

# Meeting new challenges in tropical forest management - the role of research

Since the historic United Nations Conference on Environment and Development (UNCED) in 1992, forests, particularly tropical forests, have become a central focus of international environment and development policy discussions and debates. Nearly three years ago in Johannesburg, the World Summit on Sustainable Development (WSSD) reiterated the global consensus that forests have a critical role to play in achieving sustainable development and eradicating poverty. However, deforestation and forest degradation are continuing at a rapid rate in many parts of the world, particularly in the tropics. Although planted forests in many tropical countries, especially in Asia, are making an increasingly important contribution to supplying the global demand for timber and pulpwood, the loss of natural forests is estimated to exceed 15 million ha per year in Latin America, Africa, and tropical Asia. In many countries, this process is exacerbating poverty, particularly among forest-dependent communities, and contributing to conflicts over forest land tenure and use rights.

**The widely accepted goal of sustainable forest management**, which seeks to balance ecological, social and economic objectives in the management of forests and woodlands, remains an elusive target in many countries. The reasons for this are numerous, and complex, but in general they are related to the fact that the underlying causes of forest loss and degradation often lie outside the forest sector. The development of forest policies and management practices to balance ecological, economic and social sustainability objectives are politically challenging and often hampered by lack of information, knowledge, and constructive dialogue among stakeholders at the local, national and international levels.

In view of these challenges, what role can the forest science community play in helping to further the development of sustainable forest management practices and policies? In its contribution to the 3<sup>rd</sup> session of the United Nations Forum on Forests (2003), the International Union of Forest Research Organizations (IUFRO) offered the following suggestions<sup>1</sup> (BUCK *et al.*, 2003):

- make research more policy-relevant;
- include other stakeholders in broad-based, participatory approaches to a new research agenda;
- develop research that integrates the environmental, social and ecological pillars of sustainable development;
- assist in improving science education and capacity-building;
- develop strategies to bridge the North-South divide in scientific and technological capacity;
- help to secure long-term strategies and data needs.

**Against this background, IUFRO Division 1** (Silviculture) organized a conference to explore how silvicultural research can contribute to the development of new management approaches needed to balance economic, environmental and social criteria for sustainable forest management throughout the world. The conference, *Meeting the challenge: silvicultural research in a changing world*, was held in Montpellier, France, in June 2004, and sponsored by the CIRAD Forestry Department, the Institut National de la Recherche Agronomique (INRA), and the USDA Forest Service. Attended by over 70 forest scientists from 23 countries in the Americas, Europe, Africa, Asia and Australia, the conference focused on the changing role and expectations of forest science, and silvicultural research in particular, to meet the new and emerging challenges and societal demands related to forest management.

The conference considered a broad range of topics related to landscape-level forest management, tropical forest management, management for non-timber products, environmental services and forest health, social forestry and traditional forest management, uneven-aged management for multiple uses, quantifying and modeling the effects of silvicultural treatments, plantation management, forest restoration, and silvicultural approaches to biodiversity conservation. Among the papers presented and discussed were excellent examples of innovative research aimed at developing improved tropical forest management practices from Mexico, Brazil, French Guiana, Benin, Cameroon, Republic of the Congo, India, Sri Lanka, Thailand, Malaysia, Indonesia and Australia<sup>2</sup>.

The papers contained in this issue of *Bois et Forêts des Tropiques* illustrate many of the topics and issues explored in the Montpellier conference. MENDOZA *et al.* discuss the use of a landscape ecology approach to development of policies and silvicultural management practices for a mixed pine forest in western Mexico. SNOOK evaluates collaboration among researchers, foresters, government agencies and communities to integrate the results of long-term silvicultural studies into management guidelines for community-based management of mahogany (*Swietenia macrophylla*) in Mexico's Yucatan peninsula. In the Central African context, MOUNTANDA *et al.* examine the results of a collaborative program involving timber companies and local communities, which aims to improve post-harvest management of commercial forests in the Republic of the Congo. GANGLO's study in Benin illustrates the use of phytosociological studies as a tool for evaluating species-site relationships and the productivity of fuelwood plantations of indigenous forest species. The management of indigenous tree species of high social and economic value for which little silvicultural information exists is the focus of the paper by NAIR *et al.*, who present the results of their work on the development of seed handling protocols, nursery practices, and species-site relationships for 5 species indigenous to peninsular India. The importance of reducing timber harvesting pressures on natural forests by improving the productivity of intensively managed commercial timber plantations is illustrated in the paper by GOH and MONTEUUIS in their study of clonal teak plantations in Sabah, Malaysia.

**Tropical forest scientists** have a critical role to play in helping to bridge existing gaps in knowledge and communication among local communities, forest managers and policy makers in the development of policies and practices aimed at sustainable tropical forest management. Innovative silvicultural research that builds on the understanding and experience gained through the past century of North-South collaboration in forest science and the creative synthesis of modern forest science and traditional ecological knowledge can and should continue to contribute to the development of creative approaches to forest management that balance often conflicting ecological, social and economic objectives and the needs of stakeholders.

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<sup>1</sup> BUCK A., PARROTTA J., WOLFRUM G. (ed.), 2003. Science and technology – Building the future, or the world's forests & planted forests and biodiversity. IUFRO, occasional paper n° 15. Vienna, Austria, International Union of Forest Research Organizations.

<sup>2</sup> A full conference report and extended abstracts of the 53 papers presented may be found in: PARROTTA J.A., MAÎTRE H.-F., AUCLAIR D., LAFOND M.-H. (ed.), 2005. Meeting the challenge: silvicultural research in a changing world. IUFRO World Series 15. Vienna, Austria, International Union of Forest Research Organizations, 185 p (cf. page 77 of this issue). Additional papers from this conference, including four contributions focusing on tropical forest ecology and management, were published in a special issue of *Forest Ecology & Management* (volume 209 [1/2]; April 2005).