Forestry Applications of Airborne Laser Scanning
Managing Forest Ecosystems

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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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Forestry Applications of Airborne Laser Scanning

Concepts and Case Studies

Springer
Preface

Use of airborne laser scanning to provide data for research and operational applications in management of forest ecosystems has experienced a tremendous growth since the mid-1990s and the amount of scientific publications resulting from this activity has increased rapidly. Yet there is no textbook available to bring together the results across this multitude of disciplines and synthesize on the state of the art. The aim of this book is to fill this gap by providing a unique collection of in-depth reviews and overviews of the research and application of airborne laser scanning in a broad range of forest-related disciplines. However, this book is more than just a collection of individual contributions – it consists of a well-composed blend of chapters dealing with fundamental methodological issues and contributions reviewing and illustrating the use of airborne laser scanning within various domains of application. There are numerous cross-references between the various chapters of the book which may be useful for readers who wish to get a more in-depth understanding of a particular issue.

We hope researchers, students, and practitioners will find this book useful. We also hope that colleagues will find the book of value as part of the curriculum in forestry schools and those schools offering courses in forest remote sensing and forest ecosystem assessments in a broader sense.

This book is the result of a collective effort by many good colleagues and friends. They are all listed by name as authors of the various chapters. In addition to the authors of the chapters, many researchers around the world have helped us by reviewing chapters and suggesting improvements. We would like to acknowledge these external reviewers for their efforts to improve this book: Gregory P. Asner, Mathias Disney, James W. Flewelling, Jari Kouki, Peter Krzystek, Mikko Kurttila, Tomas Lämås, Eva Lindberg, Steen Magnussen, Håkan Olsson, Pekka Savolainen, Svein Solberg, Göran Ståhl, and Valerie Thomas. The errors remaining are nevertheless attributable entirely to the authors.

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