

Foreword

The papers appearing in this special issue of *Forest Ecology and Management* are the product of the conference “Meeting the Challenge: Silvicultural Research in a Changing World”, held in La Grande Motte, Montpellier, France, in June 2004. The meeting was organized by Division 1 (Silviculture) of the International Union of Forest Research Organizations (IUFRO), and sponsored by CIRAD-Forêt, the Institut National de la Recherche Agronomique (INRA), and the USDA Forest Service. A total of 53 papers were presented at the conference, attended by over 70 forest scientists from 23 countries in the Americas, Europe, Africa, Asia and Australia.¹

The principal aim of the conference was to explore the changing role and expectations of silvicultural research to meet new and emerging challenges and societal needs related to forest management around the world. Through their presentations of current research and subsequent discussions, participants considered how silvicultural research findings and new research initiatives can be best applied to develop new management approaches needed to balance economic, environmental and social criteria for sustainable forest management. These papers covered a broad range of topics, including: socio-economic and cultural issues in silviculture and forest management; silvicultural management for multiple-uses;

new approaches in plantation forestry; silvicultural techniques for rehabilitating degraded forests and landscapes; emerging agroforestry strategies and technologies and their role in landscape environmental management; modelling effects of silvicultural practices; silvicultural management to control pest species; recycling of waste products by forest fertilization; and, conservation and management of valuable or rare, endangered, and threatened forest species.

The varied papers contained in this volume of *Forest Ecology and Management* illustrate many of the topics and issues explored in the Montpellier conference.

Walters et al., in their analysis of the factors affecting the adoption of silvicultural practices by users in the Philippines, Amazonia, and Mexico, discuss the need to complement traditional forest management systems with technical knowledge and support from government agencies and researchers so that local villagers and forests can better meet the pressures of increasing internal and external demands and threats. In a case study from Mexico, Mendoza et al. discuss the use of a landscape ecology approach to develop policies and silvicultural management practices for a mixed pine forest. These involve modification of the current evenaged management system designed solely for timber production to a more refined set of practices designed to yield a greater diversity of stand structures and lower degree of forest habitat fragmentation. Waring and O'Hara discuss the evolution of silvicultural strategies in forest ecosystems affected by exotic pests in the USA towards a broader understanding of both host and pest

¹ A full conference report and extended abstracts of all presented papers may be found in: Parrotta, J.A., Maitre, H.-F., Auclair, D., Lafond, M.-H. (Eds.) 2005. Meeting the challenge: Silvicultural research in a changing world. IUFRO World Series 15, Vienna, Austria: International Union of Forest Research Organizations, p. 185. Additional papers from this conference will be published in a forthcoming issue of *Bois et Forêts des Tropiques*.

ecology within an integrated pest management approach. Hånell and Magnusson present a national-level analysis of land suitability for forest fertilization with biofuel ash on organic soils in Sweden. Köchli and Brang describe the results of a study using a forest growth simulator and a GIS to assess the effects of alternative forest management strategies on selected goods and services in a peri-urban catchment in Switzerland over a 50-year period. Based on studies conducted in the complex tropical moist forests of French Guiana, Gourlet-Fleury et al. discuss the use of predictive models to forecast long-term population trends for important commercial species in selectively logged forests.

Zenner examines the question of spatial scale in assessing structural complexity in old-growth forest stands. He argues that within managed ecosystems understanding structural pathways and determining characteristic patterns of old-growth structure in natural stands are prerequisites for maintaining biological diversity, sustaining forest productivity, and enhancing and restoring old-growth ecosystems. Doyon et al. examine the effects of partial cutting on bird species and their habitat in northern hardwood forests in southwestern Quebec. Burgess et al. report on long-term experiments on the effects of variable harvests of overstory hardwoods on the subsequent development eastern white pine in pine mixedwood forests in eastern Ontario, Canada. Graham and Jain describe a “free-selection” system designed to maintain flexibility to favor healthy, fire resistant trees, and its application to forest management, based on their work in the interior northwest of North America. Forester et al. provide a critical assessment of the benefits and risks associated with mixed plantations in their study of pure- and mixed-species

stands of *Eucalyptus globulus* and *Acacia mearnsii* in Australia. Completing this issue, Slodiak et al. report the results of long-term research on Norway spruce in the Czech Republic, examining the effect of thinning treatments on wood production, wood quality, and the influence of these plantations on soil structural development.

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