

U.S. Biosphere Reserves

There are 47 U.S. biosphere reserves. Most are made up of federal protected areas, like national parks and national forest lands, although in some instances they include state parks and some private lands that are under specific conservation easements. A U.S. Biosphere Reserve sometimes is made up of more than one protected site, e.g., Hawaiian Islands Biosphere Reserve is made up of two National Parks, whereas Golden Gate Biosphere Reserve includes more than ten different federal, state, and municipal properties.

What follows is a listing of all forty-seven U.S. Biosphere Reserves, with appending documentary material.

Biosphere Reserve Sites

1. **Aleutian Islands Biosphere Reserve (Alaska)** est. 1976
Alaska Maritime National Wildlife Refuge, Aleutian Islands
Unit - U.S. Fish and Wildlife Service
2. **Beaver Creek Biosphere Reserve (Arizona)** est. 1978
Beaver Creek Experimental Watershed - USDA-Forest Service
3. **Big Bend Biosphere Reserve (Texas)** est. 1976
Big Bend National Park - National Park Service
4. **Big Thicket Biosphere Reserve (Texas)** est. 1981
Big Thicket National Preserve - National Park Service
5. **California Coast Ranges Biosphere Reserve (California)** est. 1983
Jackson Demonstration State Forest - California Department of Forests
Landels-Hill Big Creek Reserve - U. of California
Heath & Marjorie Angelo Coast Range Preserve - U. of California
North California Coast Range Preserve Research Natural
Area Bureau of Land Management
Redwood Experimental Forest - USDA-Forest Service
Redwood National Park - National Park Service
Redwood State Parks Del Norte Coast, Jedediah Smith, and
Prairie Creek - California Department of Parks and
Recreation
Western Slopes of Cone Peak - USDA-Forest Service
6. **Carolinian-South Atlantic Biosphere Reserve (North Carolina/
South Carolina/Georgia)** est. 1986
Blackbeard Island and Wolf Island National Wildlife Refuges -
U.S. Fish and Wildlife Service
Cape Lookout National Seashore - National Park Service
Cape Romain National Wildlife Refuge
U.S. Fish and Wildlife Service
Capers Island Heritage Preserve - South Carolina Department of Natural
Resources-Marine Resources Division
Cumberland Island National Seashore - National Park Service
Gray's Reef National Marine Sanctuary - National Oceanic
and Atmospheric Administration
Hobcaw Barony (North Inlet) - Belle W. Baruch Foundation
Belle W. Baruch Institute, U. of South Carolina, and
The Belle Baruch Forest Science Institute, Clemson U.
Little St. Simons Island - Little St. Simons Island
Foundation
Santee Coastal Reserve and Washoo Reserve - The Nature

- Conservancy and South Carolina Department of Natural Resources
Tom Yawkey Wildlife Center - South Carolina Department of Natural Resources
7. **Cascade Head Biosphere Reserve (Oregon)** est. 1976
Cascade Head Experimental Forest and Scenic-Research Area -
USDA-Forest Service
 8. **Central Gulf Coastal Plain Biosphere Reserve (Florida)** est. 1983
Apalachicola National Estuarine Research Reserve -
Florida Department of Environmental Protection and
National Oceanographic and Atmospheric Administration
 9. **Central Plains Biosphere Reserve (Colorado)** est. 1976
Central Plains Experimental Range - USDA-Agricultural Research Service
 10. **Champlain-Adirondack Biosphere Reserve (New York/Vermont)**
est. 1988
Adirondack Park - Adirondack Park Agency, State of New York
Green Mountain National Forest - USDA-Forest Service
Mt. Mansfield and Camel Hump State Natural Areas -
Vermont Agency of Natural Resources
 11. **Channel Islands Biosphere Reserve (California)** est. 1986
Channel Islands National Marine Sanctuary - National Oceanic Atmospheric Administration
Channel Islands National Park - National Park Service
 12. **Coram Biosphere Reserve (Montana)** est. 1976
Coram Experimental Forest - USDA-Forest Service
 13. **Denali Biosphere Reserve (Alaska)** est. 1976
Denali National Park and Preserve - National Park Service
 14. **Desert Biosphere Reserve (Utah)** est. 1976
Desert Experimental Range - USDA-Agricultural Research Service
 15. **Everglades Biosphere Reserve (Florida)** est. 1976
Everglades National Park and Dry Tortugas National
Monument - National Park Service
 16. **Fraser Biosphere Reserve (Colorado)** est. 1976
Fraser Experimental Forest - USDA-Forest Service
 17. **Glacier Biosphere Reserve (Montana)** est. 1976
Glacier National Park - National Park Service

18. **Glacier Bay-Admiralty Island (Alaska)** est. 1986
Admiralty Island National Monument - USDA-Forest Service
Glacier Bay National Park - National Park Service
19. **Golden Gate Biosphere Reserve (California)** est. 1988
Audubon Canyon Ranch - Audubon Canyon Ranch
Bodega Marine Reserve - University of California
Cordell Banks National Marine Sanctuary - National Oceanic
And Atmospheric Administration
Farallon National Wildlife Refuge - U.S. Fish and Wildlife
Service
Golden Gate National Recreation Area - National Park Service
Gulf of the Farallones National Marine Sanctuary - National
Oceanic and Atmospheric Administration
Jasper Ridge Biological Preserve - Stanford University
Marin Municipal Water Reservoirs (2 sites) - Marin County
Mt. Tamalpais, Tomales Bay, and Samuel P. Taylor State Parks -
California Department of Parks and Recreation
Point Reyes National Seashore - National Park Service
San Francisco Peninsular Watershed - City of San Francisco
20. **Guanica Biosphere Reserve (Puerto Rico)** est. 1981
Guanica Commonwealth Forest - Puerto Rico Department of
Natural Resources
21. **H.J. Andrews Biosphere Reserve (Oregon)** est. 1976
H.J. Andrews Experimental Forest - USDA-Forest Service
22. **Hawaiian Islands Biosphere Reserve (Hawaii)** est. 1980
Haleakala National Park - National Park Service
Hawaii Volcanoes National Park - National Park Service
23. **Hubbard Brook Biosphere Reserve (New Hampshire)** est. 1976
Hubbard Brook Experimental Forest - USDA-Forest Service
24. **Isle Royale Biosphere Reserve (Michigan)** est. 1980
Isle Royale National Park - National Park Service
25. **Jornada Biosphere Reserve (New Mexico)** est. 1976
Jornada Experimental Range - USDA-Agricultural Research Service
26. **Konza Prairie Biosphere Reserve (Kansas)** est. 1976
Konza Prairie Research Natural Area - Kansas State
University and The Nature Conservancy

27. **Land Between The Lakes Biosphere Reserve**
(Kentucky, Tennessee) est. 1991
Land Between The Lakes - Tennessee Valley Authority
28. **Luquillo Biosphere Reserve (Puerto Rico)** est. 1976
Luquillo Experimental Forest - USDA-Forest Service
29. **Mammoth Cave Area Biosphere Reserve (Kentucky)** est. 1990
Mammoth Cave National Park - National Park Service
30. **Mojave and Colorado Deserts Biosphere Reserve (California)**
est. 1984
Anza-Borrego Desert State Park - California Department of
Parks and Recreation
Death Valley National Park - National Park Service
Joshua Tree National Park - National Park Service
Philip L. Boyd Deep Canyon Desert Research Center -
U. of California
Santa Rosa Wildlife Management Area, San Bernadino
National Forest - USDA-Forest Service
31. **New Jersey Pinelands National Reserve Biosphere Reserve**
(New Jersey) est. 1983
Pinelands National Reserve - Pinelands Commission, State of
New Jersey
32. **Niwot Ridge Biosphere Reserve (Colorado)** est. 1979
Niwot Ridge - U. of Colorado
33. **Noatak Biosphere Reserve (Alaska)** est. 1976
Gates of the Arctic National Park - National Park Service
Noatak National Preserve - National Park Service
34. **Olympic Biosphere Reserve (Washington)** est. 1976
Olympic National Park - National Park Service
35. **Organ Pipe Cactus Biosphere Reserve (Arizona)** est. 1976
Organ Pipe Cactus National Monument - National Park Service

36. **Rocky Mountain Biosphere Reserve (Colorado)** est. 1976
Rocky Mountain National Park - National Park Service
37. **San Dimas Biosphere Reserve (California)** est. 1976
San Dimas Experimental Forest - USDA-Forest Service
38. **San Joaquin Biosphere Reserve (California)** est. 1976
San Joaquin Experimental Range - USDA-Agricultural Research Service
39. **Sequoia-Kings Canyon Biosphere Reserve (California)** est. 1976
Sequoia and Kings Canyon National Parks -
National Park Service
40. **South Atlantic Coastal Plain Biosphere Reserve**
(South Carolina) est. 1983
Congaree Swamp National Monument - National Park Service
41. **Southern Appalachian Biosphere Reserve (Tennessee/North Carolina)**
est. 1976
Coweeta Hydrologic Laboratory - USDA-Forest Service
Grandfather Mountain - Grandfather Mountain, Inc.
Great Smoky Mountains National Park - National Park Service
Mt. Mitchell State Park - North Carolina Division of Parks
and Recreation
Oak Ridge National Environmental Research Park -
U.S. Department of Energy
42. **Stanislaus-Tuolumne Biosphere Reserve (California)** est. 1976
Stanislaus-Tuolumne Experimental Forest - USDA-Forest Service
43. **Three Sisters Biosphere Reserve (Oregon)** est. 1976
Three Sisters Wilderness - USDA-Forest Service
44. **University of Michigan Biosphere Reserve (Michigan)** est. 1979
U. of Michigan Biological Station - U. of Michigan
45. **Virgin Islands Biosphere Reserve (U.S. Virgin Islands)** est. 1976
Virgin Islands National Park - National Park Service
46. **Virginia Coast Biosphere Reserve (Virginia)** est. 1979
Virginia Coast Reserve - The Nature Conservancy
47. **Yellowstone Biosphere Reserve (Idaho, Montana, Wyoming)** est. 1976
Yellowstone National Park - National Park Service

WHAT IS U.S. MAB?

Man and the Biosphere (MAB) was established by resolution of the 16th General Conference of UNESCO in 1971 as a voluntary and cooperative science program to promote the study of the interaction of the earth's human and natural systems. The U.S. began to participate in MAB in 1974. When the U.S. left UNESCO in 1984, the Reagan Administration decided to continue to provide funds to allow for a wholly independent U.S. Man and the Biosphere Program.

In this capacity the U.S. MAB Program continues today, pursuing national and international efforts in cooperative environmental science. The Department of State provides a small administrative Secretariat to coordinate the U.S. Man and the Biosphere program, with the collaboration and support of twelve federal agencies.

U.S. MAB promotes cooperation both domestically and internationally among biosphere reserves to facilitate scientific and technical exchanges that benefit both U.S. and foreign scientists and land managers. It is also providing sites for long-term comparative research on global environmental trends and patterns. The U.S. MAB Program particularly promotes the development of scientific information-sharing among MAB sites around the world. U.S. MAB's various software innovations have been adopted in North America, Europe, and Latin America -- making MAB a leader in efficient data exchange among protected areas. MABFauna and MABFlora are highly successful database products produced by U.S. MAB for managing information about plants and animals in protected areas. Another initiative, MABNet Americas, was highlighted by the Bolivia summit on Sustainable Development as a model for integrated scientific data exchange.

U.S. MAB coordinates the network of U.S. Biosphere Reserves. There has been considerable confusion about the definition of a biosphere reserve. "Biosphere reserve" is a title granted to a protected area or series of protected areas that conducts exemplary programs in conservation, science, and management of natural resources. Biosphere reserves foster cooperation and voluntary implementation of activities that improve the relationship among communities, economic enterprises, and those who manage natural resources. Although U.S. biosphere reserves take various forms, a typical reserve is synonymous with a national park or national forest. The added recognition as a biosphere reserve provides national and international prestige. At present there are 47 biosphere reserves in the U.S.

1. **Aleutian Islands Biosphere Reserve** (Alaska) est. 1976
Alaska Maritime National Wildlife Refuge, Aleutian Islands
Unit - U.S. Fish and Wildlife Service

The Aleutian Islands possess rich biological diversity closely tied to the surrounding marine environment. The refuge protects these islands for seabirds, marine mammals, and other wildlife, as well as Aleut archaeological and World War II historic sites. To accomplish refuge goals, and to increase our understanding of the Bering Sea Ecosystem, the biosphere reserve staff has established partnerships with other stakeholders in the Aleutians such as Aleutian Island villagers, The Aleut Corporation, the U.S. Department of Defense, numerous academic researchers, and others conducting biological and archaeological research. Public education about the Aleutians is promoted at information centers in Adak and Homer, by distribution of refuge brochures, and by naturalists on board the state ferry and commercial cruise ships.

Major focuses of scientific research in the Aleutians Biosphere Reserve include seabird populations and productivity, Aleutian Canada goose restoration, winter waterfowl populations monitoring, and marine mammals.

2. **Beaver Creek Biosphere Reserve** (Arizona) est. 1978

Beaver Creek Experimental Watershed - USDA-Forest Service

Beaver Creek Biosphere Reserve is the center of an intensive multiple resource management, research, and testing program in dry forests. Much of the research has focused on analysis of the growth, yield, and quality of timber resource for primary wood products. Since the area is used for grazing, investigation has also been done on the levels of forage production and associated cattle, other livestock, and wildlife production.

Researchers at the site have produced a computerized data management system to assist decision-makers and managers in achieving wise use and proper conservation of all natural resources. An extensive bibliography of research done at the site is available at www.rms.nau.edu/beaver_cr/

3. **Big Bend Biosphere Reserve** (Texas) est. 1976

Big Bend National Park - National Park Service

Big Bend Biosphere Reserve is the center of a growing tourism area. One of the major programs here is maintaining the park's remarkable biodiversity, exemplified by its 430 species of birds.

Big Bend cooperates with Jornada Biosphere Reserve in New Mexico and Mapimi Biosphere Reserve in Mexico in Chihuahuan Desert research activities. Big Bend hosts 80 to 100 research projects a year.

Recreational activities at Big Bend include, hiking, horseback riding, birding, camping, fishing, and river float trips.

4. **Big Thicket Biosphere Reserve** (Texas) est. 1981

Big Thicket National Preserve - National Park Service

Big Thicket is the remnant of a biological crossroads of forest, meadow, and swamp where southwest desert, central plains, eastern forest, and southeastern swamp ecosystems meet.

Big Thicket Biosphere Reserve has hosted researchers from Texas and beyond interested in the ecology of the west gulf coastal plain. Its varied biodiversity makes it a prime location for biological field research. Most recently it held a conference for scientists, resource managers, students, and the interested public on topics of the aquatic and terrestrial ecosystems of the area.

Popular visitor activities at Big Thicket include nature study, hiking, photography, boating and canoeing, fishing, camping, swimming, hunting, and trapping. The Alabama-Coushatta Indian Reservation adjacent to one unit of Big Thicket Reserve features craft demonstrations, cultural exhibitions, and tour rides.

5. California Coast Ranges Biosphere Reserve (California) est. 1983

Jackson Demonstration State Forest - California Department of Forests
Landels-Hill Big Creek Reserve - U. of California
Heath & Marjorie Angelo Coast Range Preserve - U. of California
North California Coast Range Preserve Research Natural
Area Bureau of Land Management
Redwood Experimental Forest - USDA-Forest Service
Redwood National Park - National Park Service
Redwood State Parks Del Norte Coast, Jedediah Smith, and
Prairie Creek - California Department of Parks and
Recreation
Western Slopes of Cone Peak - USDA-Forest Service

Jackson Demonstration State Forest is a working forest to demonstrate sustained production of timber, while maintaining soil, water, scenic, wildlife, and recreational values. Timber production on this property has been continuous since the 1850s. More than 40,000 people visit this forest yearly for camping, hiking, biking, hunting, horseback riding, swimming, and picnicking.

Landels-Hill Big Creek Reserve management has as a major goal to improve and expand research and teaching facilities while preserving the wilderness character of the land. In addition to developing a biological study field station, reserve management is establishing a computerized database for future studies. A system of vegetation/habitat transects is being developed, and a network of electronic weather stations is being installed. This site is for use of faculty and staff of the university. The public may visit only on organized educational tours led by The Nature Conservancy.

The Heath and Marjorie Angelo Coast Range Reserve is a research field station for the University of California and is also used by the local school district for environmental education activities.

The Redwood units of the biosphere reserve are spread out over 10 sites that stretch for nearly 400 miles along the northern California coast. The redwood parks serve as a protected area for the last of the few remaining stands of old-growth redwood. The redwood parks represent a botanical treasure present nowhere else outside of this region. The development of a new general management plan is fostering cooperative partnerships among stakeholders, especially the state parks. The knowledge acquired from the Redwood restoration program is used at other parks throughout the U.S. and in some international locations.

6. Carolinian-South Atlantic Biosphere Reserve (North Carolina/

South Carolina/Georgia) est. 1986

Blackbeard Island and Wolf Island National Wildlife Refuges -

U.S. Fish and Wildlife Service

Cape Lookout National Seashore - National Park Service

Cape Romain National Wildlife Refuge

U.S. Fish and Wildlife Service

Capers Island Heritage Preserve - South Carolina Department of Natural Resources-Marine Resources Division

Cumberland Island National Seashore - National Park Service

Gray's Reef National Marine Sanctuary - National Oceanic and Atmospheric Administration

Hobcaw Barony (North Inlet) - Belle W. Baruch Foundation

Belle W. Baruch Institute, U. of South Carolina, and

The Belle Baruch Forest Science Institute, Clemson U.

Little St. Simons Island - Little St. Simons Island

Foundation

Santee Coastal Reserve and Washoo Reserve - The Nature

Conservancy and South Carolina Department of Natural Resources

Tom Yawkey Wildlife Center - South Carolina Department of Natural Resources

The Blackbeard Island and Wolf Island National Wildlife Refuges units of the biosphere reserve are protected samples of the Atlantic Coastal Barrier Island ecosystem type that provide opportunity for nature and scientific research in the service of man. The research done here encourages interdisciplinary scientific studies leading to improved understanding, management, and use of natural and managed ecosystems especially of coastal areas. Scientific, educational, and resource management activities are available.

Cape Lookout is composed of low barrier islands. It was established by the National Park Service to protect the barrier island chain. It is reached by boat and activities include primitive camping and undeveloped beach activities.

The Cape Romain unit is a 64,000 acre offshore protected area that is also designated as a Wilderness Area. The reserve is salt marsh and islands that are a refuge for loggerhead sea turtle eggs, a nesting habitat for shore birds, and a haven for many migratory birds.

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The Sewee Visitor and Environmental Education Center is a new facility jointly operated by Cape Romain and Francis Marion National Forest. Its purposes are interpretation and information for the general public, conservation education for regional youth, and orientation for natural-resource management professionals. The refuge is primarily a protected area but does offer popular recreational opportunities such as sports fishing; clamming, oystering, and crabbing; hunting in some areas; hiking; and a ferry to 5,000 acre Bull Island for a day of undeveloped beaches, woodland paths and bird-watching.

Capers Island is a protected barrier island. It is uninhabited and contains no facilities of any kind, but is open to the public for primitive camping, surf-fishing, and general nature study. Gray's Reef is located off the coast of Georgia, 20 meters below the sea surface. The reef is sandstone which supports soft and hard coral, sea anemones, hydroids, sponges, tunicates, fishes and invertebrates. It is a popular diving and marine archeology destination.

Gray's Reef sponsors an extensive educational program with public seminars, presentations, exhibits, and elementary and secondary school curricula guides and handbooks. Scientific research at the site includes environmental and invertebrate monitoring and archaeological surveys.

Hobcaw Barony supports two biological field stations. The Belle W. Baruch Forest Science Institute is under the direction of the Department of Forestry at Clemson University. The Belle W. Baruch Institute for Marine Biology and Coastal Research is administered by the University of South Carolina. The property is owned by the Belle W. Baruch Foundation. Both institutes conduct research into the ecological and commercial values of the area. Facilities are available for U.S. and international scientists and students.

Little Saint Simons Island is a privately owned 10,000 acre barrier island on the coast of Georgia. It is maintained as a nature preserve and commercial lodging facility. Activities on the island include, wildlife and scenery watching, fishing, swimming, canoeing and boating, horseback riding, bicycling, and naturalist led walks.

The Tom Yawkey Wildlife Center is principally managed for waterfowl habitat. Visitors to the Center are restricted in number and to those whose purpose is for approved research, nature study, educational field trips, and conservation management study.

7. Cascade Head Biosphere Reserve (Oregon) est. 1976
Cascade Head Experimental Forest and Scenic-Research Area -
USDA-Forest Service

The Cascade Head Biosphere Reserve has a number of land areas that are managed in different ways. The Neskowin Crest Research Natural Area and the Cascade Head Nature Conservancy Preserve are protected to allow natural processes to take their course without undue intervention from human beings. In some cases restoration activities are being implemented. Parts of the biosphere reserve are used for education, especially summer programs for children, and for field trips for resource managers and scientists.

Perhaps the greatest milestone since becoming a biosphere reserve is the restoration of the Salmon River Estuary. Salt marsh ecosystems are being reestablished after completion of dike breaching, making this estuary one of the least disturbed along the Oregon coast.

Research and management have cooperated in several research studies involving management of young Sitka spruce-western hemlock stands. These kinds of forests are prevalent on the Oregon coast and little is known about how to manage these young stands. A number of studies looking at commercial and non-commercial thinning at different spacing have been established in the biosphere reserve.

The Sitka Center for Art and Ecology has contributed substantially to the surrounding community by providing art and ecology classes, running programs for resident artists from around the United States, and providing a presence that attempts to link art and forest ecology. This linkage helps to foster understanding of the relationship of cultural values and biological diversity.

8. **Central Gulf Coastal Plain Biosphere Reserve** (Florida) est. 1983

Apalachicola National Estuarine Research Reserve -

Florida Department of Environmental Protection and

National Oceanographic and Atmospheric Administration

The Apalachicola National Estuarine Research Reserve functions as a cooperative program of Franklin County, Florida; the Florida Department of Environmental Protection; and the National Oceanic and Atmospheric Administration. The Apalachicola Reserve and the surrounding drainage basin contain barrier islands, estuarine, riverine, floodplain, and upland environments. It is among the most important bird habitats in the southeastern U.S. Its extensive environmental education program targets audiences ranging from school groups and the general public to environmental management professionals.

Current priority research topics include water-quality monitoring, correlation of water quality parameters and biological components with river flow and upland development, commercial fishery management, food chain research, archaeological digs on Indian middens, and aquaculture development especially productivity of oyster beds in the bay.

9. Central Plains Biosphere Reserve (Colorado) est. 1976

Central Plains Experimental Range - USDA-Agricultural Research Service

With a long history of research, Central Plains provides research opportunities for government and university scientists in areas of soil and water conservation, range management, climatology, ecology of grasslands, and livestock.

10. Champlain-Adirondack Biosphere Reserve (New York/Vermont)

est. 1988

Adirondack Park - Adirondack Park Agency, State of New York

Green Mountain National Forest - USDA-Forest Service

Mt. Mansfield and Camel Hump State Natural Areas -

Vermont Agency of Natural Resources

The primary goal of the Champlain-Adirondack Biosphere Reserve is to establish a non-regulatory, non-advocacy program that uses education, research, and demonstration projects to encourage social and economic vitality and to preserve and improve the environmental health in the region.

With the many universities in the area, the biosphere reserve is rich in ecological research opportunities, and long bibliographies of these studies are available. The several units of the biosphere reserve continue their role and function as per their management and have not yet developed partnership activities.

11. Channel Islands Biosphere Reserve (California) est. 1986

Channel Islands National Marine Sanctuary - National Oceanic Atmospheric
Administration

Channel Islands National Park - National Park Service

Channel Islands Biosphere Reserve is made up of preserved aquatic and terrestrial areas which support recreational, commercial, and research activities. Hiking, diving, fishing, boating, camping, birding, and picnicking are popular. Research focuses on topics of marine and bird ecology, marine and Native American archeology, climatology, and oceanography.

12. Coram Biosphere Reserve est. (Montana) 1976

Coram Experimental Forest - USDA-Forest Service

Coram Biosphere Reserve has been an environmental education, monitoring and research site for 50 years on mountain forest ecosystems especially western larch and other conifers.

Currently, Coram, with Glacier Biosphere Reserve and Miller Creek Demonstration Forest, is preparing a celebration of 50 years of continuous research. The celebration will focus on ways research helps the natural environment, society, and economic opportunities of the upper Flathead River valley. Students, teachers, scientists, and the general community are all included in the planning and activities of this two year celebration.

13. Denali Biosphere Reserve (Alaska) est. 1976

Denali National Park and Preserve - National Park Service

Denali Biosphere Reserve is contiguous with Denali National Park and its preserve and recreational areas. Popular activities in the reserve are mountaineering, hiking, wildlife-watching, fishing, cross-country skiing, dog-sledding, and camping.

Principal research includes studies of grizzly, wolf, and caribou population, range, and behavior, and vegetation mapping. The variation in altitude make the plant diversity especially interesting.

14. Desert Biosphere Reserve (Utah) est. 1976

Desert Experimental Range - USDA-Agricultural Research Service

Desert Experimental Range Biosphere Reserve is a range ecology educational facility of international significance. Sheep-grazing studies which were begun over 60 years ago continue today. The list of research subjects has expanded to wildlife, soils, desertification, and weather.

15. Everglades Biosphere Reserve (Florida) est. 1976

Everglades National Park and Dry Tortugas National
Monument - National Park Service

The Everglades Biosphere Reserve is known worldwide for both its scientific and recreational activities. It is an immeasurable asset to the expanding metropolitan area of south Florida. Tourists and Floridians flock to the park for fishing, boating, and wildlife-watching activities. Camping and wilderness waterway canoeing are available. In addition, the Dry Tortugas offer diving, snorkeling, and deep sea fishing opportunities.

Research topics center on hydrology, Everglades wildlife, fire ecology, plant ecology, and estuarine fisheries. Resource management techniques that alleviate pressure caused by urban growth are of special importance.

16. Fraser Biosphere Reserve (Colorado) est. 1976

Fraser Experimental Forest - USDA-Forest Service

Fraser was established to conduct research on timber and watershed management. Areas of current study are climatology, stream chemistry, wildlife production, and the integrated effect of timber harvesting on water yield. The area is managed for research and demonstration of land -se management problems.

17. Glacier Biosphere Reserve (Montana) est. 1976

Glacier National Park - National Park Service

Glacier National Park functions as a biosphere reserve (BR) protected area for conservation and research. The BR concept has been implemented at Glacier by: fostering research including: genetic preservation, and detection of ecosystem change; preserving the protected area's integrity through; sharing resource data and cooperative monitoring efforts; partnering with park neighbors to resolve mutual issues; and fostering education through park interpretive programs, providing assistance to environmental education institutions, and assisting students from the United States and other countries.

The Park's implementation of the BR concept is enhanced by its many cooperative efforts with two nearby BRs -- Coram Experimental Forest in Montana (USDA-Forest Service), and Waterton Lakes National Park in Alberta, Canada.

A persistent concern of local managers and private land-owners is the dilemma of fire in forests managed for wilderness, and it's threat to property and lives when improperly controlled. In the early 1980s, U.S. MAB awarded a grant to the University of Montana to undertake an experimental burn within Glacier and to conduct the necessary sampling to closely follow vegetation re-establishment and maintenance after fire treatment. This study provided the impetus for a successful prescribed natural fire program.

Through the international MAB program, Glacier was already sharing data regarding alpine research and monitoring. One such program is EuroMAB which links 175 BRs in 32 countries. Glacier has also participated in the Northern Science Network; a caucus of scientists from circumpolar BRs.

A basis for the concurrent BR designation of both Glacier National Park and the Coram Experimental Forest was to encourage cooperation in implementing biosphere reserve roles. During the last decade, staff from these two BRs have closely cooperated on a number of Coram-based studies including: noxious weed control and revegetation methods. Results of these studies are being used to help optimize revegetation success at disturbance areas associated with reconstruction of the Going-to-the-Sun Road in Glacier.

18. Glacier Bay-Admiralty Island (Alaska) est. 1986

Admiralty Island National Monument - USDA-Forest Service

Glacier Bay National Park - National Park Service

Glacier Bay-Admiralty Island Biosphere Reserve contains some of the most spectacular tidewater glaciers in the world. The dramatic rise in elevation from the sea fosters a diverse plant community. Areas of special scientific study include, glaciology, plant succession, forest ecology, and terrestrial and marine mammals. The biosphere reserve is host to scientists from around the world.

Favorite activities of visitors are photography, cruising, fishing, canoeing, kayaking, wildlife-viewing, crabbing, hiking, and camping.

19. **Golden Gate Biosphere Reserve** (California) est. 1988
Audubon Canyon Ranch - Audubon Canyon Ranch
Bodega Marine Reserve - University of California
Cordell Banks National Marine Sanctuary - National Oceanic
And Atmospheric Administration
Farallon National Wildlife Refuge - U.S. Fish and Wildlife
Service
Golden Gate National Recreation Area - National Park Service
Gulf of the Farallones National Marine Sanctuary - National
Oceanic and Atmospheric Administration
Jasper Ridge Biological Preserve - Stanford University
Marin Municipal Water Reservoirs (2 sites) - Marin County
Mt. Tamalpais, Tomales Bay, and Samuel P. Taylor State Parks -
California Department of Parks and Recreation
Point Reyes National Seashore - National Park Service
San Francisco Peninsular Watershed - City of San Francisco

The Golden Gate Biosphere Reserve (GGBR) encompasses the complete spectrum of marine habitats ranging from the intertidal to the deep oceanic, and includes some of the largest and most diverse eastern Pacific populations of seabirds and pinnipeds south of Alaska. Collectively, the units of the GGBR offer protection to a very wide variety of ecosystems.

The Golden Gate Biosphere Reserve Association has developed a collaboration among its constituent agencies and organizations in order to improve ecosystem management within member units. It has developed awareness among diverse urban communities of the conditions and trends of biological resources, of the problems in the biosphere reserve, and how local communities can become partners in solving them.

The Education Council of the biosphere reserve association, organized a workshop titled "Links to Diversity" which convened more than 40 organizations in the San Francisco Bay area that have developed or are developing multi-cultural environmental education programs.

The Science Council of the biosphere reserve association organized a symposium on biological diversity of the central California coast to establish base-line information on the flora, fauna and ecological communities of land and ocean in the central California coastal area.

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Through its constituent units the GGBR is carrying out projects on stream restoration, coho salmon recovery, mapping of the biosphere reserve in a geographic information system, and exotic vegetation removal.

Audubon Canyon Ranch each year offers nature education and conservation programs to over 6,000 children from the greater San Francisco Bay Area. 20,000 additional yearly visitors enjoy the nature trails and nature related seminars.

Cordell Banks and Gulf of the Farallones National Marine Sanctuaries are located offshore from the greater San Francisco Bay area. The areas are dedicated to protection of the marine environment, and support extensive marine research activities. Popular public activities include boating, whale-watching, and sport fishing.

Golden Gate Recreation Area straddles the entrance to San Francisco and San Pablo Bays. It is a blend of natural beauty, historical attractions, and urban development. Hiking trails and museum exhibits are open to the public.

Jasper Ridge is primarily a biological field station for Stanford University. Because of the strong attachment of the local community to this natural area, a docents program was established which conducts interpretive nature walks, initiates monitoring and survey activities, mounts exhibits and many special events.

Point Reyes is a spectacular site where rock, sky and pounding surf meet. Hiking, camping, and beach activities are featured.

Tomaes Bay State Park is a day use area for picnicking, swimming, nature hiking and boating. Their staff participate in the various biosphere reserve projects especially involving Tomales Bay.

Samuel P. Taylor and Mt. Tamalpais State Parks have great biological diversity and spectacular scenery. Environmental studies are focused on plant and animal ecology. Activities popular with the public are camping, hiking, scenery and wildlife watching, and bicycling.

20. **Guanica Biosphere Reserve** (Puerto Rico) est. 1981

Guanica Commonwealth Forest - Puerto Rico Department of
Natural Resources

The Guanica Biosphere Reserve is recognized as a site of international importance to the understanding of the ecological processes of subtropical dry forest ecosystems. At present, several projects with stakeholders are underway. The biosphere reserve is working with Copamarina Resort to manage wetlands owned by the resort as an ecotourist resource. Biosphere staff are assisting as advisor to the Education Department for the Global Educational Project with the local schools. They are advisors to the Puerto Rico Planning Board in the land use plan regarding natural areas with nature tourism potential in the Guanica area. The biosphere reserve managers are also participating with the community of “La Laguna” in restoration of Guanica Lagoon.

21. **H.J. Andrews Biosphere Reserve** (Oregon) est. 1976

H.J. Andrews Experimental Forest - USDA-Forest Service

The dense coniferous forests and associated stream systems of H.J. Andrews have been intensively studied since 1948. The very active multidisciplinary research program focuses on forest and stream ecosystems; effects of stresses on carbon, water, and nutrient cycles; forest canopy subsystems; forest products production, and geomorphic processes and erosion.

22. Hawaiian Islands Biosphere Reserve (Hawaii) est. 1980

Haleakala National Park - National Park Service

Hawaii Volcanoes National Park - National Park Service

Haleakala and Hawaii Volcanoes National Parks, the two units of the Hawaiian Islands Biosphere Reserve serve as 1) premier sites for protection of a sample of the endemic biological diversity of the Hawaiian Islands; 2) centers for learning how to effectively protect fragile island ecosystems; 3) focuses for basic biological research on evolutionary biology and invasive alien species; and 4) centers for public education on Hawaiian natural history. Haleakala and Hawaii Volcanoes National Parks possess adequate mandates and incentives to initiate such programs without designation as an international biosphere reserve. However, the biosphere reserve recognition has assisted in obtaining the local distinction the areas deserve and increased appreciation by at least 500,000 international visitors and over two million visitors from the U.S. mainland.

23. Hubbard Brook Biosphere Reserve (New Hampshire) est. 1976

Hubbard Brook Experimental Forest - USDA-Forest Service

Hubbard Brook is composed of both protected and managed use areas dedicated to the conservation and monitoring of a minimally disturbed northern hardwood ecosystem. It is an internationally recognized environmental research center where more than 80 scientists and graduate students from three government agencies, a private research foundation, and 10 universities work together to understand the basic physical and chemical components of ecosystems and potential anthropogenic effects on these systems.

Hubbard Brook has the longest continuous record of precipitation chemistry in North America. This long-term record led to the discovery of “acid rain” in the United States.

Forty years of research at Hubbard Brook on the effects of various forest harvesting techniques have provided essential information on maintaining forest productivity following cutting which has been utilized by private industrial forest owners to modify their management and harvesting plans. Hubbard Brook holds frequent individual training sessions.

The Hubbard Brook Biosphere Reserve is involved in an active scientific exchange program with the Caucasus Biosphere Reserve in southern Russia, and with the Institute of Geography of the Russian Academy of Sciences in Moscow. The exchanges have been funded jointly by the Man and the Biosphere Program and the USDA Forest Service.

24. **Isle Royale Biosphere Reserve** (Michigan) est. 1980

Isle Royale National Park - National Park Service

Isle Royale is an island wilderness in Lake Superior. Visitor activities include camping, hiking, boating, and fishing. As a wilderness the island has no roads but 160 miles of hiking trails. Research topics include wildlife ecology, most notably the population dynamics of wolves and moose on the island.

25. Jornada Biosphere Reserve (New Mexico) est. 1976

Jornada Experimental Range - USDA-Agricultural Research Service

The Jornada Biosphere Reserve includes the Jornada Plains and adjacent San Andreas Mountains, with a range of semidesert grasslands and juniper shrub uplands. The site's long-term records of climate and grazing are useful for studies of the impact of different range management regimes on the dryland habitats.

Research staff from Jornada frequently collaborate with staff of Big Bend Biosphere Reserve in Texas and Mapimi Biosphere Reserve in Mexico on issues related to their shared Chihuahuan Desert biome. The three reserves have established the Chihuahua Desert Biosphere Technical Group. This group links all interested scientists, educators, and land managers for the purpose of enhancing multi-purpose land management through research and environmental education and to develop an information management system which will support resource use decisions in the Chihuahuan Desert. Jornada staff also collaborate with biological resources staff at the nearby White Sands Missile Range of the U.S. Air Force.

26. Konza Prairie Biosphere Reserve (Kansas) est. 1976

Konza Prairie Research Natural Area - Kansas State

University and The Nature Conservancy

Konza Prairie Biosphere Reserve includes one of the most significant intact prairie ecosystems in the United States. This offers an important benchmark environment for studies of pre-settlement tallgrass prairie ecosystems. Current studies focus on the ecology of natural prairie ecosystems.

Public visitation is restricted because of the intense research use. However, over 6,000 visitors used the marked nature trail and education programs in 1996. Konza Prairie serves as a biological research station for Kansas State University and dozens of visiting scientists. Over \$6,000,000 yearly in grants support much of this work.

27. Land Between The Lakes Biosphere Reserve

(Kentucky, Tennessee) est. 1991

Land Between The Lakes - Tennessee Valley Authority

Formed from the impoundment of the Tennessee and Cumberland Rivers, the Land Between the Lakes includes some 170,000 acres of forest, waters, and trails that serve as a major outdoor recreation and tourism focus, which has stimulated economic growth in the region. A focus of this national recreational area is sustainable economic development based on tourism. Popular activities include camping, boating, fishing, horseback riding, motorbiking, hunting, hiking, and visits to the planetarium and The Homeplace, this last featuring pioneer homesteading activities of the 1850s.

Annual timber harvests produce about five million board feet of lumber.

Approximately 15,000 hunter-use permits are sold each year allowing hunting for deer, turkey, waterfowl, fox, raccoons, and other small game animals.

Consumptive resource uses at Land Between The Lakes are managed sustainably by the professional resource management staff, which also plans and implements wildlife restoration activities. Bald eagles, river otters, turkey, and ruffed grouse have been successfully reintroduced. There is an elk and red wolf reintroduction program in progress.

28. Luquillo Biosphere Reserve (Puerto Rico) est. 1976

Luquillo Experimental Forest - USDA-Forest Service

Luquillo Experimental Forest Biosphere Reserve comprises a spectacular cross-section of the natural environments of Caribbean islands, and is valued by the public as an asset for conservation, recreation, tourism, education, and research. The research here focuses on forest ecosystems of the Caribbean area.

29. Mammoth Cave Area Biosphere Reserve (Kentucky) est. 1990

Mammoth Cave National Park - National Park Service

Members of the Mammoth Cave Area Biosphere Reserve council have pooled their data-sharing and analysis capabilities. A Geographic Information System has been established to support and interact with partner systems. Through this sharing, groundwater hazard maps were developed indicating where interstate highways and railroads cross the groundwater basins. Mammoth Cave National Park (KY) and state environmental protection employees have begun training local volunteer emergency response crews in south-central Kentucky to use the groundwater hazard map so that spills of hazardous materials in the area can be quickly contained.

A partnership was established with farmers, universities, and agencies to protect aquatic resources by promoting sustainable agriculture and on-the-farm best management practices (BMPs). Since 1990 the USDA has assisted farmers on a cost-sharing basis with design and installation of animal waste BMPs for feedlots and dairies. Several other biosphere reserve council agencies have invested in groundwater and aquatic community monitoring to assess the effectiveness of BMPs.

The Economic Development Administration funded a biosphere reserve study to assess the potential for compatible industrial development along Interstate 65 within the reserve.

30. **Mojave and Colorado Deserts Biosphere Reserve** (California)

est. 1984

Anza-Borrego Desert State Park - California Department of
Parks and Recreation

Death Valley National Park - National Park Service

Joshua Tree National Park - National Park Service

Philip L. Boyd Deep Canyon Desert Research Center -
U. of California

Santa Rosa Wildlife Management Area, San Bernadino
National Forest - USDA-Forest Service

This remarkable assemblage of desert environments capture the diversity of California's aridlands ecosystems. The various components of this reserve are distinct, from strictly research-related to recreational. This biosphere reserve includes virtually all of the significant natural desert tracts remaining in California.

Recreational opportunities of the area include hiking, desert photography, camping, visiting historic mining and archeological sites, wildflower walks, cycling, and wildlife watching. Philip L. Boyd is closed except to researchers with permission.

Research in the area involves plant and animal adaptations to an environment of extreme heat and aridity.

31. New Jersey Pinelands National Reserve Biosphere Reserve

(New Jersey) est. 1983

Pinelands National Reserve - Pinelands Commission, State of
New Jersey

The Pinelands National Reserve Biosphere Reserve is a focal point of academic research, particularly in the areas of water resources, sustainable development, biological diversity, wetlands protection, and implementation of land management techniques. Rutgers University created a Division of Pinelands Research which operates a field station in the Pinelands. A long-term monitoring program involving both economic and ecological measures is on-going, and was designed with the assistance of important stakeholders.

The area promotes extensive educational initiatives involving university, school and government partnerships. Currently, curriculum units developed by the Commission for both grammar and middle school students are being used in the region and elsewhere in New Jersey. An annual Pinelands Workshop is conducted for teachers throughout the state by Rutgers University and the Commission. A National Park Service funded interpretive plan for the Pinelands has been the subject of extensive public review and will be put into effect this year.

Affiliation with U.S. MAB has brought researchers from around the world to study the ecological resources of the region, and government officials from many nations to learn about the ecosystem management techniques utilized in this region.

Commission staff have visited other nations to advise on issues affecting growth management and community conservation programs.

32. Niwot Ridge Biosphere Reserve (Colorado) est. 1979

Niwot Ridge - U. of Colorado

Niwot Ridge is located near the major urban-suburban centers of Denver-Boulder-Fort Collins. The site receives little direct anthropogenic influence, and is thus an excellent site to monitor biological, chemical, and physical responses to changes in atmospheric chemistry and climate.

Niwot Ridge participates in the strategic plan for U.S. biosphere reserves in its support of environmental research, monitoring, education, and training. Through the Mountain Research Station, University of Colorado, a substantial amount of research is facilitated, from atmospheric chemistry to alpine and sub-alpine ecology. Niwot Ridge is one of the National Science Foundations Long-Term Ecological Research (LTER) sites, and has been used by the National Oceanic and Atmospheric Administration (NOAA) for atmospheric trace gas sampling since 1968. In addition there are several educational programs, focused primarily at the University level, but which also include K-12 environmental science education, and symposia and talks aimed at the general public. The Niwot Ridge site has participated in exchanges with scientists from the Karkonse and Tatra Biosphere Reserves in central Europe.

More than 500 scientific publications have resulted from work in the Niwot Ridge Biosphere Reserve, and thousands of individuals have participated in courses, workshops, and symposia. The research has benefited scientists worldwide. In addition, government agencies (U.S. Forest Service, National Park Service, NOAA) have benefited from research and educational activities on Niwot Ridge, and have directly participated in implementing management schemes in association with MAB guidelines.

33. Noatak Biosphere Reserve (Alaska) est. 1976

Gates of the Arctic National Park - National Park Service

Noatak National Preserve - National Park Service

Situated in the remote Brooks Range of northern Alaska, this vast unsettled arctic wilderness is perhaps the most pristine natural area in the United States. This site exemplifies the range of natural habitats in Alaska's far north, and offers research opportunities in arctic ecology.

34. Olympic Biosphere Reserve (Washington) est. 1976

Olympic National Park - National Park Service

The site of the only temperate rainforest in the coterminous United States, Olympic is an important tourist destination. The reserve supports studies of human impacts of tourism on the wilderness lands, as well as a range of wildlife surveys and studies including archeological excavations.

Tourist activities, which are important to the economy of the area include camping, hiking, wildlife observation, mountaineering, skiing, fishing, horseback riding, and boating.

35. Organ Pipe Cactus Biosphere Reserve (Arizona) est. 1976

Organ Pipe Cactus National Monument - National Park Service

Organ Pipe Cactus Biosphere Reserve subsumes a unique tract of desert vegetation dominated by cacti and other plant species not found elsewhere in the United States.

Staff at Organ Pipe have been active for many years in outreach to the native peoples of the area, and to Mexican biosphere reserves nearby. In 1986 they dedicated the Sonoran Biosphere Reserve Center and launched the Sensitive Ecosystems Program (SEP). The SEP is a long-term program of inventory, monitoring, and research which collected biological information from both sides of the international border and developed a geographic information system in coordination with adjacent land managers.

Through partnering with various cultural groups, educators, and non-governmental agencies, Organ Pipe Cactus has developed an environmental education curriculum for school children in Arizona, the O'odham schools, and Sonora, Mexico. This innovative curriculum emphasizes the unique heritage of the region, human impact on the natural environment, and changing land uses over time.

36. Rocky Mountain Biosphere Reserve (Colorado) est. 1976

Rocky Mountain National Park - National Park Service

This strikingly beautiful mountain environment receives several million tourists a year and represents an important resource to the local economy. Popular activities are horseback riding, camping, fishing, mountain climbing, wildlife and scenery viewing and cross-country skiing.

The Park is the site of a range of ecological, geological, and resource management studies, and represents an excellent example of the rocky mountain biome, a major reason for its selection as a biosphere reserve.

The Rocky Mountain Biosphere Reserve participates in the Colorado Rockies Regional Cooperative, an interagency group which supports scientific research on the human/natural area interface, community involvement on environmental issues of the area, and a newly developed geographic information system.

37. San Dimas Biosphere Reserve (California) est. 1976

San Dimas Experimental Forest - USDA-Forest Service

With steep montane and chaparral environments, the San Dimas Biosphere Reserve is an important natural area a mere 50 miles from Los Angeles. Scientific studies here focus on soil, soil percolation, nutrient cycling, sedimentation, erosion, water quality, fire ecology, smog effects, and plant and animal interactions. This experimental forest is closed to the general public.

38. San Joaquin Biosphere Reserve (California) est. 1976

San Joaquin Experimental Range - USDA-Agricultural Research
Service

The San Joaquin Biosphere Reserve centers on a tract of experimental rangeland managed for study of commercial stock production in a foothills rangelands area. Other research topics include wildlife biology, and entomology.

39. Sequoia-Kings Canyon Biosphere Reserve (California) est. 1976

Sequoia and Kings Canyon National Parks -
National Park Service

Situated between the San Joaquin and Owens valleys of California, Sequoia/Kings Canyon reserve is remarkable for the stands of giant sequoia.

As a National Park the area is devoted to preservation and recreation. There is also a strong research program focused on air pollution, acid deposition fire regime, amphibian loss, loss of biodiversity, and introduced species such as released pets, escaped plants, and weedy species.

The Sequoia Kings Canyon Biosphere Reserve has had some special accomplishments. Monitoring of air pollution and acid deposition have been part of the research program at Sequoia Kings Canyon National Parks since the early 1980s. In the late 1980s the Parks began global climate change research to assess the impacts of global change on park resources. They have developed an ecosystem management strategy in managing lands in the biosphere reserve and USDA-Forest Service lands surrounding the Parks. The staff has coordinated with the California Biodiversity Council on establishing sustainable ecosystems.

40. South Atlantic Coastal Plain Biosphere Reserve

(South Carolina) est. 1983

Congaree Swamp National Monument - National Park Service

Congaree Swamp National Monument/South Atlantic Coastal Plain Biosphere Reserve preserves the last vestiges of old-growth bottomland hardwood forest in the eastern United States. A recent study completed by Auburn University concluded that the Congaree is one of the tallest temperate deciduous forests in the world. The park takes advantage of every opportunity to inform potential partners of its biosphere reserve status. Audiences seem to appreciate the park to a greater degree knowing that it is considered significant from a global as well as a national perspective. The status has helped to establish coalitions willing to help management meet short- and long-term stewardship responsibilities. Partnerships with the River Alliance and Sunrise Foundation have formed within the last 5 years. They have incorporated the preservation and protection of the park as part of their own working agendas.

41. **Southern Appalachian Biosphere Reserve** (Tennessee/North Carolina)
est. 1976
Coweeta Hydrologic Laboratory - USDA-Forest Service
Grandfather Mountain - Grandfather Mountain, Inc.
Great Smoky Mountains National Park - National Park Service
Mt. Mitchell State Park - North Carolina Division of Parks
and Recreation
Oak Ridge National Environmental Research Park -
U.S. Department of Energy

The Southern Appalachian Man and the Biosphere Program (SAMAB) is the administrative body of this biosphere reserve. SAMAB encourages wise use of resources and promotes associated research and training. SAMAB's several programs and accomplishments have demonstrated the cooperative efforts of its federal, state, local and private members. The activities of SAMAB for forest health monitoring have included workshops across the region describing exotic insects and diseases affecting the forest, and the establishment of 100 plots to provide data.

In the area of Sustainable Development/Sustainable Technologies SAMAB coordinated the development of a regional geographic information system, workshops on Forestry Best Management Practices, and workshops and educational programs on controlling alien species.

To support efforts in conservation biology, SAMAB held a regional conference and published a book entitled "Wetlands of the Southeastern United States;" sponsored workshops on protection of native plants, and native brook trout; and cooperated on monitoring and education programs for neo-tropical migratory birds

SAMAB has been especially responsive to the needs of the community in the area of environmental education. It produced a brochure, "Understanding Air Pollution in the Southern Appalachians," and a directory of environment education and training. SAMAB created the Southern Appalachians Mountain Initiative, an eight state consortium of public and private groups to address air quality impacting the region, and partnered with the U.S. Forest Service on the Chattooga Ecosystem Demonstration Project. With the assistance of a local television station and schools, SAMAB produced videos, posters, and teacher guides on the reintroduction of the red wolf into Great Smoky Mountains National Park, Dogwood Anthracnose, and, "Water: From the Mountains to the Coast." These were distributed to all schools and public libraries in the biosphere reserve zone of cooperation.

SAMAB has been interested in conserving the cultural and historical resources of a quickly developing area. It has developed a databases on regional cultural

resources, and assisted Pittman Center, Tennessee in developing a town plan that would promote economic development and protect the area natural resources.

Coweeta Hydrologic Laboratory has been studying water cycles and effects for 50 years. It has become a training center for new scientists in many biological fields. Researchers from eight universities as well as the USDA Forest Service have active studies at Coweeta. Current research focuses on the preservation of forest soil fertility and estimation of effects of atmospheric pollutants.

Grandfather Mountain is a privately owned recreation and conservation mountain in western North Carolina. Admission is charged for the many activities and events scheduled throughout the year. Grandfather Mountain has one of the most concentrated bird habitats in the southern Blue Ridge with 147 recorded species.

Great Smoky is the most visited National Park in the U.S. Major issues of concern and focus for scientific research are the impacts of air pollutants: acid precipitation; ozone and man-made haze upon the Park's resources; and the influx and impacts of a long sequence of exotic or non-native insects, diseases and other organisms which have already dramatically altered the face of the Park's forests. New pests are being monitored as they spread nearer the Park.

Mount Mitchell is the highest peak in the eastern United States. The park serves a beneficial economic role to the county and western North Carolina by attracting tourists to the area from across the nation. The Park serves a science, educational, management and economic role in the western North Carolina region. The park provides a research site and interpretive educational programs for those studying the high altitude Spruce/Fir ecosystem. The park administers recreational opportunities for hiking, camping, wildlife and scenic viewing, and photography; and manages the natural resource for long term use by people while preserving the natural environment.

Oak Ridge National Environmental Research Park contains relatively undisturbed ecosystems of the eastern deciduous forest. More than 1000 species of plants are found on the reservation. It is the only representative of the Ridge and Valley physiographic province in the 337 MAB biosphere reserves worldwide.

Oak Ridge reservation is a Tennessee Wildlife Management Area. Restoration activities have benefited the populations of wild turkey and osprey. Oak Ridge has an active research and environmental education program in association with local schools and colleges.

42. Stanislaus-Tuolumne Biosphere Reserve (California) est. 1976

Stanislaus-Tuolumne Experimental Forest - USDA-Forest Service

Located in the Sierra Nevada Mountains not far from Yosemite National Park, this biosphere reserve is remarkable for its stands of sugar pine. Research at the site emphasizes all areas of forest management.

Recreational activities of the Stanislaus-Tuolumne Biosphere Reserve include, motorbike and mountain bike riding, fishing, hunting, boating, swimming, hiking, camping, skiing, water-skiing, and wildlife observation.

43. Three Sisters Biosphere Reserve (Oregon) est. 1976

Three Sisters Wilderness - USDA-Forest Service

The Three Sisters Wilderness Biosphere Reserve was established by the U.S. Congress as a wilderness in 1964, and as a U.S. Biosphere Reserves in 1976. It is a protected area managed to preserve its natural conditions. Recreational activities include hiking, horseback riding, and back country camping. The wilderness is part of the Deschutes National Forest.

Extensive research has been done on the geology of the area, and plant communities of forests and meadows.

44. University of Michigan Biosphere Reserve (Michigan) est. 1979

U. of Michigan Biological Station - U. of Michigan

This biosphere reserve is operated as a field station of the U. of Michigan, Ann Arbor. Research involving ecology, systematics, limnology and field biology are stressed. Over 1,500 scientific publications have been produced from research on the site.

45. Virgin Islands Biosphere Reserve (U.S. Virgin Islands) est. 1976

Virgin Islands National Park - National Park Service

As one of three U.S. Biosphere Reserves in the Caribbean, Virgin Islands shares information with Luquillo and Guanica from multi-disciplinary research and monitoring programs of the area ecology. Extensive long term monitoring continues on coral reefs and sub-tropical forests.

People from the British Virgin Islands, Belize, Venezuela, St. Vincent, Jamaica, Turks and Caicos and other countries have participated in training programs sponsored by the biosphere reserves. Resource managers from 12 marine parks in the region have attended training sessions at Virgin Islands Biosphere Reserve that helped them set up programs for their new parks.

46. Virginia Coast Biosphere Reserve (Virginia) est. 1979

Virginia Coast Reserve - The Nature Conservancy

The Nature Conservancy has acquired and protected 14 Atlantic barrier islands on the Virginia Eastern Shore. With the use of conservation easements, habitat enhancement and community planning for future development, buffer lands bordering the protected areas are becoming an integral part of the biosphere reserve.

The Virginia Eastern Shore Sustainable Development Corporation was established in September 1995 as an initiative of the biosphere reserve. By creating jobs for local residents, protecting the environment, and earning a reasonable profit for its investors, the Corporation will demonstrate the concrete economic benefits of long term conservation.

The Nature Conservancy's Center for Compatible Economic Development played a key role in launching the Corporation, raising \$2.7 million in capital through a variety of foundations, corporations and individuals. Today, the Corporation is helping Eastern Shore farmers form supply relationships with urban grocery stores, and with bed and breakfast owners to expand the market for heritage and nature tourism experiences. With assistance from the Center for Compatible Economic Development, the Corporation will soon launch a program to market Eastern Shore arts and crafts through mail order and retail outlets.

47. Yellowstone Biosphere Reserve (Idaho, Montana, Wyoming) est. 1976

Yellowstone National Park - National Park Service

The Yellowstone Biosphere Reserve is perhaps the nation's most important national park, with a diversity of habitats and remarkable natural features. As a biosphere reserve, Yellowstone provides a range of opportunities for research and monitoring of localized impacts of tourism, management of large grazing mammals (elk, bison), and reintroduction initiatives (timber wolf).

Wildlife watching and spectacular scenery viewing are the two main attractions at Yellowstone. Other popular activities include hiking, fishing, boating, and camping.