

**STATEMENT ON BIOSPHERE RESERVES FOR THE AD HOC
COMMISSION ON THE UNITED STATES
MAN AND THE BIOSPHERE PROGRAM**

**Submitted to the Ad Hoc Commission on US MAB Program
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I. Introduction and Background

o In 1974, a UNESCO-UNEP special task force developed criteria and guidelines for the selection and establishment of biosphere reserves to facilitate ecosystem-based cooperation in combining conservation with interdisciplinary research, environmental monitoring, training, demonstration, environmental education, and local participation.

o UNESCO proposed an ambitious 6-year program to develop an international network of biosphere reserves. When United Nations agencies proved unable to fund the program, a bold initiative was needed to maintain enthusiasm.

o The bold initiative came in the form of a provision in the Nixon-Brezhnev Summit Communique of July 1974 which committed both countries to support implementation of MAB and to

"designate in the territories of their respective countries 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"

o Following this communique, U.S. scientists worked to evaluate and name sites in time for the International Coordinating Council (ICC) meeting in November, 1974. The scientists emphasized selection of large conservation areas (core areas), mostly managed by the National Park Service, and protected areas with a long history of experimental ecological research administered by the Department of Agriculture (Forest Service and Agricultural Research Service). Other countries followed suit in selecting biosphere reserves. In 1976, UNESCO officially designated 59 biosphere reserves in 8 countries. (As of March 1994, UNESCO has designated 324 biosphere reserves in 82 countries)

o From the beginning, biosphere reserves were conceived as addressing three basic needs or "concerns":

1. Conservation Concern - conservation of ecosystems and the genetic resources they contain
2. Logistic Concern - international network for research, monitoring, and education
3. Development Concern - demonstration of sustainable human uses of ecosystems

o Most of the initial UNESCO-designated biosphere reserves did not reflect the innovative multi-functional ecosystem-based approach embodied in the biosphere reserve concept.

o In the United States, biosphere reserves designated before 1980 fall into three categories -- protected natural areas, research reserves, and biosphere reserve clusters consisting of separately designated protected natural areas and research reserves. Attachment I describes these categories and lists the current U.S. biosphere reserves in each category.

o In March 1979, OMB and OSTP issued a memorandum on "U.S. participation in UNESCO's Man and the Biosphere Program" (Attachment II). This memorandum gives responsibility to the Department of State for the international development of the program and jointly to the Departments of Agriculture and the Interior for its domestic development. From 1974 and 1989, the latter agencies cochaired a Biosphere Reserve Directorate for coordinating USMAB activities involving U.S. biosphere reserves.

o In 1980, USMAB commissioned development of a program plan. The plan included a call for cooperative regional demonstration projects to "integrate MAB directorates" and "focus the scientific and institutional expertise of many disciplines on specific resource management problems of particular regions, which will be defined by their unique or characteristic ecologic, economic, cultural, and geographic attributes". In 1981, changes in U.S. policy toward UNESCO and reduced agency contributions to USMAB precluded further consideration of the plan.

o In 1984, UNESCO approved the Action Plan for Biosphere Reserves, based on the recommendations of the First International Congress on Biosphere Reserves (1983). The plan clarified the concerns, characteristics and objectives of biosphere reserves, and recommended implementing actions for consideration by international organizations and National MAB Committees. The plan stimulated U.S. efforts to find more effective ways to develop and integrate biosphere reserve functions.

o Between 1980 and 1986, the U.S. nominated multi-site biosphere reserves based on the recommendations of USMAB panels of scientists convened to review particular biogeographical provinces. The approach linked ecologically and functionally complementary sites within the same biosphere reserve. However, limited USMAB resources during this period limited efforts to encourage stakeholder participation and cooperation among the complementary sites.

o In 1988, the National Committee declined approval of U.S. participation in nominating a multi-site biosphere reserve in northern Minnesota and adjacent Canada based on concerns of local citizens groups over the implications of biosphere reserve designation on traditional resource uses. Although the concerns lacked a factual basis, the Committee's unprecedented rejection of a nomination underscored the need to enlist stakeholder participation in the biosphere reserve planning process.

o Since the late 1980s, emphasis has been on implementation of biosphere reserve concepts as a flexible means to help resource managers and other ecosystem stakeholders find practical solutions to complex problems of conservation and development in particular biogeocultural areas. Designation of complementary sites as parts of a regional biosphere reserve is now appropriately seen not as an end in itself but as a continuing process that recognizes, facilitates, and energizes the work of government agencies and nongovernmental stakeholders in building a cooperative program.

o The history of biosphere reserves in the Southern Appalachians exemplifies the relationship between program development and site designation. Two biosphere reserves were designated in 1976 -- Great Smoky Mountains National Park and the Coweeta Hydrological Laboratory. The biosphere reserve cluster included Oak Ridge National Environmental Research Park as an undesignated cooperating site. In 1988, the new Federal-state Southern Appalachian MAB Cooperative (SAMAB) began planning and implementing a cooperative regional program. SAMAB subsequently nominated the initial sites, along with the Oak Ridge site, as the founding units of the Southern Appalachian Biosphere Reserve. As the number of partners in the regional program increased, state and private sites asked to be nominated and were designated as parts of the Biosphere Reserve. Additional nominations are under consideration.

o The ICC with substantial input from U.S. scientists has adopted four orientations to focus MAB research squarely on human interactions in ecosystems:

- ecosystem functioning under different intensities of human impact
- management and restoration of human-impacted systems
- human investment and resource use, and
- human response to environmental stress

The ICC has recommended that all MAB activities, including comparative studies and long-term research in biosphere reserves, reflect these orientations to the extent possible. The orientations significantly influenced the restructuring of the U.S. MAB in 1990, and the research of USMAB's Directorates in regional landscapes involving designated or potential biosphere reserves.

In 1993, the ICC, considering the recommendations of the U.N. Conference on Environment and Development, adopted several priority themes for MAB:

- conserving biological diversity and ecosystem processes
 - exploring approaches to planning and sustainable resource management (SRM) of regional landscapes
 - formulating and communicating policy information on SRM and promoting environmentally sound behavior
 - building human and institutional capacities for SRM
 - contributing to the Global Terrestrial Observing System
- Regional biosphere reserves are providing operational models for organizing stakeholder cooperation to implement these themes.

o The interdisciplinary methodologies being developed by the MAB Directorates provide important tools for use by ecosystem stakeholders in demonstrating how Regional Biosphere Reserves can help solve complex problems of conservation and development.

o The 99 administrative units in the 47 U.S. biosphere reserves represent a prodigious variety of management categories and special designations (see Attachment III). Nevertheless, only 7 of the 47 U.S. biosphere reserves are considered as regional biosphere reserves working toward full implementation of the biosphere reserve concept. It is therefore clear that biosphere reserves in the United States are at various stages in implementing the innovative multifunctional approach embodied in the biosphere reserve concept.

II. Strategic Plan for the U.S. Biosphere Reserve Program

o In December 1993, U.S. MAB sponsored a workshop of U.S. biosphere reserve managers and stakeholders to develop recommendations for developing an integrated U.S. Biosphere Reserve Program (USBRP) that takes into account the great differences among U.S. biosphere reserves. The workshop recommendations were used by a committee of workshop participants to develop a Strategic Plan for the USBRP. The National Committee approved the Strategic Plan in July 1994.

o The Strategic Plan responded to the ICC's call to National MAB Programs to develop Biosphere Reserve Action Plans. The plan is a flexible framework for developing and coordinating an integrated USBRP.

o The Strategic Plan sets forth the mission, goals, objectives, and implementing actions of the USBRP. Figure 1 of the plan is a schematic diagram illustrating the quality and quantity of biosphere reserves according to the functions they are intended to serve. The diagram indicates that biosphere reserves have substantially fulfilled conservation and research functions but have fallen far short in implementing the functions of local participation, sustainable development, and networking. The Strategic Plan sets forth goals and actions for implementation by the National Committee, a new Biosphere Reserve Directorate, and the biosphere reserves themselves. These goals and actions focus on six key areas:

- Policy and program operations
- Biosphere reserve network development
- Local participation
- Research
- Education
- Communication (networking)

III. Implementation and Accomplishments

- o Biosphere reserves have been designated in nearly all of the terrestrial and coastal/marine biogeographic provinces represented in the United States

- o Designation of sites administered by state and local governments, nongovernmental organizations, and private institutions has increased steadily during the past decade (see Attachment IV). In 1976, all BR sites were Federal. Non-Federal participation has been the principal factor in growth of the network since 1983.

- o During the first decade (1974-1983), only a few BRs initiated cooperative activities to implement the BR concept. Most were specific research projects in an individual BR or BR cluster in the same province. By the mid-1980s, the biosphere reserve concept was playing a catalytic role in the efforts of protected area administrators to address resource problems cooperatively on an ecosystem basis (e.g., in Yellowstone, Great Smoky Mountains, Big Bend, and Glacier National Parks). Such efforts -- some with catalytic funding from US MAB -- have led to establishment of governmental cooperatives in the Southern Appalachians, the Land Between the Lakes Area, the U.S. and British Virgin Islands, and the Colorado Rockies; a non-governmental organization in the Central California Coast; multi-sector steering committees in the Champlain-Adirondack area, Catskills (pending nomination) and Ozark Highlands (pending nomination); a trinational [Mexico, U.S., Tohono O'odham Nation] citizens alliance in the Western Sonoran Desert; a cooperative program coordinated through a regional development district in the Mammoth Cave Area; and a non-profit foundation in the Southern Appalachians. These diverse efforts, listed in Attachment V, facilitate structured cooperation in planning and implementing regional programs in which stakeholders identify with MAB and biosphere reserve concepts.

- o In addition to the efforts that have so far led to organized cooperation, Attachment V also lists recent informal efforts of protected area managers and other stakeholders in a score of biogeocultural areas to explore the role of the biosphere reserve concept in facilitating ecosystem-based cooperation. A number of these efforts (e.g. in the Lake Superior Basin), can be expected to lead to organized regional programs in the near future.

- o Since 1988, U.S. biosphere reserve nominations have included a mechanism to facilitate cooperation among the administrators of proposed biosphere reserve sites, agencies concerned with conservation and development issues, research institutions, and local stakeholders.

- o Cooperative regional biosphere reserve organizations are expanding the constituency for the programs and activities of their participating agencies and organizations. By facilitating

stakeholder understanding and appreciation of these programs and activities, these organizations encourage cooperation in evaluating and demonstrating their benefits in helping stakeholders address regional conservation and development problems. Under conditions of increasing demands for limited budgets, a multi-sector stakeholder constituency can play a key role in stabilizing support for productive long-term monitoring, research, and educational programs required for ecosystem-based planning and management. This "value added" was recognized by managers at the 1993 U.S. national biosphere reserve workshop as an important incentive for participating in regional biosphere reserve programs. The future development of interregional and international cooperation through the biosphere reserve network will further increase this incentive.

- o The USMAB Secretariat is publishing case studies for 11 of the most active U.S. biosphere reserves, highlighting their background, approach to cooperation, accomplishments, constraints and opportunities for implementing the biosphere reserve concept. Six of the case studies focus on regional biosphere reserves (Champlain-Adirondack, Central California Coast, Mammoth Cave Area, New Jersey Pinelands, Southern Appalachians, and the Virginia Coast), three on cluster biosphere reserves (Chihuahuan Desert, Colorado Rockies, and Crown of the Continent), and two on transborder efforts involving national parks included in the original U.S. designations in 1976 (Sonoran Desert and Virgin Islands).

- o Many U.S. biosphere reserves are included in biogeographic areas that provide the focus for agency and multi-sector efforts to address regional and global issues and to demonstrate cooperative ecosystem-based management approaches. For example, the global change research program developed by the National Park Service utilized a biogeographic area approach based on biosphere reserve concepts and use of biosphere reserve sites to provide a framework for assessing the effects of environmental change at scales relevant to biological conservation and ecosystem management. The methodologies, scientific data, and programs developed in U.S. biosphere reserves figure prominently in many -- perhaps the majority -- of ongoing ecosystem management demonstrations, and several regional biosphere reserve organizations are contributing to these efforts. For example, a consortium of resource agencies in the southeast is utilizing the Southern Appalachian MAB Cooperative to develop a cooperative regional demonstration of ecosystem management.

- o USMAB is playing an important role in facilitating international on-line access to data and information on U.S. biosphere reserves through the Biosphere Reserve Integrated Monitoring Program, developed in cooperation with the EuroMAB Organization and the UNESCO MAB Secretariat. U.S. Biosphere Reserves are actively participating in developing subnetworks of biosphere reserves for

sharing data, methodologies, and technical expertise through MAB's Northern Science Network, the Smithsonian-MAB Biodiversity Program, and the U.S. -Russia Biosphere Reserve Program.

- o An important objective of the Strategic Plan for the USBRP is to integrate the USBRP as an essential component of the USMAB Program. To implement this objective and others, the plan recommended that the National Committee establish a Biosphere Reserve Directorate. The National Committee approved the new Directorate in July, 1994. The BR Directorate is responsible for planning, coordinating, and overseeing the USBRP, developing institutional and public support, and recommending policies, an annual program plan, and specific projects for approval by the National Committee.

- o With \$90,000 provided by USMAB, the BRD has developed a program agenda of near-term high-priority activities to begin implementing the Strategic Plan. The BRD agenda complements the core programs of the MAB Research Directorates which focus on specific research issues and often include biosphere reserves in their geographic areas of concern. The agenda is designed to initiate an operational program that helps integrate activities involving the 47 USBRs, and provide guidance and support to the reserves in implementing the goals and objectives of the Strategic Plan. The agenda includes the following activities:

1. Revise guidelines for the selection and coordination of USBRs,
2. A network evaluation aimed at (a) identifying and filling gaps in the biogeographic representation of biosphere reserves that implement the full biosphere reserve concept and (b) assisting existing biosphere reserves that do not currently reflect the full biosphere reserve concept to work more effectively in implementing the concept.
3. Providing catalytic support for workshops, forums, feasibility studies, and similar projects that encourage and facilitate stakeholder efforts to address regional conservation and sustainable development issues and the development of cooperative regional biosphere reserve programs.
4. Development of media that effectively communicate the mission and goals of the USBRP and the accomplishments of U.S. Biosphere Reserves, with initial emphasis on publishing a program brochure that reflects the renewed and vigorous approach for implementing the MAB concept through the BRs.

IV. Conclusions and Needs

- o The MAB Program is based on the concept that it is possible to achieve a sustainable balance between the conservation of biological diversity, economic development, and maintenance of

associated cultural values. The validity of this concept is tested, refined, demonstrated and implemented in BRs.

- o The Strategic Plan for the U.S. Biosphere Reserve Program, which sets forth the mission, goals, objectives, and an action agenda, should be aggressively implemented.

- o Through an active USBRP, each U.S. Biosphere Reserve can become a full partner in the process of integrating conservation and development locally and in sharing information and experience to help address regional and global problems.

- o Although progress in implementing the USBRP is possible under a wide range of funding situations, full implementation of the plan will require national commitment, and steady increases in government and private support at all levels.

- o A USBR Directorate has been established to facilitate implementation of the biosphere reserve concept. The Directorate has developed an agenda for the near-term, but much remains to be done if the Directorate is to effectively meet the goals outlined in the Strategic Plan.

- o USMAB should promote broad recognition of the contributions of U.S. biosphere reserves to ongoing efforts to demonstrate ecosystem-based approaches in particular biogeocultural areas and encourage the "value added" role of regional biosphere reserves in facilitating these efforts.

- o The potential role of cooperative regional biosphere reserve programs in demonstrating and sustaining the benefits of the interdisciplinary research of USMAB's Research Directorates should be clarified and strengthened.

- o USMAB's efforts to increase international access to data and information on biosphere reserves should be encouraged, and participation of U.S. Biosphere Reserves in international networks and programs should be encouraged and coordinated.

ATTACHMENT I

LIST OF U.S. BIOSPHERE RESERVES BY CATEGORY

Protected Natural Area. *Protected area managed for conservation and designated wholly or primarily as a core area.*

Aleutian Islands National Wildlife Refuge, AK (1976: FWS)
Big Thicket National Preserve, TX (1981: NPS)
Denali National Park and Preserve, AK (1976: NPS)
Everglades/Dry Tortugas National Parks, FL (1976: NPS)
Guanica State Forest, PR (1981: state)
Isle Royale National Park, MI (1980: NPS)
Noatak National Preserve/Gates of the Arctic National Park, AK
(1976, 1984: NPS)
Olympic National Park, WA (1976: NPS)
Organ Pipe Cactus National Monument, AZ (1976: NPS)
Virgin Islands National Park, USVI (1976: NPS)
Yellowstone National Park, MT-WY (1976: NPS)

Research Reserve. *Protected areas managed primarily for research to understand ecosystem processes or support development of sustainable ecosystem uses.*

Beaver Creek Experimental Forest, AZ (1979: FS)
Central Plains Experimental Range, CO (1976: ARS) LTER site
Desert Experimental Range, UT (1976: FS)
H.J. Andrews Experimental Forest, OR (1976: FS) LTER site
Hubbard Brook Experimental Forest, NH (1976: FS) LTER site
Konza Prairie Research Natural Area, KS (1979: TNC, university)
LTER site
Luquillo Experimental Forest, PR (1976: FS) LTER site
San Dimas Experimental Forest, CA (1976: FS)
San Joaquin Experimental Range, CA (1976: ARS)
University of Michigan Biological Station, MI (1979: university)

Biosphere Reserve Cluster. *An association of separately designated administrative units that cooperate in implementing biosphere reserve roles. (Clusters of Protected Natural Areas and Research Reserves provided the basis for many initial U.S. Biosphere Reserve nominations in 1976)*

Big Bend National Park, TX (1976: NPS) and Jornada Experimental Range, NM (1976: ARS) LTER site. Also includes Mapimi Biosphere Reserve in Mexico.

Fraser Experimental Forest, CO (1976: FS), Niwot Ridge, CO (1979: FS, university) LTER site, and Rocky Mountain National Park, CO (1976: NPS)

Glacier National Park, MT (1976: NPS) and Coram Experimental Forest, MT (1976: FS). Also includes Waterton National Park in Alberta, Canada (1979: Canadian Parks Service)

Sequoia and Kings Canyon National Parks, CA (1976: NPS) and Stanislaus-Tuolumne Experimental Forest, CA (1976: FS)

Three Sisters Wilderness, OR (1976: FS) and Cascade Head Experimental Forest and Scenic-Research Area, OR (1976: FS)

Multisite Biosphere Reserve. *A group of two or more administrative units designated together as a single biosphere reserve. Designated primarily between 1980 and 1986.*

California Coast Ranges Biosphere Reserve, CA 10 units in 2 clusters. (1983: BLM, FS, NPS, state, TNC, university)

Carolinian-South Atlantic Biosphere Reserve, NC-SC-GA 13 units in 3 clusters. (1986: FWS, NOAA, NPS, TNC, states, private, university) Includes North Inlet LTER site

Central Gulf Coastal Plain Biosphere Reserve, FL 1 unit, other units not yet designated (1983: state)

Channel Islands Biosphere Reserve, CA 2 units. (1976 and 1986: NPS, NOAA)

Glacier Bay-Admiralty Island Biosphere Reserve, AK 2 units (1986: FS, NPS)

Hawaiian Islands Biosphere Reserve, HI 2 units. (1980: NPS)

Mojave and Colorado Deserts Biosphere Reserve, CA-NV 5 units (1984: BLM, FS, NPS, state, university)

South Atlantic Coastal Plain Biosphere Reserve, SC 1 unit, other units not yet designated. (1983: NPS)

Regional Biosphere Reserve. *A large multiple use area or an association of administrative units designated together as a single biosphere reserve. The designated area(s) participate in an organized, cooperative program involving multiple agencies and nongovernmental entities. Designated primarily since 1988.*

Central California Coast Biosphere Reserve, CA 13 units. (1988 and 1991: FWS, NPS, NOAA, state, local, private)

Champlain-Adirondack Biosphere Reserve, NY-VT (1988: FS local, private, state, complex ownerships)

Land Between the Lakes Area Biosphere Reserve, TN-KY multiple use area. (1991: TVA)

Mammoth Cave Area Biosphere Reserve, KY Regional development district and a national park. (1990: NPS, regional development authority)

New Jersey Pinelands Biosphere Reserve, NJ. regional multiple use reserve. (1983, 1988: FWS, local, state, complex ownerships)

Southern Appalachian Biosphere Reserve, GA-NC-SC-TN-VA. 5 units. (1976, 1988, 1993: DOE, FS, NPS, state, private). Includes Coweeta LTER site

Virginia Coast Reserve, VA multiple islands; TNC bioreserve. (1979: TNC) LTER site

Administrators of Designated Sites

ARS Department of Agriculture—Agricultural Research Service

DOE Department of Energy

FS Department of Agriculture—Forest Service

FWS Department of the Interior—U.S. Fish and Wildlife Service

NOAA National Oceanic and Atmospheric Administration

NPS Department of the Interior—National Park Service

TNC The Nature Conservancy

TVA Tennessee Valley Authority

ATTACHMENT II

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
OFFICE OF MANAGEMENT AND BUDGET
Washington, D.C. 20503

March 9, 1979


MEMORANDUM FOR HEADS OF CERTAIN DEPARTMENTS AND AGENCIES

SUBJECT: U.S. Participation in UNESCO's Man and the Biosphere Program

The Man and the Biosphere Program (MAB) is an interdisciplinary applied research effort directed toward the solution of natural resources and environmental issues. The program provides an excellent opportunity for international cooperation and a focus for the coordination of related domestic programs aimed at improving the management of natural resources and of the environment.

We request that you bring this program to the attention of appropriate program personnel in your Department or Agency and take appropriate steps, in light of your existing budget priorities, to participate fully in the program and to cooperate with other agencies in the development and management of the program.

The Department of State is responsible for the international development of the MAB program, in consultation with the U.S. MAB National Committee which was created under the auspices of the U.S. National Commission for UNESCO. The Departments of the Interior and Agriculture will have joint responsibility for developing and coordinating domestic participation in the MAB program. All other major natural resources and environmental management agencies should work with the Departments of State, Interior and Agriculture and the MAB National Committee, as appropriate, in developing a plan for participating in the MAB Program.


Director, Office of Management and Budget


Director, Office of Science and Technology Policy

Attachment

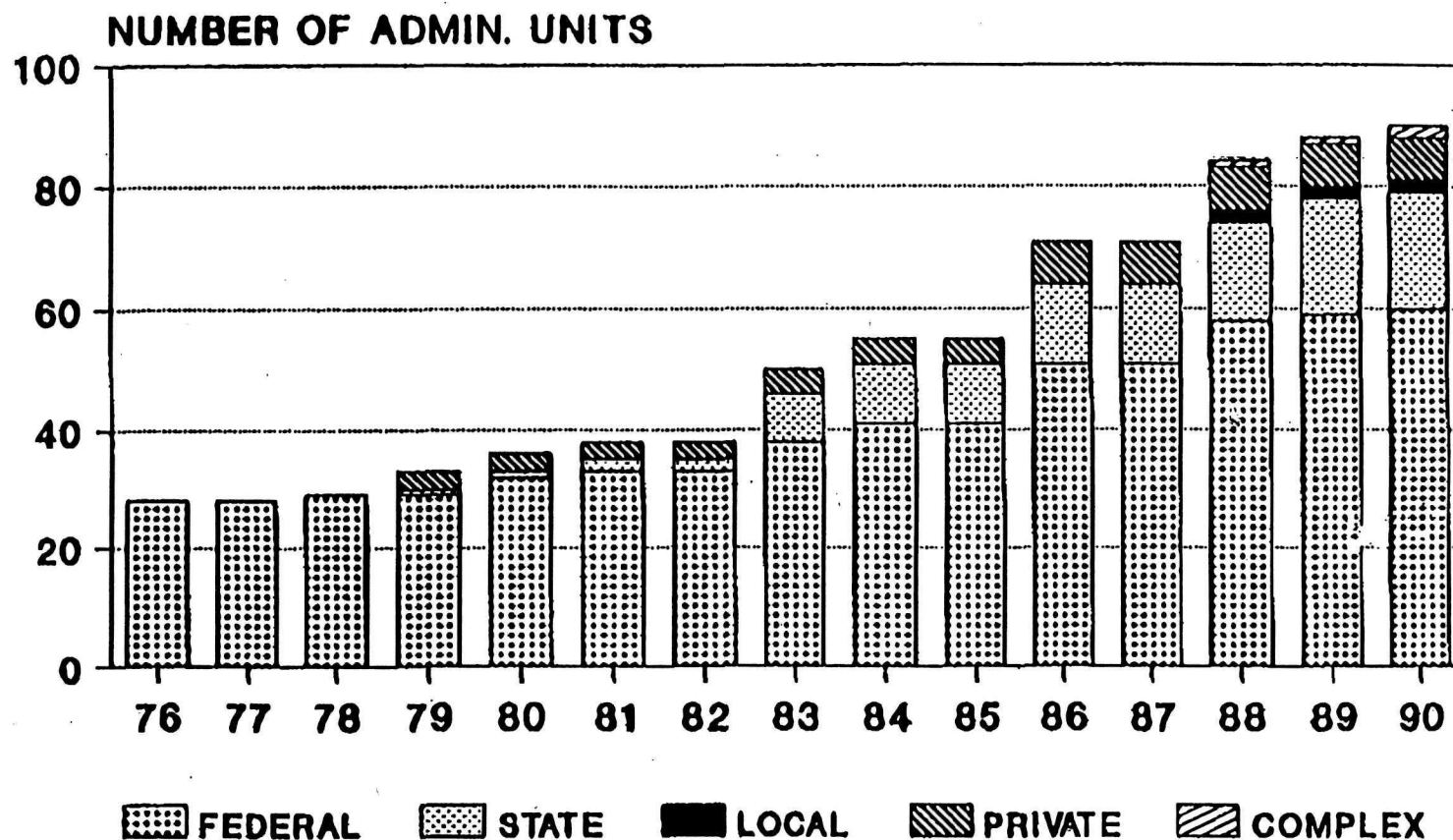
ATTACHMENT III

**MANAGEMENT CATEGORIES AND SPECIAL DESIGNATIONS
INCLUDED IN THE U.S. BIOSPHERE RESERVES NETWORK**

Bioreserves (TNC)
County Parks
Estuarine Research Reserves
Experimental Ecological Reserves
Experimental Forests and Ranges
International Peace Parks
Long Term Ecological Research Sites
Municipal Watersheds
National Environmental Research Parks
National Forests
National Marine Sanctuaries
National Monuments, Parks, Preserves, and Seashores
National Wild and Scenic Rivers
National Wildlife Refuges
Private Nature Preserves
RAMSAR Sites
Regional Development Districts
Research Natural Areas
State Forests
State Natural Areas
State Parks
University Research Areas
Wilderness Areas
World Heritage Sites

TRENDS IN OWNERSHIP

U.S. BIOSPHERE RESERVES



**ECOSYSTEM-BASED COOPERATION FOR IMPLEMENTING
BIOSPHERE RESERVE CONCEPT**

MAB-AFFILIATED ORGANIZATION

Southern Appalachians

ORGANIZED COOPERATION

Central California Coast

Champlain-Adirondack

Chihuahuan Desert (binational)

Colorado Rockies

Land Between the Lakes Area

Mammoth Cave Area

Virgin Islands

Western Sonoran Desert (trinational)

PENDING NOMINATIONS

Catskills

Ozark Highlands

SOME DISCUSSION IN THE LAST FIVE YEARS

Big Thicket

Carolinian - South Atlantic

Central Appalachians

Colorado Plateau

Crown of the Continent Area (binational)

Driftless Area (Wisconsin)

Everglades

Glacier Bay - Admiralty Island

Greater Yellowstone Ecosystem

Guanica Area

Idaho Wilderness Areas

Lake Superior Basin (binational)

Maine Archipelago

Noatak Watershed

North Cascades

North Carolina Piedmont

Olympic Peninsula

Southern Sierras

Superior Uplands

Tijuana Watershed