

Continuous Cover Forestry

Managing Forest Ecosystems

Volume 23

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Aims & Scope:

Well-managed forests and woodlands are a renewable resource, producing essential raw material with minimum waste and energy use. Rich in habitat and species diversity, forests may contribute to increased ecosystem stability. They can absorb the effects of unwanted deposition and other disturbances and protect neighbouring ecosystems by maintaining stable nutrient and energy cycles and by preventing soil degradation and erosion. They provide much-needed recreation and their continued existence contributes to stabilizing rural communities.

Forests are managed for timber production and species, habitat and process conservation. A subtle shift from *multiple-use management* to *ecosystems management* is being observed and the new ecological perspective of *multi-functional forest management* is based on the principles of ecosystem diversity, stability and elasticity, and the dynamic equilibrium of primary and secondary production.

Making full use of new technology is one of the challenges facing forest management today. Resource information must be obtained with a limited budget. This requires better timing of resource assessment activities and improved use of multiple data sources. Sound ecosystems management, like any other management activity, relies on effective forecasting and operational control.

The aim of the book series *Managing Forest Ecosystems* is to present state-of-the-art research results relating to the practice of forest management. Contributions are solicited from prominent authors. Each reference book, monograph or proceedings volume will be focused to deal with a specific context. Typical issues of the series are: resource assessment techniques, evaluating sustainability for even-aged and uneven-aged forests, multi-objective management, predicting forest development, optimizing forest management, biodiversity management and monitoring, risk assessment and economic analysis.

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Continuous Cover Forestry

Second Edition

 Springer

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Cover illustration: Typical scene in the State of Durango where forests are managed by communities known as Ejidos: management is by selective tree removal, clear-felling is not allowed. Animals (ganado) are part of the multiple use system practiced there. (Photo by K. v. Gadow, autumn 2009)

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Foreword

Although the majority of the world's forest ecosystems are dominated by uneven-sized mixed species stands, forest management practice and theory have focused on the development of plantation monocultures to maximize the supply of timber at low cost. Societal expectations are changing, however, and uneven-aged multi-species ecosystems are often believed to be superior to monocultures in addressing a wide range of expectations.

Rotation forest management (RFM) systems are characterized by standard silvicultural treatments and repetitive cycles of clearfelling followed by planting. Continuous cover forestry (CCF) is characterized by selective harvesting and natural regeneration, resulting in uneven-aged structures and frequently also in multi-species forests. The distinction is usually the result of decisions related to the stand establishment costs, simplicity of management, and various intangible benefits. The oldest and most refined examples of CCF systems are the so-called *Plenter* selection forests found in France, Switzerland, Slovenia and Germany. Today, CCF systems are encountered in various regions of Europe, North America and in some tropical and sub-tropical forests of South Africa, Asia and South America. In a forest managed under the selection system, the stand age is undefined. Forest development does not follow a cyclic harvest-and-regeneration pattern. Instead, it oscillates around some ideal level of residual growing stock, which is assumed to be favorable for natural regeneration and tree growth.

The application of new silvicultural systems – which sometimes is equivalent to a return to traditional methods of tree harvesting – has become a political reality in many parts of the world. This involves a gradual transformation of the current even-aged silvicultural practices towards Continuous Cover Forestry, which is also referred to as “uneven-aged” (North America) or “near-natural” (Europe) forest management. Applications of CCF are usually characterized by uneven-aged multi-species stands, site-adapted tree species mixtures, and selective harvesting. Selective harvesting systems have a long tradition. Specific CCF-related analysis, modeling and economic evaluation tools have been developed, but details about their use are not widely known. Thus, the objective of this volume is to present state-of-the-art

research results and methods relating to CCF management with an emphasis on modeling, economics and application examples.

Following the success of the first edition of *Continuous Cover Forestry – Assessment, Analysis, Scenarios* which was published in 2002, Springer approached the current editors with a request to develop an updated edition using a similar title. We have replaced some of the old chapters with new ones and asked the authors who contributed to the first edition, to update their contributions. The nine chapters of this book deal with the structure, silviculture, modeling, economy and optimization of continuous cover forests. The chapters are independent contributions and they can be read in any order. We wish to thank all the authors of the new edition of *Continuous Cover Forestry* for their excellent cooperation and timely submission.

Timo Pukkala
Klaus v. Gadow

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