XXIV IUFRO World Congress

"Sustaining Forests, Sustaining People: The Role of Research"

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Congress themes

Forests and trees provide a wide range of environmental, economic, social and cultural benefits to people in rural communities and urban centers worldwide. Their conservation and sustainable management are closely linked to globally important societal challenges related to environmental protection, sustainable economic development, food security, human health, water and energy resource provision, and climate change. The best available scientific knowledge is needed to effectively address these issues at multiple scales (locally, regionally and globally) and provide a strong basis for forest and forest landscape management practices and policy decisions. The scientific program for the IUFRO 2014 World Congress will bring together scientists of all ages, from throughout the world, across the full range of forest-related disciplines, who are engaged in research, education and application of science-based knowledge to address these challenges and meet the changing needs of our increasingly globalized society. The program will be organized along the following seven themes: *Forests for People, Forest Biodiversity and Ecosystem Services, Forests and Climate Change, Forest and Water Interactions, Forest Biomass and Bioenergy, Forests and Forest Products for a Greener Future,* and *Forest Health in a Changing World.*

Forests for People

Forests, woodlands and agroforests play a vital role in the lives of people in both rural and urban communities, supporting livelihoods, food and energy security, human health and wellbeing, and culture. This theme, which focusses on social, cultural and economic aspects of the management and use of forest resources, covers a broad set of topics such as nature-based recreation and tourism, landscape planning and management, nature protection, community forest management, forest work, human health and wellbeing, urban forestry, forest ethics, forest history and culture, gender issues in forestry, rural development and community wellbeing. Congress sessions within this theme will explore the linkages between human well-being and quality of life related to the environmental, economic and social goods and services provided by forests both for urban and rural populations. They will also examine the roles of policy, planning, forest governance, formal and traditional knowledge, communication, education and training in the maintenance, enhancement, valuation and optimization of benefits derived from forest ecosystems and forest products and services to people at local, regional and broader spatial scales.

Forest Biodiversity and Ecosystem Services

The conservation and sustainable use of forest biodiversity (at genetic, species and ecosystem levels) is fundamental to the maintenance of forest regulating and habitat services responsible for provision of the environmental, economic, social and cultural goods and services that people in both rural and urban communities depend on. Addressing the threats to forest biodiversity – including deforestation, forest fragmentation and degradation, unsustainable use, alien invasive species, and climate change - requires a more profound scientific understanding of the role of biodiversity in the provision of ecosystem services, and

the impacts of biodiversity loss on responses and resilience of forest ecosystems, habitats and species at different spatial and temporal scales to natural and human-induced disturbances. Sessions within this theme will explore these issues as well as such topics as the impacts and efficacy of different forest management practices on biodiversity in protected areas, community management, and more intensively managed forests for timber, non-timber forest products, and agroforestry systems; landscape level strategies for forest biodiversity conservation and restoration; and challenges in achieving a balance between biodiversity conservation and sustainable utilization of forest resources.

Forests and Climate Change

Understanding and anticipating the impacts of climate change on forest ecosystems and the services they provide to people are critical to efforts to develop and implement effective policies and management strategies for climate change mitigation and adaptation. Sessions within this theme will consider climate change effects on forest ecosystem structure and function; interactions with other natural disturbance and forest management regimes; monitoring and modelling of climate-change related impacts on forest ecosystems, landscapes, and communities; environmental, social and economic implications of forest-based climate change adaptation strategies and mitigation opportunities (such as REDD+); silvicultural, planning and policy options for managing and restoring natural and planted forests to enhance carbon storage and other ecosystem services, as well as adapting natural and planted forests to climate change; the role of sustainable production and use of wood-based products in climate change mitigation (including wood-based substitutes for less "climate friendly" materials); and the contributions of forest genetics, restoration ecology and landscape ecology in climate change mitigation and adaptation, including incentives and issues of trans-boundary emission trading schemes.

Forest and Water Interactions

Forests and forest cover play a crucial role with regard to sustaining the availability and quality of water critical for human well-being. The linkages between water, wetlands and forests show the importance of managing ecosystems at watershed or landscape scales in order to protect these vital services. There is an urgent need for improved understanding of the interactions between forests, trees and water (including riparian and coastal ecosystems) as affected by large-scale natural and human-induced disturbance, including climate change, as well as effects of land-use, land-cover change and forest management on watershed hydrology and provision of water-related ecosystem services. Sessions within this theme will consider these broad issues as well as more specific questions such as: water consumption of growing tree crops compared to other land uses; region-specific interactions of forests and water; water consumption of forest plantations and forest bioenergy systems; and governance and institutional arrangements related to management of forested watersheds.

Forest Biomass and Bioenergy

The rapidly growing use of wood and other types of biomass for bioenergy, biofuels, bio-based products requires the development of innovative production systems, more efficient use of material from plantations based on end-user, raw material and processing requirements, and management of competition for biomass from planted and natural forests for energy *vs* other forest products and environmental services. Sessions within this theme will explore these issues as well as trends in plantation forestry and fibre-farming in relation to other important roles of forests such as biodiversity conservation and provision of other forest ecosystem goods and services such as carbon sequestration and protection of water quality. Additional topics that will be emphasized include: breeding and selection of trees to meet changing biomass and bioenergy objectives; environmental and social impacts of forest resource competition; cascades of use and life-cycle analysis; 'eco-efficiency' of forest bioenergy production systems and technologies; and marketing of biomass and its economic impacts.

Forests and Forest Products for a Greener Future

The future of sustainable forest management in the face of forest loss and ever-increasing demands for food, timber and wood fiber, water and other ecosystem services, and uncertainties posed by globalization and economic, social and environmental uncertainty, is a fundamental challenge for the forest research community. Innovation in the field of forest products, goods and services together with sustainable and environmentally responsible wood production systems and forest operations will play an important role to meet these challenges. Sessions within this theme will explore: trends in demand for traditional and innovative forest products, ecosystem goods and services; increased use of wood in construction; managing conflicting needs of forest stakeholders; changing societal values, institutions and forest governance structures under different socio-cultural conditions and their role in sustainable management and use of forests in the future; development of new forest management approaches and processing techniques for environmentally and socially acceptable products and services; emerging landscape management (i.e., Green Infrastructure) approaches; valuation of benefits derived from non-wood forest products and ecosystem services; and forestry education, research and training to meet future needs.

Forest Health in a Changing World

Healthy forests are foundational to the delivery of ecological, economic and social benefits associated with forests, yet these benefits are under threat from disparate sources ranging from climate change to the side-effects of globalization. The sessions within this theme will focus on the three components of risk (as defined by the IPCC): hazard, vulnerability and exposure. Session topics will include: trends in biotic and abiotic hazard occurrence including responses to climate change, the introduction of alien invasive species, and global trade as a pathway; vulnerability of forests including, tree resistance, shifts in pest and host species relationships, and forest resilience; exposure of society to forest health issues such as hazard tree management and the socio-economic impacts associated with forest health; mechanisms of risk mitigation such as pest management solutions, alternative forest management strategies, global trade issues including alien species surveillance, forest pest incursion management, and phytosanitary protection risks and mitigation strategies for traded wood and packaging materials (i.e., suitable wood protection strategies).