# Ecological Silviculture Foundations And Applications

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## Invasive Plant Ecology

Much of the world's forested land is dominated by mixed-species stands. Understanding the complex structure and dynamics of these mixtures is a necessary step in the process of formulating appropriate silvicultural systems for their management. David M. Smith, Professor Emeritus of Silviculture at Yale University, has devoted much of his career to the study of the structure, development, and silvicultural treatment of these kinds of stands. This volume is presented by Professor Smith's collegues to honor the contributions he has made to the field. It contains both reviews of past work and results of current studies of mixed stands: topics range from analysis of forest dynamics in unmanaged stands to studies of silvicultural systems applied to mixtures, with examples drawn from boreal, temperate, and tropical regions. Much of the work stresses the importance of understanding the characteristic growth patterns of individual species within mixed stands, and how species interactions shape developmental patterns.

## The Practice of Silviculture

## Phylogenetic Diversity

The term biodiversity has become a mainstream concept that can be found in any newspaper at any given time. Concerns on biodiversity protection are usually linked to species protection and extinction risks for iconic species, such as whales, pandas and so on. However, conserving biodiversity has much deeper implications than preserving a few (although important) species. Biodiversity in ecosystems is

tightly linked to ecosystem functions such as biomass production, organic matter decomposition, ecosystem resilience, and others. Many of these ecological processes are also directly implied in services that the humankind obtains from ecosystems. The first part of this book will introduce different concepts and theories important to understand the links between ecosystem function and ecosystem biodiversity. The second part of the book provides a wide range of different studies showcasing the evidence and practical implications of such relationships.

## Ecological Silviculture

This book integrates the latest global developments in forestry science and practice and their relevance for the sustainable management of tropical forests. The influence of social dimensions on the development of silvicultural concepts is another spotlight. Ecology and silvicultural options form all tropical continents, and forest formations from dry to moist forests and from lowland to mountain forests are covered. Review chapters which guide readers through this complex subject integrate numerous illustrative and quantitative case studies by experts from all over the world. On the basis of a cross-sectional evaluation of the case studies presented, the authors put forward possible silvicultural contributions towards sustainability in a changing world. The book is addressed to a broad readership from forestry and environmental disciplines.

## Mangrove Forest Management Guidelines

Mangroves are a fascinating group of plants that occur on tropical and subtropical shorelines of all continents, where

they are exposed to saltwater inundation, low oxygen levels around their roots, high light and temperature conditions, and periodic tropical storms. Despite these harsh conditions, mangroves may form luxuriant forests which are of significant economic and environmental value throughout the world - they provide coastal protection and underpin fisheries and forestry operations, as well as a range of other human activities. This book provides an up-to-date account of mangrove plants from around the world, together with silvicultural and restoration techniques, and the management requirements of these communities to ensure their sustainability and conservation. All aspects of mangroves and their conservation are critically re-examined. Those activities which threaten their ongoing survival are identified and suggestions are offered to minimise their effects on these significant plant communities.

## Natural Disturbance and Stand Development Principles for Ecological Forestry

Silviculture, once regarded solely as reforestation and growing treesfor timber, is understood today as also maintaining forest health,reducing fire potential, benefitting wildlife and aesthetics, andensuring multiple options for the future against the uncertainties of achanging climate. Silviculture and Ecology of Western U.S. Forests,Second Edition, is a text for students, professional forestmanagers, and scientists that summarizes both early and contemporaryresearch and principles relevant to the silviculture, ecology, andmulti-purpose management of western U. S. forests. Based on itsauthors' significant experiences and contributions in the field,as well as nearly 1000 additional references, Silviculture and Ecologyremains

the only text that focuses on silviculture in western U.S.forests -- providing background and basis for current biological,ecological, and managerial practices.

## Foundations of Silviculture Upon an Ecological Basis

Classical silviculture has emphasized timber models, fundamentally based in production agriculture. This books presents silvicultural methods based in natural forest models-models that emulate natural disturbances and development processes, sustain biological legacies, and allow time to take its course in shaping stands. These methods, dubbed "ecological forestry," have been successfully implemented by foresters for decades managing a wide variety of forestlands. Ecological silvicultural strategies protect threatened and rare species, sustain biological diversity, and provide habitat for game and non-game species, all while providing timber in profitable ways.

## Handbook of Research on the Conservation and Restoration of Tropical Dry Forests

Planted forests - despite being only seven per cent of the world's forest resources, have superseded naturally regenerating forests as the principal source of industrial wood products. Lessening the pressure for wood production, on natural forests, tree planting has released them to be managed for other purposes - carbon sinks, soil and water protection, conservation of biological diversity, recreation and amenity. Representing a complement, but not an alternative, to natural forests, planted forests have become increasingly important for reducing worldwide deforestation, loss of forest ecosystems and forest degradation. Examining the

significance of this rapidly emerging world resource, chapters consider the strengths and weaknesses of planted forests, management objectives for their use and aspects of ownership and policy. Data from key production countries are used to evaluate the implications and sustainability of planted forests as a source of forest products as well as social and ecological issues.

## Ecosystem Goods and Services from Plantation Forests

The world is undergoing unprecedented changes in many of the factors that determine its fundamental properties and their in- ence on society. These changes include climate; the chemical c- position of the atmosphere; the demands of a growing human population for food and ?ber; and the mobility of organisms, ind- trial products, cultural perspectives, and information ?ows. The magnitude and widespread nature of these changes pose serious challenges in managing the ecosystem services on which society depends. Moreover, many of these changes are strongly in?uenced by human activities, so future patterns of change will continue to be in?uenced by society□s choices and governance. The purpose of this book is to provide a new framework for n- ural resource management□a framework based on stewardship of ecosystems for human well-being in a world dominated by unc- tainty and change. The goal of ecosystem stewardship is to respond to and shape change in social-ecological systems in order to s- tain the supply and opportunities for use of ecosystem services by society. The book links recent advances in the theory of resilience, sustainability, and vulnerability with practical issues of ecosystem management and governance. The book is aimed at advanced

undergraduates and beginning graduate students of natural resource management as well as professional managers, community leaders, and policy makers with backgrounds in a wide array of d- ciplines, including ecology, policy studies, economics, sociology, and anthropology.

## Biological nitrogen fixation in forest ecosystems: foundations and applications

Plantation forests often have a negative image. They are typically assumed to be poor substitutes for natural forests, particularly in terms of biodiversity conservation, carbon storage, provision of clean drinking water and other non-timber goods and services. Often they are monocultures that do not appear to invite people for recreation and other direct uses. Yet as this book clearly shows, they can play a vital role in the provision of ecosystem services, when compared to agriculture and other forms of land use or when natural forests have been degraded. This is the first book to examine explicitly the non-timber goods and services provided by plantation forests, including soil, water and biodiversity conservation, as well as carbon sequestration and the provision of local livelihoods. The authors show that, if we require a higher provision of ecosystem goods and services from both temperate and tropical plantations, new approaches to their management are required. These include policies, methods for valuing the services, the practices of small landholders, landscape approaches to optimise delivery of goods and services, and technical issues about how to achieve suitable solutions at the scale of forest stands. While providing original theoretical insights, the book also gives guidance for plantation managers, policy-makers, conservation practitioners and community advocates, who

seek to promote or strengthen the multiple-use of forest plantations for improved benefits for society. Published with CIFOR

## Introductory Probability and Statistics

This comprehensive collection of provocative papers provides a scientific foundation for justifying the use of and a solid framework for examining the ambiguities inherent in emulating natural forest landscape disturbance. Contributors range from policymakers and forestry professionals to academics and conservationists, offering a balanced view of the promises and challenges of the forest management paradigm in sustaining forest landscapes. The book opens with an overview of foundational concepts, a detailed discussion of emerging forest management paradigms and their global context, and an examination of the ecological premise for emulating natural disturbance. This section also explores the current understanding of natural disturbance regimes, including the two most prevalent in North America: fire and insects. The volume then uses several geographically diverse case studies to address the characterization of natural disturbances and the development of applied templates for their emulation through forest management. The emphasis on fire regimes reflects the greater focus that has traditionally been placed on understanding and managing fire, compared with other forms of disturbance, and utilizes several viewpoints to address the lessons learned from historical disturbance patterns. Reflecting current developments in the field, immediate challenges, and potential directions, this collection concludes with a penetrating look at practical applications, exploring the expectations for and feasibility of emulating natural

disturbance through forest management.

## An Introduction to Agroforestry

Accessible and user-friendly, LANDSCAPE SURVEYING, Second Edition prepares students to easily apply the principles and methods of surveying in a variety of occupational settings. Through illustrations, examples, and sample problems, students will not only learn methods for measuring distances and angles and completing surveys, but will also learn to determine which method is best suited for specific situations. With coverage of relevant terms, methodologies, equipment, and topography, this text provides students with a practical guide to landscape surveying that does not require a civil engineering or advanced math degree. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

## New Perspectives in Forest Science

Ecosystem research has emerged in recent decades as a vital, successful, and sometimes controversial approach to environmental science. This book emphasizes the idea that much of the progress in ecosystem research has been driven by the emergence of new environmental problems that could not be addressed by existing approaches. By focusing on successes and limitations of ecosystems studies, the book explores avenues for future ecosystem-level research.

## The Dry Forests and Woodlands of Africa

The dry forests and woodlands of Sub-Saharan Africa are

major ecosystems, with a broad range of strong economic and cultural incentives for keeping them intact. However, few people are aware of their importance, compared to tropical rainforests, despite them being home to more than half of the continent's population. This unique book brings together scientific knowledge on this topic from East, West, and Southern Africa and describes the relationships between forests, woodlands, people and their livelihoods. Dry forest is defined as vegetation dominated by woody plants, primarily trees, the canopy of which covers more than 10 per cent of the ground surface, occurring in climates with a dry season of three months or more. This broad definition - wider than those used by many authors - incorporates vegetation types commonly termed woodland, shrubland, thicket, savanna, wooded grassland, as well as dry forest in its strict sense. The book provides a comparative analysis of management experiences from the different geographic regions, emphasizing the need to balance the utilization of dry forests and woodland products between current and future human needs. Further, the book explores the techniques and strategies that can be deployed to improve the management of African dry forests and woodlands for the benefit of all, but more importantly, the communities that live off these vegetation formations. Thus, the book lays a foundation for improving the management of dry forests and woodlands for the wide range of products and services they provide.

## Ecological Forest Management

Miombo woodlands and their use: overview and key issues. The ecology of miombo woodlands. Population biology of miombo tree. Miombo woodlands in the wider context: macro-economic and inter-sectoral influences. Rural households and

miombo woodlands: use, value and management. Trade in woodland products from the miombo region. Managing miombo woodland. Institutional arrangements governing the use and the management of miombo woodlands. Miombo woodlands and rural livelihoods: options and opportunities.

## Mangrove Ecology, Silviculture and Conservation

During the Green Revolution in many developing countries, agroforestry systems tended to reflect modern agricultural systems by their intensive use of fertilizers, pesticides, and site modifications to fit the desired crop. Since the 1980's, agroforestry has learned from traditional indigenous systems to work more closely with the fertility of marginal lands through the use of less intensive cultivation and fallow periods. True to its title, this volume provides a silvicultural framework for thinking about the design and practice of agroforestry systems. Unlike many general agroforestry books, The Silvicultural Basis for Agroforestry Systems emphasizes research and thoughts from a forestry perspective rather than an agricultural one. Many of the examples used in this reference are based on the ecological theory of forests that concern the competition for resources of plant-plant and plant-animal mixtures. This guide also uses the knowledge gained about the temporal and spatial dynamic and productivity of forests as the basis for silvicultural applications in agroforestry systems. The Silvicultural Basis for Agroforestry Systems contains three parts:

## Silviculture in the Tropics

The Management of Industrial Forest Plantations. Theoretical

Foundations and Applications provides a synthesis of current knowledge about industrial forestry management planning processes. It covers components of the forest supply chain ranging from modelling techniques to management planning approaches and information and communication technology support. It may provide effective support to education, research and outreach activities that focus on forest industrial plantations management. It may contribute further to support forest managers when developing industrial plantations management plans. The book includes the discussion of applications in 26 Management Planning in Actions boxes. These applications highlight the linkage between theory and practice and the contribution of models, methods and management planning approaches to the efficiency and the effectiveness of industrial plantations management planning.

## The Management of Industrial Forest Plantations

## A Review of Dipterocarps

Harold Burkhart and Bronson Bullock have updated the quintessential introduction to forest measurements, providing a new generation of forestry students at all levels with the concepts and methods they need for career success. With attention to detail and clear, precise language, the authors present timber measurement techniques applicable to any tree inventory regardless of management objectives. Assuming no more mathematical background than algebra and plane trigonometry, the authors begin with basic statistical concepts to ensure that even introductory students benefit from the book's concise explanations. Comprehensive coverage of sampling designs, land measurements, tree

measurements, forest inventory field methods, and growth projections assures utility for foresters throughout their education and beyond. The new edition includes expanded discussions of information technology and geospatial information systems commonly employed in assessing forest resources. Recognizing the needs of contemporary forest inventories and models, a new chapter on assessing forest carbon builds on the foundations of traditional forest measurements, sampling, and modeling. Abundant photographs and illustrations highlight and clarify important concepts, while many numerical examples allow readers to become comfortable with the quantitative tools employed by foresters.

## Foundations of Restoration Ecology

From recycled products to organic food, the movement to be "environmentally friendly" is now expanding into the forestry field. Recognizing this impact, Home Depot has committed to giving preference to selling "certified wood," proven to come from forests that meet certain biological and social sustainablility standards. Retailers and vendors can offer certified wood through the international Forest Stewardship Council (FSC) and FSC accredited organizations like SmartWood, recently featured in People magazine.

## Domesticating Forests: How Farmers Manage Forest Resources

## Planted Forests

Silviculture: Concepts and Applications reflects a belief that

all the tools of silviculture have a useful role in modern forestry. Through careful analysis and creative planning, foresters can address a wide array of commodity and nonmarket interests and opportunities while maintaining dynamic and resilient forests. A landowner's needs, circumstances, and site conditions guide a silviculturist's judgment and decision making in finding the best ways to integrate the biologic-ecologic, economic-financial, and managerial-administrative requirements at hand. The Third Edition of this influential text provides a foundational basis for rigorous discussion of techniques. The inclusion of numerous real-world examples and balanced coverage of past and current practices broadens the concept of silviculture and the ways that managers can use it to address both traditional and emerging interests in forests. A thorough discussion of new and proven interpretations increasingly directs the attention of foresters toward the role silviculture plays in creating, maintaining, rehabilitating, and restoring forests that can sustain an expanding variety of ecosystem services.

## Ecosystem Management

"Biodiversity" refers to the variety of life. It is now agreed that there is a "biodiversity crisis", corresponding to extinction rates of species that may be 1000 times what is thought to be "normal". Biodiversity science has a higher profile than ever, with the new Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services involving more than 120 countries and 1000s of scientists. At the same time, the discipline is re-evaluating its foundations – including its philosophy and even core definitions. The value of biodiversity is being debated. In this context, the tree of life ("phylogeny") is emerging as an important way to look at

biodiversity, with relevance cutting across current areas of concern  from the question of resilience within ecosystems, to conservation priorities for globally threatened species  while capturing the values of biodiversity that have been hard to quantify, including resilience and maintaining options for future generations. This increased appreciation of the importance of conserving phylogenetic diversity, from microbial communities in the human gut to global threatened species, has inevitably resulted in an explosion of new indices, methods, and case studies. This book recognizes and responds to the timely opportunity for synthesis and sharing experiences in practical applications. The book recognizes that the challenge of finding a synthesis, and building shared concepts and a shared toolbox, requires both an appreciation of the past and a look into the future. Thus, the book is organized as a flow from history, concepts and philosophy, through to methods and tools, and followed by selected case studies. A positive vision and plan of action emerges from these chapters, that includes coping with inevitable uncertainties, effectively communicating the importance of this evolutionary heritage to the public and to policy-makers, and ultimately contributing to biodiversity conservation policy from local to global scales.

## Forest Certification in Sustainable Development

The landscapes of North America, including eastern forests, have been shaped by humans for millennia, through fire, agriculture, hunting, and other means. But the arrival of Europeans on Americas eastern shores several centuries ago ushered in the rapid conversion of forests and woodlands to other land uses. By the twentieth century, it appeared that old-growth forests in the eastern United States were gone,

replaced by cities, farms, transportation networks, and second-growth forests. Since that time, however, numerous remnants of eastern old growth have been discovered, meticulously mapped, and studied. Many of these ancient stands retain surprisingly robust complexity and vigor, and forest ecologists are eager to develop strategies for their restoration and for nurturing additional stands of old growth that will foster biological diversity, reduce impacts of climate change, and serve as benchmarks for how natural systems operate. Forest ecologists William Keeton and Andrew Barton bring together a volume that breaks new ground in our understanding of ecological systems and their importance for forest resilience in an age of rapid environmental change. This edited volume covers a broad geographic canvas, from eastern Canada and the Upper Great Lakes states to the deep South. It looks at a wide diversity of ecosystems, including spruce-fir, northern deciduous, southern Appalachian deciduous, southern swamp hardwoods, and longleaf pine. Chapters authored by leading old-growth experts examine topics of contemporary forest ecology including forest structure and dynamics, below-ground soil processes, biological diversity, differences between historical and modern forests, carbon and climate change mitigation, management of old growth, and more. This thoughtful treatise broadly communicates important new discoveries to scientists, land managers, and students and breathes fresh life into the hope for sensible, effective management of old-growth stands in eastern forests.

## Biodiversity in Ecosystems

Invasion of non-native plant species, which has a significant impact on the earth's ecosystems, has greatly increased in

recent years due to expanding trade and transport among different countries. Understanding the ecological principles underlying the invasive process as well as the characteristics of the invasive plants is crucial for making good

## The Miombo in Transition

With the rapid rate of forest clearance in many tropical countries becoming more serious, the importance of "silvicultural systems" to regenerate, tend, and harvest forests has increased. This book describes 20 systems enabling foresters, land managers, and ecologists to select and use those systems best suited to their needs.

## The Silvicultural Basis For Agroforestry Systems

Provides essays, exercises, summaries, learning tools, and definitions focusing on the issues surrounding ecosystem management.

## Emulating Natural Forest Landscape Disturbances

## Silvicultural Systems

## Principles of Ecosystem Stewardship

Tropical dry forests are the most exploited and endangered ecosystems in the world. A combination of climatic and human factors often reduce these forests to patches of dry scrubs or savannas. Because these ecosystems experience a more arduous and less anticipated environment, they are

more prone to environmental stress as plant communities are developed. Therefore, urgent research is necessary to understand both the detrimental issues and problem-solving approaches to conserving these important forests. The Handbook of Research on the Conservation and Restoration of Tropical Dry Forests is a pivotal reference source that combines theory and practice on the current trends and issues in this important ecological subject and discusses future challenges towards conservation strategies of these tropical dry forests. While highlighting topics such as forest management, natural regeneration, and silviculture, this publication examines the anthropogenic impacts on tropical dry forests and the necessity to rebuild their ecosystems. This book is ideally designed for state forest agency professionals, resource managers, non-governmental organization agents, ecologists, botanists, environmentalists, students, and researchers seeking current research on the threats to these forests.

## Successes, Limitations, and Frontiers in Ecosystem Science

The most up-to-date, comprehensive resource on silviculture that covers the range of topics and issues facing today's foresters and resource professionals The tenth edition of the classic work, The Practice of Silviculture: Applied Forest Ecology, includes the most current information and the results of research on the many issues that are relevant to forests and forestry. The text covers such timely topics as biofuels and intensive timber production, ecosystem and landscape scale management of public lands, ecosystem services, surface drinking water supplies, urban and community greenspace, forest carbon, fire and climate, and much more.

In recent years, silvicultural systems have become more sophisticated and complex in application, particularly with a focus on multi-aged silviculture. There have been paradigm shifts toward managing for more complex structures and age-classes for integrated and complementary values including wildlife, water and open space recreation. Extensively revised and updated, this new edition covers a wide range of topics and challenges relevant to the forester or resource professional today. This full-color text offers the most expansive book on silviculture and: Includes a revised and expanded text with clear language and explanations Covers the many cutting-edge resource issues that are relevant to forests and forestry Contains boxes within each chapter to provide greater detail on particular silvicultural treatments and examples of their use Features a completely updated bibliography plus new photographs, tables and figures The Practice of Silviculture: Applied Forest Ecology, Tenth Edition is an invaluable resource for students and professionals in forestry and natural resource management.

## Forest Measurements

With interest growing in areas of forestry, conservation and other natural sciences, the need to organize and tabulate large amounts of forestry and natural science information has become a necessary skill. Previous attempts of applying statistical methods to these areas tend to be over-specialized and of limited use; an elementary text using methods, examples and exercises that are relevant to forestry and the natural sciences is long overdue. This book utilizes basic descriptive statistics and probability, as well as commonly used statistical inferential tools to introduce topics that are commonplace in a forestry context such as hypothesis

texting, design of experiments, sampling methods, nonparametric tests and statistical quality control. It also contains examples and exercises drawn from the fields of forestry, wood science, and conservation.

## Silviculture

Fundamental changes have occurred in all aspects of forestry over the last 50 years, including the underlying science, societal expectations of forests and their management, and the evolution of a globalized economy. This textbook is an effort to comprehensively integrate this new knowledge of forest ecosystems and human concerns and needs into a management philosophy that is applicable to the vast majority of global forest lands. Ecological forest management (EFM) is focused on policies and practices that maintain the integrity of forest ecosystems while achieving environmental, economic, and cultural goals of human societies. EFM uses natural ecological models as its basis contrasting it with modern production forestry, which is based on agronomic models and constrained by required return-on-investment. Sections of the book consider: 1) Basic concepts related to forest ecosystems and silviculture based on natural models; 2) Social and political foundations of forestry, including law, economics, and social acceptability; 3) Important current topics including wildfire, biological diversity, and climate change; and 4) Forest planning in an uncertain world from small privately-owned lands to large public ownerships. The book concludes with an overview of how EFM can contribute to resolving major 21st century issues in forestry, including sustaining forest dependent societies.

## Acacia mangium Willd.: Ecology, silviculture and

productivity

This college-level textbook summarizes the state of current knowledge in the rapidly expanding field of agroforestry. The book, organized into 25 chapters in six sections, reviews the developments in agroforestry during the past 15 years and describes the accomplishments in the application of biophysical (plant and soil related) and socioeconomic sciences to agroforestry. Although the major focus of the book is on the tropics, where the practice and potential of agroforestry are particularly promising, the developments in temperate zone agroforestry are also discussed. This text is recommended for students, teachers, and researchers in agroforestry, farming systems, and tropical land use.

## Moving Ahead with REDD: Issues, Options and Implications

Silvicultural systems and biological nitrogen fixation; Morphology of nitrogen fixers in forest ecosystems; Taxonomy and distribution of non-legume nitrogen-fixing systems; Isolation and culture of nitrogen-fixing organisms; Wheeler, biochemical, physiological and environmental aspects of symbiotic nitrogen fixation; Analysis of nitrogen fixation; Agricultural and horticultural systems: implications for forestry; Nitrogen fixing plants in forest plantation management; Nitrogen fixation in North American forestry: research and application; Application of biological nitrogen fixation in European silviculture; Nitrogen fixation in Southeast Asian forestry: research and practice; Biological nitrogen fixation in forestry: research and practice in Australia and New Zealand.

Landscape Surveying

## The Ecology and Silviculture of Mixed-Species Forests

As the practical application of ecological restoration continues to grow, there is an increasing need to connect restoration practice to areas of underlying ecological theory. Foundations of Restoration Ecology is an important milestone in the field, bringing together leading ecologists to bridge the gap between theory and practice by translating elements of ecological theory and current research themes into a scientific framework for the field of restoration ecology. Each chapter addresses a particular area of ecological theory, covering traditional levels of biological hierarchy (such as population genetics, demography, community ecology) as well as topics of central relevance to the challenges of restoration ecology (such as species interactions, fine-scale heterogeneity, successional trajectories, invasive species ecology, ecophysiology). Several chapters focus on research tools (research design, statistical analysis, modeling), or place restoration ecology research in a larger context (large-scale ecological phenomena, macroecology, climate change and paleoecology, evolutionary ecology). The book makes a compelling case that a stronger connection between ecological theory and the science of restoration ecology will be mutually beneficial for both fields: restoration ecology benefits from a stronger grounding in basic theory, while ecological theory benefits from the unique opportunities for experimentation in a restoration context. Foundations of Restoration Ecology advances the science behind the practice of restoring ecosystems while exploring ways in

which restoration ecology can inform basic ecological questions. It provides the first comprehensive overview of the theoretical foundations of restoration ecology, and is a must-have volume for anyone involved in restoration research, teaching, or practice.

## Bulletin

Foresters use natural disturbances and stand development processes as models for silvicultural practices in broad conceptual ways. Incorporating an understanding of natural disturbance and stand development processes more fully into silvicultural practice is the basis for an ecological forestry approach. Such an approach must include 1) understanding the importance of biological legacies created by a tree regenerating disturbance and incorporating legacy management into harvesting prescriptions; 2) recognizing the role of stand development processes, particularly individual tree mortality, in generating structural and compositional heterogeneity in stands and implementing thinning prescriptions that enhance this heterogeneity; and 3) appreciating the role of recovery periods between disturbance events in the development of stand complexity. We label these concepts, when incorporated into a comprehensive silvicultural approach, the "three-legged stool" of ecological forestry.

## Silviculture and Ecology of Western U.S. Forests

Forest management should allow the sustainable use of forests. This is only possible through solid knowledge in the disciplines that forest science encompasses. The readers of New Perspectives in Forest Science have an excellent source

of information on actual trends of forest research and knowledge about the use of forest and landscape. This book has been written by specialists focusing on the following aspects of forest science: C cycle, biomass, forest restoration, forest resources and biodiversity. The authors of this book are of different nationalities and specialties, thus providing diverse perspectives on the subject of forestry. We hope that the chapters of this book can serve both students and researchers, as excellent guides to improve their knowledge on forest science.

## Ecology and Recovery of Eastern Old-Growth Forests

Read More About Ecological Silviculture Foundations And Applications

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