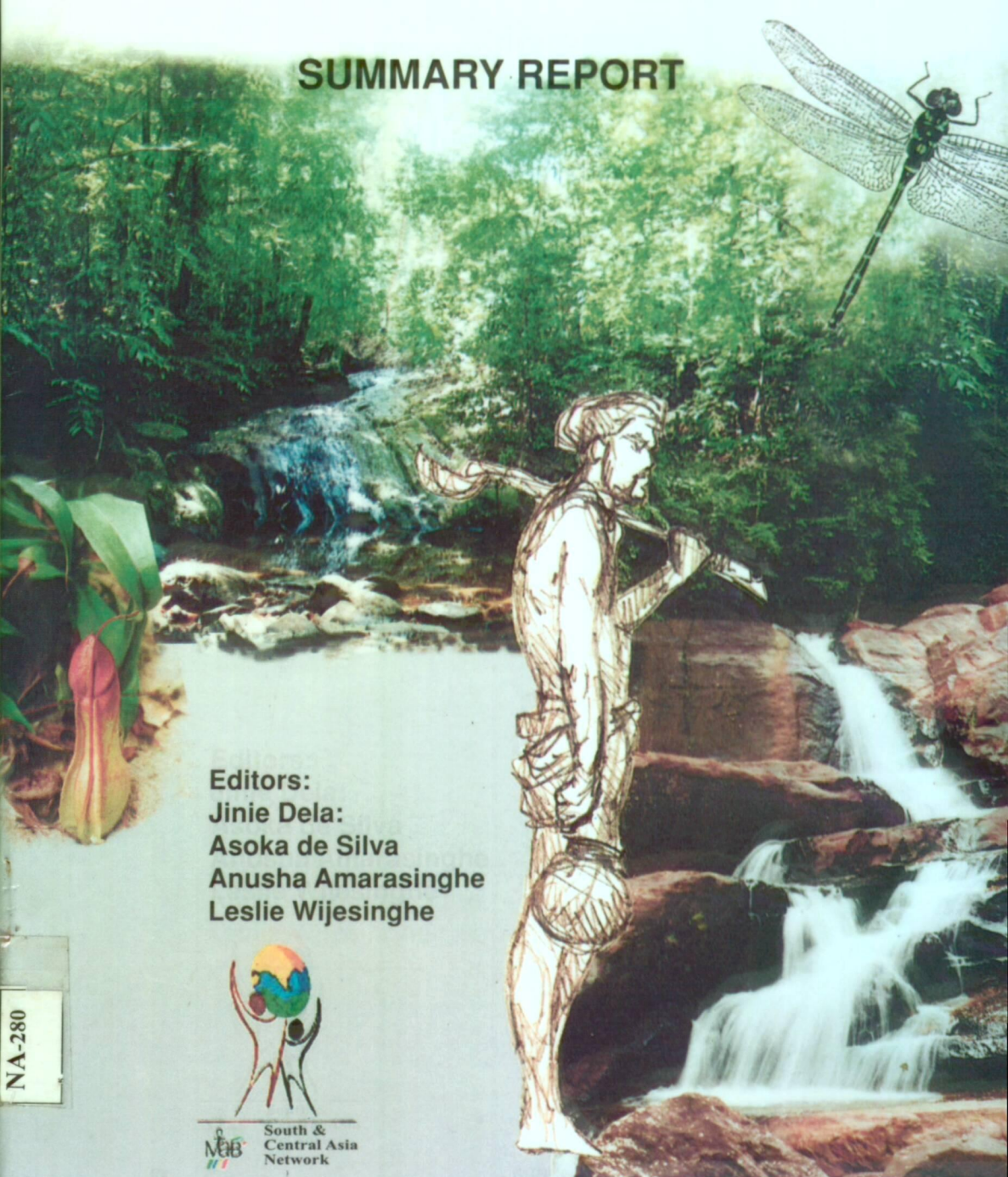


THE SOUTH AND CENTRAL ASIAN
MAN AND THE BIOSPHERE MEETING OF EXPERTS
ON ENVIRONMENTAL CONSERVATION,
MANAGEMENT AND RESEARCH

SUMMARY REPORT



Editors:
Jinie Dela:
Asoka de Silva
Anusha Amarasinghe
Leslie Wijesinghe

NA-280



MAB
South &
Central Asia
Network



Contents

Inaugural Session	1
Technical Sessions	
A. Management Issues in Biosphere Reserves	
1. <i>Linkages between biological and cultural diversities for participatory management</i>	
Eco-Cultural Diversity Embedded in the Cultural Landscape: an Approach to Biosphere Reserve Management <i>P.S. Ramakrishnan</i>	4
Linkages between Biological and Cultural Diversities for Participatory Management: Nepal's Experiences with Makalu-Barun National Park and Buffer-Zone <i>Shree Gopal Jha</i>	5
Buffer Zone of the Sinharaja Biosphere Reserve in Sri Lanka and its Management Strategies <i>S. Gunatilleke & Ananda Wijesooriya</i>	5
Case Study on Community Participation in the Management and Conservation of the Bundala National Park <i>H.D. Ratnayake et al.</i>	7
2. <i>Capacity building for sustainable development</i>	
Capacity Building for Sustainable Development <i>Wijaya Jayatilaka</i>	9
Management Issues in Indian Biosphere Reserves, with Special Reference to Alternative Livelihood Options for Dependent Population <i>R. K. Rai</i>	9

Conservation Innovations of Peripheral Communities - Case Study of Adam's Peak Wilderness <i>A. Wickremasinghe</i>	10
Conservation of the Nature and Natural Resources in Nepal: Traditional versus Modern Approaches and Management Issues in Protected Areas <i>Purna Nath Mishra</i>	12
Community Participation in the Management of the Kanneliya - Dediya - Nakiyadeniya : Proposed Biosphere Reserve <i>H.M. Bandaratileke</i>	12
Linking Livelihoods with Conservation - An Enterprise-Based Approach to Biosphere Reserve Management <i>Seema Bhatt</i>	13
 3. <i>Research, training and outreach activities in biosphere reserves</i>	
Role of Biosphere Reserves in Research, Monitoring, Training, Education, Public Awareness and Outreach Activities <i>I. A. U. N. Gunatilleke & C. V. S. Gunatilleke</i>	14
Agricultural Activities and their Impacts on the Ecology and Biodiversity of the Sunderbans Area of Bangladesh <i>Md. Giashuddin Miah</i>	15
Characteristics, Status and Need for Conservation of Mangrove Ecosystems in the Republic of Maldives, Indian Ocean <i>Ahmad Saleem & Aminath Nileysha</i>	15
Quantitative Dynamics of Phyto-Diversity Reserve in the Undergrowth of Forests of Bangladesh <i>M.A.M. Chowdhury</i>	15
Canopy Arthropod Studies in Sri Lanka: Implications for Conservation <i>D.K. Weerakoon</i>	16
Protected Areas in Pakistan: Management and Issues <i>Zafar Iqbal Khan</i>	16

Considering Economic Needs of the Community of Phobjikha, Bhutan: Constraints and Challenges <i>Lam Dorji & Jigme Tobgay</i>	17
 B. Legal and Regulatory Mechanisms	
 1. <i>Role of biosphere reserves in relation to international environmental conventions (CBD, UNCCD, UNFCCC, Ramsar)</i>	
Biosphere Reserves and Multilateral Environmental Agreements: Some Legal Issues <i>Bharat Desai</i>	18
Legally and Regulated Mechanism in Biosphere Reserves <i>Shirin Abolghasemi</i>	20
Components of Biological Diversity Important for Conservation - A Study of Small Mammals in a Sri Lankan Rain Forest <i>Mayuri Wijesinghe</i>	20
 2. <i>Access to genetic resources and benefit sharing among stakeholders</i>	
Access to Genetic Resources and Benefit Sharing (ABS) from the Man and Biosphere Programme (MAB) perspective <i>S. de Silva</i>	21
Access to Biological Material: Issues that Sri Lanka is Facing <i>J. Gunawardena</i>	23
 C. New Biosphere Reserves Related Initiatives in South and Central Asia	
 1. <i>Presentations on new biosphere reserves related to national initiatives by country representatives</i>	
New Biosphere Reserves of India, with Special Reference to Agasthyamalai <i>R. K. Rai</i>	25

Nominations of New Biosphere Reserves in the Islamic Republic of Iran <i>Mahin Gazani</i>	26
Langtang National Park - a Potential Biosphere Reserve in Nepal <i>Purna Nath Mishra</i>	28
Names and Brief Details of New Biosphere Reserve Related Initiatives Undertaken by Bangladesh <i>Md. Giashuddin Miah</i>	28
Pallas Valley: a Potential Biosphere Reserve in Pakistan <i>S. Azhar Hasan</i>	29
Kanneliya-Dediyagala-Nakiyadeniya Forest Complex (KDN) - a Proposed Biosphere Reserve in Sri Lanka <i>H.G. Gunawardena</i>	30
Knuckles (Dumbara) Conservation Forest - Proposed Biosphere Reserve in Sri Lanka <i>H.G. Gunawardena</i>	30
D. An Overview of the Flora and Fauna of the KDN Forest Complex - A Proposed Biosphere Reserve in Sri Lanka [a presentation prior to the field visit] <i>C. Bambaradeniya</i>	31
E. Application of the Biosphere Reserve Concept and the World Heritage Convention as Tools for Biodiversity Conservation in the SACAM Region	32
The UNESCO World Network of Biosphere Reserves and the World Heritage Convention - Differences and Complements <i>Thomas Schaaf</i>	32
F. Regional Issues and Collaborations The Statutes of the South and Central Asia MAB Network	40
G. Outcomes of the Meeting	46

List of Participants

A. Wickremasinghe

Dept. of Geography, University of Peradeniya, Peradeniya, Sri Lanka.

A.H.M. Jayasuriya

Plant Genetic Resources Centre, P.O. Box 59, Gannoruwa, Peradeniya, Sri Lanka.

Ahmed Saleem

Environment Research Centre, 4th Floor, Jamaaluddin Complex, Nikagas Magu, Male, Republic of Maldives.

Aminath Nileysha

Environment Research Centre, 4th Floor, Jamaaluddin Complex, Nikagas Magu, Male, Republic of Maldives.

Ananda Wijesooriya

Forest Department, 82, Rajamalwatta Road, Battaramulla, Sri Lanka.

Anusha Amarasinghe

National Science Foundation, 47/5, Maitland Place, Colombo 7, Sri Lanka.

Asha Pitadeniya

National Science Foundation, 47/5, Maitland Place, Colombo 7, Sri Lanka

Asoka T.de Silva

6/9, De Silva Road, Kalubowila, Dehiwala, Sri Lanka.

Bharat Desai

International Legal Studies Division, School of International Studies, Jawaharlal Nehru University, New Delhi - 110 067, India.

C. Bambaradeniya

IUCN, 53, Horton Place, Colombo 7, Sri Lanka.

D.K. Weerakoon

Dept. of Zoology, University of Colombo, Colombo 3, Sri Lanka.

D.K.N.G. Pushpakumara

Dept. of Crop Science, University of Peradeniya, Peradeniya,
Sri Lanka.

H.D. Ratnayake

Dept. of Wildlife Conservation, 18, Gregory's Road, Colombo 7,
Sri Lanka.

H.G. Gunawardena

Forest Department, 82, Rajamalwatta Road, Battaramulla,
Sri Lanka.

H.M. Bandaratilleke

Forest Resources Management Project, 78, Rajamalwatta Road,
Battaramulla, Sri Lanka.

I.A.U.N. Gunatilleke

Dept. of Botany, University of Peradeniya, Peradeniya, Sri Lanka.

Jagath Gunawardena

15/4, Stanley Thilakaratne Mawatha, Nugegoda, Sri Lanka.

Jigme Tobgay

Royal Society for the protection of Nature, P.O. Box 325, Thimphu,
Bhutan.

Jinie Dela

No. 45/1, Gunatilleke Mawatha, Arambegoda, Panadura, Sri Lanka.

Kanthi Abeynayake

Dept. of Botany, University of Colombo, Colombo 3, Sri Lanka.

L.A. Samayawardhena

Dept. of Zoology, University of Ruhuna, Matara, Sri Lanka.

Lam Dorji

Royal Society for Protection of Nature, P.O. Box 325, Thimphu,
Bhutan.

Leslie Wijesinghe

No. 5, Second Lane, Dehiwala, Sri Lanka.

M. Zafar Iqbal Khan

S&T-R Division, Ministry of Science and Technology, 4th Floor,
Evacuee Trust Complex, Adjacent to Marriott Hotel, F-5, Islamabad,
Pakistan.

M.S. Alam

UNESCO New Delhi Office, B 5/29 Safdarjung Enclave, New Delhi -
110 029, India.

Mahin Gazani

Iranian National Commission for UNESCO, 17, 1st Alley Shahid Hesari
Street, Mirdamad Blvd. 15489, Teheran, Islamic Republic of Iran.

Mangala de Zoysa

Dept. of Agric. Economics, Faculty of Agriculture, University of
Ruhuna, Mapalana, Sri Lanka.

Mayuri Wijesinghe

Dept. of Zoology, University of Colombo, Colombo 3, Sri Lanka.

Md. Giashuddin Miah

Dept. of Agroforestry & Environment, P.O. BSMRAU, Gazipur,
Bangladesh.

Mohammad A.M. Chowdhury

Dept. of Botany, University of Chittagong, Chittagong - 4331,
Bangladesh.

N.D.R. Weerawardane

Forest Research Centre, Kumbalpole, Boyagane, Kurunegala,
Sri Lanka.

Nanda Senanayake

Natural Resource Management Centre, Department of Agriculture,
No.5, Sarasavi Mawatha, Peradeniya, Sri Lanka.

P.S. Ramakrishnan

School of Environmental Sciences, Jawaharlal Nehru University, New
Delhi - 110 067, India.

Purna Nath Mishra

Central Department of Zoology, Tribhuvan University, Kirtipur,
Kathmandu, Nepal.

R.K. Rai

Ministry of Environment & Forests, Govt. of India, CGO Complex,
Lodhi Road, New Delhi - 110 003, India.

S. Gunatilleke

Dept. of Botany, University of Peradeniya, Peradeniya, Sri Lanka.

S.de Silva

IUCN, No. 53, Horton Place, Colombo 7, Sri Lanka.

Seema Bhatt

National Biodiversity Strategy & Action Plan, C-349 Defence Colony,
New Delhi - 110 024, India.

Shree Gopal Jha

Ministry of Forests and Soil Conservation, Singh Durbar, Kathmandu,
Nepal.

Shrin Abolghasemi

Environmental Research Station, Pardisan Ecg-Park, Tehran, Islamic
Republic of Iran.

Syed Azhar Hasan

Pakistan Museum of Natural History, Garden Avenue, Shakarparian,
Islamabad, Pakistan.

T. Jayasingam

Trincomalee Campus, No. 315, Dockyard Road, Trincomalee,
Sri Lanka.

Thomas Schaaf

Division of Ecological Sciences, UNESCO, No.7, Place de Fontenoy,
F-75007 Paris, France.

Wijaya Jayatilleke

Sri Lanka Foundation Institute, No. 100, Independence Avenue,
Colombo 7, Sri Lanka.

SUMMARY REPORT

THE SOUTH AND CENTRAL ASIAN MAN AND THE BIOSPHERE MEETING OF EXPERTS ON ENVIRONMENTAL CONSERVATION, MANAGEMENT AND RESEARCH

INAUGURAL SESSION 15/10/2002

The South and Central Asian MAB Meeting of Experts on Environmental Conservation, Management and Research commenced with the lighting of the traditional oil lamp followed by the National Anthem.

Delivering his welcome address, Prof. Ranjan Ramasamy, Chairman of the National Science Foundation (NSF), drew the attention of the audience to the Scientific and Technological Community's stand at the World Summit on Sustainable Development (WSSD), recently held in South Africa. At the Summit a new contract between scientists, technologists and society was called for, with requests for scientists and technologists to address the needs of social equity, poverty alleviation and other societal issues in their endeavours, and for science and engineering to give higher priority to identifying solutions for pressing developmental challenges with correspondingly enhanced support from society and governments. He also reminded those present of the call by Mr Kofi Annan, UN Secretary-General, for a greater emphasis on water and sanitation, water use, energy - including use of renewable energy, health and environment (especially their links), agricultural productivity, biodiversity, land use, and ecosystems and human impacts on them. In this context, Prof. Ramasamy said that it was appropriate for this meeting to be held in Hikkaduwa, a site famous for coral reefs in Sri Lanka, but now severely affected by human activity. He added that there were a large number of other global programmes and institutions which affect the Man and the Biosphere Programme (MAB) in a general sense, such as the International Geosphere Biosphere Programme, the World Climate Research Programme, the International Human

Dimensions Programme, IUCN, and the Global Climate Change Programme. These should collaborate and ensure a greater goal-focused orientation to address what Mr Kofi Annan considered as "a very serious problem in the next decade or so."

Mr Leslie Wijesinghe, Chairman of the Sri Lanka MAB National Committee, said in his introductory remarks that this meeting would concentrate on conservation, management and research in Biosphere Reserves and other similarly managed areas. He drew attention to the fact that Biosphere Reserves now spanned the globe, with 411 reserves in 94 countries. Recalling historical facts, Mr Wijesinghe said that the Biosphere Reserve concept and the MAB Programme came into existence following the UNESCO International Conference of Experts on the Scientific Basis for Rational Use and Conservation of Resources of the Biosphere held in 1968. At that time, the Sri Lanka's Forest Department was in the throes of a desperate struggle to conserve the country's remaining pristine natural forests that were facing threats due to an expanding human population and development oriented activities. The Forest Department had selected a number of natural forest sites in different climatic zones and declared them as specially protected areas under the UNESCO MAB Programme. Later they were designated as National Biosphere Reserves. This had helped protect many important forest sites in Sri Lanka. Apart from the two internationally recognised Biosphere Reserves, there are now over 30 National Biosphere Reserves in Sri Lanka. He stressed that there were lessons to be learned from the Biosphere Reserve approach, such as zonation and peoples' participation in management, and this approach could - and should - be extended to the management of other types of protected areas. Mr Wijesinghe then spoke about the Sri Lanka National MAB Committee which had functioned for about three decades, contributing in various ways to the conservation of the country's biota and a better understanding of the impacts of human activities on natural resources. Before concluding his remarks Mr Wijesinghe explained the programme, structure and procedural details of the meeting.

The next address was delivered by **Dr M. S. Alam** who represented **Prof. Tawfik, Director of the UNESCO-New Delhi Office.** Dr Alam welcomed the participants and presented a brief review of the meetings and outcomes of previous gatherings of experts in the region. He expressed the hope that this meeting would provide an opportunity to initiate understanding and dialogue among participants from member countries, and that participating countries could identify mechanisms for regional cooperation through networking to promote sustainable development. This would take the form of a regional network of scientists and experts, similar to other networks working in the region. He also said that many MAB National Committees had been re-constituted recently to focus better on relevant issues at hand,

and discussed in detail the past and current activities of UNESCO's MAB Programme in the region.

Dr Thomas Schaaf of the Division of Ecological Sciences, of the UNESCO-Headquarters, Paris, began his address saying that he was both "happy and lucky" to have got an opportunity to be present at the meeting. He said that the regional group had made good progress since the last meeting, including preparation of the draft Statutes for the establishment of the South and Central Asian Regional MAB Network, now submitted for review at this meeting. Dr Schaaf, identifying other MAB regional networks, stressed the importance of the South and Central Asian Regional MAB Network in enabling the region to speak with 'one voice' and as an exchanging mechanism relevant for environmental management, conservation and sustainable development. He was convinced that deliberations during this meeting would lead to a better and closer understanding among countries of the region.

As the Hon. Minister of Environment and Natural Resources was unable to be present due to ill health, Mr Sarath Fernando, Conservator General of Forests, read his address. The Minister's address highlighted the significance of holding this meeting in Sri Lanka - a country with a rich and long-standing tradition of nature conservation closely resembling the MAB concepts. He drew attention to the fact that MAB concepts on biodiversity conservation, sustainable development and logistic support through research, monitoring and education are of great relevance today in view of the growing concern among people to protect the environment from abuse. He highlighted many initiatives taken for the conservation of Sri Lanka's forest ecosystems including forest biodiversity assessment and enhancement of the protected area system. He noted that Asia's cultural diversity, which paralleled its biodiversity, provided people with traditional knowledge and wisdom to live in harmony with nature. The address was concluded by stating that the Minister hoped this meeting would serve to raise the voice of the region at international fora for nature conservation, and be a memorable milestone in the MAB Programme for the benefit of future generations.

The inaugural session was brought to a close with a vote of thanks proposed by Mr M. Watson, Director of the National Science Foundation.

TECHNICAL SESSIONS 15/10/2002

A. Management Issues in Biosphere Reserves

1. *Linkages between biological and cultural diversities for participatory management*

Chairperson: Prof. R Ramasamy

- **Eco-Cultural Diversity Embedded in the Cultural Landscape: an Approach to Biosphere Reserve Management** (*P.S. Ramakrishnan, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India*)

Eco-cultural diversity is embedded in the cultural landscape - whether it is a traditional landscape or a city. Linking cultural diversity with biological diversity is important for the management of bio-resources effectively, but there is a need to find the correct mix of the two knowledge systems that exist: the formal knowledge system and the traditional knowledge system. In terms of traditional knowledge, the concept of the sacred (i.e. species, groves, landscapes) is prevalent worldwide. It gives a unique opportunity to provide a value system that communities can appreciate and relate to, and provides an appropriate approach to Biosphere Reserve Management.

Q: Prof. Ramasamy: In a period when there has been an explosive rise in population, during the last few decades, do you think we can have the luxury of viewing everything in the context of traditional knowledge/methods?

A: Prof. Ramakrishnan: We did an interesting research recently with about 120-150 scientists in India, China and USA. One of the things we looked at was the obvious, and the not too obvious, linkages between population and land use dynamics. The results showed that population pressure and poverty are the least important of all the factors for land use dynamics in agriculture, especially for those adopting traditional knowledge.

Policy issues play a crucial role in terms of land degradation and land use dynamics. That does not mean that population does not play a role at all. It does play a secondary role. The second point I want to make is that we are creating an island of biodiversity within a monoculture of rice or wheat crops. There are other models of agriculture that can fit into an ecological contour. You can build upon the available agricultural practices of local communities, incrementally building upon their traditional ecological knowledge, and by using appropriate dosage of the 'formal' knowledge, over a period of time to recover the heterogenous landscape. What is important now is a change of attitude toward expanding upon the traditional pathways that already exist within a given society.

- **Linkages between Biological and Cultural Diversities for Participatory Management: Nepal's Experiences in the Makalu-Barun National Park and Buffer-Zone** (*Shree Gopal Jha, Ministry of Forest & Soil Conservation, Kathmandu, Nepal*)

Linkages between biological and cultural diversities have been achieved covering all the bioclimatic types for participatory management in the Makalu-Barun National Park and Buffer Zone in Nepal, where different species and sites are associated with various uses among different communal tribes. In addition to this, the park also has various cultural linkages with its flora and fauna in terms of functional utilities as well as symbolic value. Consequently there are also threats to biodiversity from certain traditional practices such as slash-and-burn cultivation, poaching, over-grazing and high dependency on use of bioresources - compounded by poverty and food deficiency for more than six months per year. This necessitates peoples' participation in various approaches to biodiversity conservation and natural resource management, as well as activities for improving livelihoods of the local people, if long-term conservation of biological and cultural diversities of the area are to be ensured.

- **Buffer Zone of the Sinharaja Biosphere Reserve in Sri Lanka and its Management Strategies** (*S. Gunatilleke, Dept. of Botany, University of Peradeniya and Ananda Wijesooriya, Deputy Conservator of Forests, Forest Department, Sri Lanka*)

The Sinharaja International Biosphere Reserve of Sri Lanka is exceptionally high in endemic species and genetic diversity. Efforts to conserve this forest include several management strategies adopted in its buffer zone for: (a) local people's awareness on conservation, (b) increasing publicity about Sinharaja, (c) community support for enhancing village-level educational facilities, (d) improving local people's access to health care and enhancing the infrastructure of villages, (e) promoting adaptive research (e.g. monoculture of *Pinus* enriched with multiple use and highly demanding forest species), (f) providing alternative income generation and capacity enhancement of local people for greater agricultural productivity, (g) reducing dependency on forests for timber and other forest products through planting in the buffer zone, and (h) promoting non-destructive collection of non-timber forest products. There is also a need to link the buffer zone of Sinharaja with buffer zones of other fragmented wet zone forests to ensure conservation of the wealth of genetic diversity within this Biosphere Reserve.

Q: Prof. Ramakrishnan: I have a comment and a question. The first presentation raised the issue of carrying capacity in terms of grazing animals. The concept of carrying capacity in a tropical country context has been derived from the experience in temperate regions, i.e. prairies or the steppes. The grassland is a climatic climax and is based on the ecology that is created. We have tried to imitate that for the last 100 years and what is increasingly emerging is that the traditional and formal knowledge systems are locked together in conjunction with one another. The concept is that carrying capacity needs very drastic changes especially in terms of grassland management. If not, we will be in trouble with natural resource management.

The question to Savithri [Gunatilleke] is about *Pinus* plantations. In the Indian context, when you introduce a *Pinus* plantation to areas where rainfall is low within a relatively long and dry period, there would be a lot of effects on the system, which do not allow natural re-growth in those particular areas. I would like to have a response from you on the problem of *Pinus* as a trigger species for forest regeneration.

A: Prof. S. Gunatilleke: In Sri Lanka we have done studies on chemical, physical and other properties of the soil and compared them with those of soils in a small hill which is naturally forested. We have studied soils at the ridge top, mid slope and valleys of a naturally forested hill, and compared them with the soil at the mid-slope with *Pinus* plantations where the species had grown for about eight years. We found the valley had the richest soil, the ridge top had poorer soil, and the mid slope had the poorest soil [in the natural forest], but the soil in the *Pinus* plantations was as rich as that of the lowland valley in the natural forest. Therefore, the question of more acidic and less fertile soils etc. does not hold here. We then took these soils and planted canopy-dominant species, (i.e. eight different *Shorea species*) in them. All of them performed [in the *Pinus* soils] as well as in the soils of the forested lowland valley. The issue here may not be the quality of soils but the shade provided by the *Pinus*. What happens usually in *Pinus* plantations is that there is over-crowding that cuts off sunlight to the ground. We thinned out a single row, three rows and five rows of *Pinus* and then introduced primary forest species, looking after them for about three to five years with a little bit of patch weeding. They are now beautifully grown - about 20' tall. Instead of a *Pinus* plantation, we could have [used] *Alstonia* or *Albizia* or any other shade crop, which acts as a nurse crop to facilitate the restoration of primary forest species.

Q: (Name not audible): You explained how you promote the use of non-destructive forest products, other than timber products. Could you please explain the mechanism for regulating the use of non-destructive forest products?

A: Prof. S. Gunatilleke: For example, you have useful species like the fishtail palm, and if there is no system where the villagers are allocated these palms, there could be conflicts among them. But the Forest Department has a system where they issue a permit to a particular individual, maybe, to tap a particular fishtail palm, while disallowing timber extraction. In the buffer zone, where the land belongs to the Forest Department, they promote the use of non-destructive forest species through a system of permits.

- **Case study on Community Participation in the Management and Conservation of the Bundala National Park** (*H.D. Ratnayake, Deputy Director, Research and Training, Department of Wildlife Conservation, Sri Lanka*)

A case study on community participation in the management and conservation of the Bundala National Park (6,216 ha) in Sri Lanka has shown that good rapport is required between park authorities and the local people to enable meaningful contribution by the local communities for protected area management. Previously there has been considerable damage by the local people due to the removal of forest products as they engaged in fishery in the lagoons and deep sea off the park, shell mining, collection of turtle eggs, collection of fuelwood, livestock grazing, illegal poaching, etc. Initiatives taken by the Dept. of Wildlife Conservation (DWLC) at the Bundala National Park (NP) by permitting regulated use of renewable resources by the communities, enhancing employment opportunities for the local people through park activities (e.g. as tourist guides) and increasing conservation awareness have perceptibly increased involvement of local people for habitat management. An example is community participation in removing invasive species - such as *Prosopis juliflora* - in selected plots (where villagers receive the *Prosopis* trees removed at a payment of Rs 1500/-per ha for use as fuelwood) in return for which there is cooperation by the local people for regulation of fishing activities.

Q: Dr Rai: Are there any studies undertaken by local organisations or the community in respect of this National Park - for example, on faunal species, amphibian, reptile, etc.?

- A: Mr Ratnayake:** A comprehensive report and a management plan have been drawn up. And a number of studies have been carried out, which include a resource survey and research to collect initial data. Further studies are being carried out by the Department and some universities. There are a lot of data and information available [on the park].
- C: Prof. Ramasamy:** This is an area which we could support [through the NSF] if the MAB National Committee identifies a specific need.
- C: Dr Iqbal Khan:** My comment is that, removing invasive species can cause serious problems if not done slowly and gradually.
- A: Mr Ratnayake:** Yes, it is a slow process, but villagers are encouraged to remove invasive species manually, as some are excellent as fuelwood but are of no value for wildlife.
- Q: Dr Bhujanga Rao (IUCN):** Firstly, what are the indicators that you look at when you use community participation, and is there any improvement by employing the [local] people? Secondly, what are the methods used to control invasive species?
- A: Mr Ratnayake:** There is good improvement, because people get both direct and indirect benefits, and they know the benefits that can be gained from parks, including employment and trade-offs from tourism. As an answer to the second question, we use the uprooting method, because the locality is a protected area, where we cannot use insecticides and pesticides.
- C/Q: Mr Leslie Wijesinghe:** The MAB National Committee has promoted research in many instances to get a better understanding of ecosystems. One is a study on shore birds, which was completed; and with the assistance of the NSF, a field guidebook on the shore birds at the Bundala NP was published by the MAB National Committee.

The question is: *Prosopis juliflora* was introduced by the Forest Department as a cover for barren sandy tracks. As you are now promoting their removal, is there any programme to raise alternative species, rather than leaving the ground bare?

- A: Mr Ratnayake:** We are not removing the plants and keeping the area bare. We first remove big trees, cacti and so on, and then introduce grass species, and maintain these as grasslands or pasture lands - this is also of use for animals in the park and thus

reduces human animal conflicts.

Q: Prof. Ramakrishnan: Is biological invasion of *Prosopis* as simple as you made out to be? It is all right removing these in two hectares of land. But will these species come back in a more vigorous way, and is it [such removal] practically/economically viable? In the Indian context, manual removal of this species has not solved the problem.

A: Mr Ratnayake: We have received assistance from ADB, and are taking all possible measures to remove these plants, and we are also trying to control their spread, which is facilitated by feral cattle in the park.

2. Capacity building for sustainable development

Chairperson: Prof. P. S. Ramakrishnan

- **Capacity Building for Sustainable Development (*Wijaya Jayatilleke, Director, Sri Lanka Foundation Institute, Sri Lanka*)**

Capacity Building for Sustainable Development (SD) requires understanding the complexity of the concept of human development, which covers several aspects of human well-being. These include income distribution, education, employment, food and nutrition, health, environment, population, life expectancy, social security, status of women and children, and human freedom. Hence, capacity building for SD is required at different levels, and can be facilitated by focusing on a few key issues such as environmental degradation, poverty and deprivation, population and consumptive patterns, economic inequalities, good governance, sustainable development, and providing the required institutional framework. This, however, requires high investments in social infrastructure development, adopting the necessary management techniques, networking and forming strategic alliances with partner organisations.

- **Management Issues in Indian Biosphere Reserves with Special Reference to Alternative Livelihood Options for Dependent Populations (*R. K. Rai, Member-Secretary, Indian National MAB Committee, Ministry of Environment & Forests, New Delhi, India*)**

Conservation of natural resources of global significance can be ensured through economic incentives and livelihood options for local people, who are dependent on resource use. Consequently, the management

of Indian Biosphere Reserves has given due consideration to alternative livelihood options for dependent populations, and other methods for socio-economic upliftment of the people. Other strategies adopted include: demarcation of user zones, strengthening the legal framework, use of economic instruments, compensation and rehabilitation packages, maintenance of corridor areas, development of communication systems and networking, and development of non-destructive practices such as eco-tourism. This will enable local people to attain a balanced relationship with the environment and to participate in planning and management of the protected area.

Q: Ms S Bhatt: Who is doing the biotechnological screening?

A: Dr Rai: This is being done by the Department of Biotechnology, and not directly by us.

Q: Dr Schaaf: What are the next sites in India to be proposed for Biosphere Reserves, and in what bio-climatic zones are they located?

A: Dr Rai: We have already 13 sites designated at national level, out of which three have been designated by UNESCO. The nomination for the fourth one has already been sent to UNESCO which suggested some valid changes on the nomination. These changes have been made and the revised document is ready. We are also preparing a nomination document for UNESCO on the other sites but there is a delay due to problems of demarcating the transition zones.

- **Conservation Innovations of Peripheral Communities - Case Study of Adam's Peak Wilderness** (*A. Wickremasinghe, Department of Geography, University of Peradeniya, Sri Lanka*)

A case study of Adam's Peak Wilderness *Samanala adaviya* area on the conservation innovations of peripheral communities has shown that the climatic, hydrological, historical, cultural and economic dependence on this forest by local people is very strong. Adam's Peak mountain, justifiably termed the sacred mountain of Sri Lanka, is of significance to all the major religions in the island. The communities at the Waleboda project site had a deep rooted knowledge of forest diversity and spatial location of species, enabling them to know exactly where to look for specific forest resources for food, medicinal use, etc. While traditional innovations have played a major role in conserving this valuable area in the past, this situation is changing reflected by changes in local innovations and visitor perceptions about the sanctity of the forest. An integrated conservation approach is required to address conservation needs, including measures to combat the problems associated with

visitor use at Adam's Peak. However, any such initiatives should respect peoples' innovations for conservation.

Q: Dr Schaaf: Do you think the conservation of the environment is a result of the sacredness of the site? Secondly, what about the problem of pilgrims, when they go to worship at Adam's Peak? Does that also impose a kind of stress on the environment? This is of interest for us to understand the effect of 'sacredness' for environmental conservation.

A: Prof. A. Wickremasinghe: If we go back in history, Adam's Peak was the heart of the country, where people used to worship this peak even at a distance. They obeyed the rules of god *Sumana Saman*. We even have a bath before we entered this sacred forest and pray to god *Sumana Saman*, and make vows to come out of that sacred area without even bringing out a leaf. Such beliefs helped us to maintain that forest in good shape in the Sri Lanka situation. To answer the second question, in 1992 and 1993, according to my calculations about 2 million people climbed that mountain. If we ask the question whether all these people climbed that mountain to worship it, I would say no. There are groups of people that climb the mountain for leisure or pleasure now. We have the problem where people travel with a lot of food, etc. in plastic bags, which litter and pollute these sites. We should have a plan for controlling such adverse effects, but this should not prevent us from declaring Adam's Peak as our "sacred mountain forest". The sanctity values of the area should be preserved.

C: Prof. Ramakrishnan: This is true for all sacred sites. I would like to point out that of all the sacred places I have visited, this [Adam's Peak] is the only place of interest to all communities in a country. Hence I strongly recommend to Thomas [Schaaf] that this site be taken up as a priority for World Heritage Sites.

C: Prof. S Gunatilleke: If the Peak Wilderness area is to be considered as a Biosphere Reserve, it should include the Seven Virgins forest. This is the richest area from the point of view of endemics in the whole of South Asia. It is a very steep area, and very rugged. Nevertheless, it has very localised endemics. I would plead with UNESCO/MAB to make an effort to connect the two up and give Biosphere Reserve status to both together.

C: Prof. A. Wickremasinghe: I think that is a contributing point, and needs no answer. My first study was based on the demarcations of boundaries shown in the copies of maps available at the Forest

Department at that time. I have not mentioned the boundary, but we have to take this above proposal seriously. I am sure the Wildlife Department has been working on it.

C: Mr Leslie Wijesinghe: IUCN Sri Lanka prepared a management plan for the Peak Wilderness - complete with zonation; the problem of pilgrims and the adverse effects they cause have all been studied and embodied in the plan. This plan has not gone into operation for various reasons such as lack of funds and so forth. But we have a good starting point as a good deal of work has already been done. We only have to do a little bit more before submitting a nomination to UNESCO.

- **Conservation of the Nature and Natural Resources in Nepal: Traditional Versus Modern Approaches and Management Issues in Protected Areas** (*Purna Nath Mishra, Chairman, Nepal National Committee for MAB, Kathmandu, Nepal*)

Conservation of Protected Areas and Natural Resources in Nepal requires a move towards traditional management approaches, from those based more on total protection to one based on balancing the requirements of communities and accommodating the need for nature conservation. The modernisation process in the country since the 1950s has eroded the centuries-long and holistic indigenous systems for natural resource conservation in Nepal, but this was somewhat rectified by a move towards a participatory conservation approach launched in the mid 1980s. This positive trend has enabled the establishment of conservation areas and demarcation of forest buffer zones, including the adoption of community forestry, a joint programme for national park management with the local people and buffer zone management. This has served to empower people, as exemplified by the Anapurna Conservation Area Project - which commenced in 1986 - and the Nepal Biodiversity Landscape Project.

- **Community Participation in Management of the Kanneliya - Dediya-gala - Nakiyadeniya proposed Biosphere Reserve** (*H.M. Bandaratileke, Director, Forest Resource Management Project, Ministry of Environment and Natural Resources, Sri Lanka*)

Community Participation is an integral component of the Management of the Kanneliya - Dediya-gala - Nakiyadeniya (KDN) proposed Biosphere Reserve. The management of the forest is based upon a system of zonation, which enables different management objectives to be pursued in the different zones. Management focuses on the use of local goods and services, particularly for local people; promoting non-extractive

forest use and traditional uses that are sustainable; research to support forest management; and education and awareness programmes. Future management trends will include, among others, boundary demarcation in collaboration with communities in selected buffer zone areas and the empowerment of these communities. The experience gained from the KDN forest will also serve to establish a sound policy for forest management strategies in Sri Lanka where participatory forest management is still at the early stage, and help to institutionalise management procedures that are required in this connection.

- **Linking Livelihoods with Conservation - an Enterprise-Based Approach to Biosphere Reserve Management (Seema Bhatt, Kalpavriksh, India)**

An enterprise-based approach to Biosphere Reserve management has been proposed as appropriate to reconcile peoples' livelihoods with biodiversity conservation. This approach makes use of the experience of three pilot projects, which the Biodiversity Conservation Network tested at three different sites in India, namely: Non-Timber Forest Product (NTFP) use in the Biligiri Rangan Hills, the oak tasar silk and honey project in Garhwal Himalaya, and ecotourism in Sikkim. They amply demonstrate that a stake in the conservation process by local people enables greater ownership in conservation ventures, and helps link traditional ecological knowledge and traditional technologies for positive conservation action. The relevance of the enterprise-based approach to Biosphere Reserve management can be high, by linking conservation with sustainable livelihoods, creating a stake for communities, enabling research and monitoring, and linking traditional ecological knowledge with traditional technology. To adopt this method in Biosphere Reserves, there should be understanding of the community, capacity building of both sides for a business set-up, a strong institutional base, understanding of markets, a multi-disciplinary approach, dissemination of research results and working toward legal support for Biosphere reserves.

- Q:** Dr Rai: You mentioned the use of oak for silk production. There was a problem with the availability of oak leaves. This is because, in the central Himalayas, oak is being replaced by *Pinus*. The situation at that time was that people were lopping off oak leaves and maybe switching to silk production. Has this been achieved?
- A:** Ms S. Bhatt: There has been a change of attitude, but the project has been carried out in a very small area. Also, there are research results showing the reason why oak forests are dying and oak is not regenerating. It is due to sapling mortality. The results showed

that it was not only the lopping of branches but also the mortality of saplings that reduced the regeneration of oak. In the small [project] area lopping has considerably gone down. In fact, the Forest Department has now given legal permission to harvest oak leaves from the Reserve Forest area.

- C: **Prof. Ramakrishnan:** In addition to what Seema Bhatt has said, oak degradation is due to many outside influences other than lopping. People are left with no option but to lop, but they do it systematically. Oak in central Himalaya is a culturally valued ecologically significant keystone species. It is a useful fodder and fuelwood species. The leaf litter is an important resource for sustaining soil fertility, apart from the value of Oak species for conserving soil moisture in areas where they grow. There are many simple and low-cost methods to regenerate oak, which are not being used.

3. *Research, training and outreach activities in Biosphere Reserves*

Chairperson: Mr L. C. A. de S. Wijesinghe

- **Role of Biosphere Reserves in Research, Monitoring, Training, Education, Public Awareness and Outreach Activities.** (*I. A. U. N. Gunatilleke and C. V. S. Gunatilleke, Department of Botany, Faculty of Science, University of Peradeniya, Sri Lanka*)

Biosphere Reserves play an important role in providing the logistic support to conservation through research, monitoring, training, education, public awareness and outreach activities, as elucidated in the Seville Strategy of UNESCO. The required actions are of two types: those that are international in scope, and others that are national in reach. The latter includes, amongst others, integration of Biosphere Reserves with national and regional scientific research programmes, which can be linked to national and regional policies on conservation and sustainable development; encouraging links between Biosphere Reserves and international networks/programmes to promote cross-cutting linkages in education and public awareness. There are some key areas in which Biosphere Reserves can contribute to conservation and sustainable use within the framework of the Seville Strategy: use of Biosphere Reserves for basic and applied research and data management, experiments on methods for monitoring and evaluation, development of indicators of sustainability, encouragement of local community involvement, and visitor education on biodiversity conservation.

- **Agricultural Activities and their Impacts on the Ecology and Biodiversity of the Sunderbans Area of Bangladesh** (*Md. Giashuddin Miah, Dept. of Agroforestry & Environment, Banga-bandhu Sheikh Mujibur Rahman Agricultural University, Salna, Gazipur, Bangladesh*)

Agricultural activities and their impacts on the ecology and biodiversity of the Sunderbans of Bangladesh show impacts on socio-economic profiles and land use. Environmental degradation in the area is caused by agricultural activities such as rice cultivation and brackish water shrimp farming. The use of modern varieties of rice has increased reliance on fertilizer and pesticides/insecticides, while collection of shrimp fry considerably disturbs the ecosystem. There has also been decreased productivity of vegetable cultivation, livestock including poultry, and fishery (with the emergence of brackish water shrimp farming) in the area due to adverse practices that increase the yield at the expense of environmental quality. Over-dependency of people on resources from the Sunderbans has also had negative impacts on this biologically important area. To address these issues, both macro and micro strategies are required including well-planned monitoring of the impacts of agricultural practices on the Sunderbans.

- **Characteristics, Status and Needs for Conservation of Mangrove Ecosystems in the Republic of Maldives, Indian Ocean** (*Ahmad Saleem, Assistant Environment Analyst, and A. Nileysha, Research Assistant, Environment Research Centre, Ministry of Home Affairs, Housing and Environment, Male, Maldives*)

Very little is known as yet about wetland ecosystems - particularly the mangroves - in the islands of the Republic of Maldives. The mangrove ecosystems are particularly unique as they are not estuarine-based. A study of characteristics, status, and needs for conservation of these important ecosystems has shown that biophysical and geomorphological variations exist amongst the mangrove ecosystems in different islands. These ecosystems provide food, fuel, wood, timber and medicines for the people and act as a buffer against wave action. Mangroves are also economically important as they help maintain the rich diversity of life that is pivotal to the two activities that are the mainstay of the Maldivian economy - tourism and marine fishery. There is sufficient evidence to denote that the mangrove ecosystems are eroding rapidly. Hence a mangrove management plan for the Maldives is an urgent requirement.

- **Quantitative Dynamics of Phyto-Diversity in the Undergrowth of Reserve Forests of Bangladesh** (*M.A.M. Chowdhury, Department of Botany, Chittagong University, Chittagong, Bangladesh*)

Quantitative dynamics of phyto-diversity in the undergrowth of six Reserve Forests of Bangladesh have shown a rich diversity of the undergrowth vegetation in all types of forests. A study of species diversity of undergrowth vegetation in protected reserves and unclassified state forests indicate that the diversity does not vary greatly between forests different in physiognomy and structure. Measures are required to study and conserve this component of biodiversity that has so far received little attention.

- **Canopy Arthropod Studies in Sri Lanka: Implications for Conservation** (*D.K. Weerakoon, Dept. of Zoology, University of Colombo, Sri Lanka*)

There have been no previous attempts to systematically inventorise the canopy arthropods of Sri Lanka. Recent pilot studies on the canopy arthropods in the Peak Wilderness and the Knuckles forests of Sri Lanka have several implications for conservation of biodiversity in the country. The study at the Peak Wilderness revealed 111 morpho-species among the 228 individuals collected, while the study in the Knuckles Forest yielded 142 individuals that were sorted into 12 families and 53 morpho-species. This shows that forest canopies support a very high arthropod diversity, indicating that similar studies should be expanded at the national level, with particular emphasis on building in-country taxonomic capability.

Q: Prof. Mishra: What is the main reason that vertebrates have been studied more than invertebrates in Sri Lanka ?

A: Dr Weerakoon: This [trend] is not endemic to Sri Lanka but is the case in other countries of the Asian region or even in developed countries. The reason is that vertebrates are more charismatic, bigger, easier to study, and their taxonomy is more simple in terms of identification. So a lot of people shy away from invertebrate taxonomy.

C: Mr L. Wijesinghe: That may also be the reason why the earlier studies you mentioned concentrated on just one order, the beetles.

A: Dr Weerakoon: Yes, for beetles there is a CD giving characteristics, which assists sorting out species.

- **Protected Areas in Pakistan: Management and Issues** (*Zafar Iqbal Khan, Ministry of Science and Technology, Islamabad, Pakistan*)

Protected Areas in Pakistan show continuing loss, fragmentation and

degradation of natural and modified habitats, including forests, wetland habitat types and range lands, leading to the loss or decline of many native species of fauna and flora. Accordingly, many national and sectoral plans have been prepared to encourage conservation and sustainable use of biological diversity. The need for Protected Area management to consider economic and social development for biodiversity conservation is still to find a firm foothold in Pakistan. Requirements identified are capacity building through training, especially in the provincial wildlife departments, to better establish major partnerships between managers of protected areas and other sectors of society. A new approach to community involvement on forest conservation, recognising the fact that local people are important partners in promoting conservation, has to be established in the future.

C: Prof. Ramakrishnan: Regarding the perceptions of the nomadic people and the conflict that has arisen as stated, this highlights the conceptual differences on carrying capacity in savannah systems between the perception of the people and that of government agencies. This is an area that perhaps requires research. I think there is a possibility to develop strategies from a scientific perspective for more meaningful management by linking the traditional knowledge system with the formal. I think the concept of carrying capacity in the western temperate countries has been misinterpreted in the tropical savannah system, and this would be one of the best examples of traditional knowledge in terms of the situation that is prevailing.

- **Considering Economic Needs of the Community of Phobjikha, Bhutan: Constraints and Challenges** (*Lam Dorji, Executive Director, Royal Society for the Protection of Nature and Jigme Tobgay, Coordinator, Conservation and Development Unit, ICDP, Bhutan*)

Consideration of the economic needs of the community of Phobjikha, Bhutan revealed that viewpoints of local people could help steer projects and programmes to ensure their long-term success by enhancing economic development while maintaining environmental quality. A study conducted in 1998 showed that local people considered the benefits from protecting the globally threatened black-necked cranes (*Grus nigricollis*) to be greater than the associated cost of protecting them. However, experiences from the conservation programme demonstrate that expectation of instant economic benefit undermines the ability of 'subsistence people' to think and act collectively. The challenges are; local people's desire for individual economic benefits, the potential negative perceptions towards conservation, the lack of collective

actions/initiatives, and low human resource capacity. These must be overcome through awareness creation and coordinated efforts for enhancing participation of local people in conservation and development programmes.

Q: Prof. Ramakrishnan: To what extent did you perceive that the value system of the local people has changed over time, and what do you see as a way to tackle this situation?

A: Mr Lam Dorji: We are lucky that most people still revere the black-necked cranes, though some do have a negative perception - such as being an obstacle to development. As project implementers we have to be realistic. When we speak about traditional indigenous systems and that they have a lot of knowledge for conservation, there is a question: are indigenous people willing to remain indigenous if non-indigenous people are not willing to be indigenous? 'Indigenous' does not mean very modern, and people always want 'modern' development. As for the cranes, we are trying to promote the area for ecotourism. The scenic beauty of the area can be sold to people: to walk in and sit on the road - enjoy and go back - and let the local people benefit from some of the programmes that they develop. We conceived the idea of the crane festival four years ago - this year the festival will be held on the 12th of November. If local people benefit from outsiders who come to see the cranes and enjoy the festival, this will promote the tradition of moral value, and the crane festival can be a way of joining with the local people in acknowledging our commitment to the cranes as an important part of conservation.

TECHNICAL SESSIONS 16/10/2002

B. Legal and Regulatory Mechanisms

1. *Role of Biosphere Reserves in relation to international environmental conventions (CBD, UNCCD, UNFCCC, Ramsar)*

Chairperson: Ms Seema Bhatt

- **Biosphere Reserves and Multilateral Environmental Agreements: Some Legal Issues** (*Bharat Desai, International Legal Studies Division, School of International Studies, Jawaharlal Nehru University, New Delhi, India*)

The concept of Biosphere Reserves is an important innovation in the

sphere of multilateral regulatory techniques. Conventions generally set thresholds for balancing conservation of natural resources and their exploitation for human use, but do not dictate to member countries the specific action they should take. The World Network of Biosphere Reserves constitutes a tool for conservation of biological diversity; especially as Biosphere Reserves are *sui generis* in nature by placing emphasis on harmony between people and nature. The Seville Strategy has sought to strengthen the contribution that Biosphere Reserves make to the implementation of international agreements promoting conservation and sustainable development. The non-conflict nature of Biosphere Reserves make them compatible with requirements of other management tools under other conventions such as the Ramsar Convention, the WHC and the CBD. Countries generally seek global listing of national sites under international conventions to strengthen their case for conservation and increase global attention, by providing the sites with various layers of protection. Many countries are Party to several conventions that impinge on the same resource. These actions may lead to conflicting situations in respect of the relationships between different layers of protection. A specific instrument that defines relationships between these various layers of protection is required to prevent confusion and operationalise the process to ensure that conventions attain maximum synergy and linkage. UNESCO could ensure this through the Statutory Framework that promotes harmony between various layers of protection using past experiences. Many states have also designated areas for protection without any statutory back-up. This too is an area where UNESCO guidelines could be provided at the national level.

Dr Jayasingham: Regarding your question of where Biosphere Reserves fit in with other reserve systems, is not the IUCN's protected area classification adequate for this?

A: Dr Desai: Some MAB reserves do have protected area status, but this being UNESCO/MAB's child, the MAB Programme has to work this out so that these sites have a concrete footing and all conventions act synergistically.

C: Ms Bhatt: As far as I know each country has the freedom to accept the IUCN [Protected Area] categories. For instance India has accepted two of the IUCN categories, under the Wildlife Conservation Act. So even if we include Biosphere Reserves under the IUCN categories, it will not constitute a legal category unless it is recognised by the legislation of individual countries. Also, as a quick clarification, the Supreme Court case in India referred to (in

the presentation) was filed by WWF India to expedite the settlement rights of people. Legally you cannot throw people out of Wildlife Sanctuaries.

A: Dr Desai: The directions issued by the Supreme Court of India was translated at the grassroots level to getting people to vacate the area, and a lot of excesses were committed.

- **Legally and Regulated Mechanism in Biosphere Reserves** (*Shirin Abolghasemi, Environment Research Station, Tehran, Iran*)

Protection of the environment is embedded in the constitution of the Islamic Republic of Iran, and activities that pollute or damage the environment are prohibited by law. Iran also is a member of many environment-related conventions including the CBD, the Ramsar, Bonn, and CITES Conventions. All matters pertaining to the environment are under the purview of the Ministry of Environment, which is directly under the President of Iran. Overall, the country has 10 million ha of forest, and is rich in biodiversity, particularly among plants and birds. There are 16 National Parks, 13 National Monuments, 33 Wildlife Refuges and 90 Protected Areas under the Ministry of Environment. There are also several Biosphere Reserves in the country where conservation of biodiversity is the main goal, linked with socio-economic development of communities. Despite these positive features, there has been significant species loss in Iran, and there are several pressing environmental problems which include inadequate environmental awareness, inadequate information dissemination and sharing, over-exploitation of bio-resources, lack of transparency in policies, weakness in monitoring, and low capacity for law enforcement and regulation.

- **Components of Biological Diversity Important for Conservation - A Study of Small Mammals in a Sri Lankan Rain Forest** (*Mayuri Wijesinghe, Dept. of Zoology, University of Colombo, Sri Lanka*)

Biosphere Reserves can serve as sites for research that is important to fulfil Article 8 on *in-situ* conservation and Article 7 on components of biodiversity of the CBD, as demonstrated by a study on small mammals in a Sri Lankan rain forest - the Sinharaja Biosphere Reserve. The distribution of small mammals in unlogged, selectively logged, cleared and abandoned, and plantation habitats showed that endemics were more restricted to forest habitats whilst non-endemics used forest and non-forest habitats or were confined to non-forest habitats. Detailed investigations using both field and captive experiments revealed that the endemics had greater diet specialization and were competitively inferior to the non-endemics. The study provides an

ecological basis for the greater vulnerability of endemics to anthropogenic habitat disturbances - an important fact for conservation planning in the biologically rich, but small and fragmented, wet zone forests of Sri Lanka that are exceptionally high in endemic species. Conservation measures include more effective law enforcement, boundary demarcation, linking-up of the buffer zones of individual forests and regulation of forest extractions. The study also shows that endemic species are an important component of biodiversity for consideration when adopting and implementing conservation measures.

Q: Prof. Mishra: Is there any role for predators of insectivores and rodents in your study?

A: Dr M Wijesinghe: This was not covered in my study. However, *Rattus rattus* is known to feed on other rodents and on insectivores elsewhere (e.g. in England) and there are programmes aimed at eradicating this species.

2. Access to genetic resources and benefit sharing among stakeholders

Chairperson: Dr Azar Hasan

- **Access to Genetic Resources and Benefit-Sharing (ABS) from the Man and Biosphere Programme (MAB) perspective (S. de Silva, Senior Programme Officer, Environmental Law, IUCN, Sri Lanka)**

Access to genetic resources and benefit-sharing in relation to the CBD is still a grey area in most countries, and there are more questions than answers. Although people have used biological resources since time immemorial, the advent of bio-technology has introduced a new dimension to the issue of "access" due to the ability for direct manipulation of genes and the geographic polarisation of capacity for bio-technology. This also highlights the question of equitable distribution of benefits, arising from the use of genetic resources, to source countries as specified by the CBD. There are many direct ways in which one can link Biosphere Reserves to the CBD in terms of conceptual issues, objectives and philosophies that underlie "access issues" as addressed by the CBD. This is especially relevant to the understanding of the relationship between people and nature. The use of natural resources is increasing, and economic considerations are influencing decisions on the maintenance of biodiversity. The CBD views the commercial aspect of "access" as an opportunity to apply economic incentives to local people and countries to maintain their national biodiversity. The means for technology transfer has to be resolved as

well. In theory, access issues can be determined by sovereign nations, provided states do not restrict access in a manner that undermines the objectives of the CBD; they can be taken up specifically on a case by case basis on mutually agreeable terms by all parties concerned. There is no one way of addressing "access"; and it is not clear as to what access means. The best way is a case by case approach based on agreements, but there should be guidelines for local and foreign parties interested in [biotechnological] research to make sure of the legal implications of such activities.

Q: Prof. N Gunatilleke: Thank you for posing such interesting questions that need answers for most countries within the network - what we can do individually, in terms of national legislation, and collectively - is important even if the CBD has not defined certain things, as the CBD is not etched in stone, and it is due for revision every five years after adoption. So if we can regionally create a unified force on the issue, there can be a significant contribution when the CBD comes up next for review.

A: Mr S de Silva: Certainly, in the Sri Lankan perspective, we share about 70% of our biodiversity with India. We should have bilateral agreements with India to address this issue and this also applies to the whole region.

Q: Dr Mangala de Zoysa: We know that there are traditional benefit sharing systems that have been in existence for generations in Sinharaja. Do you feel that this kind of system can be incorporated into the legal system?

A: Mr S de Silva: This is a very valid question, but I don't know the answer to that. It was discussed recently at a workshop on traditional knowledge and how this can be incorporated into development activities. What we found is that the legal system is removed from the natural regulatory processes that exist within communities - not only in Sri Lanka but also in other countries. Not much work has been done on how the two systems can be incorporated, and this needs attention in the future.

C: Dr Desai: Regarding access, what is required is that countries of the region put their heads together under a common umbrella to address this. And I think the IUCN Regional Office is in the best position to ensure a framework that minimizes poaching (illegal access) in the region. For example, there exists a problem of transboundary movement of hazardous waste despite the vigilance of concerned countries, and India is particularly vulnerable to this problem.

- **Access to Biological Material: Issues that Sri Lanka is Facing (J. Gunawardena, Attorney at Law)**

In terms of access to biological material and the related issues that Sri Lanka is facing, key concerns are that: (a) "access" and "benefit-sharing" are not defined under the CBD, and (b) understanding these concepts are difficult at the national level, where biological diversity has been viewed from ancient times as a common heritage. The CBD does not provide a forum for resource-rich countries to address these issues and it is up to the regional fora such as SAARC to do so. The issue of access should also not be limited to genetic resources as in the CBD, which ignores the fate of the biological material in which a particular gene constitutes a part. This is a matter of serious concern in Sri Lanka because the country is rich in biological diversity, and traditional knowledge - especially in respect of agriculture and medicine. The question of access involves two components: the tangible physical material and the intangible legal right to make use of the material. The former is covered by national legislation and the latter by intellectual property laws and contractual agreements. A main issue here is that the rights of source countries (i.e. the bio-resources rich countries like Sri Lanka) are constantly infringed by patents obtained by technology-rich countries. Other points of confusion are: (a) developed countries equate inventions to discoveries that deserve a monopoly, even though the bio-resource may be used traditionally for a similar purpose in the source countries, and (b) the patenting of microbes. The case study on biopiracy of *kotalahimbutu*, a plant used traditionally to cure diabetes in Sri Lanka, provides an important lesson. A foreign company held the patent for this diabetic medicine. This was addressed by the Forest Department of Sri Lanka by halting the illegal export of the plant material, causing the company to abandon the patent which had to be renewed annually. Similarly, appropriate strategies on a case by case basis have to be used in instances of biopiracy, drawing from the experience of countries such as India that have combated such problems successfully.

- C: **Dr Desai:** To address the issue of access, we need to understand the nature of the CBD, which happens to be a hard instrument with a soft belly. It provides a lot of discretion to the sovereign governments, depending on the socio-economic conditions of the country. If you have a policy or legal framework that can be given effect to at the domestic level, there are no international obligations to provide access to other countries. The arm twisting tactics of the WTO are well known. However, legally WTO cannot override other conventions, especially when membership differs

as between the CBD and the WTO. Secondly, developing countries such as India, China and Malaysia have taken countries such as the USA to the WTO dispute settlement mechanism. While the WTO does not have an overarching effect on other Multilateral Environmental Agreements (MEAs), the potential conflict between two MEAs is of concern. I raised this issue at the CITES Secretariat recently. According to them the WTO does not understand what CITES is doing. So-called trade and environmental conflicts - whether in connection with the Climate Change Convention or access to genetic resources - countries can go to the WTO dispute settlement mechanism. There are instances, however, where WTO rulings have questioned the extra-territorial application of domestic laws of a country. It remains to be seen as to how countries are able to prevent encroachment of the WTO within the areas of jurisdiction of some MEAs.

A: Mr Gunawardena: I agree. We still don't know how the WTO reacts, so we have to make use of our present laws that are designed to protect our plants, animals and agricultural biodiversity to do it [address access], rather than going in for [new] access laws that may end up in unforeseen situations. And we should decide mutually agreed terms through agreements on a case by case basis, so that there is no uniform regime for the WTO to challenge - because the WTO cannot challenge a bilateral agreement on a specific issue. But, if we have a law as he (Dr Desai) correctly pointed out, there are instances where the WTO has brought countries before the dispute resolution panel.

Q: Prof N. Gunatilleke: Does what you said before cover plants, animals, and their uses as well - Is there capacity for the laws in Sri Lanka to cover the uses of plants and animals in indigenous technology?

A: Mr Gunawardena: As I see it, it is adequate to prevent the smuggling of biological resources from Sri Lanka under Section 40 of the Fauna and Flora Protection Ordinance (FFPO); Plants not covered by this are covered by the forest regulations under the Forest Ordinance Section 20, sub-section 1. The last gazette regulations of 5th of December 2000 cover the export of any forest produce, or any thing made in a forest, or any derivative or extract that has been taken from forest produce. Those provisions taken together are adequate to cover our wild genetic resources and wild biodiversity. Section 40 of the FFPO covers any animal or its part which can be extended to the venom of an animal, a gene, a promoter region or code of a gene. So there is no need for new

legislation, and what is required is a comprehensive and holistic mechanism to enforce it. It is of concern that the Board of investment of Sri Lanka can take out material without being checked by Customs, which is a problem that needs to be resolved.

C: Mr Wijesinghe: I've been asked by the Chairman to offer some sort of direction to the discussion. When we were preparing the agenda for this meeting, we considered the fact that many Biosphere Reserves have high biodiversity value. As it is required by the CBD to provide access on mutually agreed terms and benefit-sharing, it was thought that we should devote a session to this issue although it is one that could form a full-scale seminar. What we envisaged is an exchange of ideas on the subject. In Sri Lanka we have spent about two years to develop access laws, and have not yet succeeded. But in terms of what was said this may not be the best approach. We had requested UNESCO to send us case studies on how individual countries have approached this question, but we have not received any. Perhaps none of the countries have effectively and satisfactorily addressed this as yet, although they may be taking some steps in that direction. But we can yet share ideas on how they approach the subject.

C: Dr Schaaf: To state a point, Biosphere Reserves are not necessarily areas of high biodiversity; they are foremost representative areas of ecosystems which also have a high conservation value - even though they may not be rich in species diversity. For instance they may be high in endemic species or threatened species, particularly in the world's dry lands.

C. New Biosphere Reserves related initiatives in South and Central Asia

1. *Presentations on new Biosphere Reserves related to national initiatives by country representatives*

- **New Biosphere Reserves of India with Special Reference to Agasthyamalai (R. K. Raj, Member-Secretary, Indian National Committee for MAB, India)**

India is a megabiodiversity rich country with diverse bio-physical features that increase the opportunity for earmarking new sites as Biosphere Reserves important for sustainable development of local communities. So far there are 13 National Biosphere Reserves in India, of which three have been designated by UNESCO as International

Biosphere Reserves, and 13 more sites are being considered for future designation. Indian Biosphere Reserves have been selected on the basis of their representativeness of ecological zones. India has 10 biogeographic zones and it is envisaged to nominate Biosphere Reserves in each. Of the 13 sites designated as Biosphere Reserves, Agasthyamalai contains the Agasthya Peak of 1,868 m, named after the sage Agastya who proposed the *Sidha* system of medicine and is thus closely linked to the culture of the people. The site is located in the Indo-Malayan Realm, the Malabar Rain Forest Province and the Deccan thorn forest Province, and it is very rich in medicinal plants. Notably about 2,000 species of flowering plants are reported from the area of which about 200 are endemic. There is considerable collection of NTFPs, including medicinal plants, by local people for their livelihood. The reserve contains several wildlife sanctuaries in its core area including a tiger reserve, a buffer zone and a transition area. It also contains about 250 km² of virgin rain forest and the mountain system is separated from the Western Ghats in South India.

- C: Dr Schaaf: I want to congratulate India for having already established a number of national Biosphere Reserves. I consider that India's intention to nominate one site per bio-geographic region is also a very important factor. I hope to speak later about similarities and differences of Biosphere Reserves and World Heritage Sites. Biosphere Reserves represent typical ecosystems, but they need not necessarily be outstanding ecosystems. You have 10 bio-geographic zones - one per typical site. This is also relevant for other countries - the Maldives has predominantly mangroves, but other large countries like Pakistan and Bangladesh can look at more ecosystems and nominate more typical sites.
- C: Dr Rai: Basically we are talking of very large areas, so there are problems of management and coordination, and we do not intend to nominate more than one site per bio-geographic zone.
- **Nominations of new Biosphere Reserves in the Islamic Republic of Iran** (*Mahin Gazani, Member-Secretary, Iranian National MAB Committee, Tehran, Iran*)

The Biosphere Reserve concept is increasingly recognized around the world as a valuable and workable model for linking conservation of biodiversity with sustainable development. Biosphere Reserves can become theatres to reconcile people with nature, as they serve to bridge past knowledge with the needs of the future, and demonstrate how to overcome problems brought about by the sectoral nature of

national institutions. Biosphere Reserves can serve as a means by which people live and work within and around special areas to attain a balanced relationship with the natural world, and contribute to the needs of society as a whole by showing the way to a more sustainable future. The selection and nomination of new Biosphere Reserves in Iran is based on these concepts, bearing in mind that Biosphere Reserves contain a core area, which is undisturbed and permit the protection of these special places. The areas nominated as Biosphere Reserves are: Dena, Hamaoun, Central Alborz and Lisar Nayband, Bahookalt protected areas; Bakhtegan, Tandooreh, Tang-e-Sayad protected areas and national parks; Shadegan, Khosh, Fereydoonkenar and Gamishloo wildlife refuges, and the Govator gulf.

Q: Prof. Ramakrishnan: My question is for Bhutan. At the previous MAB meeting, the delegate from Bhutan said that they were not interested in designating Biosphere Reserves, as the whole country was a Biosphere Reserve. What is the basis for this very interesting concept, and how does Bhutan intend to ensure the purpose for which Biosphere Reserves are created under the UNESCO MAB programme?

A: Mr Dorji: Bhutan is a party to the CBD, and all potential conservation actions are taken, so what difference does it make on the ground? Bhutan has 26% of land area as Protected Areas, and 9% as corridors that link these Protected Areas. This shows Bhutan's immense commitment to conservation. Also about 72% of the country is covered with forest, and many impoverished communities live within this forest area - like in a Biosphere Reserve. Due to certain aspects of the people, you can't keep conservation areas that people can't use. We are very interested in Biosphere Reserves to integrate both economic and environmental aspects, but we cannot talk about the benefits of Biosphere Reserves for the people on their behalf. However, it may not be possible to have a Biosphere Reserve covering all of Bhutan.

C: Dr Schaaf: In fact, the point that a whole country could be nominated as a Biosphere Reserves is not completely wrong. There is some consideration for Andorra to nominate the whole country as a Biosphere Reserve - of course, Andorra is fairly small. But the point is not so much the size - as the concept that addresses both development and conservation concerns. What really is a Biosphere Reserve? It designates some areas [core areas] for conservation, a buffer zone for a lesser degree of conservation and for

rehabilitating degraded areas, and a transition area for sustainable development. So this is basically an integrated concept to bring together conservation and development, so the size - whether big or small - really does not matter, except when practical considerations come into being as well.

1. *Presentations on new biosphere reserves related national initiatives by country representatives (contd.)*

Chairperson: Dr Mahin Gazani

- **Langtang National Park - a Potential Biosphere Reserve in Nepal** (*Purna Nath Mishra, Chairman, Nepal National Committee for MAB, Nepal*)

A programme to develop National Parks and Wildlife Reserves was started in different parts of Nepal in 1976, while the statutory status was recognized in 1973. The Royal Chitwan National Park, established in 1973, was the first protected area in Nepal. Since then 16 protected areas, comprising eight national parks, one national park-cum conservation area, three wildlife reserves, three conservation areas and one hunting reserve have been established covering approximately 18 per cent of the land. All of these but one are administered by the government. The country, however, does not have a Biosphere Reserve. The MAB National Committee considered several potential sites that fulfil the required criteria for Biosphere Reserves, and has selected Langtang National Park (LNP) as a possible site for a Biosphere Reserve. The main purpose of this park is to protect the central Himalayan ecosystem. The park boundaries are demarcated, encompassing an area of 1,710 km². The LNP has a rich biodiversity with 46 species of mammals, 345 species of birds, 11 species of herpetofauna, 30 species of fish, 70 species of butterflies and 10 species of spiders. It also has more than 1,000 species of plants. About 45 villages with 3,000 households are found within the park boundaries. The LNP also contains the catchment of two major rivers. It can amply fulfil the functions of a Biosphere Reserve.

- **Name and Brief Details of New Biosphere Reserve Related Initiatives undertaken by Bangladesh** (*Md. Giashuddin Miah, Dept. of Agroforestry & Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Salna, Gazipur, Bangladesh*)

The Bangladesh MAB National Committee was formed in 1978, and became effective in the early 1980s. Its activities include a series of

meetings, preparation of a publication entitled "A Practical Guide to MAB", and a workshop on coastal zone management. The National Committee does not exist now, but various activities related to conservation or protection of the environment have been undertaken by the government from time to time. In 1992 the government promulgated the Bangladesh Environmental Policy and Implementation Programme, which was followed by the Environment Conservation Act (1995) and the Environment Conservation Rules (1997). Subsequently, the National Conservation Strategy and the National Environmental Management Action Plan were prepared and the secretariat of the National Conservation Strategy was set up. As a follow-up the National Conservation Strategy Implementation Project was initiated in 1990, leading to a survey of seven designated areas. Bangladesh has also compiled a Red Data Book on threatened vertebrates and initiated many conservation actions. Several sites have now been identified as appropriate for declaration as Biosphere Reserves, including the Sundarbans Reserve Forests, Char-Kukri-Mukri, Chunati, Pablakhali, Bhawal, Himchhari, Madhupur, Ramsaga, Hai Haor, Hazarikhil, Rampahar and Dulahazara.

- **Pallas Valley: a Potential Biosphere Reserve in Pakistan** (*S. Azhar Hasan, Director, Zoological Sciences Division, Pakistan Museum of Natural History, Islamabad, Pakistan*)

The Pallas is a major Himalayan valley covering some 1,400 km², and comprising one of the least disturbed and largest temperate forests in the western Himalayas. It is a global biodiversity hotspot, and has been identified as one of the world's priority areas for conservation of biodiversity. It lies at the northwestern extremity of the Great Himalayas, close to the meeting point with the Hindu Kush and Karakorum ranges at the convergence of two zoo-geographical realms : the Palaearctic and the Oriental. Consequently it supports a high diversity of habitats with many rare and threatened faunal species, including the Kashmir grey langur, brown bear, black bear, snow leopard, common leopard, leopard cat, musk deer, and karkhar. It has over 140 species of birds and over 400 species of flowering plants and ferns, of which three are newly identified species. Although it is currently managed under the "Revised Working Plan for Pallas Forests", its timber harvesting practices are not silviculturally sustainable. This is because the local communities, which formally own the forests and derive significant benefits from them, lack the necessary organisation, finances and skills to manage timber harvesting and extraction. Pakistan currently has one Biosphere Reserve (Lal Suharra). The Pallas Valley, with its outstanding temperate forest regime and high number of endemic species, is particularly well suited to be designated as a

Biosphere Reserve. However, it has to be first declared as a protected area, and relevant plans, policies, legal and institutional framework and infrastructure are required for its nomination as a Biosphere Reserve.

- **Kanneliya Dediyaigala and Nakiyadeniya Forest Complex (KDN) - a Proposed Biosphere Reserve in Sri Lanka** (*H.G. Gunawardena, Deputy Conservator of Forests, Forest Department, Sri Lanka*)

The Kanneliya and Dediyaigala Forest Reserves together with the Nakiyadeniya Proposed Reserve (i.e. The KDN forest complex) are naturally interconnected and cover an extent of 9,714 ha. These forests are located in the southwestern region of Sri Lanka identified as among the floristically richest in South Asia. The Dediyaigala and Kanneliya sectors rank among the most important natural forests in the Southern Province in terms of hydrological value, while the biota of the KDN complex is of high scientific interest in respect of the biogeography of South and Southeast Asia. This forest complex is surrounded by about 78 villages, and the raw material for small-scale cottage industries, based on NTFPs collected from the forest, form an important part of the rural economy. There is high dependency on forest products such as fuelwood, medicinal plants and game meat. The Forest Department had prepared management plans for this forest complex in 1994, identifying a core zone, buffer zone and a transitional zone. The latter contains private lands and plantations. Since 1999 the Southwest Rain Forests Conservation Project has been implemented by the Forest Department in the peripheral villages of the KDN Complex. It aims to establish and strengthen the Community-Based Organisations (CBOs) to provide alternative income-generating opportunities to wean villagers away from harmful forest uses, while permitting controlled forest use of NTFPs and medicinal plants. Priming funds are provided to CBOs and the funds are lent for small enterprises to the members identified and approved by the CBOs themselves. Surveying for boundary demarcation, *in-situ* conservation, development of ecotourism facilities and a project for conservation and sustainable use of medicinal plants are underway. The KDN forest complex is proposed as an International Biosphere Reserve in view of its capacity to satisfy the three functions of a Biosphere Reserve.

- **Knuckles (Dumbara) Conservation Forest - Proposed Biosphere Reserve in Sri Lanka** (*H.G. Gunawardena, Deputy Conservator of Forests, Forest Department, Sri Lanka*)

The Knuckles Forest is located in a small isolated massif situated to the northeast of the central hills. The Knuckles range has 11,222 ha

(63%) of natural forests, 688 ha (3.8%) of forest plantations, 551 ha of abandoned tea lands and 4,812 ha of unclassified land use types. The rainfall in this forest, considered as one of the most important and critical watersheds in the island, ranges from extremely wet to dry as it is located along the boundary of the Wet and Dry Zones. Studies reveal high levels of biological diversity and endemism and many unique habitats. The area has at least 85 endemic species of plants. It supports a highly diverse fauna, including many species of endemic fish, amphibians and reptiles, some of which are confined to this forest. Fourteen of the endemic birds of Sri Lanka can be seen here in addition to other indigenous and migrant species. In 1990 the area above 1,067m in the Knuckles region was identified as an environmentally critical area to be protected as a Conservation Area along with other state-owned contiguous forests. There are a total of 77 villages surrounding the Knuckles Conservation Area with a total population of over 50,000 and an average family size of 5-6. The villages mainly obtain water and NTFPs such as fuel wood, medicinal plants, bush meat, ornamental plants and kitul (*Caryota urens*) sap from the forest. The practice of cardamom cultivation, cattle grazing and shifting cultivation in the dryer areas are environmentally destructive to the forest. The Forest Department carries out conservation and management activities, including the formation of local CBOs that are empowered to identify suitable community development programmes and buffer zone development activities. The Knuckles Conservation Forest is a nationally and internationally important forest in terms of economic, hydrological and biodiversity value, and fulfils the requirements for recognition as an International Biosphere Reserve.

1. Presentations on new biosphere reserves related national initiatives by country representatives (contd.)

Chairperson: Dr M. S. Alam

D. An overview of the flora and fauna of the KDN Forest Complex - A proposed Biosphere Reserve in Sri Lanka [a presentation prior to the field visit] (C. Bambaradeniya, Head, Biodiversity Unit, IUCN Sri Lanka Country Office)

The Kanneliya-Dediyagala-Nakiyadeniya (KDN) forest complex is located in the southwestern part of Sri Lanka, spanning the Galle and Matara Districts. The general landscape of this tropical lowland evergreen forest consists of ridges, valleys and low-altitude isolated hills. Surveys show a total of 426 plant species in the KDN forest complex, among which are nine of the 18 endemic plant genera occurring in Sri Lanka. The fauna of the KDN forest complex has not been surveyed

exhaustively, but the existing data show very high diversity specially among the freshwater fish (15 - 20 spp.), amphibians (of which nearly half are endemic and threatened), reptiles and birds. There are several relict species in the KDN complex such as the rock frog (*Nannophrys ceylonensis*). Considering the species richness and the unique flora and fauna of the KDN complex, it has a high potential to be declared as a Biosphere Reserve of international significance.

E. Application of the biosphere reserve concept and the World Heritage Convention as tools for biodiversity conservation in the SACAM Region

- **The UNESCO World Network of Biosphere Reserves and the World Heritage Convention - Differences and Complements** (*Thomas Schaaf, Division of Ecological Sciences, UNESCO, Paris*)

Biosphere Reserves are ecosystems internationally recognised within the framework of UNESCO's MAB Programme, through which the Biosphere Reserve concept has been developed. Unlike most other protected areas, Biosphere Reserves take a people-centred approach, where solutions to conserving the environment while ensuring sustainable development for people, reconciling conservation of biological resources with their sustainable use, and sustainable land management are worked out among all stakeholders in a sustainable manner. Biosphere Reserves nominated by national governments must meet a set of criteria and adhere to a set of conditions for admission to the World Network of Biosphere Reserves so as to be formally recognised by UNESCO's 188 Member States. Each Biosphere Reserve is intended to fulfil (a) a *conservation function* (b) a *development function* and (c) a *logistic support function*.

World Heritage Sites (WHSs) are declared under UNESCO's World Heritage Convention. The concept here is the protection of cultural and natural sites and cultural landscapes that are of outstanding universal value. Their deterioration or destruction constitutes a loss to the heritage of all humanity, not just to the country where they are located. There are now 563 cultural sites, 144 natural sites and 23 mixed sites in 125 countries listed under the Convention, which seeks to identify and protect the WHSs through a system of collective assistance and cooperation that complements (not replaces) the actions of States Parties to the Convention.

The differences between the two concepts are: WHSs are of *outstanding* universal value, generally cover a *protected area*, and mostly *emphasise*

conservation; while Biosphere Reserves should be representative or typical ecosystems and they go beyond the boundaries of protected areas, thus promoting conservation, environmental and social research and sustainable development equally. All World Heritage Natural sites are legally protected and provide the highest degree of international legal protection, while Biosphere Reserves contain legally protected areas, have varying degrees of legal protection, and are also internationally recognised. The World Heritage Convention, ratified by 174 States Parties, is serviced by UNESCO's World Heritage Centre, while the World Network of Biosphere Reserves is serviced by UNESCO's Division of Ecological Sciences. The status of WHSs are monitored on a case-by-case basis, regionally, using a six-year cycle, while Biosphere Reserves are subject to a periodic review every ten years. The areas of complementarity between the two concepts are many, particularly with regard to site-functioning and outreach: WHSs provide the highest degree of international protection, which can be reinforced by scientific knowledge and expertise from MAB National Committees; WHSs can benefit from the World Heritage Fund for enhanced conservation, and Biosphere Reserves are sites where scientists and managers meet. WHSs often generate income through tourism, and Biosphere Reserves promote sustainable development in partnership with local people and could also promote sustainable eco-tourism.

- Q:** Ms Anusha Amarasinghe: What depth should be the Biosphere Reserve review which according to Article 4 is required once in 10 years ?
- A:** Dr Schaaf: There are some guidelines for the periodic review of biosphere reserves which I will send you. Biosphere Reserves were first designated as sites with a high value for conserving the environment. Later, especially after the Rio Conference in 1992, people felt that both conservation and sustainable development aspects should be covered. Hence the periodic review should reflect how biosphere reserves serve conservation needs and satisfy the needs of local people.
- Q:** Dr Rai: According to Dr [Thomas] Schaaf a site could be designated both as a Biosphere Reserve and a World Heritage Site. India has three Biosphere Reserves (Nanda Devi in the Himalaya, Monas in Assam, and Sunderbans), which are World Heritage Sites as well, each having different problems. When a WHS is declared, the focus is only on the legally protected national park area. Legal protection in India is very strong, and problems are usually in the buffer zone areas. The Nanda Devi is not affected by population pressure, but has heavy visitation. Through the Biosphere Reserve

scheme, alternate routes are used to enable people to view the core area, without entering it, but local people are benefited as guides, etc. Monas, which is contiguous with Bhutan is a prestigious and pristine site. The problem here is that the southern side of the reserve - heavily populated up to the forest border - does not have a proper boundary and is subject to severe encroachment. The eastern and western sides have buffer zone areas; the northern boundary adjoins Bhutan. Assistance is required for protection of the southern area. The Sundarbans is the only site where the Royal Bengal Tiger survives on saline water. At these sites the designations [MAB and WHS] are complementary.

- A:** Dr Alam: Because Sundarbans is a WHS site and a Biosphere Reserve, UNESCO is initiating a big project there with United Nations Fund for International Paternership (UNFIP) providing a billion dollars to the UN, requesting them to take up this type of project with a biodiversity tranche in the WHS. Consequently, for the first time, the Ministry of Environment and Forests of the Government of India, and the Ministry of Forestry of Bangladesh have agreed to have a joint project for biodiversity conservation in the Sundarbans, starting in 2003 and implemented by UNDP, UNESCO, FAO and UNFPA.

Sri Lanka can also initiate similar steps for saving Sinharaja through UNDP. It is a pity that countries like Nepal, Bhutan and Maldives do not have such reserves, and should be given guidance on this matter.

- C/A:** Dr Schaaf: On funding: UNFIP provides funds only for WHSs, but there are many other potential donors for Biosphere Reserves. For example GEF, the German Government, etc. Both WHS and Biosphere Reserves tend to get funding because international donors like to fund sites with proven value by being internationally designated, and are recognised by an international community using internationally agreed procedures.

- Q:** Prof. Mishra: There is some confusion about the differences between Biosphere Reserves, Cultural Sites and World Heritage Sites. We [Nepal] have already declared Chitwan National Park and Sangarmatha National Park as World Heritage Sites, and intend to declare Langtang National Park as a Biosphere Reserve. What are the criteria developed by UNESCO for declaration of Biodiversity Reserves? Also, is biodiversity considered in terms of genetic diversity, species diversity or ecosystem diversity? Should all bioclimatic zones be represented? I particularly want to know whether biodiversity criteria, development issues and logistic support are

enough to declare a Biosphere Reserve?

- A:** Dr Schaaf: It is up to the country concerned to nominate Biosphere Reserves, and in particular the MAB National Committees have to decide which areas have conservation value, where good scientific research could be carried out, and where projects with the people could be implemented. Countries are also realising that it is not possible for conservation to stop at the national boundaries, and are prepared for cross-border co-operation on wildlife conservation. It is important to look at corresponding sites on either side of national borders for cross-border conservation issues as it may involve transportation and migration of people. It is important to see how countries could co-operate over political boundaries.
- C:** Mr Leslie Wijesinghe: Sinharaja was made a Biosphere Reserve well over 10-12 years before it was designated a WHS. The reason for this is that it was declared a Biosphere Reserve within the provisions of the Forest Ordinance, but it was not possible to accede to the requirements necessary to make it a WHS under this Ordinance. Consequently the Sri Lanka Government put forward a new Act of Parliament called the National Heritage Wilderness Act, and by bringing Sinharaja under the special Act gave it an additional measure of protection to forward it as a WHS. This means that WHSs require greater protection than a Biosphere Reserve which allows for protection as well as resource use. Also, the [Protected Area] category of Sanctuary is unlikely to satisfy criteria for a WHS. To my mind in the case of many biosphere reserves it may be difficult to declare such sites as World Heritage Sites, because the latter is strictly for conservation, and the other [former] is for conservation as well as sustainable use.
- A:** Dr Schaaf: This is a very interesting point. Will combining conservation with allowing restricted use in some areas ease pressures on strictly protected areas?
- Q:** Dr Azhar Hasan: IUCN and UNESCO are working on conservation and sustainable use of biological resources. But there appears to be some differences in their approaches. UNESCO puts more emphasis on biosphere reserves, and IUCN puts more emphasis on national parks. Why can't both organisations make a joint effort? The biosphere reserves have a broader scope than national parks, but if there is a more co-ordinated effort, more biosphere reserves can be declared in a shorter space of time.
- A:** Dr Schaaf: There is some duality of the basic difference in

approach between IUCN promoting protection (through IUCN's Protected Area categories) which is even stronger than conservation, whereas UNESCO's biosphere concept looks at both conservation and sustainable development, with heavy involvement of people in the process. But both approaches have the same goal. Declaring a site as a protected area confers certain restrictions on human use under some IUCN categories, but there has been a marked trend for IUCN to view people as an important requirement for conservation. IUCN also promotes a lot of buffer zone development to involve people in conservation. So there is convergence of the two approaches in coming towards the same goal - even if it is through different approaches. But it would be interesting to see what IUCN thinks about it.

A: Dr Bambaradeniya: I certainly agree with Dr Schaaf. IUCN's more conservationist approach of protection in the past (especially in respect of threatened species) has given way to the thinking that National Parks cannot be conserved if people were completely ignored, and currently IUCN's mission is promoting the equitable and sustainable use of natural resources. So our goals are now very much similar.

Q: Prof. Mishra: Nepal has many sites suitable for declaration as Biosphere Reserves. First Shiyapuri was selected, then later Langtang. Of course, there are complexities when co-operating for cross-border conservation, and there is need to develop bilateral and multilateral agreements with not only China, but also with India and Sikkim. We have already proposed one park in conjunction with Sikkim, Tibet and Nepal. I also wish to know from our IUCN representative whether it is sustainable to work on the species concept, or should we change into molecular, biological, or chromosomal level, or numerical taxonomic level, or biochemical taxonomic level? What has already been published by IUCN about biodiversity involves the number of species in fish, reptiles, mammals etc. It is high time to think about the species concept.

Q: Prof. Wickremasinghe: According to my understanding the difference between protection vs conservation and sustainable use have serious socio-economic implications. Declaring a site as a Biosphere Reserve, and then as a WHS could lead to conflict of management priorities. The Biosphere Reserve concept is more people centred with the goal of conservation and sustainable development, and has broader scope, while declaring a site as a WHS leads to alienating people through strict conservation / protection. What are the implications or conflicts created due to

the transition from biosphere reserve status to WHS status from the experience of other countries?

A: Dr Schaaf: You have summarised the point that Biosphere Reserves include people while WHS tend to exclude people. This was true in the past, but there has been a shift of thinking in the WHS community and there is realisation that, for a site to be conserved, one has to involve the people. While it may sometimes be necessary to have areas set aside for strict conservation as “no go areas for people” because they are really for highly threatened or endangered species, it may be necessary to open other areas where people can use natural resources, provided they are trained to use them in a sustainable way. There is an example from my own project in West Africa, in Ghana. Working with IUCN, three villages were selected on a pilot basis where people could go into the park and collect the African giant snail, which they like to eat, on payment of a fee. A part of the fee went for park management and improvements, and another part was for community projects. People were also taught to harvest snails without disrupting the ecological balance. As more villages then wanted to have the licence to collect snails from the park, a second phase was established to introduce snail farming in the buffer zone around the Protected Area. Training and materials were provided to local people to help them farm giant snails, thereby reducing pressure on the park. This is an example, but methods for managing PAs have to be constantly modified to arrive at the best mechanisms and schemes for each site. This often involves “learning by doing”. There is no blueprint or prescription that can be applied to all sites.

Q: Ms Bhatt: Although IUCN is changing its philosophy of 30 years, when a country selects categories of protected areas, these do not change. India has two categories of PAs: national parks and wildlife sanctuaries designated under the Wildlife Protection Act, and they will remain the same. So when an area - which may have several protected areas within - is declared a Biosphere Reserve and a World Heritage Site, there will be conflicts, unless there is a strategy, similar to the example mentioned before. But most protected areas remain what they are. Hence if one is really looking at involvement of local people, and actually doing something in terms of a development strategy, who exactly is going to do that?

A: Dr Schaaf: If I understand correctly all what you said, when a site is designated as a Biosphere Reserve or a WHS, it keeps its national legal status as this is a pre-requirement, A WHS or Biosphere Reserve will have legal status at least in the core area, and this

would not necessarily change. In addition, in the case of WHS, you would have the international degree of legal protection.

- Q: Mr Gunawardena:** In respect of nomination and recognition of MAB reserves, Sri Lanka has nominated some sites. They were proposed one year ago, and we were informed that these will be discussed at this forum. What will be the next step and what do we got to do now?
- A: Dr Schaaf:** On your part ensure the integrity of the site as a WHS, and for a Biosphere Reserves try to come up with a mechanisms for sustainable development schemes in consultation with the local people.
- Q: Ms Anusha Amerasinghe:** What happens to nominations Sri Lanka sent in for the two reserves? Will they be submitted to the International Co-ordinating Committee (ICC) and then go up to the Advisory Committee? How long will it take to designate these sites as Biosphere Reserves?
- A: Dr Schaaf:** The MAB Advisory Committee meets once a year, and a few weeks or a few months later the MAB International Co-ordinating Committee (ICC) meets. They have to officially endorse the recommendations. The Advisory Committee met this year about two weeks ago, and the MAB Bureau will meet in November this year. All proposals that came in before August this year would have been submitted to the Advisory Committee and then to the Bureau. The final decision will probably be taken in November. I am not sure about the exact dates for next year as they vary annually.
- Q: Ms Anusha Amerasinghe:** Sri Lanka is not represented at the ICC or at the Advisory Committee. What is the mechanism by which Sri Lanka can participate at these meetings?
- A: Dr Schaaf:** The MAB ICC consists of 34 countries. They are elected by the UNESCO General Conference held every three years. Half of the 34 countries are rotating out every four years, so that there is a renewal every two years. The representation is made on a regional basis. The Asian countries in the ICC include China, India, Japan, Thailand and a few others. During rotation, there is the possibility for other countries to be elected into the ICC. So you should contact the MAB National Committee if you are interested in joining the ICC, which in turn will contact the permanent delegate of your country at UNESCO.

Q: Prof. N Gunatilleke: This is a concern and a comment. From what I understand, the MAB international designation has this development function. In relation to Sinharaja, the transition zone, and partly the buffer zone have some activities that are of concern, particularly tea cultivation, which is becoming unsustainable. Hence, there is a possibility that in 10 years at the next review (I hope that it would not happen), Sinharaja could be de-listed as an International Biosphere Reserve, if such unsustainable activities expand in the transition area, although it will remain a WHS because conservation activities are continuing. The Forest Department should therefore work with the other agencies, particularly the Tea Small Holders Authority, etc. and seek a solution to this problem, which is mainly due to high use of agro-chemical inputs. Through eco-tourism projects the larger tea estates in the Eastern Sinharaja have encouraged organic tea farming which fetches better prices.

Q: Iranian Delegate: Is there possibility for us (Iran) to be observers at the ICC meeting? When we made such a request before, we had a negative answer from ICC.

A: Dr Schaaf: Yes. You are always welcome to participate in the MAB ICC as an observer, and quite a number of countries send observers. They can participate in the discussions, but not vote. Observers are possible at the ICC, but not at the MAB Bureau, which has only six members and meet in private sessions. The ICC meets once in two years and is open to all.

Q: Dr Mangala de Zoysa: Complementary to what Prof. Gunatilleke said earlier there are people in some areas of Sinharaja for generations. They have their own traditions and cultures and a sustainable system of earning. For example, at Sinharaja there are people producing treacle and jaggery from *Caryota* trees, through which they earn a lot of money. These people are now shifting towards tea cultivation. The earnings derived are much the same, but the way they earn has changed to being more destructive of the environment. On the other hand eco-tourism is picking up, and this can be used even in Sinharaja to derive income for the reserve, without destroying the environment. Here we have to think about carrying capacity, which includes physical carrying capacity, the environmental carrying capacity, and also the socio-economic carrying capacity, before planning development activities.

F. Regional issues and collaborations

Chairpersons : Dr Thomas Schaaf and Dr M.S. Alam

THE STATUTES OF THE SOUTH AND CENTRAL ASIA MAB NETWORK

I. Background

During a Regional Meeting of Co-ordinators of National MAB Committees and Biosphere Reserves, organized by the UNESCO-New Delhi Office, in collaboration with the Indian National Committee for MAB and the Ministry of Environment and Forests, and hosted by the Indian Council of Forestry Research and Education at Dehra Dun, from 22-25 February 2001, MAB representatives from eight Asian countries, Bangladesh, Bhutan, India, the Islamic Republic of Iran, Mongolia, Nepal, Pakistan and Sri Lanka, expressed the will to forge closer sub-regional collaboration by initiating a process that would lead to the creation of a 'South and Central Asia MAB Network'.

During the discussions, there was a general consensus that the new network would operate principally in the context of biosphere reserves and similarly managed areas and would focus on a number of thematic topics for regional collaboration, such as traditional ecological knowledge, biodiversity conservation, forest ecosystems, land degradation and rehabilitation in vulnerable ecological systems (such as wetlands, drylands, and mountains) and waste management. Sri Lanka offered to host the regional meeting in 2002, and also offered to produce a regional "South and Central Asia MAB Newsletter" to enhance networking.

It was also agreed that the scientific papers presented at the Dehra Dun meeting would be published through the UNESCO, New Delhi Office, with a synthesis of the presented papers as well as the results of the meeting being made available on the UNESCO-MAB website in preparation of the meeting of the South and Central Asian MAB representatives in Sri Lanka in October 2002.

Taking note of the Statutory Framework of the World Network of Biosphere Reserves, and in particular its Article 8 that encourages the establishment of regional and thematic sub-networks, the representatives of Bangladesh, Bhutan, India, the Islamic Republic of Iran, Nepal, the Maldives, Pakistan and Sri Lanka participating in the South and Central Asian MAB Meeting held in Hikkaduwa (Sri Lanka) from 15 to 18 October 2002, agreed that the statutes

of the "South and Central Asia MAB Network" shall be as follows:

II. Name of the Network

The name of the network shall be 'South and Central Asia MAB Network', which shall be abbreviated and hereinafter referred to as SACAM Network.

III. Objectives

- i) To provide an institutional mechanism for South and Central Asian countries to exchange information on the three functions of biosphere reserves.
- ii) To compare experiences in the management of biosphere reserves in South and Central Asia, particularly in relation to zoning and harmonizing a biosphere reserve's goal of conserving biodiversity with its function of supporting socio-economic development of local economies and people.
- iii) To exchange information with regard to institutional and administrative arrangements for the management of biosphere reserves of South and Central Asia and to make appropriate recommendations for improvement.
- iv) To identify, design and implement short-term multi-disciplinary and inter-disciplinary studies that explore and demonstrate links between conservation of biodiversity and sustainable socio-economic development of local people in and around biosphere reserves of South and Central Asia.
- v) To provide opportunities for staff of biosphere reserves and coordinators of MAB National Committees in South and Central Asia to improve their knowledge and skills in implementing the Seville Strategy for Biosphere Reserves.
- vi) To promote and strengthen co-operation between the SACAM Network and other UNESCO Member States in the Asia Pacific Region in the implementation of the Seville Strategy for Biosphere Reserves, and
- vii) To promote and facilitate information exchange and inter-regional co-operation with similar networks in other parts of Asia and in the world (such as the East Asian Biosphere Reserve Network, EABRN; the Southeast Asian Biosphere

Reserve Network, SeaBRNet; the African MAB Network, AfriMAB; the Arab MAB Network, ArabMAB; the European MAB Network, EuroMAB; the Latin American Biosphere Reserves Network, IberoMAB; and the Ibero-American Programme for the Development of Science and Technology, CYTED) and international organizations, such as IUCN, as well as any other interested international organization.

IV. Membership

The following organizations/individuals from Bangladesh, Bhutan, India, the Islamic Republic of Iran, the Maldives, Nepal, Pakistan and Sri Lanka are considered to be members of the SACAM Network: the MAB National Committees and affiliated government and private sector agencies; the UNESCO National Commissions and affiliated government and private sector agencies; staff of SACAM Network biosphere reserves included in the World Network of Biosphere Reserves; and UNESCO staff of the International Secretariat of the MAB Programme and the UNESCO Offices in New Delhi (India) and Teheran (Islamic Republic of Iran), Islamabad (Pakistan), Kathmandu (Nepal) and Dhaka (Bangladesh).

Others who are part of national biosphere reserves in South and Central Asia, may be invited by Members to participate in specific activities of the SACAM Network. Similarly, representatives of other MAB Networks (in particular, EABRN and SeaBRNet), UNESCO National Commissions, MAB National Committees and affiliated government and private sector agencies in South and Central Asian countries other than those belonging to the SACAM Network, and international organizations (e.g. IUCN and UNEP) may be invited to participate in activities of the SACAM Network.

Any other country of the region may become a member of the SACAM Network upon its explicit request and upon approval by the SACAM countries.

V. Activities

(a) Meetings

- i) There shall be at least one meeting of the SACAM Network Members every two years.
- ii) SACAM Network Members shall periodically (e.g. once every

five years) meet with other countries of the Asia Pacific Region.

(b) Seminars and workshops

Apart from the meetings mentioned under (i) above, SACAM Network Members may organize special scientific seminars and/or training workshops. While the frequency of the organization of such events shall depend upon available financial and other resources, training workshops shall be organized at least once every 3 years.

(c) Exchange of specialists

Scientists, administrators, managers and policy-makers concerned with the implementation of the Seville Strategy for Biosphere Reserves in a SACAM Network country may visit other countries to share knowledge and experience. Whenever possible, delegation(s) of SACAM Network countries may visit biosphere reserves in countries outside the Network to exchange views regarding biosphere reserve management.

(d) Dissemination and exchange of information

SACAM Network Members will regularly exchange, either directly, or through the services of one of the National MAB Committees or through the International MAB Secretariat in UNESCO, Paris, or the UNESCO Offices in New Delhi, Teheran, Islamabad, Kathmandu and Dhaka, information on issues, problems and solutions to the management of biosphere reserves. Such exchange of information shall be via newly evolving electronic media as well as conventional instruments such as newsletters, brochures and technical and popular articles. SACAM, in co-operation with UNESCO, shall ensure that the proceedings of all meetings, seminars and workshops covered as part of SACAM activities shall be published and disseminated with the minimum possible delay.

(e) Research co-operation

Any SACAM Member may initiate bilateral and multilateral co-operation for carrying out research on specific themes and issues of biosphere reserve management. In this regard a Member may, in consultation with other Members, solicit co-operation, outside of the South and Central Asian Region, as well as of international organizations and donors.

(f) Management co-operation of trans-border biosphere reserves

All SACAM Members are encouraged, through the launching of specific projects, co-operation between management of trans-border biosphere reserves (e.g. Sunderbans Mangrove Ecosystems, both in India and Bangladesh; Manas in Bhutan and India). Such co-operation is particularly encouraged with respect to SACAM Members' participation in the implementation of multilateral agreements, such as the Convention on Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNCCD), the Ramsar Convention on Wetlands, the World Heritage Convention (WHC) and other relevant multilateral agreements.

(g) Promotion and fund raising

Any SACAM Member, in consultation with other Members, may launch private or public sector campaigns to promote the work of SACAM and to generate funds for the activities of the SACAM Network.

VI. Budget

The core-budget for the operations of the SACAM Network shall derive from funds of UNESCO's Regular Programme and from the Budget approved for the activities of SACAM by the General Conference, particularly those earmarked for implementing the Seville Strategy for Biosphere Reserves by UNESCO Offices in New Delhi (India), Teheran (Islamic Republic of Iran) and the MAB Secretariat in UNESCO, Paris. Other UNESCO contributions to SACAM may derive from the Director-General's allocations for specific draft resolutions relevant to SACAM and approved by the General Conference, National and Regional Participation Programmes requests and specific proposals submitted to, and approved by the International Co-ordinating Council and the Secretariat of the MAB Programme.

Any SACAM Member State may provide funds to support SACAM activities, through funds-in-trust or voluntary contributions schemes of UNESCO, or directly to a recipient Member in another SACAM country(ies). SACAM Members, individually or jointly may prepare projects for consideration of funding by regional and/or international donors as well as launch fund-raising campaigns to support SACAM activities.

A SACAM Member may provide support to activities in kind: e.g. a SACAM Member may agree to host and meet all local expenses of visitors from other SACAM States if the latter (or other Members such as UNESCO) are meeting the costs of international travel of visitors; all such contributions in kind made by SACAM Members shall be acknowledged in publications which are the outcome of the activity under consideration.

VII. Administration and coordination

The activities of the network shall be administered and coordinated by the UNESCO, New Delhi Office, in co-operation with UNESCO-MAB, Paris and a national focal point in each SACAM Member Country. Any SACAM Member country may discuss with UNESCO, New Delhi Office, short-term arrangements for one of its specialists assisting the UNESCO, New Delhi Office, in implementation of SACAM activities. Countries belonging to SACAM activities i.e. Bangladesh, Bhutan, India, the Islamic Republic of Iran, the Maldives, Nepal, Pakistan and Sri Lanka, may also unanimously decide, at any time in the future, to assign Secretariat responsibilities to one among themselves.

All funds which are administered by the UNESCO-New Delhi Office and the UNESCO-Teheran Office shall be in accordance with the UNESCO Manual Guidelines for managing a specific category (Regular Programme, funds-in-trust, etc.) of programme funds. Whenever a donor who is not a Member of SACAM agrees to provide financial assistance to SACAM activities the procedures for the management of the said funds will be mutually agreed upon by SACAM Members including UNESCO, and the donor.

VIII. Other Matters

Any amendments to the text of the Statutes of the SACAM, including those concerning the termination of the operations of SACAM, shall come into effect only with the unanimous approval of all its Members.

G. Outcomes of the meeting

- ◆ The South and Central Asia MAB (SACAM) Network was established at the Regional Meeting held in Hikkaduwa, Sri Lanka on 18/10/2002.

- ◆ The National Science Foundation agreed to publish both the **Summary Report and the Proceedings** of the regional meeting. This would be included in the web site to ensure wider coverage.
- ◆ Sri Lanka proposed that the publication of the next **SACAM newsletter be entrusted to the Maldives**. This was accepted. This would be included in the web page for easy reference. The proposal was endorsed by all participants.
- ◆ Pakistan proposed that the **Islamic Republic of Iran take the lead in hosting the next regional meeting with financial support from UNESCO**. The Islamic Republic of Iran accepted the proposal which was welcomed by all representatives.
- ◆ **Mrs Anusha Amarasinghe (from the present host country) was elected as Hony. Vice President of the SACAM Network while Dr Mahin Gazani (from the next host country) was elected as SACAM's Hony. President, for effective coordination and collaboration at the next meeting. The next meeting is scheduled for early 2004 on a date to be specified later.**
- ◆ It was agreed that the **UNESCO-New Delhi Office acts as Regional Secretariat at present and create a web site for SACAM**. The responsibilities would be assigned to other countries in the region when and where necessary in agreement with the participating countries for the delegation of authority.
- ◆ The regional network would **identify the priorities for further regional collaboration in the interests of the participating countries on topics to be decided upon later. Sources of funding would be explored from both national and international funding sources.**
- ◆ The regional network would **facilitate and provide opportunities for professional enhancement of the members via workshops, seminars, etc.**

UNESCO congratulated the Sri Lanka organizers of the MAB meeting in Hikkaduwa for their excellent preparation and organization of the meeting, which was a great success, and invited the Maldives and the Islamic Republic of Iran to ensure an active **SACAM Network** in the region within the framework of the UNESCO-MAB Programme.

C: comments, Q: questions, A: answers