by mixing up smaller units of both protection and harvest areas so that all stages of forest succession will be adequately juxtaposed in the local landscape.

To be sure, the best designs for mixing forest successional stages in the local landscape must consider the size and location of these indispensable larger preserves. Harris and colleagues show how this can be done by applying theories of island biogeography to one of the last and fast disappearing areas of old-growth forest in the U.S. – the commercial forest lands of the Willamette National Forest in Oregon. Several chapters are devoted to describing the history, old-growth character, and animal community characteristics of these truly impressive Cascadian forests. Should the reader become enamoured of old-growth forest for its own sake, Harris reminds us (p. 109), “There is no old-growth issue save for the desire and objective of maintaining biotic diversity.”

Chapter 6 is a review of pertinent elements of island biogeography theory. Harris describes the insularization of old-growth forest ecosystems brought about by conventional forest harvest practices. This leads to local faunal extinctions or adverse isolation effects on remnant populations.

The key to management strategy is then stated: “To the degree that old-growth ecosystems can be surrounded, even partially, by similar habitat, the island analogy and its portents do not apply.”

Chapters 8-10 are the heart of the book. Island biogeography applied at a whole forest level is like fitting the pieces of a puzzle together. What are the total acreage requirements for maintaining viable populations of different animal species? How many “islands” should there be? What about their size or assortment of sizes? How far apart? What about their connectivity (or severity of the barrier to movement between adjacent islands)? What are the crucial qualities of the islands themselves: should they merely be old-growth stands or “long-rotation” islands defined as “a management unit consisting of a current old-growth stand and several surrounding adjacent stands managed on a 320-year rotation?”

The key management strategy, stated above, favors long rotation islands in the face of present risks and future uncertainties concerning wildlife. Chapter 10 applies the theory to the Willamette National Forest Oak Ridge district. The chapter is altogether too brief. The importance of riparian drainage patterns is indicated as a basis for fitting the pieces of the puzzle. But I would like to see several of the alternatives discussed in Chapters 8 and 9 displayed, and their tradeoffs discussed. This is what forest managers have to do in preparing their Plans and Environmental Impact Statements.

I applaud this book and its author and collaborators. The concepts surely can be applied to other regions

with different qualities of old growth forest and forest harvest practices. Even Park and Wilderness managers can take note. Too much old-growth in absence of disturbances that create younger stands also can lower diversity. And what happens on the boundaries of these preserves will determine the long term health within. We do not want megazoos only, but sustainable ecosystems.

Forest managers should not look upon Professor Harris's book as a cookie cutter approach to forest diversity. Forests outside the Pacific Northwest can be similarly analysed with different emergent patterns and tradeoffs. The old days of "Everything-Everywhere" as the timber harvest addage has it, is no longer a feasible approach. Harris has shown how timber managers can join with wildlife biologists, ecologists, and planners and publics of varying persuasions and professions to produce a pleasing, harmonious forested landscape in the best sense of environmental quality and multiple use.

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