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TROPICAL MOIST FORESTS CONSERVATION BULLETIN

INTERNATIONAL PROJECT

NATURAL RESOURCES DEFENSE COUNCIL

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TROPICAL MOIST FORESTS CONSERVATION

BULLETIN

editor: Cynthia Mackie

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INTERNATIONAL PROJECT
NATURAL RESOURCES DEFENSE COUNCIL
917 15TH STREET, N.W.
WASHINGTON, D.C. 20005
U.S.A.

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I.
INTRODUCTION

In the past decade, deforestation in the tropics has accelerated to such an extent that the very survival of the primary forests and the indigenous cultures which depend upon them is uncertain. Cautious estimates suggest that 20 million ha. of tropical forests are cut annually, or over 5,000 ha. each day. A forthcoming study by the Council on Environmental Quality (U.S.A.) predicts that, if present trends persist, only one-third of the original tropical moist forest may remain by the year 2000, and these will be degraded, remnant patches (see CEQ).

There is growing recognition that these forests are essential to the biological, economic, and agricultural systems of tropical countries. Conservation and management efforts by international, national, and private organizations are evident on all three continents. However, these initiatives may suffer from being uncoordinated and inadequate in light of the scale of cutting in most regions. Not only is more financial support necessary, but also more understanding of the importance of conservation for rural development is needed. Decisionmakers need to become informed about the costs of deforestation and the necessity for protection, management, and restoration.

This bulletin describes briefly some of the major institutions and programs which contribute to the protection and wise use of the tropical moist forests. It is our hope that this Bulletin will foster more cooperation and communication between these groups. This first issue provides a brief overview that is admittedly incomplete and drawn from United States sources of information. Many individuals and groups conducting valuable work in this area are, therefore, not described. Readers are encouraged to supply this information, so that a second, more comprehensive issue can be published. Information and inquiries should be addressed to:

Cynthia Mackie
Natural Resources Defense Council
917 15th Street, N.W.
Washington, D.C. 20005
U.S.A.

Scope

This Bulletin is concerned not only with the establishment of parks and biosphere reserves but with efforts to relieve pressure on the remaining primary forests by providing alternatives to present exploitation practices. Planners, international aid agencies, and politicians are beginning to recognize the important role of environmentally sound forestry in rural development. The Bulletin also discusses scientific and socio-economic studies which provide information for planners and decisionmakers in the humid tropics. Without sufficient knowledge of the ecological and sociological processes which affect the moist forests, sound management and conservation strategies cannot be designed.

The Tropical Moist Forests

These forests can be loosely defined for our purposes to be those ecosystems which fall under the FAO and UNESCO tropical moist forest classification. They include, therefore, lowland evergreen, semi-deciduous, deciduous, swamp, bog, and mangrove forests. They also encompass the submontane, montane, drought-deciduous, cloud, and subalpine formations. This delineation is a guideline, not an exclusive classification: a broad, flexible definition will avoid the exclusion of important forested areas and will allow discussion of general types such as the Amazonian lowland forest. While the Bulletin is primarily concerned with moist forests, projects in other forest ecosystems which provide useful models for integrated land use planning and rural development are also discussed such as the fuelwood planting program in Korea (see World Bank).

II.
MULTILATERAL PROGRAMS AND INSTITUTIONS

A. United Nations Group

1. UNDP

United Nations Development Programme (UNDP)
1 United Nations Plaza
New York, New York 10017
Director of Forestry Division: Mr. Charles J. Lankester

UNDP is the principal development aid agency of the United Nations group. Funded entirely through voluntary contributions from member states, UNDP expects to disburse $2.5 billion in technical aid between 1977 and 1981. UNDP also supervises special UN programs and funds. Almost all of the forestry projects assisted by UNDP in the tropics are executed by the Food and Agriculture Organization. (See FAO for details of projects.)

2. FAO

United Nations Food and Agriculture
Organization (FAO)
Forestry Department
Headquarters:
Via Delle Terme di Caracalla
00100 Rome, Italy

As an autonomous agency within the United Nations system, FAO undertakes most of the forestry projects funded by sister agencies. The Forestry Department has field personnel working with almost every tropical country to develop national forest resources. FAO provides technical assistance and conducts applied research in several areas which contribute to wise management and conservation of tropical moist forests, including the following:

(1) Inventory and assessment of national forests, including satellite photo interpretation.

(2) Assistance for developing and strengthening forest services and related institutions.

(3) Silviculture management and training assistance.

(4) Legal advice and proposals for appropriate regulations in nature conservation, and for timber concession contracts.

(5) Assistance and development of wildlife management and national park programs.

(6) Assistance and development of erosion control and watershed management projects.

(7) Studies of genetic resources of forest genera such as eucalypts and tropical pines.

(8) Research and development of village-level forestry schemes such as fuelwood plantations, agrisilviculture, and reforestation.

(9) Economic analysis of global, regional, and national trends in forestry such as labor and market outlooks.

The Conservation Division of the Forestry Department handles many of the above activities in the field. About half of all FAO forestry projects are designed to increase timber production, and a large portion of these are industrial. However, a new direction in FAO policy is leading to more village-level forestry schemes and attention to forestry as a component of rural development.

FAO has Regional Forestry Commissions in Africa, Latin America, and Asia to coordinate FAO forestry activities. There are also a series of FAO technical committees which draw together expertise in specific areas, including the Committee on Forest Development in the Tropics. The latter Committee, during its Fourth Session in November 1976, focussed on the problems of moist tropical forests development (Committee Chairman: John Francois, Chief Conservator of Forests of Ghana).

Because of the wide range of FAO forestry projects, it is not possible to provide a detailed outline here. The following projects illustrate FAO's global initiatives. (Further examples of FAO projects are described in the Brazil and Indonesia sections, and FAO participation and support of other activities are mentioned throughout the Bulletin.)

Forestry For Community Development

FAO, in collaboration with the Swedish International Development Authority (SIDA; see Sweden), has recently established

an ad-hoc advisory panel to design an action program for forestry for community development. The second panel meeting, in Rome in June 1977, included representatives from India, Indonesia, Tanzania, Ethiopia, Nigeria, Colombia, and Peru. During the Expert Consultation Meeting sponsored by FAO/SIDA in Semarang, Indonesia, in December of the same year, it was decided to expand the panel to include representatives from the Near East and Pacific. Details of the panel's findings will soon be published by FAO. Inquiries concerning the panel can be made to Mr. Egbert Pelinck at FAO Rome headquarters.

Tropical Forest Cover Monitoring Project

This project is co-sponsored by FAO and UNEP. A pilot study in tropical forest monitoring through the use of satellite remote sensing techniques has been launched in West Africa. While this project now covers Cameroon to Togo, IUCN recently proposed that the project be expanded to include the eastern portion of the forests. Details of the project can be obtained by writing M. Jean-Paul Lanly, Forest Resources Surveys Officer, at FAO Rome headquarters.

Regional Project For Latin America: Wildland Management And Environmental Conservation

This UNDP/FAO project was launched in 1971 and formally terminated at the end of 1975 when the Wildland Management Unit of the Tropical Agriculture Center for Research and Training (CATIE, see OAS/IIAS) took responsibility for the Central American part of the program. Countries in Central and South America were provided assistance in the initial development of master plans for natural resource management and protection. Upon the request of national government agencies, assistance is now given by CATIE for planning and establishment of national parks, wildlife management, environmental education, marginal land development and technical guidance on administrative and legislative matters. The Rockefeller Brothers Fund provides substantial financial support for these activities.

3. UNESCO

The United Nations Educational, Scientific and Cultural Organization (UNESCO)
International Council for the Man and the Biosphere Programme
7 Place de Fontenoy
75700 Paris, France

While FAO is devoted primarily to development activities,

UNESCO supports research and education worldwide.

UNESCO's Man And The Biosphere Programme (MAB)

In 1970, UNESCO initiated the MAB Programme to promote integrated research, management, and conservation of the world's fragile ecosystems through a series of fourteen project areas. Projects 1 and 8 are the most relevant to tropical moist forests, although successful initiatives in other project areas may prove useful as models and guidelines for the humid tropics. The MAB programs are proposed and implemented by national committees and financed, to a great extent, by national government agencies and private sources.

MAB Project 1: Ecological Effects Of Increasing Human Activities In Tropical And Subtropical Forest Ecosystems

According to a recent progress report (July 1977) the main objective of Project 1 ". . . is to help develop the ecological basis for rational use of natural resources and the management of ecosystems in the tropical and subtropical forest zones of the world." Through integrated sociological and ecological research, the interactions between human activities and tropical forest ecosystems are examined. The dynamics of "untouched" forests are compared to a range of exploitation systems from shifting cultivation to intensive monocultures. This holistic approach to environmental problems is designed to bring anthropologists, biologists and planners together to generate specific research and training proposals.

It is difficult to assess the progress of MAB Project 1 in different regions. Because the initiatives depend upon national and regional interests, operational programs are at various stages. Dr. Lawrence Hamilton at Cornell University is about to undertake a review of the MAB programs in tropical moist forests for UNESCO. (See Venezuela, Ivory Coast, Nigeria, Indonesia, Philippines for details of field projects. Other sites of MAB Project 1 activities include Pucallapa, Peru; Yangambi, Zaire; lower Lobaya River Basin, Central African Empire; Pasoh-Tasek Bera, Malaysia; Upang Delta, Indonesia; Agno River Basin, Philippines; Sakaerat, Thailand, and North Queensland, Australia.)

MAB Project 8: Conservation Of Natural Areas And The Genetic Material They Contain

This Project is designed to establish an international network of protected ecosystems, or biosphere reserves, of representative natural and modified biomes. A recent progress

report (November 1977) states the objective of Project 8 as "the conservation of representative ecosystems . . . as a strategy for maintaining genetic diversity; to provide sites for long-term research . . . serving as a logistic base for other MAB Project Areas; . . . for monitoring of environmental change; and to make available facilities for education and training." National MAB committees and government agencies propose suitable sites for biosphere reserves and administer and control them.

As with all parks and reserves in the tropics, the biosphere reserves are under varying degrees of protection, and most are in urgent need of additional funds and personnel. The following list of formally designated reserves in the humid tropics is as of July 1977.

Congo	Parc National d'Odzala
Indonesia	Cibodas Reserve Komodo Island Game Reserve Lore Kalamanta Game Reserve Tanjung Puting Nature Park
Nigeria	Omo Reserve
Philippines	Puerto Galera Biosphere Reserve
Sri Lanka	Hurulu Forest Reserve
Thailand	Mae Sa-Kog Ma Reserve Hauy Tak Teak Reserve Sakaerat Environmental Research Station
Zaire	Reserve floristique de Yangambi

Workshop Report

A recent report on a MAB workshop held in the Federal Republic of Germany at the Reinbek Institute of World Forestry (see Germany) is now available. This workshop reviewed the progress, problems, and objectives of field projects in the tropical rainforest zone. Guidelines for integrated research were also presented, and a discussion of the activities of the International Union of Forest Research Organizations (IUFRO), a co-sponsor of the workshop. "Transactions of the International MAB-IUFRO Workshop On Tropical Rainforest Ecosystems Research," Hamburg-Reinbek, May 12 - 17, 1977, edited by Dr. E. F. Brunig, is available by writing: Institute of World Forestry,

Leuschnerstrabe 91, 2050 Hamburg 80, Federal Republic of Germany.

UNESCO State-Of-Knowledge Report On Tropical Forest Ecosystems

This report is due shortly by UNESCO, and will describe the ecological processes and evolution of tropical rainforests. Patterns of use and human activities in the forests will also be discussed. According to Dr. P. Ashton's review of the forthcoming report in the MAB-IUFRO workshop proceedings mentioned above, the report aims to present a unified overview of the research by biologists, demographers, anthropologists, and other disciplines, and to bring together both applied and pure research results.

4. UNEP

United Nations Environment Programme (UNEP)
P. O. Box 30552, Nairobi, Kenya
Executive Director: Dr. Mostafa K. Tolba

New York Liason Office:
Dr. Noel Brown
P. O. Box 20, Grand Central Station
New York, New York 10017

UNEP acts as a coordinating agency for all environmental activities undertaken by the United Nations Group.

Earthwatch

Two important programs that UNEP has initiated which will contribute to the understanding of deforestation rates and ecological processes of tropical moist forests are GEMS and IRS,components of the Earthwatch Program. The Global Environment Monitoring System, now in its initial phases, will include the monitoring of important biological factors which affect the long range stability of forests. Although action on a formal Information Referral System is not planned until 1981, many countries have already established computer centers for information gathering and dissemination of environmental information, including the United States (see EPA). This information exchange system will facilitate the planning and coordination of tropical forest management.

As a coordinating agency, UNEP supports projects launched by sister agencies (UNDP, FAO, UNESCO), by the International Union for the Conservation of Nature (IUCN), and by the World Wildlife Fund (WWF). Areas which have been proposed

to receive UNEP support, according to the Report Of The Executive Director at the 1977 Governing Council (Fifth Session), include:

(1) The establishment of field pilot projects which apply existing knowledge of tropical ecology to devise sound management strategies. This will focus on implementing UNESCO's MAB 1 and 8 projects and be coordinated with FAO and UNDP activities. FAO is expected to initiate agrisilviculture projects by 1978.

(2) In connection with MAB programs, the determination of research priorities for tropical rainforest management. Knowledge gained will be used to prepare manuals of management guidelines to ecologically-sound development to be issued by 1981.

(3) The promotion of worldwide tree planting and protection through the "Trees Programme." This will be a broad, inter-disciplinary approach to tackle the causes of forest degradation and destruction as well as replanting activities. The humid tropical rainforest belt is one of four geographic areas where one country will be chosen to implement an integrated action plan.

(4) The promotion of training programs to encourage natural resources management in collaboration with FAO, UNESCO and MAB.

B. Other

1. IUCN/WWF

International Union for the Conservation of Nature and Natural Resources (IUCN)
1110 Morges, Switzerland
Director-General: David Munro
Head, Membership and External Affairs: Robert Allen

Commission on National Parks and Protected Areas (CNPPA)
Chairman: Kenton R. Miller
School of Natural Resources
University of Michigan
Ann Arbor, Michigan 48105

IUCN is an independent, international organization

with voting members from sovereign states, international and national agencies, and environmental organizations. The purpose of IUCN is to promote the conservation of wildlife species and their habitats. An extensive network of scientists and other professionals are organized into six commissions, including CNPPA, listed above.

World Wildlife Fund
1110 Morges, Switzerland

United States Appeal
1601 Connecticut Ave., N.W.
Washington, D.C. 20009
Program Director: Thomas E. Lovejoy
Press and Public Affairs Director: Vivian Silverstein

WWF, also based in Switzerland, is an international charitable organization which works closely with IUCN. WWF conducts fund raising and publicity campaigns in 26 countries to support efforts in habitat and endangered species protection, ecological research, and land acquisition.

IUCN and WWF have taken many important steps to ensure the adequate protection of endangered species and ecosystems. Since 1975, special attention has been given to the strengthening and expansion of national parks in the tropical zone. IUCN works with other members of the Ecosystem Conservation Group (UNEP, UNESCO, FAO) to encourage programs and policies that give adequate protection or representative ecosystems throughout the world. Among the efforts undertaken by IUCN and WWF on a global scale are the following (see CATIE: OAS/IIAS, Brazil East Caribbean Program, and Indonesia for programs assisted by IUCN/WWF):

World Conservation Strategy

IUCN, with the financial support of the World Wildlife Fund and UNEP, is presently preparing a World Conservation Strategy for wildlife species and their habitats. The first draft states that the Strategy aims to " . . . develop policies and outline programmes of action to maintain the potential of wild plants and animals and of the ecosystems of which they are part to meet changing human needs." The support papers contained in the draft document briefly outline the threats and problems, conservation programs in progress, actions required and priorities for action for major ecosystems and lifeforms.

The Tropical Moist Forests chapter of the draft

identifies priorities for action and proposes practical steps to be taken by members of the Ecosystem Conservation Group (UNEP, FAO, UNESCO, IUCN) and by IUCN member organizations. The Strategy proposes many flora and fauna surveys of specific forests in Southeast Asia and the Pacific, Asia, Africa, and the Americas. These would be undertaken in cooperation with FAO and UNESCO.

Conservation Priorities

IUCN and WWF have undertaken regional surveys of conservation needs to protect ecosystems and species in tropical regions. The first is "Conservation of Forests, Plants and Animals in South East Asia" by Dr. T. C. Whitmore and Dr. I. R. Grimwood, a three-volume study prepared in July 1976. Dr. Whitmore recently undertook a brief survey of South America for a similar report on that region.

Dipterocarp Conservation Taskforce

IUCN is presently organizing a task force of Southeast Asian botanists for the conservation of Dipterocarp genetic forest resources. Dr. Peter S. Ashton of the University of Aberdeen is Chairman of this group. (See United Kingdom for Dr. Ashton's address.)

2. ICSU

International Council of Scientific Unions (ICSU)
51 Boulevard de Montmorcy
75016 Paris, France

This is an international association of scientific organizations and national research institutions. ICSU coordinates and encourages activities in the sciences by its members through a series of committees, some of which are run in collaboration with UN agencies, particularly UNESCO.

Special Committee On Problems Of The Environment (SCOPE)

This committee was established in 1971 by ICSU to identify, monitor, and assess problems in the environment, and to support research efforts in this area which draw from the international scientific community. The Monitoring and Assessment Research Centre (MARC) is one of the major programs supported by SCOPE. Global environmental problems are defined and evaluated by MARC with the intention of devising methodologies for monitoring and assessment, and MARC assists with UNEP's Earthwatch program (see UNEP). The Centre, also

supported by the UNEP and the Rockefeller Foundation, recently published a report titled "Monitoring Tropical Forests: A Review with Special Reference to Africa," by Timothy J. Synnott (1977). MARC Technical Report No. 5 is available by writing Monitoring and Assessment Research Centre, Chelsea College, University of London, The Octagon Building, 459a Fulham Road, London SW10 0QX England.

3. ICRAF

International Council for Research in Agroforestry (ICRAF)

temporary address:
c/o Royal Tropical Institute
63 Mauritskade
Amsterdam-Oost, Netherlands

This internationally-supported Council will be officially operating in Nairobi by the middle of the year. A result of a 1975 International Development Research Center project that identified 23 tropical forestry problem areas (see Canada), ICRAF will act as a catalyst and information clearinghouse for agroforestry research and field projects. IDRC defines agroforestry as "a sustainable management system for land which increases overall production, combines agricultural crops, tree crops and forest plants and/or animals simultaneously or sequentially, and applies management practices which are compatible with the cultural patterns of the local population." ICRAF is organized as an autonomous, international council governed by a board of trustees and assisted by a small team of experts and consultants. The Board of Trustees includes representatives from Canada, U.S.A., Senegal, Philippines, Netherlands, India, and Germany. In October, the Board elected Dr. K. F. S. King of Guyana, the Assistant Director-General of FAO's Forestry Department, as the Council's first Director-General. ICRAF has already taken steps to provide information and documentation services, and to identify possible studies in agroforestry in need of financial support.

4. OAS/IIAS

Organization of American States (OAS)
Inter-American Institute of Agricultural Sciences (IIAS)
1725 I Street, N.W.
Washington, D.C. 20006

An OAS organization, the Inter-American Institute of Agricultural Sciences, supports research, training, and education programs among its 20 member sovereign states. IIAS is the mother institution of the Tropical Agriculture Center for Research and Training in Turrialba, Costa Rica, one of the most important centers for tropical forestry in Latin America (see CATIE in following section).

OAS has sponsored a series of technical meetings in preparation for the ministerial conference in 1980 on the Western Hemisphere Convention. This international convention on Nature Protection and Wildlife Preservation in the Western Hemisphere has been relatively dormant since its adoption in 1941. Interest in the conservation of valuable ecosystems and wildlife is now being renewed by OAS members. The technical meetings include Protection of Major Ecosystems (April 1978), Training (September 1978), and Legal Problems (tentatively scheduled for April 1980). The Major Ecosystems meeting was held in San Jose to review generally the status of protected areas by biogeographical regions, to identify priority areas for protection, to establish a common terminology for protected areas in Latin America, and to recommend appropriate OAS actions for the Western Hemisphere Convention. Experts were invited from OAS member states and international organizations such as FAO, UNESCO, IUCN, World Wildlife Fund-U.S. Appeal, and observers from nongovernmental organizations. The proceedings will be published shortly.

Department of Forest Sciences
The Tropical Agriculture Center for Research and Training (CATIE)
Director: Dr. Gerardo Budowski
Head of Wildland Management Unit: Dr. Arne Dalfelt
Turrialba, Costa Rica

CATIE is the major institution undertaking conservation and management studies in Central America and the Caribbean. The Department of Forest Sciences conducts research and graduate training in tropical forestry, and assists Latin American institutions in the development and strengthening of their research, training, and conservation programs. The three major

areas of forest-related research are silviculture, wildland and watershed management, and the development of stable "agro-silvo-pastural systems" for the small farmer. The latter program attempts to combine tree crop production with annual food cultivation and livestock.

In 1976, CATIE formed the Wildland Management Unit within the Department of Forest Sciences. Major funding for this unit has been provided by the Rockefeller Brothers Fund, and additional support by IUCN and WWF. Technical consultants have been available on an ad hoc basis from the U.S. National Park Service and the Smithsonian-Peace Corps Environment Program.

The Wildland Management unit has provided planning and technical assistance to national park and forest conservation initiatives in Central America. Continuing the work initiated by the UNDP/FAO Wildland Management project (see FAO), the unit has assisted with the implementation of pilot national parks in Altos de Campana, Panama (4,000 hectares); Volcán Poás, Costa Rica (5,500 hectares); Lago Yojoa, Honduras (40,000 hectares); Cerro Montecristo, El Salvador (1,000 hectares); and Volcán Pacaya, Guatemala (4,000 hectares). The unit is also developing an International Mobile Training Workshop series to promote environmental education and wildlife management training.

5. EAST CARIBBEAN PROGRAM

Eastern Caribbean Natural Area Management Program (ECNAMP)
45 Estate Tipperary, Star Route 00864
Christiansted, St. Croix
U.S. Virgin Islands 00820
Program Coordinator: Allen D. Putney

The first phase of this program was launched in 1977 in Dominica under the title "Eastern Caribbean Wildlands Program." The initial one-year project served as a prototype for management of natural areas in the Caribbean. The cooperative efforts of the University of Michigan's School of Natural Resources, the Caribbean Conservation Association, IUCN and Dominica's Forestry Division led to:

(1) A preliminary national park and forest systems plan.

(2) Five environmental brochures for secondary schools and the general public.

(3) A three-week workshop on national park planning, attended by representatives from fourteen Caribbean nations.

(4) Initial exploration of possible village industries based on the use of forest resources through local technologies and nature-oriented tourism.

A broader program focusing on the management of terrestrial and marine areas of the Caribbean islands is now being undertaken. With support from the Rockefeller Brothers Fund, World Wildlife Fund, and IUCN, this three-year effort will identify the key natural areas in need of management in the region. The program is designed to assist local governments in the management of critical natural ecosystems, training in relevant management techniques, environmental education, and the utilization of local natural resources for development. Coordination with other efforts and institutions in the region, including CATIE (see OAS/IIAS), is one of the essential components of the program.

6. EAAFRO

East African Agriculture and Forestry
Research Organization
P. O. Box 30148
Nairobi, Kenya

Founded in 1948, this organization is governed by members from the governments of Kenya, Tanzania, and Uganda. An advisory body for agriculture and forest policy, EAAFRO supports international research in the applied sciences, including forestry and wildlife.

7. IUFRO

International Union of Forest Research
Organizations (IUFRO)
A-1131
Vienna, Austria
Secretariat: Mr. Otmar Bein

In 1967 IUFRO founded a subject group on tropical silviculture, with the intention of facilitating contact and communication between researchers active in this area. At the 16th IUFRO World Congress in Oslo, 1976, a whole section was devoted to the subject, and papers were presented on the biological processes in tropical ecosystems and the latest developments in silviculture management and research. Since

that time, IUFRO has established subgroups in the following:

(1) structure of closed tropical forests;

(2) natural regeneration of closed, moist tropical forests;

(3) enrichment of tropical forests;

(4) agrosilvicultural systems for the regeneration of tropical forests;

(5) conversion of tropical forests;

(6) mangrove silviculture.

(This information is drawn from E. Brunig's article on IUFRO in the MAB-IUFRO Workshop Transactions, May 12 - 17, 1977. See MAB Project 1 for details of the Workshop.)

8. WORLD BANK

World Bank
Headquarters:
1818 H Street, N.W.
Washington, D.C. 20433
U.S.A.
Forestry Advisor: Dr. John S. Spears

The World Bank is the greatest single contributor to foreign aid for developing countries. As the leader of financial institutions, the Bank's recognition of the importance of tropical forestry management and conservation may lead to similar responses by other development banks.

Forestry Policy

A new policy towards forestry lending was recently announced by the World Bank. The Bank's Sector Paper on Forestry, released in early March, outlined plans to lend U.S. $500 million in the next five years. Recognizing the rapid disappearance of forests in developing countries, the Bank has targeted 60% of this amount for rural and environmental forestry projects. The report states that new emphasis will be given "to the environmental and ecological effects of forestry destruction, and to rural development strategies that will help low-income groups without . . . leading to ecologically destructive patterns of development." Afforestation, watershed protection, agrisilviculture, and fuelwood plantations are among

the proposed projects designed to serve basic human needs. The Bank will also encourage stronger forestry institutions and training programs within the host countries. In line with the Bank's growing awareness of the importance of environmental considerations, the Sector Paper notes that "the Bank will not support projects that might result in disintegration of a habitat not elsewhere represented in the country and not under suitable protection . . . ."

Several innovative projects have already been assisted by the Bank, and these may serve as prototypes for further initiatives in rural forestry. In the Philippines, credit to 1,300 smallholder farmers was provided to establish *Albizzia falcata* pulpwood plantations during a three-year pilot project financed in 1974. This is now being expanded to include combination cropping regimes of fast growing fodder trees (*Leucaena leucophylla* or Ipil-Ipil) and fuelwood plantations. Part of a rural infrastructure project in Korea was devoted to a nationwide fuelwood/pole planting program, where over 11,000 villages have established lots totalling 127,000 hectares of plantations. In the Forestry Sector Paper, it is noted that the success of such rural forestry projects was due in part to the strong forestry or credit institutions of the host countries, which were able to absorb and allocate funds. The Paper concludes that weak institutions in many tropical countries must be assisted in order for similar projects to succeed.

Forestry, a World Bank Sector Policy Paper, is available free of charge in English by writing the Publications Unit at the Bank's headquarters.

III
BILATERAL AND NATIONAL PROGRAMS AND INSTITUTIONS

A. Developed World

1. Canada

Canadian International Development Agency (CIDA)
Information Division, Communications Branch
200 Principale, Hull, Quebec K1A 0G4 Canada

CIDA recognizes forestry as an integral part of rural development, which has been the agency's priority area since 1975. Half of CIDA funds are devoted to bilateral aid, and as of March 31, 1977, there are 72 ongoing forestry projects totalling over $51 million in annual CIDA expenditures. Although many of these are small- and medium-scale industrial projects aimed at increasing timber production, CIDA has been giving more attention to rural and environmental forestry. CIDA also supports and gives technical assistance to the Malaysian Pertanien University to establish a forestry faculty and program. IDRC (see following section), which has several programs in forestry management and restoration, is financed by CIDA.

International Development Research Center (IDRC)
Box 8500, Ottawa, Canada K1G 3H9
Information Officer: Ms. Micheline O'Shaughnessy

In 1970, IDRC was established by the Canadian Government. It is governed by an international board of governors, including six members from developing countries. IDRC supports and conducts research in problems of economic and social development, particularly of the rural poor in developing regions, and promotes the coordination of scientific, technical, and other knowledge to assist in this effort.

Among the IDRC initiatives related to forestry is assistance to local institutions in Ghana for an agrisilviculture research project (see Ghana), afforestation projects in Bolivia and Peru, and support for the development of agroforestry cropping systems in Nigeria (see Nigeria). In July 1975, IDRC launched a project to identify research needs in tropical

forestry. This study identified 23 problem areas in forestry research and training which inhibit the wise management of tropical lands. A major emphasis of the report was the need for a significant increase in research and in the application of agroforestry principles, and this finding led to their establishment of ICRAF (see ICRAF under "Multilateral Institutions." "Trees, Food and People: Land Management in the Tropics," by J.G. Bene, H. W. Beall and A. Cote (IDRC-084e), and "Trees for People: An Account of the Forestry Research Program Supported by IDRC." by Clyde Sanger (IDRC-094e), are available by writing to the above address.

2. FEDERAL REPUBLIC OF GERMANY

Federal Research Centre for Forestry and Forest Products
Reinbek Institute of World Forestry
Leuschnerstrabe 91
Hamburg 80, Federal Republic of Germany
Director: Dr. H. Ollmann

The Institute conducts research in forestry management and economics, forest ecology, inventory, soil sciences and other fields. Recently, the Workshop on Tropical Rainforest Ecosystems Research was held at the Institute (see UNESCO: Workshop Report).

3. FRANCE

Office de la Recherche Scientific et Technique Outre-mer (ORSTOM: Office of Overseas Scientific and Technical Research)
24, rue Bayard
75008 Paris, France

ORSTOM maintains research centers in France, French colonies, and former colonies. It has participated in research and training programs in the tropical forests of Africa and Latin America as part of MAB Project 1. In addition to the activities of the Cayenne Center in Guyana (see Guyana), ORSTOM is involved with projects in the Central African Empire, Ivory Coast (Project Tai), and Columbia.

Centre Technique Forestier Tropical (CTFT: Technical Center for Tropical Forestry)
45 bois, Avenue de la Belle Gabrielle
94130 Nogent-Sur-Marne, France
Director: R. Catinot

CTFT assists the development of forestry resources in French colonies and former colonies, particularly in Africa. Under contract with government agencies and FAO, CTFT conducts field surveys of national forests for preliminary investment data and mapping purposes. CTFT's Groupement d'Etude et de Recherche pour le Developpement de l'Agriculture Traditionalle (GERDAT: Study and Research Group for the Development of Traditional Agriculture) is involved with MAB Project 1 activities in the tropics, particularly the study of pygmy hunter-gatherer communities in the frontier regions of the Central African Empire. The Group has conducted research on the human ecology of the cultivation methods used by these groups.

4. SWEDEN

Swedish International Development Authority (SIDA)
Information Division
S-105 25 Stockholm, Sweden

As Sweden's foreign assistance agency, SIDA gives assistance to several multilateral programs which promote the conservation and wise use of tropical moist forests. One of the most notable is SIDA's support of the advisory panel for forestry for community development (see FAO).

5. UNITED KINGDOM

Ministry for Overseas Development
Land Resources Division
London, United Kingdom
Tolworth Tower
Surbiton Surrey KT6 7DY England

The Ministry, the major foreign assistance institution for the United Kingdom, provides support for institutions, and projects related to tropical forestry. In particular, the Land Resources Division gives technical assistance and makes recommendations for the development of forestry, particularly in the Southeast Asia region.

University of Aberdeen
Department of Botany
St. Machar Drive
Aberdeen AB9 2UD, United Kingdom
Contact: Dr. Peter S. Ashton

Among the research topics pursued by members of the university botany department is the size of breeding populations of trees in tropical forest ecosystems and their degree of genetic variability. Dr. Pete Ashton has recently been named chairman of a taskforce for the conservation of Dipterocarp genetic forest resources (see IUCN/WWF).

6. UNITED STATES

(a) Federal Activities

The United States Agency for International Development (AID)
Office of Public Affairs
Washington, D.C. 20523

AID is giving more attention to natural resources management in response to a congressional directive to provide assistance in environmental protection to developing countries. In 1976, AID issued regulations requiring formal environmental assessments to assess the environmental impact of activities which will significantly affect the environment before the activities are undertaken. These developments have spurred AID to give a higher priority to tropical forest management and restoration activities.

Last October, John Sullivan, AID's Assistant Administrator for Asia, announced his Bureau's concern for the tropical forests. He stated: "We need forests. And not just for lumber and fuel. We need them because . . . they help control temperature and climate. They collect and store rainfall, provide a wildlife habitat and prevent soil erosion. Destruction of forests hampers economic growth in developing countries."

Among the new projects AID has proposed to Congress for Fiscal Year 1979 are several which reflect these concerns. One of the most promising is an agroforestation project in the Philippines which would develop combined agriculture-forestry methods for hillside farmers who now practice a destructive form of shifting cultivation. Reforestation of the denuded watershed areas, local participation, and training are part of this project. AID has also proposed a

reforestation project in Gambia. Some of the rural development schemes proposed will have forest conservation and management components, including fuelwood, plantations, watershed protection, afforestation, and similar activities.

Bureau of Oceans and International Environmental and Scientific Affairs (OES)
Department of State
Washington, D.C. 20520
Contact: Mr. William L. Long

OES has recently taken steps to initiate an internationally-coordinated program to further the protection, management, and rehabilitation of the world's forest resources. The Bureau has identified several initiatives to launch this program, including:

(1) a public awareness campaign to demonstrate the importance of tropical forests by raising issues in international forums and by encouraging action by U.S. agencies and private organizations; and

(2) promotion of more precise inventory and monitoring activities to keep track of forest trends, including support of country profiles of forest resources and expansion of existing global projects such as GEMS, (see UNEP);

(3) promotion of more extensive ecological research in tropical forest regeneration, fast growing species, and the role of forests in the CO_2 cycle;

(4) quantification and determination of the specific causes of deforestation in tropical countries by encouraging national inventories;

(5) promotion of greater international action in these areas by encouraging stronger institutional capabilities and training programs.

OES is launching several immediate steps to prepare for the internationally coordinated program. These include extensive discussions with U.S., international and private organizations concerned with the rapid deforestation of tropical forests and the Deforestation Conference described in the next paragraph. The Bureau seeks to act as a coordinator and catalyst for conservation and management actions.

Deforestation Conference

The Department of State and AID will sponsor a small conference 12-14 June 1978 on "Tropical Deforestation: Global Issues and the U.S. Response." This meeting will review the extent and implications of deforestation trends, assess the nature and adequacy of existing U.S. and international programs, and propose specific steps U.S. governmental and nongovernmental organizations can take. Participants from government agencies, academia, industry, private foundations and environmental groups in the United States have been invited.

Environmental Protection Agency
International Environmental Research Center
PM/213, Room 2902
Washington, D.C. 20460
Coordinator: Mrs. Sharlene Sayers

This office is the United States focal point for the United Nations International Referral Service (see UNEP). Information from registered environmental organizations is compiled and made available to the public. In response to a recent request from the State Department (see OES), the Center is organizing information concerning tropical forests. A listing of all institutions which influence forestry development and conservation in the tropics and a bibliography of literature on deforestation since 1972 are being assembled and should be completed by June 1978.

Council on Environmental Quality
722 Jackson Place, N.W.
Washington, D.C. 20006
Year 2000 Study
Director: Gerald Barney

Year 2000 Projections

The Council on Environmental Quality (CEQ) is preparing a Global Year 2000 Study at the President's request. The Study will be completed early in the summer of 1978. Worldwide trends will be assessed and projected to determine the state of the earth's environment in the year 2000. The forest and species extinction sections of the Study will paint a gloomy picture. In response to cables sent to all U.S. missions, rates of deforestation for different nations were collected. Mr. Bruce Ross, Central Intelligence Agency consultant for the forest section of the study, has determined that at least two-thirds of the original forest in the tropics will be gone by the end of the century, those

remaining will be remnant, degraded patches. Dr. Thomas E. Lovejoy of the World Wildlife Fund's U.S. Appeal suggests in his "Genetic Diversity" report to the Study Director that if these estimates of deforestation are correct, at least half the species in the tropics will disappear. This is a reduction of up to 20% in the world's genetic diversity, or the loss of 500,000 to 600,000 species.

U.S. Technical Assistance

National Park Service
International Division
Department of Interior
Washington, D.C. 20240
Director: Mr. Ken Thalen

U.S. Fish and Wildlife Service
(same address as above)
Contact: Mr. Terry Wolkerstorfer, Special Assistant for International Affairs

Several United States agencies provide technical consultants when requested by Latin American countries. These are largely funded through excess foreign currencies and local institutions. The U.S. National Park Service and the Fish and Wildlife Service plan to advise Costa Rica and Ecuador in training and planning for park areas. A team will be sent to Equador in May. The Park Service participates in many cooperative projects initiated and funded by CATIE, including wildlands management in the Darien Gap, Honduras, and Costa Rica.

U.S. Forest Service
Department of Agriculture
International Forestry Program
P.O. Box 2417
Washington, D.C. 20013
Director: Dr. Robert Brandt

This program coordinates U.S. technical assistance in forestry research and training projects overseas. Consultants are recruited to participate in projects initiated by international agencies (e.g., FAO, UNDP) and national institutions. Through the foreign excess currency program (Public Law 480) assistance is given to India, Pakistan, Sri Lanka, and other participating countries. In the past, this technical advice has been largely for industrial production projects, but recently assistance is being considered for natural resource management programs, including those for forest resources. (Most technical assistance in Latin America is through the Institute for Tropical Forestry, described below.)

Conference on Improved Utilization of Tropical Forests
Forest Products Laboratory
6501 Inner Drive
Madison, Wisconsin 53705
Coordinator: Mr. Richard Auchter

From May 21 to May 26, 1978, the Forest Service's Forest Products Laboratory will host this conference in Madison, Wisconsin. Sessions will be devoted to the potential of tropical forest resources, environmental values, silviculture, logging and chipping systems, the use of mixed tropical hardwoods for pulp and other products, and the technical and economic aspects of industrial operations. Representatives from a wide range of academic, industrial, governmental and international aid organizations will attend. Papers will be presented on the various topics and published at a later date. Dr. K. F. S. King, Assistant Director-General of FAO's Forestry Department, will give the keynote address and Dr. Duncan Poore of IUCN will discuss the environmental values of tropical forests.

The Institute of Tropical Forestry
P.O. Box AQ
Rio Piedras, Puerto Rico, 00928
Director: Dr. Frank H. Wadsworth

The Institute has three major functions: (1) providing information on tropical forests and forestry; (2) generating new knowledge on these subjects; and (3) promoting the application of forestry knowledge in Puerto Rico, the U.S. Virgin Islands, and other areas of the Caribbean. The Institute contains the most complete library on tropical forestry in the Western Hemisphere.

These functions are carried out by three teams concerned with: (1) research, (2) administration of the Caribbean National Forest, and (3) technical assistance.

Research The Institute has conducted research in tropical tree culture for plantation and reforestation species. Studies have been conducted on all the major life-zones in Puerto Rico and have examined tree and stand growth rates. In addition, the Institute has been the major participant on the Recovery Team for the Puerto Rican Parrot, formed by the U.S. Fish and Wildlife Service.

Caribbean National Forest (Luquillo Mountains in Northeastern Puerto Rico -- 28,000 acres). This forest is a major watershed for the island. The Institute administers the forest and uses part of it for studies of timber, wildlife

protection, watershed monitoring, and soils.

Technical Assistance Through the Institute, the U.S. Forest Service provides technical assistance to the forest services in Puerto Rico and the Virgin Islands. Guidance has been provided for forestry planning, training, plantation and nursery establishment, and forest protection and utilization.

Smithsonian Institution
1000 Jefferson Drive, S.W.
Washington, D.C. 20560

The Smithsonian, a trust instrumentality of the United States, was established to further the increase and diffusion of knowledge and to provide education, training, and informational services for the general public and for educational and scientific organizations. Several divisions of the Smithsonian are involved in research and conservation activities in tropical moist forests.

Smithsonian-Peace Corps Environmental Program
900 Jefferson Drive, S.W.
Washington, D.C. 20560
Director: James Sherburne

Six years ago, this joint program was established so that the Smithsonian could help the Peace Corps develop natural resource programs in the developing regions, and could provide volunteers with the necessary scientific expertise to assist with these programs. The Smithsonian also gives training and technical support to other organizations involved with conservation activities.

Presently, about 300 volunteers are in the field working on conservation and natural resource projects. Programs include forestry and land management assistance, particularly afforestation, soil research, land-use planning and watershed management. Applied research is undertaken in requested fields such as entomology, genetics, and silviculture. Instruction and extension services are given in the biological sciences, environmental law, and economic analysis. In addition, the Program has assisted the planning, promotion, and management of national parks and conducted basic research to increase the knowledge of local wildlife and plant species.

Smithsonian Tropical Research Institute
Director: Dr. Ira Rubinoff
Box 2072
Balboa, Canal Zone

The Institute includes Barro Colorado Island, a natural preserve, where a wide range of biological studies are carried out by a staff of 22 scientists. A laboratory and the forest reserve on the island serve as facilities for many visiting researchers.

Educational Park Proposed

The Institute is now proposing a comprehensive park project on the Bohio Peninsula, located in Gatun Lake between Barro Colorado Island and the Panama mainland. This forest of roughly 768 hectares is presently under the Institute's custody on behalf of the Panama and U.S. governments. This tract would not be used so much as a preserve, as it would as an educational park.

The purpose of Bohio Park, accessible by railroad from Panama City, is to demonstrate to the Panamanian public the ecology and natural history of their local environment and the benefits of conserving their rich floral and faunal resources. Only a limited amount of research would be allowed within the area. Similar to several U.S. and Canadian national parks, the Bohio Park would serve as a model for the rest of Central and Latin America.

The Bohio Park proposal has been formally endorsed by the Smithsonian, the Rare Animal Relief Effort, the Ministry of Education and the Ministry of Health of the Republic of Panama, the Nature Conservancy, and the World Wildlife Fund. Financial support from the Smithsonian and the World Wildlife Fund has been offered or is under consideration. However, additional support is needed and is actively being sought from government agencies and private institutions. More information concerning the proposed park is available from Dr. Rubinoff at the above address or from Mr. Ross Simons, Program Manager, Office of the Assistant Secretary for Science, at the Smithsonian Institution's Washington address.

National Science Foundation (NSF)
Division of Environmental Biology
1800 G Street, N.W.
Washington, D.C. 20550

Contact: Mr. Seymour Sohmer

NSF initiates and supports a large portion of the basic research in tropical biology conducted by U.S. scientists.

In September 1977, Dr. Sohmer began a year-long survey of biological studies in tropical countries to encourage more coordination and cooperation and to assess needs for NSF support. NSF has become increasingly involved in international efforts which contribute to the understanding and management of tropical forests, such as the studies initiated by the International Centre for Tropical Ecology (see Venezuela). By supporting the Committee on Research Priorities in Tropical Biology (see NAS/NRC), NSF hopes to determine which research areas require immediate attention in light of the rapid rate of deforestation and degradation of tropical moist forests.

National Academy of Sciences/National Research Council
(NAS/NRC)
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

The National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine are affiliated as a nonprofit, independent organization dedicated to the promotion and application of scientific research. The National Research Council, the principal operating agency for the NAS Group, advises the U.S. Federal Government on scientific and technological matters through an extensive network of committees. Three NAS/NRC committees are presently engaged in research concerning tropical moist forests.

Committee on Research Priorities in Tropical Biology
Chairman: Dr. Peter H. Raven
Missouri Botanical Garden
2345 Tower Grove Avenue
St. Louis, Missouri 63110

In recognition of the urgent need for accelerated research in the tropics, particularly in moist lowland forests, this international committee was established by the NAS/NRC Assembly of Life Sciences. The committee, composed of fourteen experts from many scientific disciplines, has received support from the National Science Foundation to launch the two-year study. Five major areas are to be examined and evaluated by the Committee:

(1) The status of the world's tropical forests and the projected rate of destruction of their various types. This initial part of the study is now underway under the guidance

of the NAS staff officer of the Committee. A report, ultimately to be published by NAS, will be presented to the full Committee sometime this year.

(2) The priorities for biological research which can only be pursued, or most suitably pursued, in the tropics. The questions which have priority for research will depend on the basis of their potential contribution to general scientific knowledge and to more informed development and conservation planning in tropical countries. A conference of scientists knowledgeable in this field, including many from tropical countries, will identify the priority questions for research. Publication of the full list of questions is expected in late 1979.

(3) Some of the operational projects and logistical support necessary to develop answers to these questions, including assessments of the extent of expertise in particular fields.

(4) The level of worldwide funding, particularly U.S. support, for the priority research areas, and ways of increasing it.

(5) The most appropriate publications, symposia, and other public awareness activities concerning the priority areas.

International Environmental Programs Committee
Environmental Studies Board
Commission on Natural Resources
NAS/NRC
2101 Constitution Avenue
Washington, D.C. 20418

Staff Associate: Dr. Suellen Pirages

This committee is nearing completion of a general state-of-knowledge report on changes in moist tropical forest cover. Quantitative data is being compiled on the extent of various moist tropical forest formations, the remaining areas of unmodified forests, the rate of exploitation of specific species, and the rate of forest clearing for agriculture and commercial timbering. Information on industrial uses and methods of extraction is also being assembled. As the U.S. national committee for SCOPE (see ICSU), this Committee will

review its findings at the end of April and determine whether there is an opportunity for SCOPE support of research in this area.

Board on Science and Technology for International Development
Commission on International Relations
NAS/NRC (Same address as above)
Staff Researcher: Dr. Noel Vietmeyer

Among the study areas the Board has explored is the potential of many underutilized tropical species. Its reports demonstrate the many contributions tropical flora and fauna species may make to agricultural and industrial production, as well as for protection of the natural resource base of tropical countries. Among the Board's studies are: "Underexploited tropical plants with promising economic value" (1975); "Leucaena (Ipil-Ipil): Promising forage and tree crop for the Tropics" (1977); "Natural Products for Sri Lanka's Future" (1975); and reports near completion on "Underexploited tropical legumes with promising economic value" and "Firewood crops: Bush and tree species for Energy Production."

These reports, largely sponsored by the U S. AID's Office of Science and Technology and Office of Agriculture, are available free of charge by writing to the above address to persons in developing countries and to persons in the United States who are affiliated with institutions with a professional interest in this area.

(b) Private Organizations

Natural Resources Defense Council (NRDC)
International Project
917 Fifteenth Street, N.W.
Washington, D.C. 20005
Director: Thomas B. Stoel

The Natural Resources Defense Council is a public interest legal and scientific organization dedicated to the wise use and protection of natural resources and wildlife, and to the achievement of environmental quality. NRDC's International Project, based at NRDC's Washington Office, has been active in three board areas: (1) monitoring and influencing decisions of United States and international agencies affecting the international environment; (2) cooperating and assisting foreign environmental groups; and (3) researching strategies to protect tropical resources of international significance.

Since February 1976, NRDC has been studying ways of protecting tropical moist forests. Through a grant from the Rockefeller Brothers Fund, NRDC was able to hire Dr. Norman Myers, an expert on African wildlife and conservation in developing regions, to undertake a special project on threatened species and genetic resources. Dr. Myers is writing a book on disappearing species which will assess the threats to the tropical moist forests in Africa, Latin America and Southeast Asia and propose innovative solutions. The book is expected to be completed by the end of 1978. This Bulletin is intended to supplement Dr. Myers' efforts by promoting communication and coordination among those concerned with the conservation of tropical forests.

Nature Conservancy
Suite 800, 1800 North Kent Street
Arlington, Virginia 22209
International Program Director: R. Michael Wright

The Nature Conservancy is a nonprofit organization dedicated to the preservation of natural lands. The international program assists local groups and government agencies primarily in the Western Hemisphere to acquire lands and protect them from development pressures.

The establishment of the Corcovado Park forest reserve on the Osa Peninsula of southwestern Costa Rica was the result in part of Nature Conservancy initiatives in cooperation with Costa Rican conservationists and government leaders. This 86,485 acre tract of swamp forest was acquired with financial assistance from the World Wildlife Fund's U.S. Appeal, the Rare Animal Relief Effort (see RARE), and private donations. Corcovado is the largest tropical moist forest protected in Central America. The Nature Conservancy also assisted with the establishment of a park in a critical watershed area of Dominica (West Indies), which contains some moist forests. Efforts are underway to conserve forests in the Darien Gap, Panama, Honduras, and other parts of Latin America.

Rare Animal Relief Effort, Inc. (RARE)
c/o National Audubon Society
950 Third Avenue
New York, New York 10022
President: David O. Hill

RARE assists programs, particularly in tropical America, which contribute to the protection of endangered species and habitats. As a tax-exempt organization, RARE is funded entirely through contributions and has given support

to several projects in tropical moist forest conservation (see Nature Conservancy, USA for details of one RARE-assisted project.)

Sierra Club Tropical Forests Program
Earthcare Tropical Forestry Advisory Committee
Chairman: Dr. Lawrence S. Hamilton
c/o Department of Natural Resources
Fernow Hall, Cornell University
Ithaca, New York 14850

This program, overseen by the advisory committee, promotes an integrated, multi-disciplinary approach to tropical forest conservation. The program seeks to coordinate and assist efforts in tropical countries to devise resource management schemes which are ecologically sound while enhancing economic development.

Venezuela Study

Among the initiatives taken by the program is a comprehensive study of the problems of deforestation in Venezuela. This study, supported by UNEP and private Venezuelan institutions, was conducted in close cooperation with Venezuelan officials. The causes and extent of deforestation were identified within the context of Venezuelan agricultural and industrial growth. Practical recommendations were made for national action to protect the rainforest and mitigate the adverse impacts of development. Follow-up efforts by the Venezuelans continue, and the Sierra Club is encouraging the establishment of Sierra San Louis as a MAB biosphere reserve.

Mangrove Study Proposed

A similar project for the management and protection of the mangroves in the Caribbean is now being proposed under the direction of Dr. Hamilton. Following a preliminary reconnaissance trip last July, Trinidad, Tobago, Venezuela, and Puerto Rico have been selected as study sites. The study will focus on the specific causes of mangrove degradation and losses. It will not be solely an ecological survey, but will be directed at the complex political and socio-economic processes which bear upon the use of the mangroves. As with the Venezuelan project, this initiative will be undertaken in close cooperation with local government agencies and private institutions, and will generate practical recommendations. The project was due to start in February, but additional financial support is needed. "Tropical Rainforest Use and Preservation: A Study of Problems and Practices in Venezuela"

by Dr. Lawrence S. Hamilton, 1976, International Series No. 4, is available from the Sierra Club in English and Spanish, from 530 Bush Street, San Francisco, California 94108, $4.00. A color slide and tape packet for educational purposes is also available.

Worldwatch Institute
1776 Massachusetts Avenue, N.W.
Washington, D.C. 20036

The Institute, a private organization funded by contributions, grants, and governmental agencies, analyzes issues of global significance within the context of ecological, economic, and social systems. Erik Eckholm of the Institute is beginning a study of the social and economic implications of the worldwide loss of forests. He will survey current trends in forest area and quality, investigate the probably direct economic effects in various regions as the per capita supply of forest products changes, and discuss the indirect economic costs incurred when ecologically valuable forests disappear. Trends in and potentials for reforestation will be examined as well. Sponsored by the Ford Foundation, the study will be completed by the end of 1978. Eckholm would appreciate receiving papers on trends in forest area and forest-products supply and demand for any country or region. He can be contacted at the above address.

The Ford Foundation
320 East 43rd Street
New York, New York 10017
Contact: Mr. Peter Hakin, Office of
Resources and the Environment.

The Ford Foundation assists many institutions in the tropical zone in the broad area of water management, which includes activities related to tropical forest conservation and management. Grants under this heading have been for studies in water demand and supply for agriculture, upland ecology, forestry, and watershed management. Support for natural resources research, planning, and training programs is given to many local institutions, particularly in Brazil, India, Indonesia, Mexico, Philippines, and Thailand.

Most of the work funded by the Foundation is aimed at improving subsistence agriculture capabilities by assisting government and private institutions at all levels of research, planning, and training. Because of this holistic approach,

it is difficult to list specific forestry activities, as they tend to be a component of a larger project. A grant to the Madhya Pradesh Government (India) for a social forestry program and support to the Kalahan Educational Foundation in the Philippines for an agroforestry program are the most directly related to forestry. A useful assessment of the environmental issues and problems of resource management, including tropical forests, in Southeast Asia is presented in a Ford Foundation report, "Ecology and Resource Management in Southeast Asia" by Gordon Conway and Jeff Romm, August, 1973.

Rockefeller Brothers Fund (RBF)
30 Rockefeller Plaza
New York, New York 10020
Contact: Mr. William Moody

RBF has supported many programs which have a tropical forest conservation and management component. These include research and training projects in the Caribbean, Latin America, and Africa, and initiatives by U.S. environmental organizations. (See CATIE, East Caribbean Program, and NRDC for a description).

B. Latin America

1. BRAZIL

Instituto Brasileiro de Desenvolvimento Florestal
(IBDF: Brazilian Institute of Forestry Development)
Brasilia, D.F. Brazil
Director of the Department of National Parks and Reserves: Celso Soares de Castro
Director of the Division of the Protection of Nature: Maria Tereza Jorge Padua

This government agency is responsible for developing Brazil's forest resources and administers 18 national parks and six biological reserves. Two of these are in Amazonia: the Araguaia National Park (460,000 hectares) and the Amazonia National Park (1 million hectares). IBDF also supports research and planning projects designed to improve the management of the nation's forests, and can propose additional areas for protected status.

Identification of Conservation Priorities

A general proposal for the conservation and management of wildlife and habitats was prepared as part of an IBDF/UNDP/FAO/Forestry Development and Research project. Dr. Gary B. Wetterberg, wildlife management specialist, presented his findings to the Brazilian government in 1976. The report outlines the country's wildlife and ecosystem resources, identifies the institutions and policies which influence these areas, and suggests a national conservation program. Particular emphasis is placed upon the Amazon region, where an appraisal of existing parks and reserves is made in terms of the degree of species endemism and phytogeographical considerations. Thirty specific sites for protection are recommended, and these have served as the basis for IBDF's delineation of a park reserve system in the Amazon.

Conservation Meeting

In July 1977, the second meeting of the Intergovernmental Technical Committee for the Protection and Management of Amazonia Flora and Fauna (CIT) was held in Brasilia at IBDF Headquarters. Participants, many of them from national park and conservation agencies, represented Brazil, Bolivia, Colombia, Ecuador, Peru, and Venezuela. There were also observers from the WWF, FAO and IBDF, which sponsored the meeting. Sessions dealt with each nation's progress in the conservation of forest flora and fauna, the protection of primates, and international cooperation for the conservation of frontier regions.

Tapajos National Forest Project

This IBDF/FAO project was recently completed, and a preliminary report will be made public in the next few months. This forest was assessed by experts in forestry (wood technology, silviculture, marketing, etc.) and by leading ecologists from many countries, including Maria Tereza Jorge Padua (Brazil), Mark Dourojeanni (Peru), Duncan Poore, (UK), and J.A. Tosi (Costa Rica). By evaluating the potential of the Tapajos Forest from both the technical and the ecological perspective, the project team hopes to recommend a development plan that is feasible and economically viable as well as ecologically sound. A preliminary finding indicates that the forest can be developed while retaining its essential natural characteristics, and that cattle raising is an inappropriate use of the forest resources because it would lead to irreversible destruction.

Information concerning these projects can be obtained by writing to: Dr. G. B. Wetterberg, FAO Forestry, UNDP C.P. 07-0285, Brasilia, D.F., Brazil.

Study of Minimum Critical Size

A ten-year project was recently launched to explore the minimum critical size necessary to preserve the biological integrity of tropical forest ecosystems in the Amazon basin. Dr. Thomas E. Lovejoy, of the World Wildlife Fund's U.S. Appeal, will be the principal investigator of this study, which will be funded by Conselho Nacional de Pesquisias (CNPa: the Brazilian National Research Council, and the U.S. Department of Interior. Timber cutting patterns are now being redesigned so that different size forest remnants can be monitored for the loss of genetic diversity. (Dr. Lovejoy's address is listed under WWF.)

Symposium

A symposium on tropical forest refugia and conservation of Amazon species, funded by the Association of Tropical Biology the Smithsonian Institution, and possibly the World Wildlife Fund, will be held in February, 1979. Dr. Ghillean Prance, Vice President of the New York Botanical Garden, will run a workshop to review with leading experts to refine critical conservation areas identified by the Brazilians. The validity of using refugia forests as guidelines for suitable biological preserves will be discussed.

Instituto Nacional de Pesquisas da Amazonia
(INPA: National Institute of Amazonian Research)
Caixa Postal 478
60.000 Manaus, Amazonas
Brazil
Director: Dr. Warwick Kerr

This institute is part of the Conselho Nacional de Pesquisas (CNPq: The Brazilian National Research Council). A staff of over 25 Ph.D's, numerous scientists with masters' degrees, and graduate students conduct biological research in the Amazon.

Projecto Flora Amazonica

This project is supported by CNPq, SUDAM (Amazon Development Agency of Brazil), and the National Science Foundation (U.S.A.). It involves an intensive five-year survey of the flora in Amazonia through the inventory of existing herbaria and libraries and through collection of

flora in the areas now endangered by human activities (e.g., roads, mines, timbering).

Part of the project is devoted to assembling existing data on the flora in Brazil's herbaria and libraries. This information will be computerized and will serve as a data base for researchers. Eventually, printouts will indicate many of the rare and endangered plants of the Amazon. It is hoped that a similar study for fauna will be possible.

One of the principal investigators of the project is Dr. Ghillean T. Prance,the coordinator for U.S. participation. (Dr. Prance's address is: New York Botanical Garden, Bronx, New York 10460).

Biological Studies of Priority Conservation Areas of the Amazon

A two-year study has been proposed to evaluate some of the conservation areas identified by Dr. Wetterberg for IBDF (see IBDF) in the Amazon. The principal investigators are Dr. Warwick Kerr, the Director of INPA, and Dr. Ghillean Prance, Vice President of the New York Botanical Garden (address in last paragraph). The priority areas, selected on the basis of their reported status as Pleistocene forest refugia, require detailed biological evaluation to ensure that the most suitable areas are given park or reserve status by IBDF. This study will evaluate the Jatapu, Jau and Sierra das Oncas areas for biological content, land use, mineral deposits, and other relevant characteristics. Field studies will be carried out by the staff and students of INPA with the cooperation of several overseas experts in zoology and botany. With the possible support of IUCN and the World Wildlife Fund, this study will enable IBDF to choose the most biologically suitable areas for protection.

Empresa Brasileira de Pesquisa Agropecuaria
(EMBRAPA: Brazilian Agricultural Research Corporation)
Belem, Para
Brazil.

EMBRAPA, an agency of the Ministry of Agriculture, supports studies of agricultural products and methods which could allow sustained cultivation of the Amazon and other regions. The agency supports research conducted in Manaus by INPA, in Porto Seguro, and in Belem.

2. COSTA RICA

Tropical Science Center (TSC)
Apartado 8-3870
San Jose, Costa Rica
Director: Dr. L. R. Holdridge
Contact: Dr. Gary Hartshorn

TSC is a private, nonprofit organization with over 200 members from government agencies and the scientific community of Central and northern Central America. Dr. Holdridge, Dr. Tosi and Dr. Hartshorn, as full-time consultants for TSC, provide information concerning ecological characteristics of forests (surveys, inventories, identification of species) for government FAO, and OAS projects. By promoting the development of regional forest resources on a sound ecological basis, TSC laid the groundwork for the Corcovado Park acquisition effort (see United States: Nature Conservancy). Recently, the Center created a political arm, the Costa Rica Association for Conservation of Nature. The Monteverde Cloud Forest Preserve (10,000 hectares) is owned by the Center.

3. ECUADOR

Institute of Food and Agricultural Sciences
International Programs
The Center for Tropical Agriculture
University of Florida
2001 McCarty Hall
Gainesville, Florida 32611
Director: Dr. Hugh Popenoe

A research and training project initiated by the Center is in progress in the Ecuadorian Amazon. One objective is the design of small-scale farming systems based on a mixture of crops, animals and forest production. This method, based on sustained-yield agriculture, is being developed as an alternative to local shifting cultivation practices. Trees for firewood, fruit, and other uses are planted in fallow garden plots where animals (poultry and cattle) graze. These protect and fertilize the soil for the next planting. Studies are also conducted on commercial cattle-forest production systems.

4. GUYANA

Office de la Recherche Scientifique et Technique
Outre-mer
(ORSTOM: Office of Overseas Scientific and
Technical Research)
Centre de Cayenne
Director, J. M. Brugiere
B.P. No. 165
97301 Cayenne, French Guyana

The Cayenne Center has participated in MAB Project 1 (see UNESCO) activities in Guyana. Researchers have compiled substantial data since 1971 on the soil and vegetation regeneration processes following traditional cultivation methods by the Wayapi Indians of High Oyapock. Work is now underway on the more industrial forms of exploitation, including fast-growing tree species, pastures, and tree crops.

5. MEXICO

Centro de Ecodesarrollo
(CECODES: The Ecodevelopment Center)
Apartato postal 11-440
Mexico 11, D.F.
Contact: A. Toledo Ocampo

In 1975, the Mexican National Council of Science and Technology, CONACYT, established CECODES, a new research institute within the National Indicatory Program for Tropical Ecology. The Center's functions include: (1) the integration of ecological and anthropological studies to provide a basis for development planning in specific regions, (2) the assessment of development projects within the context of ecodevelopment, (3) the analysis of different production and conservation methods and their appropriateness to local sociological conditions, and (4) the collection and dissemination of information on environment and development.

CECODES is involved in several development schemes in the tropical forest regions of Mexico. One of the most notable is a study in Balancan-Tenosique in the state of Tobasco, where the feasibility of Chinampa is being explored. Chinampa is a form of wetland farming from "floating garden." The design of a cultivation system which is highly productive in crops and fish is being attempted in the swamp regions. Work on the rational use of the tropical moist forests has also been undertaken. Research is conducted in cooperation with the Institute for Research on Biotic Resources (INIREB) and with several U.S. scientists, including Dr. Vandemeer at Michigan State University. CECODES receives support from the Mexican governmental and private institutes and from UNEP,

the International Research Center on Environment and Development (CIRED), and the Economic Commission for Latin America (ECLA).

6. NICARAGUA

University of Tennessee/Republic of Nicaragua Program
University of Tennessee, Knoxville
Tennessee, 37916
Director: Dr. Donald D. Hanson, Dean of Architecture
Contact: Dr. Frank McCormick
Office of Biological Sciences
U.S. Fish and Wildlife Service
1730 K Street N.W. 20240

A bilateral program between the University of Tennessee and the Republic of Nicaragua grew out of the Managua earthquake relief efforts in 1972. This program now encompasses a multidisciplinary technical guidance and education exchange component. Most of the cooperative efforts have been directed at devising a Nicaraguan energy and natural resources master plan. The University currently advises the Nicaraguan Department of Agriculture on resource management matters.

An institute, financed by the Nicaraguan government and perhaps by outside grants, is proposed to oversee 30,000 acres in the eastern region of the country and to conduct research in agriculture and forestry. The institute has been approved in principle by the Nicaraguan Congress, which voted to establish a special council for the receivership of the land. This eastern region contains remnants of the original, highly valued pine forests. It is now exposed to haphazard shifting cultivation and agricultural expansion. Dr. Frank McCormick of the University of Tennessee proposes to conduct research and training projects in this area in collaboration with Nicaraguan academic and government institutions. Proposed research related to tropical forestry and conservation would first entail baseline monitoring of the eastern region. Specific projects would be designed to demonstrate superior cultivation methods that are less ecologically destructive. Pine reforestation, trail runs with Caribbean Pine and suitable methods of rice and fruit cultivation, are among the projects contemplated.

7. VENEZUELA

The Venezuelan Institute for Scientific Research (IVIC)
International Centre for Tropical Ecology
Director: Dr. E. Medina
Caracas, Venezuela

The Ecology Center has launched a major programme of ecological studies in the Venezuelan Amazon. As part of MAB Project 1 for Latin America, the Amazon project includes studies of vegetation, soils, and water at a field site near the village of San Carlos on the Rio Negro. These studies will form the ecological basis for devising sound management plans for the Amazon territory.

In October 1974, the Amazon project became operational with financial support from the Venezuelan National Science Foundation and the Organization of American States. As the project became part of the MAB Project 1, cooperation was begun with the (U.S.) University of Georgia, the Max-Planck Institute of Limnology (Federal Republic of Germany) and the World Institute of Forestry in Reinbeck, Federal Republic of Germany. Researchers from these institutions receive support from the U.S. National Science Foundation and the German Science Foundation.

Baseline studies of nutrient cycling, forest ecology and productivity, and soils are part of the first phase of the project, which is now underway. The second phase will entail the cutting and burning of experimental plots and the planting of different traditional crops and a rubber plantation. Observations of the ecological impact of these methods will be compared with the dynamics of the undisturbed forest. The project is planned to last for at least six years.

C. Africa

1. GHANA

Forest Products Research Institute (FPRI)
University P.O. Box 63
Kumasi, Ghana
Director: Mr. Addo-Ashong

Agrisilviculture

With the support of IDRC (see Canada), a three-year FPRI project is examining the technical, ecological, and economic viability of introducing agrisilviculture methods to shifting cultivators. Research on two sites aims to compare an operational agrisilviculture system to shifting cultivation and to train personnel in the necessary field methods for research. Combination cropping systems using annuals, fuelwood, and cash crops will be studied.

2. IVORY COAST

Ecology Research Institute
University of Abidjan
Abidjan, Ivory Coast

The Tai forest, one of the last remaining patcnes of primary forest in West Africa, is the site of an international research effort as part of MAB Project 1. Situated in the southwestern Ivory Coast, this national forest was selected in 1975 as the most suitable location for a pilot project in Africa as part of MAB Project 1. In addition to the University, scientists and social scientists from other African nations and from the international community, particularly French research institutes (see France), are participating. Seven broad areas are being explored by researchers, including the biological and physical characteristics of the forests, the presence of pathogens on species, the development of fauna in relation to human populations, the range of human activities, and the evolution of the forest.

The ecological station established in the Tai forest conducts ecological studies of a range of disturbed forest, from the virgin forest as a reference base to bare land. The forest is exposed to the pressure of many human activities, including traditional, extensive cultivation, colonisation, plantations, and timber industries. The Ivory Coast Government, in recognition of the need to protect this area, created a special authority, L'Autorite pour L'Amenagement de la Region de Sud-Ouest (ARSO), to oversee a range of forest classifications from industrial to protected. Project Tai aims to develop alternative land uses which maintain the ecological functions of the forest. Studies being conducted of tree crops, improved shifting cultivation methods, and other cultivation

systems which are extensive rather than industrial and intensive.

3. NIGERIA

Department of Forest Resources Management
University of Idaban
Idaban, Nigeria

The University and other institutions located in Idaban, such as the International Institute of Tropical Agriculture and the Forestry Research Institute of Nigeria, conduct research in tropical ecology and appropriate cultivation systems for the local forest environment.

Agroforestry

The University, with the support of IDRC (see Canada) is developing farming systems which combine food and tree crops in upland forested areas.

Outline of Current Research

The UNESCO-MAB Workshop Report (see) contains an outline by Dr. B. A. Ola-Adams of basic studies in tropical forest ecosystems and investigations of the effects of human interference in the forests.

D. Asia

1. INDONESIA

Directorate-General of Forestry
Perlindungan dan Pengawetan Alam (PPA: Directorate of Nature Conservation and Wildlife Management)
Jalan Ir. H. Juanda 9, P.O. Box 133
Bogor, Indonesia

This office was established by the Indonesian Directorate-General of Forestry in 1971. Charged with overseeing all the nation's parks and reserves, PPA has been assisted by the World Wildlife Fund Indonesia Program and by the UNDP/FAO National Parks and Wildlife Management project (see next paragraph). PPA has developed a comprehensive program for managing the nation's natural areas, with a five-year target of increasing the nation's reserves and parks from the present 3.8 million hectares to 10 million.

UNDP/FAO National Parks and Wildlife
Management Project
c/o UNDP P.O. Box 2338
Jakarta, Indonesia
Contact: Mr. John Blower

After an initial mission in 1973, UNDP funded a small-scale, two-year project designed to prepare the way for a more extensive effort. Launched in late 1974, the project identified some of the general training and management needs of the nation in order to protect the most valuable biological areas. Although sufficient funds for a large-scale project are not yet available from UNDP, the original project was extended to December 1977 as an interim measure.

Project activities include assistance with new legislation, the "Nature Conservation and Wildlife Management Act," which was drafted and submitted to the Indonesia Parliament; a general survey of the status of existing protected areas and the species population within them; recommendations as to research and training needs in specific areas; assistance with the design of master plans for parks; and participation in training programs and workshops.

World Wildlife Fund Indonesia Programme

In September 1977, the WWF and the Indonesian government signed a formal 5-year agreement for a joint conservation program. The WWF has pledged an initial $1 million to this initiative, due in part to the successful WWF Netherlands National Appeal. The programme, a cooperative effort between WWF and (PPA), involves 17 projects. These include the management and protection of existing reserves where many endangered species reside, such as Ujung Kulon (Java), the last stronghold of the Javan rhinoceros. Identifying conservation priorities for unprotected regions, designing management plans for neglected reserves, and promoting conservation education and training are among the other projects. The WWF has supported conservation activities in Indonesia for the past ten years, and has been closely associated with the UNDP/FAO project "Nature Conservation and Wildlife Management in Indonesia." The WWF Indonesia Programme has a newsletter available free of charge which highlights conservation initiatives in the region and reports on specific threats to habitats and wildlife. (Information concerning the program can be obtained by writing to Mr. John Blower or Mr. Jeffrey McNeely, World Wildlife Fund Representatives, at PPA's address listed above.)

Center for Natural Resource Management and
Environmental Studies
Bogor Agricultural University
Jalan Raya Pajajaran
Bogor, Indonesia
Director: Dr. Soeratno Partoatmodjo

The Center was established by the Institut Pertanian Bogor (IPB: the Bogor Agricultural University) in order to meet the training and research needs in integrated resource management. Officially operational in January 1977, the Center aims to provide a multidisciplinary background for scientists and resource development planners and to initiate research to generate more appropriate management approaches for fragile ecosystems, particularly for swamp and upland regions. Emphasis is given to agricultural areas where government agencies propose to increase production. The Center also plans to conduct studies for agencies to improve the long-term planning and management of the nation's natural resources. The Ford Foundation provides financial and technical support for the Center's activities. Work programs in the eroded uplands of Java and transmigration sites in South Sumatra have brought attention to the broader implications of development and suggested innovative approaches to resource management in these areas by utilizing local capabilities and cultivation methods.

Universitas Mulawarman
Samarinda, East Kalimantan
Indonesia
Rector: R. Sambas Wirakusumah

This relatively new university offers undergraduate and graduate programs in forestry management and economics. As a participant in MAB Project 1 activities in Indonesia, the university is developing capabilities in tropical forest ecology, including an integrated program in rural ecology.

MAB Project 1 Field Studies in East Kalimantan

Field studies are now under preparation in East Kalimantan under the direction of Indonesian researchers and in consultation with Dr. A. P. Vayda (USA). This Borneo province is the site of extensive commercial logging, agricultural expansion, and shifting cultivation. The interior region still supports many indigenous forest communities, many of whom are loosely referred to as Dayaks. Proposed research areas include study of the effects of timber camps on the economic activities of local villages, comparative studies of cultivators in their upriver homelands and in downriver resettlement sites, the environmental aspects of different land use patterns, and the divergence berween forestry policies and actual practice. A reconnaisance trip to the upriver settlements of the Kenyah is

planned for June 1978.

2. MALAYSIA

Persatuan Perlindungan Alam Sekitar Malaysia
(The Malaysian Environmental Protection Society)
127 Jalan 17/14
Petaling Jaya, Malaysia
President: Sdr. Gurmit Singh

The Society, which recently became an official national organization, promotes public awareness and participation in issues concerning the Malaysian environment.

Proposed Endau-Rompin National Park Anti-Logging Campaign

According to the Society's quarterly magazine, Alam Sekitar (December 1, 1977), a 500,000 acre park in Pahang State was designated by the Third Malaysia Plan to become a National Park in 1980. This area will contain the last extensive tract of natural forest in southern peninsular Malaysia, and a core 7,000 acre forest provides one of the last refuges of the Sumatran Rhinocerosus. However, the Pahang State Government continued granting timber licenses up to 1977. A concerted campaign by the Society and other Malaysian environmental groups drew attention to the destructive nature of the logging activities and produced 7,000 signatures on a petition to the federal government appealing for action. Although the campaign did not succeed in obtaining an immediate ban on logging, the State of Pahang was forced to halt all future timber licensing and the federal government imposed a ban on any timber exports from the Endau-Rompin forest.

4. PHILIPPINES

Bureau of Forest Development
Department of Natural Resources
Visayas Avenue, Diliman, Quezon City
Philippines

Famy-Infanta Project

In the provinces of Laguna and Quezon, a forest reserve of 11,380 hectares is the site of a continuous flow of squatters. The project, as part of MAB Project 1, aims to stabilize the occupancy of this tract and to conduct ecological

research. The Bureau, as coordinator of the project, is concerned with cultivation systems which are conductive to the squatters' lifestyle and are ecologically sound. Since late 1976, ecological studies, technical assistance, health services, and the prevention of further illegal settlement have been activities of the project. The present occupants are provided with seeds, technical assistance in tree farming and agroforestry methods, and tree crop nurseries. (See World Bank, United States: AID, for descriptions of other activities in the Philippines.)

5. SRI LANKA

Department of Botany
University of Sri Lanka
Peradeniya campus, Peradeniya
Sri Lanka
Principal investigators:
Dr. (Mrs.) C.V.S. Gunatilleke
Dr. I.A.U.N. Gunatilleke

A three-year study of the rainforest in Sinharaja is proposed by members of the faculty at the University. This study will include a survey of the flora and fauna, an exhibition of rare and unusual species, and a public awareness campaign to encourage national interest in the protection of this rainforest. Although two sites are demarcated for MAB biospere reserves in Sinharaja, the largest remaining tract of natural rainforest in the country, agriculture and timber cutting are encroaching upon the forest. Last November, the Sri Lanka government banned all logging in Sinharaja, although measures to prevent local poaching have been insufficient. The proposed study will generate basic information concerning the flora and fauna, including endangered species, will promote a greater understanding of the biological values of forest for the local and national public, and will promote conservation efforts by government and private agencies. Although this project is endorsed by many internationally renowned scientists, sufficient funds have not yet been found.

6. THAILAND

Royal Forest Department
Phaholyothin Road
Bangkhen, Bangkok, Thailand
Director-General: Mr. Thanom Premrasmi

Teak Export Ban

Early this winter, the Thai Government banned the export of teak. General Kriangsak Chanaman, Thailand's Prime Minister, imposed the ban after photographs taken by American satellites revealed that over one-third of the teak forests in the national reserve had been cut. The New York Times reported (1/29/78) that General Chanaman declared that the Thai Government had the "duty to protect our national reserves for our younger generations and to prevent our country from turning into a desert one day." The drastic decline of teak in the national forests has been attributed to poachers and to the encroachment of squatters who clear the forests for cultivation. This decree is also intended to pressure teak importers, including American boat-builders, to invest in teak-processing facilities in Thailand. Currently, most of the teak is exported raw due to lack of local drying and manufacturing equipment. The Thai Government has taken even more stringent steps to protect the forests since the ban. All poaching in the national forests is now punishable by immediate execution without trial for all transgressors.

National Conservation Plan

In January, an IUCN/UNEP mission began preparation of a Nature Conservation Plan for Thailand. This plan is being designed at the request and with the cooperation of Thailand's National Environmental Board, the Royal Thai Forest Department, and FAO. Encompassing the entire country, the plan will review the extent and condition of present national parks and reserves, identify new areas which require protection, and assess forestry development policies and exploitation methods. The plan, to be completed in September 1978, will also suggest national programs in environmental impact assessment, conservation legislation, and education.

IV
FORTHCOMING MEETINGS

8th World Forestry Congress
Jakarta, Indonesia, 16-28 October 1978.

This conference, sponsored by FAO, will be attended by governmental and non-governmental organizations worldwide. Over thirty agenda items are planned within five general discussion areas:

(1) Forestry for Rural Communities
(2) Forestry for Food
(3) Forestry for Employment Promotion
(4) Forestry for Industrial Development
(5) Forestry for Quality of Life

A position paper will be presented for each agenda item to serve as a basis for discussion, and participating countries will submit reports containing a brief description of socio-economic and forest resource characteristics. There will also be many "voluntary" papers presented on special topics, including the tropical moist forests. More information can be obtained by writing:

Mr. Oscar Fugalli
Associate Secretary-General
8th World Forestry Congress
c/o Forest Department of FAO
Via delle Terme di caracalla
00100, Rome, Italy

5th International Congress of Tropical Ecology
Kuala Lumpur, Malaysia April, 1979

This meeting is sponsored by the International Society for Tropical Ecology. Humid tropical ecosystems, particularly forests, will be one of the main topics for discussion. More information can be obtained by writing:

International Society for Tropical Ecology
Department of Botany
Banaras Hindu University
Varanasi 5, India

V
FORTHCOMING PUBLICATIONS

"A Latin American Dilemma: Current Efforts to Develop the Tropical Forest Areas of Thirteen Latin American Nations" by Douglas R. Shane. A report to the Museum of Natural Sciences, National Museums of Canada.

This is an overview of institutions and projects in 13 Latin American nations in forestry, agriculture, colonization, engineering and conservation. The status of many parks and reserves is discussed and an appendix of national institutions and individuals is provided. The author also has a substantial collection of color slides of agricultural development projects in Latin America. Inquiries may be addressed to:

Mr. Douglas R. Shane
South Barton Street
Arlington, Virginia 22204

"Forestry Projects and the Environment" by Robert O. Blake, Chapter IX of Banking on the Environment, to be published shortly by the International Institute for Environment and Development (IIED).

This forthcoming report by IIED examines the environmental assessment procedures of 13 international financial institutions and their influence on the environmental problems of developing countries. The forestry chapter reviews the performance and policies of these institutions in forest resource development, protection, and restoration. Regional banks such as the Asian Development Bank and the Inter-American Development Bank are discussed as well as the World Bank's new approach to forestry development. More information can be obtained by writing:

Mr. Robert O. Blake
International Institute for Environment and Development
1302 18th Street, N.W.
Washington, D.C. 20036

Proceedings of the Paris Round Table Conference on Dipterocarps (June 1977).

This meeting of 35 botanists was convened to review the state-of-knowledge of this family of tropical tree species which are under intensive exploitation in Southeast Asia. The participants submitted technical papers on different aspects of Dipterocarps, including geological history, classification, fruitation and bark morphology. The papers will be published by the National Museum of Natural History (France). More information can be obtained by writing:

Mme. G. Maury
Mueum National D'Histoire Naturelle
Ecologie Generale
4, Avenue du Petit Chateau
91800 Brunoy, France