

DECEMBER 1980

Volume 3, Number 2

INTRODUCTION

We are thinking about calling this bulletin the MAB Occasional Paper, for obvious reasons. If you haven't received an issue since January 1980, it is because there haven't been any; we hope this current Bulletin will bring you up-to-date and that we will be able to publish more frequent issues in the months ahead.

1980 has been a year of progress for the U.S. Man and the Biosphere Program. A number of excellent projects were launched by the Directorates and 16 research grants were given under our "Consortium for the Study of Man's Relationship with the Global Environment." Most importantly, the U.S. Man and the Biosphere Program document was completed, approved by the MAB National Committee during the annual meeting in Tucson, and submitted to the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP). The annual meeting of the U.S. National Committee for MAB held in Tucson in late October was highlighted by the participation of Dr. Francesco di Castri, head of the MAB Secretariat at UNESCO/Paris. All this and more will be described more completely in the succeeding pages.

The staff of the Secretariat of MAB take this occasion to send best wishes for a Merry Christmas and a Happy New Year to all of you who participate in and/or support the MAB Program. We look forward to working with you in 1981 to make our efforts to improve humankind's relationship with the biosphere even more effective.

Jay Blowers
Executive Director

Phyl Rubin
Conference Coordinator

Marian Keough
Our Lady Friday

Les Whitmore
Program Coordinator
(Les is the successor to Russ
Burns from the Forest Service)

Jim Corson
AID/MAB Project Coordinator
(Jim is from the National Park Service)

Tom Gilbert, Sheila Wentworth and Mary Scully-Johnson are also working with us part time through the MAB contract with the International Science and Technology Institute.

1980 MEETING OF THE U.S. MAN AND THE BIOSPHERE COMMITTEE

The U.S. National Man and the Biosphere Committee convened in Tucson, Arizona, October 27-29 for the 1980 annual meeting. 34 Committee members participated.

Discussion at the meeting centered on the U.S. MAB Program document, newly completed, and how the U.S. MAB Program can be better structured to contribute to the resolution of the global resource management problems identified most recently in the "Global 2000 Report" of the United States Government. Chairmen of the 14 active MAB Directorates presented reports on their activities for evaluation by the Committee.

The National Committee approved the MAB Program document for submission to OMB and OSTP and a small Program Development Committee headed by Dr. Jack Ives, Chairman of the Temperate and Tropical Mountain Ecosystems Directorate, was formed to develop new program and organizational concepts.

The work of the National Committee was greatly enhanced by the participation of Dr. Francesco di Castri, Secretary of the International Coordinating Council (ICC) of the MAB Program and Chief, Division of Ecological Sciences, UNESCO, Paris. By providing an international perspective on the MAB Program, Dr. di Castri facilitated a more definitive evaluation of the U.S. Program by the Committee. A summary of Dr. di Castri's opening remarks about the global MAB Program and the role of the U.S. MAB Program follows:

Dr. di Castri provided the Committee with the latest news of the international MAB Program and of the recent discussions at the UNESCO General Conference in Belgrade. He also offered valuable comments and guidance to Directorate chairmen regarding the coordination of their activities with those in other countries.

Dr. di Castri's interesting account of the evolution of MAB and of current objectives provided a good background for the U.S. Committee's discussion. He talked about the beginning of MAB and how in 1971 the 13 major MAB projects had been extracted from the confusing lot of recommendations made at the "Biosphere Conference" in 1968. He said that MAB had been designed to deal with the types of issues raised in the Global 2000 Report, which had been a "best seller" at the Belgrade conference.

From 1971-73 the major effort was to define the characteristics and objectives of MAB and the scientific content of the 13 project areas. 1973-75 was spent in determining how the 13 projects corresponded with country priorities so that countries could begin to cooperate in the development of field research and training activities. In 1975-77 MAB reached its operational phase, which led progressively to development and coordination of field projects, and the selection of international priority areas:

- 1) Ecological research and training related to management of tropical forests
- 2) Ecological research and training related to marginal lands: arid and semi-arid areas and mountains
- 3) Large cities treated as ecological systems
- 4) Development of the international network of biosphere reserves

In 1977-80 the focus has been to facilitate interrelations between countries and to integrate MAB activities in a limited number of priority areas and regional field projects. For 1981, as the planning of new phases of MAB proceeds, the hope is that the focus will be on the transfer of information resulting from MAB research to decision makers, and to the general public through education programs which will expand their participation in decision making.

Throughout this evolution of MAB the small MAB Secretariat in Paris has had only 8 to 10 people. Plus a few people seconded to UNESCO by the U.S., Australia, Netherlands, and other countries. Dr. di Castri felt that the Secretariat should remain small, no more than 12-14 persons, so that they could still function as a team. This small team has had an effective catalytic effect in stimulating and assisting the development of MAB activities. For example, the budget for MAB administration in UNESCO is approximately \$1 million, and that can be compared with approximately \$200 million for MAB activities in the world. This is probably the least expensive and most flexible administration of any United Nations Program.

Dr. di Castri commented that often a small amount of "seed money" can be a starting point to the development of significant programs, especially in the less-developed countries. Recently \$10,000 has been used in China to train 200 scientists in systems analysis, and an activity such as this can be indispensable in getting MAB programs underway.

Dr. di Castri paid special tribute to U.S. MAB for its contribution to the development of the international program, particularly to Dr. Donald King, who as a member of the International Coordinating Council of MAB has helped to guide its development from the beginning in 1971, and to the United States for secondment of personnel to the MAB Secretariat in Paris.

In the Department of the Interior, Washington, D.C. on October 31, Dr. di Castri gave a similar presentation to representatives of U.S. government agencies and non-governmental organizations. His talk was enthusiastically received by the large number of U.S. MAB supporters.

NOTES FROM DON KING ON THE UNESCO/MAB BUREAU MEETING, NAIROBI, KENYA
NOVEMBER 18-21, 1980

There are now over a hundred MAB committees and some 960 MAB projects in 75 countries. There are about 200 biosphere reserves and 600 projects in biosphere reserves. Some 350-400 people are being trained under MAB field projects.

There was considerable discussion of the content of the MAB 10th Anniversary celebration scheduled for November 1981. The first week will involve a scientific review of MAB. Two days will then be devoted to a session for decision-makers to recommend future program activity, after which the ICC will meet in regular session for two days. A core exhibit about MAB activities is being planned by professionals and Dr. di Castri indicated he is much impressed with their work.

MAB RESEARCH CONSORTIUM

The U.S. MAB/Agency Consortium for the Study of Man's Relationship with the Global Environment has now entered its third year. FY 79 was the first year and with \$300,000 from the USDA-Forest Service the following seven research proposals were funded. They have now been underway for one year:

1. Comparison of Wood Productivity between Tropical Second Growth Forests and Plantation Forests - Principal Investigators: Carl F. Jordan and Edward G. Farnworth, University of Georgia;
2. A Foresters' Manual of the Moraceous Trees of Sarawak, East Malaysia - Principal Investigators: Peter Shaw Ashton and Peter F. Stevens, The President and Fellows of Harvard College;
3. Regeneration and Growth Strategies of Brosimum alicastrum Swartz, in the Moist Tropical Forests of Mexico - Principal Investigators: F.H. Bormann and P.B. Tomlinson, School of Forestry and Environmental Studies, Yale University;
4. Biosphere Inventory of Mangrove Forest Lands: Current Status, Managing Institutions and Research Initiatives - Principal Investigator: Samuel C. Snedaker, University of Miami;
5. Present and Potential Utilization of a Tropical Palm Forest - Principal Investigator: John Ewel, University of Florida;
6. Interactions between People and Forests in East Kalimantan - Principal Investigator: Andrew P. Vayda, Environment and Policy Institute, East-West Center;
7. A Study of a Bornean Intensive Agricultural System as a Model for Development - Principal Investigator: Christine Padoch, University of Wisconsin.

In FY 80, sixteen additional projects were funded for a total of nearly \$800,000. The funding agencies were the U.S. Department of the Interior's National Park Service, Fish and Wildlife Service and Heritage Conservation and Recreation Service, and the U.S. Department of Agriculture's Forest Service. The following sixteen projects, out of 62 submitted, were selected June 30th by the governing committee:

1. Comparative Study of Interrelationships between Range Management and Forest Management Activities in Forest Ecosystems of La Michilia and Beaver Creek Biosphere Reserves - PIs: P.F. Pfolliott and E. Thomas Bartlett sponsored by University of Arizona and Colorado State University;
2. Ecology of Amazonian Forest Trees: Baseline Data for Forestry and Reserve Design - PI: Thomas Lovejoy for World Wildlife Fund;
3. Dynamics of Tropical Tree Plantations in a MAB Biosphere Reserve - PIs: Ariel Lugo and Leon Liegel for Institute of Tropical Forestry, P.R.;
4. Re-establishment and Maintenance of Fire-dependent Ecosystems in the Glacier Park Biosphere Reserve, Northwestern Montana - PIs: James Habeck and Robert W. Steele for University of Montana;
5. The Impacts of Intensive Harvest on Poor Soils - PIs: Nellie Stark and Dean Benj. Stout for University of Montana;
6. Fire as a Management Tool in the Western Aspen Ecosystem - PIs: James Brown and Norbert deByle for U.S. Forest Service, Intermountain;
7. Composition, Structure and Distribution of the Ecosystems of the Three Sisters Biosphere Reserve and their Relationships to Patterns of Disturbance - PIs: Richard Waring, Jerry Franklin and Miles Hemstron for Oregon State University;
8. Quantification and Comparison of the Impacts of Intensive Biomass Harvest on Forested Ecosystems - PIs: John Finn and Thomas Leschine for University of Massachusetts;
9. Conflict of Human Interest in the Ituri Forest of Zaire: Implications for Forest Survival - PIs: Peter Murphy and Terese Butler Hart for Michigan State University;
10. A Study of Relationships between Mbuti Hunting Systems and Faunal Resources in the Ituri Forest of Zaire: Significance for Management - PIs: George Petrides and John Hart for Michigan State University;
11. Development of the Economic Theory and Methodology for Evaluating Non-market Values of Tropical Moist Forests - PIs: Carl Jordan, Edward Farnworth, Thomas Tidrick, Webb Smathers, Jr. for University of Georgia Research Foundation.
12. Present Utilization and Potential Regeneration of the Pinaceae in the Highlands of Tropical Mexico and Guatemala - PIs: W. Kent Ostler and Dennis Hansen for Native Plants, Inc;
13. The Role of Epiphytes in the Nutrient Dynamics of Two Rainforest Ecosystems - PIs: Charles C. Grier and Nalini Nadkarni for University Washington, Seattle;
14. Tree Growth as a Guide to Management of Secondary Tropical Forests - PI: Frank H. Wadsworth for Institute of Tropical Forestry, P.R.;
15. Structure, Diversity and Function of Soil Nematodes in an Annual Grassland Ecosystem - PI: Diana W. Freckman for University of California, Riverside;
16. Nitrogen Dynamics of Forest Ecosystems in the Great Smoky Mountains National Park - PIs: Wayne Swank and Gary Larson for National Park Service, Great Smoky Mountains National Park.

The guidelines for FY 81 proposals were recently sent out. As before, the research consortium will fund at the level of \$50,000 per proposal or less, but for FY 81, the guidelines suggest specific areas of research that are of particular interest to the governing committee. In the past, proposals have been requested in the areas of tropical forests, temperate forests and biosphere reserves (MAB-1, 2 and 8). For FY 81, proposals will be accepted for these areas and for arid zones and coastal zones (MAB-4 and 5B). The deadline for receiving proposals is January 9, 1981.

DIRECTORATE ACTIVITIES

The Directorates which are the energizers of the U.S. MAB Program were energetic during 1980. The following brief summaries are illustrative of this energy. Additional information about the Directorates and their activities can be obtained from the Directorate Chairmen or the MAB Secretariat.

MAB-1 Ecological Effects of Increasing Human Activities on Tropical and Subtropical Forest Ecosystems (Tropical Forests)

The Directorate met in Washington in August to report on selected MAB research projects to an invited audience:

Dr. Frank Golley presented an overview of the MAB Tropical and Subtropical Forest project.

Dr. Carl Jordan, Institute of Ecology, University of Georgia, reported on the San Carlos de Rio Negros project in Venezuela. This cooperative project involving U.S., German and Venezuelan scientists is a study of the structure and function of an Amazonian rainforest in order to make more rational use of the forest.

Dr. Jack Ewel, Department of Botany, University of Florida, described a project underway in Turrialba, Costa Rica, to develop complex agro-ecosystems that provide sustainable yield and require minimal fossil fuel based subsidies. To develop such systems, investigators are attempting to build ecosystems that mimic the structure and function of native successional vegetation.

Dr. Stanley Rand of the Smithsonian Research Institute in Panama detailed ecosystem related research on Barro Colorado Island, Panama, which is forested. Results of the studies thus far indicate that forest production on the island is similar to other moist, wet, lowland tropical forests. Information has been produced on how populations of individual species, sometimes whole trophic levels, respond to environmental changes, both seasonal and eventual. Research and monitoring of the Barro Colorado Island ecosystem will continue.

Dr. Ariel Lugo of the Institute of Tropical Forestry in Puerto Rico outlined research activities of the Institute. Three major problems have been assigned to the Institute for investigation. They are: 1) Lack of practical guidelines to establish and manage timber plantations in the tropics without adversely affecting site productivity; 2) lack of knowledge as to the biological potential of timber production from secondary forests, with due concern for other environmental values; and 3) lack of knowledge as to forest wildlife habitat requirements and techniques for their management. Research is underway in each of these problem areas.

Dr. Dieter Mueller-Dombois, Department of Botany, University of Hawaii at Manoa described his investigation of the "OHI'A Dieback Phenomenon in the Hawaiian Rain Forest." The working hypothesis resulting from the study is that the dieback is initiated by climatic instability, e.g., excessive rainfall which may flood and drown out the root systems of taller trees on poorly drained sites.

Dr. Ariel Lugo of the Institute of Tropical Forestry, U.S. Forest Service, was elected Chairman of the Directorate vice Dr. Frank Golley, National Science Foundation.

Directorate activities are grouped in three areas:

1. Clarifying misconceptions about tropical forests and tropical forestry
2. Tropical tree plantations
3. Natural tropical forests

Projects include short-term research in areas such as biomass production in plantations, species diversity in natural forests and the ecology of dry forests; a symposium on the feasibility of extensive tree plantations in the tropics; state-of-the-art papers on tropical dry forests and the impacts of human colonization on primary forests in the tropics.

MAB-2 Ecological Effects of Different Land Uses and Management Practices on Temperate and Mediterranean Forest Landscapes (Temperate Forests)

The Directorate played a major role in the organization of an "International Seminar on the Social and Environmental Consequences of Natural Resources Policies with Special Emphasis on Biosphere Reserves" held in Durango, Mexico in April. 65 policy makers, scientists and educators from Mexico, Central America and the U.S. participated in the seminar. A follow-up conference in 1981 on natural resource management is in the planning stage. Resource managers and planners from all Central American countries, Mexico and the U.S. will be invited to participate.

The Directorate was also involved in the organization of a conference on "Research in Multiple Use of Forest Resources" and an "International Symposium on the Effects of Air Pollutants on Mediterranean and Temperate Forest Ecosystems."

As a follow-up to the 1979 international workshop on "Biological and Sociological Basis for a Rational Use of Forest Resources for Energy and Organics," the Directorate is preparing two sets of synthesis papers on the use of biomass as an energy source. The first set will deal with the potential use of non-commercial tree species, e.g., chaparral, pinyon-juniper, scrub oak; the second set of papers will be concerned with the environmental, economic, social, legal consequences of using biomass for specific energy purposes.

Under the MAB "Consortium for the Study of Man's Relationship with the Global Environment," Directorate members are involved in a "Comparative Study of Interrelationships between Range Management and Forest Management Activities in Forest Ecosystems of La Michilia and Beaver Creek Biosphere Reserves." The Directorate continues to collaborate with Mexican scientists on a number of projects.

MAB-3 Impact of Human Activities and Land Use Practices on Grazing Lands: Savanna, Grassland (from Temperate to Arid Areas), Tundra (Grazing Lands)

The Directorate is concerned with the impact of human activities and land use practices on grazing lands. Current Directorate projects include: Prediction of Grazing Land Productivity Under Climatic Variations; Range Management Strategy, Evaluation in the South; Collaboration with MAB-2 on the Comparative Study of the Interrelationship between Range Management and Forest Management Activities in the Forest Ecosystems of La Michilia and Beaver Creek Biosphere Reserves.

The Directorate is sponsoring a session on Training and Technology Transfer for Man and the Biosphere at the International Grassland Congress, Lexington, Kentucky in June.

MAB-4 Impact of Human Activities on the Dynamics of Arid and Semi-Arid Zones' Ecosystems, with Particular Attention to the Effects of Irrigation (Arid Zones)

The MAB-4 Directorate is concentrating its attention on completing the planning for a major symposium on the "Impacts of a Declining Water Supply for Irrigation Agriculture in the U.S. Southwest" to be held in September 1982.

MAB-5 Ecological Effects of Human Activities on the Value and Resources of Lakes, Marshes, Rivers, Deltas, Estuaries and Coastal Zones (Fresh Water)

Under the purview of MAB-5a a project entitled "Development and Application of a State-wide Water Resource Decision Making Process" is underway. The project addresses the crucial problem of dwindling water resources, increasing demand, and weaknesses in structures for managing water resources in the State of Florida. A decision making model, which can be transferred to other jurisdictions, is being tested and applied.

The Directorate is also working with state agencies and private groups on the diminishing water problem in Lake Mono, California as a consequence of urban water demand. Efforts are underway to develop a cooperative research effort with MAB/Canada on the protection and rehabilitation of the Great Lakes ecosystem.

Directorate members are engaged in research on toxicology and water resources, limnology of Lake Tahoe, water management in the U.S. Southwest and Northern Mexico, water management in the Everglades, acid rain, and Gulf Coast Estuaries.

MAB-5b Coastal Zone Resources

The living resource productivity of estuaries and associated ecological-biological processes is the principal focus of this Directorate.

A comparative study of coastal drainage basins fringing the Gulf of Mexico constitutes the Directorate's prototype investigation and has the highest priority for funding. Barataria Basin, Louisiana; Laguna Madre, Texas; Laguna de Terminus, Mexico have been tentatively identified for evaluation and comparison. The Directorate is also engaged in the design of a prototype study of the Gulf of Mexico with the objective of understanding the effect of man's impact on the living resource productivity of the coastal fisheries in order to manage these resources wisely. The development of a handbook dealing with the principles of estuarine management is under study.

MAB-6 Impact of Human Activities on Mountain Ecosystems (Mountains)

MAB-6 continues to concentrate on three major areas:

1. Development of an applied research program for mid-latitude mountain problems in the U.S.
2. Collaborative research with MAB committees in Peru and Nepal to focus on mountain problems in the tropics.
3. Development of international collaboration on problems of mountain development at large.

Specific activities include: production of state-of-knowledge volumes on the Colorado Rocky Mountains and West Slope and mountains of the U.S. Northeast; mountain hazard mapping in Nepal; development of a management plan for Niwot Ridge Biosphere Reserve, and the conduct of long-term ecological research. Publications include: Geocology of the Colorado Front Range; Avalanche-Hazard Mapping and Zoning Problems in the Rocky Mountains; Geocology of Southern Highland Peru: A Human Adaptation Perspective; state-of-knowledge volume on the Andean Environment. In addition, the chairman of MAB-6 was instrumental in founding the International Mountain Society which will publish a quarterly journal, Mountain Research and Development.

MAB-7 Ecology and Rational Use of Island Ecosystems (Islands)

This Directorate is seeking to learn about and help enlarge the carrying capacity of Caribbean islands. To this end, the Directorate is engaged in an intensive study of resource management in the U.S. Virgin Islands to see what lessons can be learned that could have broader applicability. In addition, the Directorate has been actively involved in the development of an oil spill

contingency plan for the Caribbean Islands. MAB-7 is also organizing a workshop on solid waste management. The Directorate has been active in developing plans and procedures for investigating fish kills in the region.

MAB-8 Conservation of Natural Areas and the Genetic Materials They Contain
(Biosphere Reserves)

Chairmen: Dr. F. Bryan Clark, U.S. Forest Service
Dr. William Gregg, National Park Service

Federal agency support for MAB-8 related projects increased substantially in 1980. The National Science Foundation, for example, awarded grants totaling \$876,349 for long-term ecological research in four biosphere reserves. Fully half of the 16 research projects funded under the MAB Consortium will take place in biosphere reserves or focus on the objectives of the protection of genetic resources.

With the November approval by the MAB Executive Bureau of designation as biosphere reserves of the Hawaiian Parks and Isle Royale National Park, the Biosphere Reserve System in the U.S. now consists of 35 reserves representing 16 of the 20 biogeographic provinces covering the U.S. and its territories.

During 1980, a major effort was initiated by the Directorate which should lead to substantial completion of the U.S. Biosphere Reserve System by the end of FY 82. In order to achieve representation in unrepresented and under-represented biogeographical provinces, multi-disciplinary ad hoc committees of experts in a province's ecosystems will be utilized. The first of these committees under Dr. Edward Fernald of MAB-5A is developing a systematic methodology for identifying, evaluating, and selecting reserves in the Austroriparian province. This methodology will then be applied to other provinces. In addition, an expert panel under Dr. Carleton Ray of the University of Virginia has developed a biogeographic classification system for coasts and a process for identifying and selecting coastal areas for nomination as biosphere reserves.

The National Park Service, in cooperation with EPA, has developed a program for monitoring of wet-fall and dry-fall atmospheric deposition in NPS administered biosphere reserves. Twelve reserves are now instrumented. USGS is preparing reports on available photographs and imagery for biosphere reserves in the U.S. The principal emphasis of the NPS MAB program for FY 81 through FY 85 will be on the development of comprehensive baseline inventories and long-term monitoring and ecological research programs.

US-USSR Bilateral Activities in Biosphere Reserves:

The Second US-USSR Symposium on Biosphere Reserves was held March 10-15, 1980 in Everglades National Park, Florida. The main topics of discussion related to natural and man-induced succession and monitoring of ecologic systems in biosphere reserves. The protocol issued following the symposium called for a two-week visit to the USSR in September by a team of U.S. scientists to visit several biosphere reserves, carry out joint pollution monitoring, inter-calibrate methods, and plan joint biological research and monitoring activities. This visit was canceled when storm damage occurred in a major Soviet reserve to be visited. Efforts are underway to remount the visit in the summer of 1981, with a Soviet team visit to the U.S. tentatively set for 1982.

The decision has been made and funds provided by UNEP to begin a monitoring program in three biosphere reserves as part of the Global Environmental Monitoring System (GEMS). The reserves selected are Benezina in the USSR, Torres del Parne in Chile, and the Great Smoky Mountains in the U.S.

The International Biosphere Reserve Conference proposed by the USSR for Minsk in 1982 has been postponed until June 1983.

Two 20-minute video-tapes on Olympic and Channel Islands Biosphere Reserves have been prepared through the cooperation of the NPS and MAB-8. They cover the resources, science activities and management of the two reserves, and the pollutant monitoring program at Olympic. Parties desiring to use or acquire copies of the video-tapes should contact the Office of Science and Technology, NPS, Washington, D.C. 20240 (telephone: 202--523-5404).

MAB-9 Ecological Assessment of Pest Management and Fertilizer Use on Terrestrial and Aquatic Ecosystems (Pesticides/Fertilizer)

Chairman: Dr. Virgil N. Freed, Oregon State University

MAB-9 activities fall into three categories: 1) research in the transport and fate of pesticides on the environment and methods of reducing the impact of pesticides on humans and the environment, 2) training in integrated pest management and the proper use of pesticides, and 3) perceptions of risks associated with pests and their control.

At an international conference held at Clark University in October 1980, with the assistance of MAB-9 and MAB-13, a work plan was established for the field of "Perception of Pests and Pesticides." It was agreed that four studies would be completed. They include: Pest/pesticide profiles on each participating country; flow of pesticides into and through participating countries; perceptions of pests and pesticides and the hazards they create; case histories of selected integrated pest management efforts, both successful and not so successful.

MAB-11 Ecological Aspects of Energy Utilization in Urban and Industrial Systems (Urban Ecosystems)

Chairman: Dean Britton Harris, University of Pennsylvania

The Directorate is pursuing a new line of approach which regards the human settlement patterns of urban areas as a special ecological form which interacts with the natural ecology of urban places and their surroundings. Urban ecosystems are therefore regarded as part of the natural environment and as part of the social environment.

Activities of the Directorate are crystallized in two directions: 1) exploration of the interactions of the two ecosystems through the interactions of large-scale computer models, and 2) organization of a conference in the spring of 1981 to explore the issues, concepts, and methods of work which arise out of the desire to integrate the treatment of the two ecosystems by specialists in natural ecosystems and human settlements.

MAB-12 Interactions between Environmental Transformations and Genetic and Demographic Changes (Demographic Change)

Activities of MAB-12 are focused on the consequences of migration, on the basis that migration as contrasted with other basic demographic processes always involves environmental change. Migration is the least well understood and least well predicted of the basic demographic processes; migration in the foreseeable future will apparently account for a much larger proportion of the change in population distribution and localized growth than will changes in, or difference between, birth and death rates.

Directorate members are engaged in research on the consequences of migration in Samoa, the Sahel, Thailand, and Malaysia, Japan, Korea, Chile and the U.S.

The Directorate is planning an international conference for August 1981 to discuss recent research findings on the consequences of migration in the Pacific Basin and their policy implications. It will consider three kinds of consequences: human physiological and medical changes; socio-economic, cultural and demographic changes; and environmental consequences.

MAB-13 Perception of Environmental Quality

Chairman: Dr. Ervin H. Zube, University of Arizona

During the Directorate meeting in February 1980, MAB-13 adopted new initiatives which are directed toward stronger inter-Directorate ties and toward fostering communications, nationally and internationally, about

problems, projects and issues related to the perception of environmental quality. Research into the perceptual, evaluational, attitudinal and value system aspects of environmental quality continues as a major activity of the Directorate. Studies in the field of perception of environmental change are being conducted in Tucson and Boston among individuals including new and old residents, tourists, and transients. Work in the area of perception of environmental hazards is primarily focused on perception of pests and pesticide hazards. This work is carried on with MAB-9. A state-of-the-art review on environmental perception and tourism has been initiated as the first step in the development of a major research effort on this topic. A pilot study has been initiated in the arid and semi-arid landscapes of southern Arizona. The first stage involves interviews with resource managers, seasonal residents, tourists to develop a comprehensive list of environmental values, experiences and perceived changes. The second stage of the study will focus on prototypicality and importance ratings of elements from the comprehensive list. The final objective of the study is the development of indices of perceived environmental quality.

Initial steps have been taken by the Directorate to develop an international newsletter addressing MAB-13 interests and projects. Tentative plans indicate co-sponsorship with MAB-Canada.

BIOSPHERE RESERVE DEDICATIONS

Representatives from the MAB Secretariat participated in the following Biosphere Reserve dedications. An attractive plaque was formally presented at each ceremony.

Beaver Creek Experimental Watershed	Arizona
Coram Experimental Forest	Montana
Glacier National Park	Montana
Konza Prairie Research Natural Area	Kansas
Luquillo Experimental Forest	Puerto Rico
Virginia Coast Reserve	Virginia

PRINCIPAL CONFERENCES

Conference on Shifting Cultivation in Humid Tropical Forest Ecosystems, Iquitos, Peru, November 11-15, 1980

Formal presentations and discussions at the Conference centered on the description of native forms of shifting cultivation in the Amazon Basin, particularly of the crops grown and the cropping-fallow regimes employed by Indian groups. The great diversity of Amazonian cropping systems was well illustrated by the papers delivered, and an appreciation of the relative stability, long-range productivity, and non-destructiveness of these indigenous patterns was imparted. Data concerning the problems faced now by many indigenous peoples largely because of the invasion of their territories by colonists and commercial interests were presented. The possibilities of both preserving and disseminating much of the ecological knowledge these native Amazonian peoples possess and of designing environmentally and socially sound development that might aid them, was another focus of discussions at the Conference. Various systems of agroforestry, which might build on existing arrangements and patterns were described and discussed at length. Presentations given also dealt with problems of migration and colonization in the foothills of the Andes, and with changes in soil conditions under varying agricultural regimes.

Resolutions and conclusions adopted by the participants generally centered on encouraging further interdisciplinary research into existing Amazonian systems of forest and land use, as well as continued research in agroforestry. Also adopted were recommendations encouraging the collection and deposit in some research institution in Amazonia of bibliographic and other materials on Amazonian resource use patterns.

This conference, sponsored by MAB-Paris and MAB-Peru, brought together scientists from several disciplines and from all of the Amazonian nations of NW South America. The US-MAB Committee was represented by Les Whitmore of the Secretariat and by Christine Padoch of the MAB-1 Directorate.

Conference on Research on Multiple Use of Forest Resources, Flagstaff, Arizona
May 18-23, 1980

MAB and the International Union of Forestry Research Organizations (IUFRO) joined forces to bring together scientists and resource managers from 20 countries to share international research and resource management experience on the multiple use of forest resources. A variety of papers were presented which described experiences and information related to the multiple use of forests and some of the significant global problems such as deforestation.

Dr. Warren Doolittle, Chairman of the Conference Executive Committee, indicated in his conference wrap-up that for virtually every forest function there are relevant research questions which need answering if the science and art of multiple-use forestry is to progress. Some of the more prominent research questions that emerged from the Conference are the need to learn how to increase the production of wood, how to better regulate and improve the flow of clear water, how to provide diversity for wildlife, how to better produce agricultural and forest crops from the same land, how to protect the soil and improve the productivity of the ecosystem, how to best provide for recreation and spiritual values, and how to manage for an harmonious balance that maximizes the usefulness of forests for all mankind.

The priority areas were identified for emphasis: Agroforestry (on the more basic research aspects, with focus on species combinations and protein production); production functions of multiple use; and definition and practice of multiple use. Wildlife habitat was chosen as a subject for joint consideration with the IUFRO Working Party on Forest Management Practices--Effects on Wildlife. Conference proceedings are available from the MAB Secretariat.

Symposium on Effects of Air Pollutants on Mediterranean and Temperate Forest Ecosystems, Riverside, California, June 22-27, 1980

This symposium, with representatives from 15 nations, focused on communications between scientists carrying out specialized studies of the effects of air pollutants on individual forest species and researchers using computer simulation models to interpret and predict long-term pollutant effects at the plant community and ecosystem levels. The state of knowledge of species-single pollutant relationships, the interactions of producers, consumers, and decomposers under pollutant stress, and the use of ecological systems models for interpretation and prediction of pollutant effects were discussed. Another important question was the search for indicators of system-level effects of air pollution on ecosystems.

28 papers were presented, all of which were informative. Some of these related specifically to MAB activities, such as the one by G. Bruce Wiersma and Kenneth W. Brown, both of EPA, entitled "Background Levels of Trace Elements in Forest Ecosystems" concerning development of an international pollutant monitoring system for biosphere reserves. Proceedings of the symposium are available from the MAB Secretariat.

IUFRO/MAB/ITF Symposium on Production of Wood via Plantations in the Neotropics
Rio Piedras, Puerto Rico, September 8-12, 1980

The purpose of the symposium, in which 50 persons representing 17 nations participated, was to bring together international research experiences on tropical wood plantations and to explore and share these experiences. The focus was on research with the intent to outline practical solutions to actual problems.

During the first day, the attendees were addressed by three of the principal forestry figures in Puerto Rico: Mr. Juan Munoz, Supervisor of the Caribbean National Forest; Mr. Jose Zambrana, Associate Secretary of Natural Resources of the Commonwealth of Puerto Rico; and Dr. Ariel Lugo, Project Leader of the Institute of Tropical Forestry in Rio Piedras. During the next three days, 35 papers were presented on subjects such as growth, yield, plantation systems, techniques, disease problems, agroforestry, woody biofuels, species and provenance trials, and site and gene conservation. Proceedings of the symposium will be available in the near future.

AID/MAB PROJECT GETS MORE TIME AND MONEY

The Resources Support Services Agreement (RSSA) between Man and the Biosphere (MAB) and AID has provided funds during the past three years to support environmental conferences on : Biomass; Caribbean Islands; Resource policies

in Central America (with special emphasis on Biosphere Reserves); and training courses: "Ecological Inventory and Environmental Monitoring of Tropical Forest Ecosystems" and "Watershed Management"; and provided a series of 31 "Environmental Profiles" on less developed countries. This AID/MAB RSSA has now had \$300,000 added to its fiscal authorization and been extended to December 31, 1981. Many of the present activities will be continued. 16 additional country profiles have been requested. Added sessions of the training courses are in the planning stages. More courses and conferences are under discussion and a couple of new initiatives to support AID's environmental programs and training are now possible, thanks to this extension.

Summary Progress Report on DS/ST RSSA with US MAB

The following activities are underway through the DS/ST contract with US Man and the Biosphere Program:

1. Country Environmental Profiles: 30 country reports are now completed. US MAB reports that there is considerable demand for the profiles--more than 200 requests for some countries. 16 additional profiles will be done during the coming year. Follow-up activities related to the profiles include fielding inter-disciplinary teams to Bolivia, Ecuador, and Guatemala to update the information contained in the reports and to work with the Missions, host country government officials and scientists to design the technical basis for CDSS's and ABS submissions for environmental and natural resource activities. AFR/DR and AFR/SFWA have reserved funds for in-country Phase II studies of Mali and Zaire. LAC/DR is completing arrangements for an in-country study in Panama.
2. Watershed Management Training: 3 more regional training courses will take place over the next two years. The first session in November 1979 at the University of the Philippines, Los Banos, had 20 people from the Philippines and 7 participants from other Asian countries. Los Banos incorporated the course into its regular curriculum in January 1980. A second training session is scheduled for Thailand in '81 and a third is under discussion for Nepal. A manual for the training program has been prepared and copies are available from DS/ST and US MAB.
3. Directory of Environmental and Natural Resource Study Programs in the US: A comprehensive listing of study programs at US universities, government facilities, and elsewhere in the US has been prepared for US MAB by the Sierra Club to assist in placing foreign students in appropriate environmental programs. Distribution to AID, USDA, and Dept. of Interior international training programs and overseas missions and UN agencies has been made totaling about 200 copies. Additional copies are available from US MAB.
4. Policy-level Seminar in Mexico, April 1980: Sponsored jointly by US and Mexican MAB National Committees. The purpose of the seminar was to start a dialogue between decision makers who often face similar natural resource problems and may resolve them in different ways. Under-Secretaries Herbst of US Dept. of Interior and Cutler of US Dept. of Agriculture attended along with top-level decision makers from Mexico, Costa Rica, Nicaragua and Honduras. Participants were exposed to some new methods for determining multiple-use natural resource policies and follow-up review for their effects. Costa Rica requested assistance in establishing Biosphere Reserves and a recommendation was made that another regional workshop on this subject be held with participation by UNESCO/MAB Paris. This session is being discussed for the fall of 1981.
5. Report on the Status of Endangered Species in Thailand: This report has been prepared under contract with Florida State Museum through the US Fish and Wildlife Service. In addition to describing critical habitat requirements and the status of species, a prototype methodology is expected to emerge for other missions interested in such studies. Dr. Stephen Humphrey, Florida State Museum, is the principal researcher. This draft is to be distributed during December.
6. Environmental Guidelines for Projects Involving Clearance of Tropical Forest Areas in the Amazon Basin: Being prepared by the World Wildlife Fund under an AID funded contract through the National Park Service. This study is examining the minimum habitat requirements necessary to maintain a diverse genetic base of plants and animals. This project will also develop training materials on methods of gathering basic information in tropical areas (species lists, keys, etc.) that will be useful to project planners.

7. Environmental Guidelines for the Design of Large and Small Scale Irrigation Projects: Developed in cooperation with US MAB Directorate No. 10 (Major Engineering Works), the US Forest Service and The Cary Arboretum. These documents will address project planning, implementation, and post-project monitoring of health effects, erosion, etc., and will discuss some lesser known indigenous methods of utilizing water resources for crop purposes, such as the drip method and irrigation with sea water. The draft of these guidelines has been distributed for review.
8. Support for Indonesian MAB Rural Ecology Training Program at Mulawarman University in Kalimantan on "The Relationships Between People and Forests:" This extended an existing project to provide supervised field studies for population groups that differ widely in their use of and attitudes toward natural resources. Study topics include the migrations of forest clearing farmers from Sulawesi to E. Kalimantan, the connections between rural forest users and urban entrepreneurs, and the ethno-botanical knowledge of forest users.
9. Training Sessions on Environmental Mutagens and Carcinogens: Our project with Dr. Alexander Hollander, Associated Universities, through EPA to produce these training sessions and methods for detection of mutagens and carcinogens produced a regional program Nov. 19-December 8, 1979, at Medellin, Columbia. The "First Latin American Symposium on Environmental Mutagens and Carcinogens" was held June 6-8, 1980 in Puebla, Mexico.
10. Location and Inventory of Audio-Visual Materials on the Environment: This project has been completed through a small contract with the Natural Resources Defense Council. The purpose is to provide AID and Missions with a useful reference to be used for training of both AID and host country counterparts.
11. Training at College of African Wildlife: This project to upgrade the training capability of the college detailed experienced US National Park Service personnel to Mweka, Tanzania, for two months each. Four teams have now assisted at Mweka. Basic financial support is provided by NPS. An AID contribution brought staff from the Wildlife College to the US in the summer of 1980 for further experience and training.
13. Adaptive Environmental Assessment (AEA): Through a cooperative agreement with US Fish and Wildlife Service, an AID funded feasibility study for transfer of the technology of the AEA method of planning developed by the staff at the University of British Columbia has been completed. A demonstration workshop to introduce the actual workings of this system to AID and International Bank personnel, private voluntary organizations, and other government agencies was conducted June 23-24 at the Leetown, West Virginia, Fish and Wildlife Service Training Center.

TRAINING

A workshop on the "Adaptive Environmental Assessment Method" was conducted by Fish and Wildlife Service for 24 persons from AID, other government agencies, and private voluntary organizations on Monday and Tuesday, June 23 and 24. The course was held at the Park Service Mather Training Center on June 23 and at the Fish and Wildlife's Solar Lab, Leetown, W. VA. on June 24.

The purpose of this course was to introduce these people and their organizations to the unique systems analysis methods devised by C.S. Hollings group at the University of British Columbia. This system, informally subtitled "Expect the Unexpected," is a method of modelling that will incorporate as many variables into the planning process as we desire and can then demonstrate in graphic printout fashion the effects that changes in one or more of the variables will produce upon the others. This allows us to question our premises and provides visible predictions of the end results from chosen policies and management actions.

Another AID/MAB sponsored training course entitled "Concepts and Techniques for Conducting Resource Inventories and Environmental Monitoring" is being offered through the USDA International Training Division. This course's coordinator is Dr. Frank McCormick of the University of Tennessee. The first session was July 5 - August 1 and the course relied heavily upon existing MAB programs in the biosphere reserve areas at Great Smoky Mt. National Park, Forest Service's Coweeta Experiment Station and Oak Ridge National Laboratory. The second session, revised to include specific problems from the less developed countries, will be offered again at Great Smokies this summer, July 6-31. Further information on this course is available from International Training Div., OICD US Dept. of Agriculture, Washington, D.C. 20250.

NEWS FROM PARIS

The following was submitted by Dr. Brian Payne, a member of the MAB International Secretariat at UNESCO in Paris. We hope to continue this item in future BULLETINS.

"Since August 1979 I have been a member of the MAB Secretariat in Paris on a three-year assignment from the Forest Service in the US Department of Agriculture. My major responsibility is to help administer MAB project area 1 (tropical forests), with some responsibility also for MAB 2 (temperate forests), MAB 11 (human settlements), and the MAB information system. I am also trying to serve as a coordinator within the Secretariat in Paris for activities involving the United States. In that role, I am anxious to be of service to the US MAB Secretariat and to US scientists in any way possible.

After one year here I am impressed by the opportunities that the MAB program offers for coordinated research on environmental and development problems world-wide. US scientists have already made outstanding contributions within the MAB network, but the potential for further US participation is enormous.

I believe that greater US participation and leadership in MAB are vital as one means for concentrating some of the best scientific talent on some of the world's most pressing problems. At the same time, MAB offers a chance for individual scientists to broaden the scope and the applicability of their research, to increase their contacts with colleagues throughout the world, to identify new sources of research support, and even to engage in foreign travel."

UPCOMING MEETINGS

Jan. 14-15	MAB-4 Directorate	University of Arizona, Tucson
Jan. 29-30	MAB-7b Directorate	San Juan, Puerto Rico
March ?	MAB-12 Directorate	East/West Center, Honolulu, Hawaii
June 15-24	MAB-3 International Grasslands Congress	Lexington, Kentucky
Nov. ?	10th Anniversary Cele.	UNESCO/MAB, Paris, France

Dates Not Set:

MAB-2 Directorate Meeting, Milwaukee, Wisconsin
MAB-2 Workshop US/Mexico
MAB-5A Meeting on Great Lakes Project
MAB-3 US/Mexico Range Workshop (August, dates not set)
MAB-6A Directorate Meeting, Boulder, Colorado (February)

PUBLICATIONS

Write to the Secretariat for the following - first-come, first-served:

Proceedings: Symposium on the Environmental Consequences of Fire and Fuel Management in Mediterranean Ecosystems, August 1-5, 1977
Palo Alto, California

U.S. Strategy Conference on Tropical Deforestation, June 12-14, 1978, Washington, D.C.

Summary and Recommendations, International Symposium on Tourism and the Next Decade, March 11-15, 1979, George Washington University, Washington, D.C.

Biological and Sociological Basis for a Rational Use of Forest Resources for Energy and Organics, May 6-11, 1979
Michigan State University, East Lansing, Michigan

Conference on Environmental Management and Economic Growth in the Smaller Caribbean Islands, September 17-19, 1979
Wilbey, St. Michael, Barbados

Effects of Air Pollutants on Mediterranean and Temperate Forest Ecosystems, June 22-27, 1980, Riverside, California

Conference on Research on Multiple-Use of Forest Resources, May 18-23, 1980, Flagstaff, Arizona

- Directories: Directory of Social Scientists for Rangeland Peoples
Selected US Training Programs, Short Courses and Workshops in Environmental Protection and Natural Resource Management
- Reports: The World's Tropical Forests: A Policy, Strategy, and Program for the United States
The Global 2000 Report to the President, Vols. 1 & 2
- MAB Pub. Series Report #1 - Guidelines for the Selection of Biosphere Reserves, An Interim Report and Key
Report #2 - Understanding Marine Ecosystems in the Gulf of Mexico
Handbook #1 - Pollution Assessment: A Training Manual
Miscellaneous Publication #1 - Diarrheal Disease Correlated with Season, Age and Sex of Patient, Hospital Behrhorst, Chimaltenango, Guatemala
- Environmental Profiles: (Prepared by Library of Congress)
Bolivia, Ecuador, Guatemala, Haiti, India, Jordan, Mauritania, Nepal, Sri Lanka, Peru, Philippines, Thailand, Bangladesh, Zaire, Swaziland, Syria, Liberia
(Prepared by Arid Lands Institute, University of Arizona)
Cape Verde, Egypt, Ghana, Mali, Morocco, Niger, Senegal, Tunisia, Upper Volta, Yemen
(Ready soon)
Barbados, Cameroon, Honduras
- Information for Non-Scientific Audiences Developed by MAB/Paris
- o For: audiences of planners, managers, teachers, local environmental groups, etc.
 - o To: highlight main objectives and themes of MAB, as well as principal issues and environmental problems to which MAB is addressed
 - o Subject: "Man and the Humid Tropics"
 - o Available:
 - . A slide-tape show entitled "Man and the Humid Tropics," the first in the new MAB audio visual series from Paris. (On loan basis only, no charge)
 - . A 16-page illustrated brochure entitled "Man and the Humid Tropics" designed to accompany the slide-tape show or used as an independent document
 - . A poster on MAB in the Humid Tropics, illustrated - how and why an international research network based on national efforts has been launched in this ecological region
- A descriptive sheet on each of the above items is also available from US MAB Secretariat
- Available at cost: Geobotanical Atlas of the Prudhoe Bay Region, Alaska, D.A. Walker, K.R. Everett, P.J. Webber and J. Brown, CRREL Report 80-14, June 1980 Available from : USA CRREL/TIB, Box 282, Hanover, NH 03755, USA, \$25.00

The following publications are available from the Canada/MAB Secretariat, c/o Canadian Commission for Unesco, 255 Albert Street, Ottawa, Ontario, Canada K1P5V8

- Prospectus for Canada/MAB (The Unesco Program on Man and the Biosphere in Canada)
- Canada/MAB Report 2: Research Strategy: Provisional Concept, Aug. 31, 1974
- Canada/MAB Report 3: Sub-Program on Agriculture and Forestry: Provisional Framework, Aug. 31, 1974
- Canada/MAB Report 4: Sub-Program on Urbanization: Provisional Framework, Nov. 30, 1974
- Canada/MAB Report 6: Guidelines for the Selection of Biosphere Reserves in Canada, Oct. 1, 1975
- Canada/MAB Report 8: Sub-Program 4, Science for the North: Research Framework, Jan. 31, 1977
- Canada/MAB Report 9: Methods and Interpretation of Environmental Perception Research, Aug. 1, 1977

- Canada/MAB Report 10: Submission Procedures for Candidate Biosphere Reserves
in Canada, Aug. 1, 1977
- Canada/MAB Report 11: Canadian Contributions to the Unesco Program on Man
and the Biosphere (MAB), March 31, 1979
- Canada/MAB Report 12: Biomass Strategy Consultation, March 31, 1979
- Canada/MAB Report 13: Management Problems of Polydisciplinary Environmental
Research Projects in the University Setting, Nov. 1979
- Canada/MAB Report 14: Managing Urban Space in the Interest of Children, Oct. 1980

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