

Cambridge University Press

978-0-521-70072-6 - Setting Conservation Targets for Managed Forest Landscapes

Edited by Marc-Andre Villard and Bengt Gunnar Jonsson

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## Setting Conservation Targets for Managed Forest Landscapes

Forests host a disproportionate share of the world's biodiversity. They are increasingly being seen as a refuge for genetic diversity, native species, natural structures, and ecological processes yet intensive forestry threatens their value for biodiversity. The authors present concepts, approaches, and case studies illustrating how biodiversity conservation can be integrated into forest management planning. They address ecological patterns and processes taking place at the scale of landscape, or forest mosaics. This book is intended for students and researchers in conservation biology and natural resource management, as well as forest land managers and policy-makers. It presents case studies and examples from many forest regions of the world and addresses multiple components of biodiversity. With contributions from researchers who are familiar with forest management and forest managers working in partnership with researchers, this book provides insight and concrete tools to help shape the future of forest landscapes worldwide.

MARC-ANDRÉ VILLARD is a Professor of Biology at Université de Moncton, where he holds a Canada Research Chair in Landscape Conservation. He is a Fellow of the American Ornithologists' Union and co-editor of the journal *Avian Conservation and Ecology*.

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## *Foreword*

As landscape ecology has developed over the past quarter-century, applications of its basic results have become widespread in applied conservation biology. Some applications have been distortions of the basic research results by oversimplification. For example, the original meaning of connectivity became streamlined into “corridors” and applied as a simple solution to all fragmentation problems. Many such applications have been essentially random and without demonstrable measures of success or failure. At the opposite extreme, results of simulation models have been applied globally without measures of effect that would constitute real tests of the reality of the model results. In both these extreme cases, the missing link was some quantitative measure capable of demonstrating statistically what had been achieved by the conservation application derived from the results of fundamental research.

The contributors to this volume each advance ways to increase the connectivity between the advancing front of fundamental ecological knowledge and the application of that knowledge in conservation. Managers and applied ecologists attempt to correct, improve, or guide ecological processes or the structural surrogates of those processes. Without a target, quantitatively defined in terms of the system’s processes or structures, the effect of applications cannot be assessed.

Conservation applications can be better connected to the knowledge base, current theory, and valid statistical analysis if basic research provides targets that can be used in applications. Those targets and how to provide them is what this volume is about. Here, conservation targets are any quantitative objective based on empirical data or realistic models used to adjust intensity of conservation management.

Several chapters explicitly recognize the commonness of non-linear ecological responses to changes in landscape structure, often requiring applications to detect critical thresholds. Simulation models are combined with realistic data sets to project likely responses. Whatever the current

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knowledge and projections, they must be treated as an evidence-based model to be tested and updated from additional evidence. The challenge for basic research is to set targets before every facet of complexity is detailed by empirical data sets. Basic researchers seek evidence-based generalities that will apply as broadly as possible but in setting targets, they also need to recognize that applications normally focus on specific conservation goals and localized management units.

Contributions in this volume aim not at setting aside reserves as the main thrust of conservation management but, instead, recognize the need to manage all the landscape between reserves as well as the reserves. The strategy is to manage conservation issues at the scale of the entire landscape including all the reserves.

The audiences that can benefit from these contributions include: research ecologists who wish to see their concepts and new knowledge used in management applications, the appliers who have the same desire from the other side of the gap, those who wish to make their policies effective on the ground, administrators who need a sound basis for funding decisions in applied ecology, and politicians who find it necessary to make political adjustments in translating basic ecological knowledge into practicable programs in the current sweep of environmental discussions.

The editors acknowledge the need for some allowance to vary targets in consideration of socio-economic parameters, but that should not be taken to mean that basic researchers in ecology should be responsible for putting the “political spin” on targets. In Canada, and probably globally, there have been blatant examples of scientists being blamed for applications that have gone wrong because politicians bent the scientific findings and recommendations. Scientists, basic and applied, are not responsible for producing politically acceptable ecological applications and must stay well clear of politically adjusted targets; the professional hazard is already too great.

Application of ecology to conservation needs to move to a state where defensible targets are based on peer-reviewed scientific findings and the efficacy of applications is judged by the degree of attainment of those targets. This volume is intended to move conservation applications toward that state.

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