



HIGHLIGHTS OF THE INTERNATIONAL CONFERENCE "BIODIVERSITY: SCIENCE AND GOVERNANCE": WEDNESDAY, 26 JANUARY 2005

On Wednesday, participants to the International Conference "Biodiversity: Science and Governance" convened in plenary and workshop sessions. In the morning, Plenary heard presentations on biodiversity and the management of living resources. In the afternoon, workshops convened on: biodiversity governance; agriculture; environmental education and communication for biodiversity; an integrated approach to biodiversity; innovation; indicators and the 2010 target; appropriation regimes and management systems; and management of tropical and subtropical biodiversity – forests and islands.

Editor's note: Coverage of workshops has been limited to those described below, selected according to priorities determined by the Conference organizers.

PLENARY

BIODIVERSITY AND MANAGEMENT OF LIVING RESOURCES: Peter Schei, Chairman of BirdLife International, chaired the session on biodiversity and the management of living resources. He said the greatest challenge for natural resource management lies in socioeconomic factors rather than in scientific knowledge.

Presentations: Jeremy Jackson, Smithsonian Tropical Research Institute, spoke on marine biodiversity and sustainable fisheries. Noting that the biodiversity status of the oceans is worse than that of the land, he said major factors contributing to marine degradation include: loss of large marine species; destruction of continental shelves; spreading of alien invasive species; ocean warming; contamination of the marine food web; and eutrophication. He concluded that one of the greatest challenges for sustainable fisheries is to make the shift from marine degradation to recovery worthwhile for people.

Emile Frison, Director of the International Plant Genetic Resources Institute, presented on biodiversity and agriculture, with a focus on the role of agriculture in achieving the Millennium Development Goals. Stressing that 854 million people still suffer from hunger and 2 billion from malnutrition, he explained how using biodiversity can help alleviating poverty and hunger. He said increased productivity and a diverse diet require a better use of biodiversity, including greater genetic diversity and a wider and intensified use of species. He recommended: focusing on neglected and under-used traditional crops; improving cultivation; diversifying products; and investing in agriculture.

David Kaimowitz, Director-General of the Centre for International Forestry Research, stressed that people are an integral part of forest life. Noting that many of the most vulnerable people depend on forests, he called for an emphasis on threatened livelihoods rather than on threatened biodiversity only, and presented examples of the importance of medicinal plants and bush meat to local people. Stressing that biodiversity conservation may pose threats to livelihoods, he called for regulations that take into account local priorities. Kaimowitz concluded that long-term compensation is the key to conservation.

Madhav Gadgil, Indian Institute of Science, spoke on the cultural dimensions and local use of biodiversity, focusing on local peoples' ecological knowledge and conservation practices. He said traditional knowledge is practical, experiential and localized, and has greatly benefited biodiversity conservation. He also noted that conservation practices must be fine-tuned to the variability of complex ecosystems. He advocated a register of biodiversity conservation practices to help design conservation and management plans. Gadgil underscored the importance of communication between scientists and local people, as the first hold scientific knowledge and technologies while the others have practical ecological knowledge and traditional wisdom.

Roundtable: Roundtable Chair Mohan Munasinghe, Munasinghe Institute for Development of Sri Lanka, said the recent tsunami in Southeast Asia revealed that inefficient environmental management can decrease ecosystem resilience and make people vulnerable to natural catastrophes.

Noting that genetically modified organisms pose a threat to biological and cultural diversity, Giuseppe Ambrosio, Italian Ministry of Agricultural Policy and Forestry, cautioned against their use in agriculture.

Natarajan Ishwaran, UNESCO, said the decision by the Australian government to increase non-catch zones in the Great Barrier Reef exemplifies a clear interaction between science, governance and policy makers.

Jean-Luc Roux, Greenpeace International, stressed the importance of good governance and involvement of all stakeholders, including local communities, in tackling illegal logging and fishing.

Rosalía Arteaga Serrano, Secretary-General of the Amazon Cooperation Treaty Organization, noted that developed countries are largely responsible for the decline of the Amazon's biodiversity, as a result of their agricultural subsidies and purchase of illegally harvested timber and animals.

Youth representatives expressed concern over the state of the world's biodiversity.

WORKSHOPS

GOVERNANCE: Bertrand-Pierre Galey, Director-General of the French National Museum of Natural History (MNHN), highlighted the role of museums in education and information sharing.

Hamdallah Zedan, Executive Secretary of the Convention on Biological Diversity (CBD), delivered a keynote presentation, highlighting the need for: coordination between biodiversity-related agreements; communication among national focal points for various international agreements; and involvement of local communities in national policy-making processes.

David Brackett, Environment Canada, chaired the workshop's session on efficiency of conservation and sustainable use measures. In a keynote address, Joshua Bishop, IUCN, presented case studies regarding valuation of forests in Europe and ecosystems around the world, as well as the costs of environmental damage, to demonstrate the importance of conserving biodiversity and using it in a sustainable way. He advocated new markets for biodiversity conservation, filling gaps in funding for conservation and increasing development assistance for biodiversity. He suggested the following formulas to measure the efficiency of biodiversity conservation:



conservation costs versus *per capita* income; opportunity costs of conservation; and cost-benefit analyses of conservation.

In the ensuing discussion, one participant suggested setting up a system to charge those who benefit from biodiversity conservation. Others suggested land tenure systems and intellectual property rights (IPRs) as new instruments.

During a panel discussion, Aldo Consentino, Italian Ministry of the Environment, stressed the need to educate the public and integrate various conservation measures. Leon Rajaobelina, Executive Director of the Center for Biodiversity Conservation of Madagascar, shared his country's experience regarding improvements in conservation efficiency. He said international funding, national policies and laws, and local direct payment systems are important measures. Stefan Leiner, EC Directorate-General for the Environment, stated that all existing measures and instruments should be mutually supportive and integrated. Bráulio Dias, Brazilian Ministry of the Environment, stressed the need to mainstream biodiversity conservation into social and economic development. Jean-Marc Michel, French Ministry of the Environment, said protection and proper management are equally important for biodiversity conservation. Tom Dedeurwaerdere, Catholic University of Louvain, said IPRs can be used to generate resources for biodiversity conservation and the profits of biodiversity conservation should be shared with local communities.

AGRICULTURE: Workshop Chair Harison Randriarimanana, Minister of Agriculture, Farming and Fishing of Madagascar, highlighted the challenge to overcome the contradiction between production and conservation.

Bernard Hubert, French National Institute for Agriculture Research (INRA), said a challenge lies in considering natural resources management as a process based on cross-fertilization between agronomy, ecology, social sciences, and traditional knowledge.

Jeffrey McNeely, IUCN, presented biodiversity managers' perspective on agriculture. He outlined ways to improve the relationship between biodiversity and agriculture, including: using incentives for wild biodiversity conservation; compensating farmers for damage from wild species; recognizing the value of traditional farming systems and indigenous land rights; removing trade barriers; and using modern technologies.

Maria Fuentes, EC Directorate-General for Agriculture, outlined how biodiversity concerns are integrated into the reform of the Common Agriculture Policy of the European Union (EU), describing key threats and pressures, as well as main obstacles, including low public support and lack of awareness. She noted the adoption of a Biodiversity Action Plan for Agriculture, which makes use of agro-environmental measures.

Jean-Claude Lefeuvre, MNHN, provided a historical overview of the relation between agriculture and biodiversity.

Guy Riba, INRA, outlined ways to shift from agriculture to eco-agriculture, suggesting that research focus on, *inter alia*, the functional role of biodiversity, ecotoxicology, genetic resources, clean practices and diversification of species. Regarding governance, he stressed the need to promote eco-agriculture at all levels, adapt assistance legislation and policies, and promote innovative practices.

Participants heard presentations regarding case studies on: shrimp farming in Madagascar; the management of the Brazilian Amazon by traditional and migrant populations; and agriculture based on grassland ecosystems and microbial diversity in dairy-producing systems in the northern Alps.

INNOVATION: Pierre Porcher, French National Centre for Scientific Research, introduced the session on innovations and biodiversity, pointing out that using resources from biodiversity has legal and ethical implications.

Workshop Chair Bana Bihari Jana, University of Kalyani, India, defined ecological engineering as designing sustainable ecosystems that integrate human society with the natural environment for the benefit of both. He said biodiversity can be a model for technical innovation and, in turn, ecological engineering can restore habitats and improve livelihoods. Highlighting examples of ecological waste management, including wastewater-fed aquaculture, he

said public awareness could be an effective mechanism to prevent biodiversity loss.

Mark Ayre, European Space Agency, elaborated on biomimetics, which is the art of copying biological materials and mechanisms for engineering purposes. He described examples including artificial muscle, drilling and digging mechanisms, architectural design, and flight. Stressing that biology is a good template for managing complexity, he said our increased understanding of complexity could contribute to biodiversity conservation.

Renée Borges, Indian Institute of Science, stressed man's inability to effectively value ecosystems and natural products. She showed that natural chemical compounds can be used for, *inter alia*, drugs, natural pesticides, slowing adverse processes such as biofilm formation, and elaborated on the scale, nature and difficulties of medicinal plant use in India.

Addressing wetlands restoration, William Mitsch, Ohio State University, said wetlands are the landscape's kidneys since they clean water and lessen the effects of floods. Highlighting wetlands' vulnerability, especially to drainage, he stated that wetlands can be restored or even created, as long as the design takes into account the principles of wetlands ecology.

Moses Mugabi, Kasese Cobalt Company, described a case study on the use of microorganisms to restore an area in Uganda suffering from environmental degradation due to mining activities. He said the project's successes include: regeneration of local vegetation and associated biodiversity; employment; increased environmental awareness; water provision; improved infrastructure; and knowledge transfer.

INDICATORS AND THE 2010 TARGET: Dominique Richard, European Topic Center on Biodiversity, and Denis Couvet, MNHN, presented the different types of, and requirements for, biodiversity indicators.

Jo Mulongoy, CBD, and Gordon McInnes, European Environment Agency, discussed targets, goals and indicators used by the CBD and the EU to assess progress towards the 2010 target to reduce significantly the current rate of biodiversity loss. They said biodiversity indicators should be, *inter alia*, policy-relevant, affordable, sensitive, scientifically sound, and broadly accepted.

Workshop Chair Andrew Dobson, Princeton University, spoke on the scientific objectives behind biodiversity indicators, stressing the importance of raising the profile of environment indicators among the public.

Charles McNeil, UN Development Programme, discussed biodiversity and the Millennium Development Goals (MDGs) campaign. He explained why the MDGs and the 2010 target are interdependent, and recommended measures to make the MDGs more biodiversity friendly.

David Sheppard, IUCN, spoke on targets for protected areas (PAs), noting that they should be ambitious, address the national level, involve effective partnerships and be effectively monitored. He also stressed the importance of setting targets for PAs both in quantity and quality.

McNeely presented projection scenarios in support of policy decisions. He called for indicators that will modify consumer behavior, such as product prices that reflect their true environmental costs.

Don Waller, University of Wisconsin, discussed baseline problems and drivers of plant diversity loss across forest landscapes. He concluded that declines of plant populations often go unnoticed due to baseline data scarcity.

Romain Juilliard, MNHN, discussed current successes and future challenges regarding multi-species indicators based on large-scale monitoring of common birds. He noted that wild bird indicators are actively being used by decision makers in Europe.

Stuart Butchart, BirdLife International, discussed how the IUCN Red List Index can be used to measure trends in the threat status of biodiversity. He said the Index can help measuring net changes to overall threat status and complementing population base indices in resolution and representativity.

Frédéric Gosselin, Cemagref, discussed indicators, ecological gradients and model selection, focusing on tree species composition as an indicator for forest floristic diversity.