Integrating Wildlife Conservation And Ecosystem Health: An Example From The Columbia River Basin, USA [SAF]

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The theory and practice of ecosystem management is pivotal to the debate over how to sustain the health and productivity of our environment. Despite substantial and recent effort to implement ecosystem management in the United States and elsewhere, to date considerable uncertainty remains about how to evaluate the historic and natural spatial-temporal variation in ecosystems, secure present and future management options by maintaining essential parts of an ecosystem (including wildlife), analyze wildlife information—habitat, distribution and abundance—that often is insufficient at the ecosystem scale, predict wildlife habitat and other requirements at the ecosystem level to satisfy national and agency legal and policy requirements, and offer recommendations that vary with taxa to ecosystem change—historic and future (i.e., restoration)—at an ecosystem scale that matches both planning strategies and implementation opportunities of land and resource management agencies. Our central goal in assembling this paper is to examine these five aspects—in essence the concept of ecosystem health and its relation to wildlife management—in a contemporary landscape, the Columbia River Basin in the Pacific Northwest of the United States. Our Interagency Working Group report begins with brief description of the extent and ecological significance of the major departures in the nature, distribution and structure of vegetation since intensive European settlement. Second, all vertebrate wildlife species within the Basin are evaluated based on trend, habitat and other information to identify those in need of consideration in management to meet legal and policy requirements. Third, given the lack of habitat and other natural history information for many species, we

describe a process to build and evaluate species' habitat information, recognizing that effects of environmental change on individuals is more easily detected than on populations (although the latter are often needed to meet legal and policy requirements under the Endangered Species Act, the National Forest Management Act and similar legislation). The fourth aspect is not a trivial task whether in scale, theory or practice. Specifically, characterize the distribution and abundance of habitats for species groups (related to geographic scale and species-specific ecology and behavior) and/or individual species; and determine whether such habitats may serve as "sources" of individuals—a consideration to the maintenance of viable species populations—or "sinks" where populations may be expected to decline without regular immigration; and map the results of task four. Unfortunately, most available wildlife and ecosystem theory and scientific literature addresses ecosystem management at a scale far less than that needed to implement, greatly increasing the difficulty in developing reasonable implementation ecosystem management strategies. We conclude with lessons learned in linking ecosystem health and wildlife management.