

The US MAB Concept and Program—A Chronology Addressing Biosphere Reserves

Vernon C. (Tom) Gilbert

United States Biosphere Reserves Association

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On October 1, 2003, the United States rejoined UNESCO and committed to participate fully in its mission to advance human rights and tolerance and learning. An important program of UNESCO that contributes to this mission is the Man and the Biosphere Program (MAB) and the World Network of Biosphere Reserves—425 special places in 95 countries that promote sustainability and human welfare. As the U. S. renews its MAB program and contributes to this mission, there is much valuable experience to build on, both successes and failures. In the past, the US MAB Program failed to foster enough public understanding of the United Nations, of UNESCO and the MAB Program, and the role of biosphere reserves. However, many other countries have kept the program going and are benefiting from it. Today, the emphasis on human welfare and involvement of local communities in the biosphere reserve program is generally accepted and appreciated. It is also recognized, that such collaborative efforts toward conservation and sustainability are needed because much of the diversity of life occurs outside protected areas, and most of the threats to that diversity come from outside protected areas.

An individual who contributed in many important ways to the development of MAB and biosphere reserves was ecologist Ray Dasmann. He described many of the environmental problems the world faced in 1968, and wrote, “There seems to be no way of speeding these commitments except through public demand within each nation and this requires a growing level of public awareness not only of the problem but of the means and machinery required for its solution.”¹

These words ring louder and clearer today. In fact, the cumulative experience of thousands who contributed to the development of MAB and biosphere reserves over the last 32 years amplifies them. Below is a chronology of events leading to the establishment of the US MAB, with some emphasis on the Biosphere Reserves Program. Many of the examples described below focus on U.S. contributions to the development of the biosphere reserve concept and program, for by improving on this past experience, and benefiting from renewed exchange and synergy with others, the U.S. can make a valuable contribution to UNESCO’s mission to advance human welfare and transition to a more sustainable world.

1968 - The Biosphere Conference (UNESCO Paris, September) recommended strenuous efforts by national and international agencies and public and private organizations to establish natural areas for the preservation of species, their habitats, and representative samples of ecosystems. Stanley Cain (USA) described the need for conservation of natural areas and landscape planning—multidisciplinary, multiagency, public-private joint planning that recognized the existence and nature of natural and human ecosystems—essentially ‘ecological planning.’

¹ Dasmann, Raymond F., 1972. *Planet in Peril? Man and the Biosphere Today*. Penguin Books.

1970 - MAB projects were identified by working groups. An International Coordinating Council was established, and the General Conference of UNESCO gave its approval to MAB.

1971 - The International Coordinating Council of MAB defined the MAB projects. Project No. 8 was to deal with the establishment of reserves, protected and managed in various ways, to help meet the scientific, economic, educational, cultural and recreational needs of mankind. Such areas were regarded as essential for research in ecosystems of various kinds and of fundamental importance as baselines or standards against which change can be measured and the performance of other ecosystems judged, and for conservation of gene pools of plants, animals and micro-organisms. The Council recommended development of a coordinated, worldwide network of protected areas, and suggested that they might be designated 'biosphere reserves.'

1973 - An Expert Panel on Project 8: 'Conservation of Natural Areas and of the Genetic Material They Contain' (IUCN- Morges, MAB Report No. 12) recommended conservation of representative significant ecosystems, or biosphere reserves, should be given high priority by governments and international bodies, and that special groups should be convened to accomplish the following:

- Preparation and guidelines for the choice and establishment of biosphere reserves, embodying ecological and genetic principles of nature conservation.
- Identification of biomes, and subdivisions of them, for which representative samples are not already adequately protected.
- Determination of criteria for selecting a network of baseline and monitoring stations in representative undisturbed biome areas, to serve as benchmarks or standards for assessing change.
- Preparation of a general framework for various types of questionnaires needed by National Committees to suit the specific circumstances and situations in their own countries.
- Development of plans for using existing protected sites and associated programs for environmental education and to promote public awareness of MAB and its objectives.
- Elaboration of research proposals on population structures in reserved areas and on the possible use of genetic change as an indicator of environmental change in baseline studies.

1974 - The MAB Task Force on 'Criteria and Guidelines for the Choice and Establishment of Biosphere Reserves' (UNESCO, Paris. MAB Report 22) described criteria for selection of biosphere reserves and the primary objectives of biosphere reserves:

- To conserve the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends.
- To provide areas for ecological research, including, particularly, baseline studies, both within and adjacent to such reserves.
- To provide facilities for education and training.

The Task Force recommended further development of the IUCN System (Ray Dasmann's Biotic Province Classification scheme) for classifying natural regions and for facilitating the selection of representative sites as biosphere reserves.

It emphasized that planning and management of reserve areas should be related to the conditions in the surrounding areas, and to the relevant environmental, social and economic issues in those areas. The idea of cooperation with the local population was emphasized in several ways, including establishing councils or coordinating bodies to represent landowners, and through establishment of environmental education programs and study areas with local institutions. The Task Force also recommended monitoring of human impacts to keep them in reasonable bounds.

In July, the Biosphere Reserve program attracted worldwide attention when the United States and the Soviet Union agreed in a Summit Conference in Moscow to support the MAB Program. President Nixon and General Secretary Brezhnev signed an agreement and Joint Communiqué to: ***“Designate certain natural areas as Biosphere Reserves for protecting valuable plant and animal genetic strains, and ecosystems, and for conducting scientific research needed for more effective actions concerned with global protection.”*** The State Department then invited other countries to join in the program by proposing appropriate areas as biosphere reserves, and a U.S.-U.S.S.R. Joint Committee on Cooperation in the Field of Environmental Protection agreed to take steps to select biosphere reserves and initiate cooperative efforts in ecosystem research. A project initiated under the agreement, supported by the National Park Service as a contribution to the exchange of information among nations, was a compilation of reports by The Nature Conservancy on ways in which the United States manages and protects certain areas of ecological value. Three volumes were published in cooperation with the USMAB Program:

1. Preserving Our Natural Heritage- Vol. 1 Federal Activities, 1976
2. Preserving Our Natural Heritage- Vol. 2 State Activities, 1977
3. Preserving Our Natural Heritage- Vol. 3 Private, Academic and Local Government Activities, 1982

1976 - The USMAB Directorate for Project No. 8 prepared a National Program Statement outlining guidelines and plans for Project 8 and biosphere reserves. 28 U. S. areas had been designated biosphere reserves and recognized by UNESCO. In several regions, large natural areas were paired with research-rich, experimentally-oriented reserves. A principal goal was to develop cooperative activities in ecological research, land use and environmental quality management. The first of a series of regional workshops was conducted in the Southern Appalachians for biosphere reserves in the southern U.S.

Special focus was given to coastal and marine areas, to be done in collaboration with the Federal Committee on Ecological Reserves.

The U.S. proposed planning for the use of biosphere reserves as baseline areas for environmental monitoring as part of the U.N.E.P. Global Environmental Monitoring System (GEMS).

A Symposium on the Selection, Management and Utilization of Biosphere Reserves was held in Moscow. Papers were presented on the research, monitoring, conservation and education activities planned or underway in biosphere reserves and priorities for exchange were agreed. The English version of the Symposium proceedings were published as General Technical Report PNW-82 by the Pacific Northwest Forest and Range Experiment Station, USDA, Forest Service, March 1979.

1977 - The Chairman of the US MAB Committee, Donald King, proposed the idea of a ‘Global 2000 Study’ to the President’s Council on Environmental Quality. Later, in his Environmental Message to the Congress on May 23, President Carter directed U.S. agencies to make a one-year study of the probable changes in the world’s population, natural resources, and environment through the end of the century. He indicated that the study would serve as the basis for longer term planning. Several persons with US MAB played important roles in developing papers setting forth the concepts of the study.

The Biosphere Reserve Directorate, with support from EPA, approved the Southern Appalachian biosphere reserve cluster for the first pilot pollution-monitoring project. Plans and special equipment for the project were developed by the Las Vegas Lab of EPA.

1978 - An International Workshop on Long-term Monitoring in Biosphere Reserves was hosted by USMAB in cooperation with UNESCO and UNEP. Forty-five scientists from 10 nations and the U.S. participated in discussions in Washington, D.C., at Oak Ridge National Laboratory, Great Smoky Mountains National Park, and Coweeta Hydrologic Laboratory. Plans were developed for four categories of monitoring—chemical, biological, geo-physical, and anthropological. The workshop led to further U.S. technical assistance to the UNEP Global Environmental Monitoring System (GEMS) and applications of long-term monitoring in biosphere reserves.

1979 - The Executive Office of the President, Office of Management and Budget and Office of Science and Technology Policy, called upon key federal agencies to participate fully in the MAB program and to cooperate fully in the development and management of the program, citing that it was ***“an excellent opportunity for international cooperation and provided a focus for the coordination of domestic programs aimed at improving the management of natural resources and the environment.”*** The Departments of Agriculture and Interior were asked to lead the development of the domestic program, and the Department of State, the international component.

A report was prepared for UNESCO by IUCN’s Commission on National Parks and Protected Areas on ‘The Biosphere Reserve and its Relationship to Other Protected Areas.’ It described the special focus of biosphere reserves and how the program differed from other national and international programs for protecting areas. Six special features of biosphere reserves were described:

- Emphasis in selection is on representative samples rather than those that are exceptional.
- They form an international network in which the international character is insured by exchange of information and personnel.
- They provide for manipulative research in portions of the reserves.
- They combine conservation, research, education and training as major objectives.
- They play an integrative role with local populations whose social and economic activities comprise a significant management input.
- They focus their efforts on the relationship between man and the biosphere.

The report concluded that development of a world-wide network of biosphere reserves is an important initiative among efforts to provide an assured future for mankind, and that it should provide an excellent opportunity of increasing understanding of the problems of the biosphere and of involving people, especially local people, in conservation and research having a vital bearing on their own future.

A U. S. Biosphere Reserves Information Synthesis Project was conducted by the Oklahoma Biological Survey (Oklahoma Biological Survey, March 1979) including:

- A description and characterization of each of the 28 reserves.
- An evaluation and analysis of the sites as a total system in the context of the environmental characteristics of the United States.
- A summarization of existing research and monitoring projects at each reserve
- A bibliography of information about the reserves
- A synthesis volume that included selected portions of the above information.

A U.S. MAB Consortium for the Study of Man's Relationship to the Global Environment was established as a MAB interagency initiative.

1980 - A National Plan for U.S. participation in the MAB Program was prepared as a result of the request in 1979 from the Directors of the Offices of Management and Budget and Science and Technology Policy to the Departments of State, Interior, and Agriculture to develop a plan for participation in the MAB Program. It included:

- Completion of the U.S. Biosphere Reserve network
- Development of pilot environmental monitoring projects in selected areas
- Research on design and size of areas required for ecosystem and species conservation
- Training on protection of ecosystems and genetic resources
- Establishment of a permanent, easily accessed data system
- Development of Cooperative Regional Demonstration Projects (specifically for the southern Appalachians, the Colorado Rockies, the Lake Champlain Basin, and the Lower Colorado River Basin)
- Cooperation with Mexico, Central American and Caribbean countries in developing a network of biosphere reserves
- Exchange with the U.S.S.R. in research and monitoring in selected biosphere reserves.

A major effort was initiated to select additional biosphere reserves with the help of ad-hoc committees of experts in different biogeographic regions. MAB also convened an expert panel, under the chairmanship of Dr. Carleton Ray of the U. of Virginia, to develop a biogeographic classification scheme for the Nation's coastal regions and a process for identifying and selecting areas for nomination as biosphere reserves. The process established procedures governing the activities of ad-hoc committees, and a rating system for use in Reserve selection.

1981 - The International Conference on Ecology in Practice (Paris, November) took stock of ten years of work within MAB. Papers and case studies from several countries dealt with biosphere reserves and their role in providing a scientific basis for ecosystem conservation. Five U.S. posters on "Conservation and biosphere reserves" were part of a 36 poster exhibit, "Ecology in Action."

The Second U.S.-U.S.S.R. Symposium on Biosphere Reserves was held, March 10-15, in Everglades National Park on "Successful Research and Environmental Monitoring Associated with Biosphere Reserves." (Proceedings- USMAB in cooperation with USFS and NPS, Sept. 1981) The discussions and later exchanges furthered the objectives of comparable ecosystem research and environmental pollutant monitoring efforts in biosphere reserves in each country.

1982 - A 'Cooperative Regional Demonstration Project' (CRDP) was developed with USAID support in Rwanda, Africa focused on a biosphere reserve and Mountain Gorilla habitat and adjacent farmland in the Virunga Volcanoes, based upon concepts and principles developed by USMAB.

1983 - The First International Biosphere Reserve Congress was convened in Minsk, U.S.S.R. in 1983. These consultations and recommendations formed the basis for an 'Action Plan for Biosphere Reserves.' Emphasis on Cooperative Regional Demonstration Projects provided a basis for the Action Plan objectives regarding biosphere reserve roles in regional planning and development, and environmental education and training.

Thirty-six U.S. biosphere reserves were designated by 1983. A report was prepared of the ecological inventory, monitoring, and research in the 15 NPS areas. (Biological Conservation, Applied Science Publishers Ltd., England, 1983)

1984 - The Action Plan for Biosphere Reserves was adopted by the International Coordinating Council at its eighth session (Paris, December, 1984) and subsequently endorsed by UNESCO's General Conference and UNEP's Governing Council.

A 'Workshop on Biosphere Reserves and Other Protected Areas for Sustainable Development of Small Caribbean Islands' was held in Virgin Islands National Park, sponsored by the U.S. N.P.S., the Caribbean Conservation Association and UNESCO. It focused on the conservation and development of small islands, and explored the role of biosphere reserves in stimulating and sustaining development, and in enhancing ecosystem management skills in support of integrated development of the region and conservation of its biodiversity.

1985 - The U.S. Interagency Report to Congress, *U.S. Strategy on the Conservation of Biological Diversity*, recommended increased support for U.S. MAB, and in particular to biosphere reserves as centers for developing the information and skills needed for sustainable conservation of regional ecosystems, and for the continuing assessment and improvement of resource management through research.

The Scientific Advisory Panel for Biosphere Reserves had its first meeting in Cancun, Mexico at the invitation of the MAB National Committee of Mexico. It focused on:

- Action Plan objectives
- Evolution of the biosphere reserve concept and its application
- Refinement of selection criteria for biosphere reserves, and evaluation of new proposals for biosphere reserves

1986 - Following approval by the MAB Biosphere Reserve Directorate in 1985, a proposal for a cooperative regional demonstration project in the Southern Appalachians was developed (V. Gilbert). The proposal identified issues of regional concern, documented cooperative support by various partners for solving shared problems, and provided a basis for a collaborative project. The Directorate approved support for planning the project.

A Biosphere Reserve Environmental Education Program was developed by J.Peine, NPS, and designed by Gary Mullins, Ohio State University.

An International Marine Protected Areas Management Seminar was hosted by USMAB and the U.S. National Marine Sanctuaries Program with support of several international organizations. An Action Plan for marine protected areas was prepared. (June, 1986)

The Smithsonian Institution and MAB jointly developed a program to address needs arising from the loss of biodiversity in developing tropical countries. The Program designed a standardized inventory protocol that could be used by biologists and biosphere reserve managers in developing countries and contributed to national and international cooperation and a biological resource network in the tropics.

The Scientific Advisory Panel for Biosphere Reserves held its second meeting. (La Paz, August). A report to the Bureau of the ICC of MAB outlined major developments in the international biosphere reserve network from 1985 to mid 1986.

USMAB and MAB-Germany agreed to cooperate in biomonitoring, landscape ecology, and public education on air pollution and acid deposition with emphasis on Southern Appalachian and Bavarian biosphere reserve units.

1987 - In March, the Office of Technology Assessment of the U.S. Congress said in its report, *Technologies to Maintain Biodiversity*, “Notwithstanding the program’s practical problems, the planning and management principles in the biosphere reserves concept reflect what an international conservation program needs to endorse—conservation as an open system, where areas of undisturbed natural ecosystems can be surrounded by areas of synthetic and compatible use, and where people are considered part of the system.”

A Biosphere Reserve Symposium was sponsored by UNESCO, USMAB, MAB Mexico, NPS, and USFS, and hosted by World Wilderness Leadership Foundation (Estes Park, Colorado, September). It provided a ‘window’ on biosphere reserve programs being implemented in several countries, and an overview of strengths and weaknesses of the programs. A paper presented on ‘Coastal and Marine Biosphere Reserves’ presented by G. Carleton Ray and M. Geraldine McCormick Ray, U. of Virginia, described a taxonomy for coastal and ocean areas, and the value of applying the biosphere reserve concept in these areas.

A Symposium on the role of biosphere reserves in environmental education and training, within UNESCO-UNEP Congress on Environmental Education was held in Moscow.

USMAB prepared and distributed *A Practical Guide to MAB*.

A workshop on ‘Ecosystem Management for Parks and Wilderness’ sponsored by the U. of Washington, USFS, and NPS. (U. of Washington Institute of Forest Resources, Contribution No. 62, 1988) emphasized the role of biosphere reserves in a regional approach to management of ecosystems, using the Southern Appalachians as an example.

The Ecosystem Conservation Group (UNESCO, UNEP, FAO and IUCN), promoted biosphere reserves as a focus for cooperation among the major international organizations in carrying out their Action Plans, and established a Working Group on in situ Conservation of Plant Genetic Resources that included the International Board for Plant Genetic Resources.

1989 - A U.S. Biosphere Reserve Program Development Plan was prepared by a Committee of the Project Directorate on Biosphere Reserves. (Paul Risser- Chairman) International workshops were conducted on application of the biosphere reserve concept to coastal areas (San Francisco), and on remote sensing technologies for biosphere reserves. (Moscow)

A joint study of 'Integrated Conservation/Development Projects,' including biosphere reserves, was initiated by the World Bank, USAID, and the World Wildlife Fund. (Wells, Brandon and Hannah, June 1989) The results were described as sobering but encouraging. Modest progress had been made in several areas. The main problems were attributable to financial constraints and the lack of experience of the participating organizations. The study concluded... *'Innovative, well-designed ICDPs at carefully selected sites that constructively address local people-park relationships are essential to the conservation of biodiversity and thus to sustainable development.'*

USMAB sponsored feasibility studies for regional biosphere reserve programs in several regions.

A U.S. - Mexican symposium on biosphere reserves in the Chihuahuan Desert discussed topics for future emphasis, including restoration of desert grasslands in the Big Bend region, monitoring for global change, and reestablishment of the Bolson tortoise at Big Bend using genetic stock from Mapimi.

A workshop at Great Smoky Mountain National Park Biosphere Reserve to explore the feasibility of adopting the Smithsonian/MAB protocols developed to describe biodiversity in the tropical forest of Latin America resulted in agreement to establish a demonstration plot in the park.

A Training Workshop on Global Climate Change and Biosphere Reserves was held at the U. of Tennessee, August, 1989. Following the workshop a committee of the NPS met and strongly endorsed the MAB program, and encouraged the NPS Directorate to make MAB a more meaningful program at all levels of the Service.

A Committee on Criteria and Guidelines for the Evaluation of Projects Designed to Protect or Enhance Biodiversity (NRC- National Academy Press, 1989) recommended that U.S.A.I.D. should encourage countries, as appropriate, to participate in the international biosphere reserve program as a means to conserve ecosystems and habitats, and called attention to the MAB/ International Geosphere- Biosphere Program to develop a world-wide network of research sites for early detection of problems related to habitats and ecosystems.

1990 - The ICC of MAB at its 11th session recalled that biosphere reserves were established under appropriate national legislation in force in each country, which maintains full sovereignty and responsibility for the biosphere reserves in its territory. The Council recommended giving enhanced status to the development of the international network of biosphere reserves, and made a number of recommendations including one that biosphere reserves should become the focus of more integrated

projects aimed at sustainable use of natural resources, and that a synthesis of experience gained in these projects should be prepared and widely distributed.

1991 - The U.S. Coordinating Committee for Biosphere Reserves prepared a Directory of U.S. biosphere reserves, and developed a draft plan to implement a national strategy for biosphere reserves. The Committee agreed upon four integrating goals for biosphere reserves:

- Improve the scope and utility of biosphere reserves for the conservation of biodiversity
- Foster research activity supportive of sustainable conservation and ecosystem use in biosphere reserves.
- Promote education for sustainable conservation and ecosystem use
- Facilitate involvement of others in USBR activities (e.g. local communities, non-governmental organizations, environmental education groups.)

1992 - The First formal meeting of the Advisory Committee on Biosphere Reserves was convened. A Workshop on assessing recent experience in operating biosphere reserves was held as part of the 4th World Congress on National Parks and Protected Areas (Caracas).

U.S. scientists, supported by USAID and the World Bank, prepared GEF Biodiversity projects in Czechoslovakia and Poland using MAB biosphere reserve concepts. Biosphere reserve status was recommended for several border areas in these and adjacent countries.

1993 - The U.S. MAB Committee convened a national workshop of biosphere reserve managers and stakeholders to develop recommendations for an integrated U.S. biosphere reserve program. The workshop, involving 83 participants, was held in Estes Park, Colorado, in December, and a Draft Action Plan was prepared. A series of case studies as examples of efforts to implement biosphere reserve concepts was prepared by Partners in Parks.

1994 - A Strategic Plan for the U.S. Biosphere Reserve Program was approved by the U.S. MAB Committee (Department of State Publication 10186, Dec. 1994. The Plan included a description of the USMAB Program and biosphere reserves, policy and program objectives, network development, local participation, research, education and communication.

1995 - An International Conference on Biosphere reserves was held in Seville, Spain. (March) The Seville Strategy for Biosphere Reserves provided recommendations for developing effective biosphere reserves, and suggested the level (international, national, individual) at which each recommendation would be most effective. The goals described were:

1. Improve the coverage of natural and cultural diversity by means of the World Network of Biosphere Reserves
2. Utilize Biosphere Reserves as models of land management and of approaches to sustainable development
3. Use biosphere reserves for research, monitoring, education and training

A Statutory Framework for the World Network was recommended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The Seville Strategy and the Statutory Framework were approved by the UNESCO General Conference. (November)

A U.S. Biosphere Reserve Managers Workshop to obtain the perspectives and recommendations of biosphere reserve managers for implementing the U.S. Strategic Plan for Biosphere Reserves was held in Herndon, VA. (October) Working groups and recommendations were:

- **Communications:** There is need to focus on unique benefits of biosphere reserves. Local level involvement and attention to cross-cultural needs is essential.
- **Education and training:** Coordinated efforts with local partners are needed. Celebrate ‘local stories.’
- **Filling gaps:** Provide technical assistance to local groups. Support planning of new biosphere reserves.
- **Local participation:** Canada’s approach to cooperative planning and involvement was cited as a good model.
- **Operational framework:** Identify authorities, roles and responsibilities; strengthen awareness among agencies and the Administration.
- **Research and monitoring:** Hold regular meetings of Directorate chairs. Prepare a project decision plan; prepare guidelines for management involvement.

A survey of managers to assess their perceptions about their biosphere reserves was conducted, and a report of the results was presented at the Managers workshop.

Recognizing that the biosphere reserves in the North America Free Trade Area (63 areas) offer an opportunity for monitoring global change and effects on biodiversity, a ‘Memorandum of Understanding Regarding Cooperation Among the MAB Programs of Canada, Mexico and the United States’ was signed by the Chairs of the MAB Committees for each country. (NAFTA/MAB Agreement, October 30, 1995)

1996-1997 - A “20 in 2000 Campaign” was proposed by the U.S. Biosphere Reserve Directorate for the functional development of at least 20 U.S. biosphere reserves by the end of the year 2000. Funds were requested for biosphere reserve promotion and public education, forums on regional issues, MAB applications to meet local needs,, technical assistance for briefing local interests, and training in biosphere reserve concepts, regional partnerships etc.

A ‘Workshop on Implementing the Seville Strategy for Biosphere Reserves’ was conducted as part of IUCN’s World Conservation Congress in Montreal (October 1996) Periodic reviews of biosphere reserves designated over 10 years were launched.

Many of these recommendations were being implemented when U.S. Biosphere reserves came under threat of termination by the U.S. Congress. This threat resulted from a well-organized, sensationalized campaign by right wing groups and a few members of Congress who alleged that Biosphere Reserves are a UN-White House experiment within sovereign U.S. borders, and that biosphere reserves and World Heritage sites were being used to take control of public and private lands in the United States. A ‘Biosphere Reserves Fact Sheet’ prepared by the Congressional Research Service (June 1996) indicated that the allegations were false, but the document received little attention and the ‘Sovereignty’ movement flourished. The result was reduced political and financial support for MAB and termination of the biosphere reserve activities in many areas.

1999 - *Ecosystem Management for Sustainability: Principles and Practices Illustrated by a Regional Biosphere Reserve* was published (Lewis Publishers- London, New York, Washington, D.C./ edited by John Peine) This work was based on the experience of MAB and the development of the biosphere reserve cooperative in the Southern Appalachians. It included work by 50 contributors and provides a vision for more effective use of biosphere reserves toward sustainability.

2000 - Biosphere Reserves were recognized as a major tool for implementing the ecosystem approach by IUCN World Congress (AMMAN, October)

The Seville+ 5 meeting was held (Pamplona, October). A survey of Seville Strategy implementation indicators was initiated. The Pamplona meeting agreed that science is the basis of a satisfactory biosphere reserve network, which is itself a unique global platform for research and monitoring. The network is also vitally concerned with conservation and sustainable human development. It was agreed that biosphere reserves were not perfect, and they needed better visibility, support, outreach, use as outdoor laboratories and classrooms, integration into regional planning and into local economies, methods of evaluation, links with multi-lateral environmental agreements, and links with each other.

Biosphere Reserves on Borders was prepared and published by the National MAB Committee of Poland with support by UNESCO. It describes the state of the art regarding establishment and management of transborder reserves, and presents case studies of several biosphere reserves, including the Chihuahuan Desert Biosphere Reserve (Mexico/U.S. and Crown of the Continent Biosphere Reserve (Canada/U.S.).

The U.S. MAB Program Committee prepared a draft position paper, *The USMAB Program: Refocusing on Environmentally Sound Development for a New Millennium*. (February) The paper focused on research leading to the development of smart growth and land management approaches and conducting demonstration projects showing examples of smart growth. Biosphere reserves provided a focus for collaboration to address regional natural resource and economic growth challenges.

2001 - A Columbia University-UNESCO Symposium on Biodiversity and Society was conducted. (New York, May) Discussions were held to define concepts for urban biosphere reserves and ways to assist MAB in the development of an urban ecosystem research agenda.

2002 - The Canadian Biosphere Reserves Association, with support from the Canadian Government initiated a program to enable each Canadian biosphere reserve to develop a plan of cooperation. These innovative plans set priorities for the three functions of biosphere reserves (conservation, sustainable development and capacity building). The plans are “grass roots” in organization. They identify partners and describe their roles, discuss resources needed, recommend actions to address priorities, and describe community benefits. The Canadian biosphere reserves, with their limited funding and heavy dependence on volunteers, make their cooperation plans relevant to many countries, including the U.S.

2003 - The United States rejoined UNESCO on October 1 and committed to participate fully in its mission to advance human rights and tolerance and learning. (This action followed First Lady Laura

Bush officially representing the Bush administration at ceremonies marking U.S. reentry into UNESCO in Paris, September 29.) Ambassador Louise Oliver was appointed as U.S. representative to UNESCO.

Initiating renewal of the biosphere reserve program in support of the U. S. return to UNESCO, and the preparation of a plan for biosphere reserve collaboration with Canada and Mexico, had already been approved by the USDA Under Secretary for Natural Resources and the Environment on February 5, 2003. The plan included the incorporation of a U.S. Biosphere Reserves Association to:

- Convey factual information about biosphere reserves
- Assist in planning and developing a national program
- Affiliate with groups locally and nationally to promote the biosphere reserve concept and goals
- Assist individual biosphere reserves in developing cooperative plans to achieve their goals, focusing on community-based, public-private partnership activities.
- Plan and develop collaborative activities with Canada and Mexico in a North American Biosphere Reserve Network, in collaboration with UNESCO and the international network of biosphere reserves.
- Perform periodic surveys and assessments of U.S. biosphere reserves to determine how they are carrying out their functions.
- Assist in developing and implementing projects in conservation and sustainable resource use in biosphere reserves suitable to local and national needs.

The Association was incorporated in April, and two of its representatives participated in the Fifth Conference of Science and the Management of Protected Areas Association (SAMPAA), held in Victoria, BC, Canada in May. At the suggestion of the U.S. representatives, a resolution was drafted, and the Conference resolved unanimously to support the UNESCO biosphere reserve program as a practical means to achieve collaborative conservation, and to establish an effective and functional North American Biosphere Reserve Network.

A U. S. Biosphere Survey was conducted July-September by the Association with support from the SAMAB Foundation. 96% of the U.S. biosphere reserves responded, Most of the respondents reported interest in helping to plan a renewed program.

'Global Peace through the Global University System' was published. (GUS and Research Centre for Vocational Education, University of Tampere, Finland) A paper by J. Peine and D. Johnson, *'Linking Universities with Biosphere reserves: Creating a Global Biome and Society Living Laboratory'*, proposes an approach to formulating and testing pedagogical models utilizing the resources of selected biosphere reserves, e.g. Southern Appalachians, for on-line teaching, research and policy development.

2004 - The Environment ministers from West African countries met in Paris in January and called on the New Partnership for Africa's Development to use UNESCO biosphere reserves as laboratories for sustainable development.

The U.S. MAB National Committee began the process of reconstituting and establishing a new vision for US MAB. The Committee confirmed the mission of MAB to support a network of biosphere reserves that represent the ecoregional diversity of the U. S. and serve as centers of

innovative and effective conservation, education and progress toward sustainability. A Workshop on Renewing the U. S. Biosphere Reserves program is scheduled to be held at the Missouri Botanical Garden, in St. Louis, May 4-6. The participants will recommend key elements of a strategy for the program and objectives for the next five years, including focus areas for collaborative activities with Canada and Mexico.

Barbara Weber, Chair of US MAB will present a paper on the “Status, Role, and Future Directions of the US MAB Program” at the Conservation Biology Annual Meeting, July 20-August 2, New York.

An international workshop with Canadian and Mexican Biosphere Reserve colleagues will be held in the Southern Appalachians in October.

The NPS has provided funding for a study to begin in May to assess the past experience and current capacities of Mammoth Cave and Southern Appalachian Biosphere Reserve units to renew U.S. biosphere reserve activities consistent with U.S. rejoining UNESCO and participating fully in its mission. Robert Turner, Executive Director of SAMAB, will become a member of UNESCO’s International Advisory Committee on Biosphere Reserves.

Conclusion - As plans are developed to renew the U.S. biosphere reserve program, questions are being asked about its relevance to government agencies. The activities described above should suggest some answers. Most of the biosphere reserves in the U.S. are under public stewardship, and they will likely remain so in the future, but long-term sustainability will require stronger support and involvement of citizens in each area. It is notable that, even after a decade of inactivity, representatives of more than 30 U.S. biosphere reserves responded to the 2003 Survey that biosphere reserve status still brought significant to highly significant benefits to their areas by increasing environmental awareness, improving public recognition of resource significance, increasing nature protection, and promoting an ethic of sustainability. How much is this worth, and how much more valuable could it be if there was an active biosphere reserve program?

How much could it be worth if government performance and results were improved through biosphere reserve and MAB regional programs, such as SAMAB has attempted to do, by integrating some of the relatively independent government and non-government research, resource management, inventory, monitoring, assessment, information, education and training activities into systems that work more effectively toward sustainability?

Consideration should be given to the value of the US MAB, Smithsonian Institution, and biosphere reserve cooperative efforts that led to development of the large international database of protected areas and the world’s flora and fauna, now known as the Monitoring and Assessment of Biodiversity Program, at the Smithsonian’s National Zoological Park. Renewed collaboration and the development of a North American Biosphere Reserve network could enhance this program. A renewed U.S. biosphere reserve program, improving on past experience, and benefiting from exchange with others, could be a powerful tool to help bring about the changes needed to place stewardship of natural ecosystems on a firmer footing for the future. Participating in the international biosphere reserve network would enable us to benefit from the synergy and experience of others, and

improve relations with other countries, particularly those whose boundaries and ecosystems and migratory species we share. How relevant is this to government agencies and citizens?