

NATIONAL REGISTRY OF NATURAL LANDMARKS



NATIONAL
NATURAL
LANDMARKS
PROGRAM

June 2009



NATIONAL REGISTRY OF NATURAL LANDMARKS JUNE 2009

NATIONAL REGISTRY OF NATURAL LANDMARKS

Summary: This publication lists all National Natural Landmarks (NNL) currently included on the National Registry of Natural Landmarks. This listing provides information on each landmark's natural values, designation date, and ownership type.

For Further Information Contact: Natural Resources Stewardship and Science, National Park Service, 1201 I Street N.W., Washington, D.C., 20005.

Supplemental Information: The National Natural Landmarks Program was established by the Secretary of the Interior in 1962, under authority of the Historic Sites Act of 1935 (16 U.S.C. 461 *et seq.*) to identify and encourage the preservation of the full range of geological and biological features that are determined to represent nationally significant examples of the Nation's natural heritage. Potential sites are evaluated by qualified scientists and, if determined nationally significant, recommended to the Secretary of the Interior for designation. Once a landmark is designated it is included on the National Registry of Natural Landmarks, which currently lists 586 NNLs nationwide.

The National Registry of Natural Landmarks includes nationally significant geological and biological features in 48 states, American Samoa, Guam, Puerto Rico, and the Virgin Islands. Of the 586 landmarks currently listed on the Registry approximately one-half are administered solely by public agencies (e.g., Federal, State, county, or municipal governments), nearly one-third are owned entirely by private parties and the remaining are owned or administered by a mixture of public and private owners. Because many natural landmarks are privately owned and/or not managed for public access, owner permission must be obtained prior to visitation. Designation in no way infers any right of public access.

National Natural Landmark designation is not a land withdrawal, does not change the ownership of a site, and does not dictate use or activity. However, Federal agencies should consider the unique properties of these nationally significant areas in completing compliance under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), and there may be State or local planning or land use implications.

National Registry of Natural Landmarks

The following list contains all NNLs included on the National Registry of Natural Landmarks as of June 2009. The landmarks are arranged alphabetically by state and county. The number of landmarks in each state is enclosed in parentheses following each state's name. A description of each landmark's natural values, designation date, and ownership type is provided. Ownership categories include Federal, State, county, municipal, Indian Trust, and private. The order does not reflect the relative amount of land owned by any party. The information contained herein can also be found on the NNL website at <http://www.nature.nps.gov/nnl/>.



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ALABAMA (7)

Baldwin County

MOBILE-TENSAW RIVER BOTTOMLANDS

(extends into Mobile and Washington Counties) Mobile-Tensaw River Bottomlands is one of the most important wetlands in the nation. The site contains a variety of habitats, including mesic floodplains, freshwater swamps and brackish water marshes, and supports several rare and endangered species. Designation: 1974. Ownership: State, private.

Franklin County

DISMALS

The Dismals is a moist sandstone gorge cut by Dismals Branch. The site contains a rich diversity of native plant life, including a stand of virgin timber composed chiefly of hemlock, tulip poplar, sweetgum, and beech. Huge blocks of sandstone have broken away from the gorge walls and lie in haphazard fashion on the floor, producing many natural bridges and damp rockface microhabitats. Designation: 1974. Ownership: Private.

Jefferson County

RED MOUNTAIN EXPRESSWAY CUT

The Red Mountain Expressway Cut exhibits an unusual combination of stratigraphic and structural features that record the geological development of this part of the Southern Appalachian fold belt during Paleozoic time. In one location, because the strata are tilted, exposed rocks represent a 150 million-year geological record along a distance of only 650 feet. Additionally, the exposed rocks contain a rare Silurian trilobite species. Designation: 1987. Ownership: Municipal.

Limestone County

BEAVERDAM CREEK SWAMP

Beaverdam Creek Swamp, located within Wheeler National Wildlife Refuge, is a prime tupelo gum swamp. Occurring within the Interior Low Plateaus biophysiographic province, this habitat type is an unusual occurrence, as it is typically found farther south in the Gulf Coastal Plain biophysiographic province. Designation: 1974. Ownership: Federal.



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Madison County

SHELTA CAVE

Developed in fossiliferous Warsaw Limestone of Mississippian Age, Shelta Cave contains a large underground lake deep within. The cave is noted for its diverse and complex aquatic fauna, including some species that are known to exist only in this cave. Designated: 1971. Ownership: Private.

Marshall County

CATHEDRAL CAVERNS

Located within Cathedral Caverns State Park, Cathedral Caverns consists of a series of large chambers containing flowing underground streams and a variety of decorative speleothems, such as stalagmites, totem poles, dripstone slopes and walls. The huge entrance to the cave is 125 feet wide by 50 feet high and is spanned by a thin, almost flat arch. Designated: 1972. Ownership: State.

Mobile County

**MOBILE-TENSAW RIVER
BOTTOMLANDS**

(see Baldwin County)

Morgan County

**NEWSOME SINKS KARST
AREA**

Newsome Sinks Karst Area occupies a north-south trending karst valley about 4 miles long, 3/4 mile wide and 400 feet deep. Both ends of the drainage basin are higher in elevation than the valley floor, forcing water runoff to escape through subterranean passageways. The Newsome Sinks area is hollowed out by more than 40 caves, with over 50,000 feet of known passages. Most of the passages are dry, carrying water only during periods of heavy rainfall. Designated: 1973. Ownership: Private.

Washington County

**MOBILE-TENSAW RIVER
BOTTOMLANDS**

(see Baldwin County)



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ALASKA (16)

ANIAKCHAK CRATER

Aniakchak Crater, located within Aniakchak National Monument, is one of the largest explosive craters in the world, averaging 6 miles wide and 2000 feet deep. The crater contains Surprise Lake, a warm springs fed lake that provides spawning grounds for a unique subspecies of salmon. The lake is the source of the Aniakchak River, which flows through a breach in the crater rim to the Pacific Ocean. The last eruption of this volcano was in 1931. Designated: 1967. Ownership: Federal.

ARRIGETCH PEAKS

Located within Gates of the Arctic National Park, the Arrigetch Peaks have long been a landmark to the Nunamiut Eskimo people of northwest Alaska. Carved by glacial ice and running water, the conspicuous granite pinnacles rise thousands of feet above the surrounding glacial valleys of tundra and boreal forest. The Arrigetch Peaks illustrate several phases of alpine glacier activities and reveal abrupt transitions from metamorphic to granitic rock. Designated: 1968. Ownership: Federal.

BOGOSLOF ISLAND

Located within Alaska Maritime National Wildlife Refuge, Bogoslof Island, a product of several volcanic eruptions, is recognized by geologists to be a prime example of volcanism at work. The most recent eruption in 1992 added a new dome to the east end of the island. The island supports an important rookery and haulout for endangered Steller sea lions, and nesting grounds for over 50,000 murre, kittiwakes and other sea birds. Designated: 1967. Ownership: Federal.

CLARENCE RHODE NATIONAL WILDLIFE RANGE

Located within the Yukon Delta National Wildlife Refuge, the Clarence Rhode National Wildlife Range is an excellent example of coastal and upland tundra habitat; consisting of more than 50,000 lakes and ponds, meandering streams, extensive tide flats and low shrub and sedge tundra. The site provides nesting grounds for most of the world's black brant, cackling and emperor geese, and numerous other waterfowl, shorebirds, and sandhill cranes. Designated: 1968. Ownership: Federal, State, private.

ILIAMNA VOLCANO

Iliamna Volcano, located within Lake Clark National Park, is a broad, cone-shaped active stratovolcano that rises to a summit of 10,016 feet. Most of the volcano is covered by snow and ice and at least 10 glaciers radiate from its summit. Its great height and proximity to Cook Inlet make it readily visible from the east side of the inlet and from Anchorage. Designated: 1976. Ownership: Federal.



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LAKE GEORGE

At the time of its designation, Lake George was the largest glacier-dammed lake and one of the most consistent self-dumping lakes in North America. The lake emptied almost annually for 49 years before 1967. When the lake outlet was blocked by the Knik Glacier, the lake swelled with water until summer when the dam broke and the water dumped in a spectacular torrent into the Knik River. Designated: 1967. Ownership: Federal, State, private.

MALASPINA GLACIER

Malaspina Glacier, located primarily within Wrangell-St. Elias National Park, is the largest piedmont glacier in North America and one of the largest outside the ice cap regions of the world. It provides classic examples of glacial mechanisms and fluctuations. This large body of ice has been noted by explorers concerned with navigation of the western coast of North America for more than two centuries. Designated: 1968. Ownership: Federal, State, private.

**McNEIL RIVER STATE
GAME SANCTUARY**

The McNeil River State Game Sanctuary contains a portion of the McNeil River with a series of low, shallow falls that afford easy wading and good visibility for brown bears fishing for salmon. The concentration of bears fishing at the falls provides a world renowned bear viewing opportunity. The site provides permanent protection for brown bear and other fish and wildlife populations and their habitats. Designated: 1968. Ownership: State.

MOUNT VENIAMINOF

An active volcano of great mass, Mount Veniaminof contains a cupped ice field of 25 square miles, the most extensive crater-glacier in the nation. The caldera originated when the former summit collapsed. It is the only known glacier on the continent with an active volcanic vent in its center. Located within Alaska Peninsula National Wildlife Refuge, Veniaminof is usually shrouded in fog and clouds, and local residents indicate that the entire volcano is visible only one or two days a year. Designated: 1967. Ownership: Federal.

REDOUBT VOLCANO

An active stratovolcano, Redoubt Volcano is the second highest of the 76 major volcanoes of the Alaska Peninsula and Aleutian Islands. Located within Lake Clark National Park, extensive glaciers and ice fields cover much of the volcano. There was a major eruption of Redoubt in 1989, with ash deposition as far north as central Alaska. Designated: 1976. Ownership: Federal.

SHISHALDIN VOLCANO

Located within Izembek National Wildlife Refuge, Shishaldin Volcano is the highest volcano on Unimak Island. Used for centuries as a landmark, this explosive stratovolcano is primarily known for its remarkable form, a near perfect cone, which it has retained despite violent eruptions. Designated: 1967. Ownership: Federal.



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**SIMEONOF NATIONAL
WILDLIFE REFUGE**

One of the islands in the Shumagin Island Group, Simeonof Island, within the Alaska Maritime National Wildlife Refuge, is an ancestral hauling ground for sea otters. The rich kelp and eel grass beds in tideland waters surrounding the island are rich in marine life providing ideal habitat for sea otters. Upland areas on the island support Arctic fox, ground squirrels, river otters, and various species of waterfowl, shorebirds and passerines. Designated: 1968. Ownership: Federal.

UNGA ISLAND

Exposures of petrified logs and stumps along the shores of Unga Island are remnants of a sequoia or metasequoia forest buried as a result of volcanic activity in the Tertiary Period. The petrified forest remains hold scientific significance for the passage of species between Asia and America and help portray the climate and environment of the Aleutian Arc before humans inhabited Alaska. The site is part of the Alaska Maritime National Wildlife Refuge. Designated: 1968. Ownership: State, private.

WALKER LAKE

Walker Lake, located within Gates of the Arctic National Park, is a striking and scenic example of the geological and biological relationships of a mountain lake at the northern limit of forest growth. It is typical of the glacial lakes formed in rock basins or behind moraine dams along both flanks of the Brooks Range. There is representation of a full range of ecological communities from white spruce forest on the shores to the barren talus slopes 2000 feet above the lake. Designated: 1968. Ownership: Federal, State, private.

WALRUS ISLANDS

Walrus Islands are the southernmost primary haul-out area for bull walruses, and the only remaining area in the United States where they haul-out in appreciable numbers. Over 4,000 have been counted here during the summer. The landmark consists of seven islands that make up the Walrus Islands State Game Sanctuary. Designated: 1968. Ownership: State.

WORTHINGTON GLACIER

As a typical small valley glacier, Worthington Glacier includes fine examples of most glacial features from accumulation areas to terminal moraines. Partially located within Worthington Glacier State Recreation Site, it is one of the most road accessible glaciers in Alaska. Visitors can park their vehicle nearby and then walk close to the face of the glacier. Designated: 1968. Ownership: State.



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AMERICAN SAMOA (7)

AUNU'U ISLAND	Aunu'u Island is the site of recent episodes of volcanism backed by a geologically recent tuff cone. Designated: 1972. Ownership: Communal Lands.
CAPE TAPUTAPU	Cape Taputapu is a natural exhibit of shoreline, offshore volcanic rocks, and blowholes sculptured by heavy sea wave action. Designated: 1972. Ownership: Communal Lands.
FOGAMA'A CRATER	Fogama'a Crater is one of very few illustrations of the most recent episode of volcanism in American Samoa. Designated: 1972. Ownership: Communal Lands.
LE'ALA SHORELINE	Le'ala Shoreline is a young flow of basalt, inter-bedded with layers of tuff that illustrates erosion by wave action. The site is covered with dense tropical vegetation. Designated: 1972. Ownership: Communal Lands.
MATAFAO PEAK	Matafao Peak is one of five great masses of volcanic rocks that extruded as molten magma during the major episodes of volcanism that created Tutuila island. Matafao Peak is the highest peak on the Island. Designated: 1972. Ownership: Communal Lands.
RAINMAKER MOUNTAIN	Rainmaker Mountain, one of the same extrusions as Matafao Peak, is an outstanding example of several gigantic plugs that created Tutuila Island. Designated: 1972. Ownership: Communal Lands.
VAI'AVA STRAIT	Vai'ava Strait is a classic illustration of steep cliffs and erosion-resistant outliers formed by wave action on a volcanic mass. Designated: 1972. Ownership: Communal Lands.

ARIZONA (9)

Cochise County

RAMSEY CANYON	Ramsey Canyon is a stream-cut, vertical-sided gorge. Cold air drainage from the upper canyon results in a well-defined microclimatic habitat that supports Mexican flora and fauna and plants that normally occur only at higher elevations. The site is also frequented by more species of hummingbirds than any other area in the United States. Designated: 1965. Ownership: Private.
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WILLCOX PLAYA

Willcox Playa, the largest “dry lake” in Arizona, is a remnant of the pluvial Lake Cochise. Unlike similar dry lakes, the black mud below the surface contains a rich fossil pollen record of the pluvial periods of the Pleistocene. The site has become a night-time roosting area for 4,000-8,000 sandhill cranes and contains the greatest diversity of tiger beetles in the United States. Designated: 1966. Ownership: Federal.

Coconino County

**BARRINGER METEOR
CRATER**

Barringer Meteor Crater is the largest impact crater yet discovered in the United States. The impact occurred approximately 50,000 years ago from a meteor weighing several hundred thousand tons. Designated: 1967. Ownership: Private.

KAIBAB SQUIRREL AREA

The Kaibab Squirrel Area, located within portions of the Kaibab National Forest and Grand Canyon National Park, is illustrative of the habitat for the Kaibab squirrel. This rare and restricted species, represents a classic example of evolution through geographic isolation. Designated: 1965. Ownership: Federal.

Mojave County

**GRAPEVINE MESA
JOSHUA TREES**

The Grapevine Mesa Joshua Trees forest contains the best existing display of Joshua trees in the United States. Additionally, the diversity and excellent condition of the associated flora makes this site a superb example of the Mojave Desert ecological unit. Designated: 1967. Ownership: Federal, Indian Trust (Hualapai Tribe), private.

Navajo County

COMB RIDGE

Comb Ridge is the only known location for tritylodont fossils in North America. The close relationship between the specimen found here and those in South Africa, Argentina, and Eastern China provides support for the theory of continental drift. Designated: 1976. Ownership: Indian Trust (Navajo Indian Nation).

Santa Cruz County

CANELO HILLS CIENEGA

Canelo Hills Cienega contains the least disturbed extensive southwestern desert wet grasslands (cienega) along the United States-Mexican border. The site supports one of two known populations of Canelo lady's tresses, and is one of several areas that support the native, rare Gila chub and Gila sucker. Designated: 1974. Ownership: Private.



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ONYX CAVE

Onyx cave, located within Coronado National Forest, is considered to be the finest cave in Arizona. Helictites and speleothems, such as shields are numerous and beautifully developed. Designated: 1974. Ownership: Federal.

**PATAGONIA-SONOITA
CREEK SANCTUARY**

Patagonia-Sonoita Creek Sanctuary is a good example of a cottonwood-willow riparian forest and is one of the last permanent stream-bottom habitat areas in southern Arizona. The site retains a substantial part of the indigenous aquatic biota, including the endangered Gila topminnow. The birdlife includes several Mexican species and is the only known nesting site in the country for the rare rose-throated becard. Designated: 1970. Ownership: Private.

ARKANSAS (5)

Desha County

**WHITE RIVER
SUGARBERRY
NATURAL AREA**

White River Sugarberry Natural Area contains a partially virgin forest with excellent examples of three bottomland hardwood forest types and wildlife populations typical of the forest types present. Designated: 1974. Ownership: Federal.

Fulton County

MAMMOTH SPRING

The third largest spring in the Ozark Mountains, Mammoth Spring is a classic example of a spring originating as a resurgent subterranean stream. Designated: 1972. Ownership: State.

Mississippi County

**BIG LAKE NATURAL
AREA**

Big Lake Natural Area contains a significant amount of virgin forest, composed of a mix of southern, ozark, and midwestern flora. The site supports several threatened or endangered bird species. Designated: 1974. Ownership: Federal.

Polk County

**ROARING BRANCH
RESEARCH NATURAL
AREA**

Roaring Branch Research Natural Area includes a steep ravine with a virgin mesophytic forest representing a relict outlier of forests characteristic of Tennessee, Kentucky, and Indiana. The site also supports plant species that are rare in the Ouachita Mountains. Designated: 1976. Ownership: Federal.



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Saline County

**LAKE WINONA
RESEARCH NATURAL
AREA**

Lake Winona Research Natural Area contains a large virgin shortleaf pine forest reminiscent of those that once covered large areas of Arkansas. Designated: 1976. Ownership: Federal.

CALIFORNIA (35)

Amador County

BLACK CHASM CAVE

Black Chasm Cave is a small three-level cave containing an outstanding variety of speleothems and some of the best helictite formations in the West. Designated: 1976. Ownership: Private.

Contra Costa County

MT. DIABLO STATE PARK

Mt. Diablo State Park contains the best examples of diapiroic (igneous intrusion) geologic processes in the South Pacific Border biophysigraphic province. It is one of the few places in the region where geologic strata of Jurassic, Cretaceous, and Tertiary age can be seen in an aggregate thickness of 42,000 feet. The site also possesses a great diversity of native plant species and associations. Designated: 1982. Ownership: State.

El Dorado County

EMERALD BAY

A vividly colored oval embayment of Lake Tahoe, Emerald Bay was formed by moraines as parallel glaciers receded. The site is an outstanding example of glacial geology. Designated: 1968. Ownership: Federal, State.

Imperial County

**ANZA-BORREGO
DESERT STATE PARK**

(see San Diego County)

IMPERIAL SAND HILLS

Imperial Sand Hills is one of the largest dune patches in the United States. It is an outstanding example of dune geology and ecology in an arid land. Designated: 1966. Ownership: Federal, private.

**SAN FELIPE CREEK
AREA**

The San Felipe Creek Area is a marsh containing probably the last remaining perennial natural desert stream in the Colorado Desert region. Designated: 1974. Ownership: Federal, private.



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Inyo County

DEEP SPRINGS MARSH

Deep Springs Marsh is an example of increasingly rare desert marsh and possibly the only area containing habitat for the black toad. Designated: 1975. Ownership: Private.

EUREKA DUNES

Eureka Dunes, located within Death Valley National Park, is an excellent example of eolian (wind) geological processes. It is the tallest dune complex in the Great Basin biophysiographic province of the United States. The site contains an endangered grass genus, one species of which is the only plant capable of surviving on and stabilizing the steep dune slopes. Designated: 1983. Ownership: Federal.

FISH SLOUGH

(extends into Mono County) Fish Slough is a large, essentially undisturbed desert wetland that provides habitat for the endangered Owens pupfish. Designated: 1975. Ownership: Federal, State, municipal, private.

Kern County

**SAND RIDGE
WILDFLOWER
PRESERVE**

Sand Ridge Wildflower Preserve is a remnant natural area displaying a great diversity of floral species, including the native Bakersfield cactus, a species becoming increasingly rare in this locality. Designated: 1984. Ownership: Private.

SHARKTOOTH HILL

Sharktooth Hill is one of the most abundant, diverse and well-preserved fossil marine vertebrate sites in the world. Designated: 1976. Ownership: Private.

Los Angeles County

RANCHO LA BREA

Rancho La Brea is the site of the world-famous natural asphalt tar pits in which Pleistocene animals became entrapped in their quest for fresh water. It is recognized for having the largest and most diverse assemblage of extinct Ice Age plants and animals in the world. Designated: 1964. Ownership: Municipal.

Marin County

**AUDUBON CANYON
RANCH**

Audubon Canyon Ranch is the largest known nesting area for great blue herons and American egrets on the Pacific Coast. Designated: 1968. Ownership: Private.



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Mendocino County

ELDER CREEK

Elder Creek is a largely undisturbed watershed containing large old stands of Douglas fir, broadleaf evergreens, and deciduous trees. The site also supports a wide variety of wildlife. Designated: 1964. Ownership: Private.

PYGMY FOREST

Pygmy Forest is a unique forest of low, stunted trees and shrubs caused by a complex ecological condition associated with underlying wave terraces and their unusual soils. Designated: 1969. Ownership: State.

Mono County

FISH SLOUGH

(see Inyo County)

Monterey County

**POINT LOBOS STATE
RESERVE**

Point Lobos State Reserve is an outstanding example of terrestrial and marine environments in close association. It is the only known habitat of Monterey cypress and variegated brodiaea, and is one of only two or three areas containing the Gowan's cypress and sea otter. The site is a sanctuary for thousands of sea and shorebirds. Designated: 1967. Ownership: State.

Orange County

IRVINE RANCH

Irvine Ranch contains a remarkably complete stratigraphic succession ranging in age from late Cretaceous (80 million years ago) to the present. The primary biological features at the site include coastal sage scrub and chaparral communities, including rare Tecate cypress woodlands. Designated: 2006. Ownership: Federal, State, county, municipal, private.

Riverside County

**ANZA-BORREGO
DESERT STATE PARK**

(see San Diego County)

Sacramento County

**AMERICAN RIVER
BLUFFS AND PHOENIX
PARK VERNAL POOLS**

American River Bluffs and Phoenix Park Vernal Pools contains outstanding examples of vernal pools, and blue oak woodlands, a rare plant community type. Designated: 1976. Ownership: Federal, county, private.



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**COSUMNES RIVER
RIPARIAN WOODLANDS**

Cosumnes River Riparian Woodlands is a small remnant of a rapidly disappearing riparian woodland community type that once formed a major part of the central California valley. Designated: 1976. Ownership: Private.

San Benito County

SAN ANDREAS FAULT

Located along the San Andreas Fault at the Cienega Winery is one of the best illustrations of earth displacement caused by small crustal movements. One-half of the building has moved eight inches in nine years. Designated: 1965. Ownership: Private.

San Bernardino County

AMBOY CRATER

Amboy Crater is an excellent example of a recent volcanic cinder cone with an unusually flat crater floor. Designated: 1973. Ownership: Federal, private.

**CINDER CONE NATURAL
AREA**

Cinder Cone Natural Area is a complex of over 20 large cinder cones of recent origin with extensive and continuous lava flows. Designated: 1973. Ownership: Federal, State.

**MITCHELL CAVERNS
AND WINDING STAIR
CAVE**

Mitchell Caverns and Winding Stair Cave, developed in the Bird Spring Formation of Permian age, are the most important solution caverns known in the Mohave Desert biophysiographic province. Several other caves are located within the landmark boundary. Designated: 1975. Ownership: State.

RAINBOW BASIN

Comprised of deep erosion canyons with rugged rims, Rainbow Basin is an outstanding example of geologic processes. The site contains significant fossil evidence of insects, larger Miocene mammals and mammal tracks. Designated: 1966. Ownership: Federal.

TRONA PINNACLES

Trona Pinnacles is a relict landform from the Pleistocene containing unique formations of calcium carbonate known as "tufa". Designated: 1967. Ownership: Federal.

**TURTLE MOUNTAINS
NATURAL AREA**

Turtle Mountains Natural Area contains two mountain sections of entirely different composition. It illustrates past volcanic phenomena with superimposed sculpturing of mountain landforms by weathering and uplift. Designated: 1973. Ownership: Federal, State.



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San Diego County

**ANZA-BORREGO
DESERT STATE PARK**

(extends into Imperial and Riverside Counties) Anza-Borrego Desert State Park is the largest desert state park in the nation. The site contains some of the best examples of the various biotic communities and geological phenomena of the Colorado Desert region. Designated: 1974. Ownership: State, municipal, private.

MIRAMAR MOUNDS

Miramar Mounds contains unique soil features called "mima mounds," which are found in only three or four locations in the country. The site also contains rare vernal pools that are found only in California. Designated: 1972. Ownership: Federal.

**TIJUANA RIVER
ESTUARY**

Tijuana River Estuary is one of the finest remaining saltwater marshes on the California coastline. The site supports three species of endangered birds and contains important habitat for other wildlife, especially waterfowl. Designated: 1973. Ownership: Federal, State, municipal, private.

**TORREY PINES STATE
RESERVE**

Torrey Pines State Reserve contains a unique and undisturbed biological community supporting endangered bird species. Torrey pine forests occur naturally only here and on Santa Rosa Island, 175 miles to the northwest. High bluffs and sea cliffs found at this site are good examples of geological processes. Designated: 1977. Ownership: State.

San Luis Obispo County

**NIPOMO DUNES-POINT
SAL COASTAL AREA**

(extends into Santa Barbara County) Nipomo Dunes-Point Sal Coastal Area contains the largest, relatively undisturbed coastal dune tract in California, and is one of the last remaining tracts of pristine rocky coastline in the South Coast Ranges. The site supports great species diversity, including rare and endangered plants and animals. Designated: 1974. Ownership: Federal, State, county, private.

San Mateo County

**ANO NUEVO POINT AND
ISLAND**

Ano Nuevo Point and Island contains habitat for harbor seals and Steller and California sea lions and is the only mainland breeding ground for the northern elephant seal in the world. The processes of wave cutting, geologic uplift and sea level fluctuation are well represented along Ano Nuevo Point. Designated: 1980. Ownership: State.



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Santa Barbara County

**NIPOMO DUNES-POINT
SAL COASTAL AREA**

(see San Luis Obispo County)

Shasta County

BURNEY FALLS

Burney Falls, located within McArthur-Burney Falls Memorial State Park, contains some of the best examples in the western United States of a river drainage regulated by stratigraphically-controlled springs, and of a waterfall formed by undercutting of horizontal rock layers. Designated: 1984. Ownership: State.

Siskiyou County

MOUNT SHASTA

One of the world's largest and most impressive stratovolcanoes, Mount Shasta contains five glaciers and consists of four distinct but overlapping cones. It is the second highest of the 15 main volcanoes in the Cascade range, only Mount Rainier is higher. Designated: 1976. Ownership: Federal.

Solano County

DIXON VERNAL POOLS

Dixon Vernal Pools represents the best example of the valley needlegrass grassland in the Great Central valley of the South Pacific Border biophysiographic province. There are only three valley needlegrass grassland sites remaining today. The site contains extensive stands of perennial needlegrass in a mosaic with claypan vernal pools, another critically rare natural community. The rolling hummocky topography results in a complex patchwork of grasses and native wildflowers. Designated: 1987. Ownership: Private.

Tulare County

PIXLEY VERNAL POOLS

The Pixley Vernal Pools is one of the few remaining natural vernal pools containing rare endemic plant species. Over 26 families and 100 species are represented at this site. Designated: 1973. Ownership: Private.



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COLORADO (11)

Clear Creek County

SUMMIT LAKE

The Summit Lake area is one of the best examples of Arctic tundra in the conterminous United States. Located within Summit Lake Park at nearly 13,000 feet elevation, this area provides habitat for a variety of rare alpine-arctic plants, some of which occur only here and at the Arctic Circle. Designated: 1965. Ownership: Municipal.

Douglas County

ROXBOROUGH STATE PARK

Roxborough State Park provides an excellent example of the titled and faulted sedimentary strata of the Colorado front range environment. The site contains significant fossil remains, fine exposures of hogbacks, unusual erosional patterns in Fountain sandstone, and atypical occurrences of at least two front-range plant communities. Designated: 1980. Ownership: State.

El Paso County

GARDEN OF THE GODS

Garden of the Gods is an outstanding illustration of the lithologic character of sedimentary rocks, and of the vertical forces that produced the front range of the Rocky Mountains. Located within Garden of the Gods Park, the site contains the uncommon honey ant, and is one of the best sites in Colorado for observing white-throated swifts, swallows, and canyon wrens. Designated: 1971. Ownership: Municipal.

Fremont County

GARDEN PARK FOSSIL AREA

Garden Park Fossil Area is an internationally known paleontological site that was one of the primary areas responsible for generating worldwide interest in dinosaurs during the late 1800's. Fifteen species of dinosaurs, nine of which were new, were recovered from here at that time. Fish, crocodile, turtle, and mammal fossils have also been recovered, making this site one of the oldest and richest fossil sites in the United States. Designated: 1973. Ownership: Federal.

INDIAN SPRINGS TRACE FOSSIL SITE

Indian Springs Trace Fossil Site is considered the best trace fossil locality in North America for illustrating the markings and movements of ancient Ordovician animal life. Designated: 1979. Ownership: Private.



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Hinsdale County

**SLUMGULLION
EARTHFLOW**

Slumgullion Earthflow is an excellent illustration of the geologic process of mass wasting. Seven hundred years ago, a huge mass of volcanic rock slumped from the mountainside and flowed into the main valley where it spread laterally to form Lake San Cristobal. The older flow is presently being overridden by a new flow moving up to 20 feet per year. Designated: 1965. Ownership: Federal, private.

Huerfano County

SPANISH PEAKS

(extends into Las Animas County) Spanish Peaks, located within the San Isabel National Forest, is one of the best known examples of exposed igneous dikes. Dikes are formed when molten igneous material is forced into a fracture or fault before becoming solidified. There may be over 500 such dikes in the area. Designated: 1976. Ownership: Federal, private.

Jefferson County

**LOST CREEK SCENIC
AREA**

(see Park County)

MORRISON FOSSIL AREA

In the late 1800's, the Morrison Fossil Area was the site of the first major discovery of giant dinosaur fossil bones in North America. Fossils from nine species of dinosaur were recovered, seven of which were newly discovered species. A new species of crocodile and turtle were also collected. Designated: 1973. Ownership: County, private.

Larimer County

SAND CREEK

(see Albany County, Wyoming)

Las Animas County

RATON MESA

Raton Mesa illustrates a mesa preserved by a thick lava cap that has resisted destruction from weathering and erosion. It is the only significant reference available illustrating the magnitude of erosion involved in developing the land surface of the Great Plains adjacent to the lower foothills of the Rocky Mountains. Designated: 1967. Ownership: State, private.

SPANISH PEAKS

(see Huerfano County)



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Park County

**LOST CREEK SCENIC
AREA**

(extends into Jefferson County) Lost Creek Scenic Area illustrates unusual rock formations and underground stream channels resulting from weathering along joint planes. Located within Pike National Forest, the site contains spires, pinnacles, narrow ridges and steep, narrow gorges. Lost Creek disappears and reappears at the surface at least nine times, a drainage pattern atypical in granite. Designated: 1966. Ownership: Federal.

Saguache County

RUSSELL LAKES

The most extensive bulrush marsh in Colorado, Russell Lakes represents one of the few remaining large, high-altitude, alkaline marshes in the southern Rocky Mountains. The site supports large numbers of flora and fauna and is an outstanding resting and breeding site for waterfowl. Designated: 1975. Ownership: Federal, private.

CONNECTICUT (8)

Hartford County

DINOSAUR TRACKWAY

At least three types of reptile have been identified from over 1,000 fossilized tracks at Dinosaur Trackway, one of the largest known exposures of dinosaur tracks on a single bedding plane. Preserved in place and representing a single moment in time, this site affords a rare opportunity to study the life history of an ancient reptile community. Designated: 1968. Ownership: State.

**McLEAN GAME REFUGE
NATURAL AREAS**

McLean Game Refuge Natural Areas consists of two separate land tracts, the Western Highlands and the Sand Plains, which encompass an unusually diverse forest flora. Occurring within the oak chestnut region of the eastern deciduous forest, kettlehole bogs and a mile-long esker are evidence of glacial activity. Designated: 1973. Ownership: Private.

Litchfield County

**BARTHOLOMEW'S
COBBLE**

(extends into Berkshire County, Massachusetts) Considered the greatest natural concentration of ferns in the country, Bartholomew's Cobble supports 43 species, including several rarities restricted to limestone. Within this small area of diverse habitats, occurs a remarkable and well documented assemblage of plants and animals. Designated: 1971. Ownership: Private.



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BECKLEY BOG

The most southerly sphagnum-heath-black spruce bog in New England, Beckley Bog possesses all principal elements of a boreal bog. It is a rare relic of the early post-Pleistocene. Peat moss underlies the quaking, floating bog mat to a maximum depth of 50 feet. Designated: 1977. Ownership: Private.

BINGHAM POND BOG

Extremely rare in New England outside of Maine, Bingham Pond Bog is an undisturbed, cold northern spruce bog. It is atypical in the lack of sphagnum moss as a component of the floating bog mat. Designated: 1973. Ownership: Private.

CATHEDRAL PINES

Cathedral Pines is an old-growth, white pine and hemlock forest that is considered the largest stand identified in New England. Trees measure over 150 feet tall and 4 feet in diameter. The site exemplifies the old-growth, pine forest stage in New England forest succession. Designated: 1982. Ownership: Private.

Middlesex County

**CHESTER CEDAR
SWAMP**

Chester Cedar Swamp is a wetland complex that contains relatively mature, second-growth forested swamp, a small pond, and bogland, bounded by upland forest. It is considered one of the finest Atlantic white cedar swamps in Connecticut. Designated: 1973. Ownership: State, municipal, private.

New London County

**PACHAUG-GREAT
MEADOW SWAMP**

Two wide streams, the Pachaug River and the Great Meadow Brook, flow through the Pachaug-Great Meadow Swamp, which is considered one of the finest and most extensive Atlantic white cedar swamps in Connecticut. Designated: 1973. Ownership: State, private.

FLORIDA (18)

Alachua County

DEVIL'S MILLHOPPER

Located within Devil's Millhopper Geological State Park, Devil's Millhopper is an excellent example of karst topography in the Southeast and an important cultural and historic site in the Alachua area. The generally dry sink is an example of several ecosystems with many microhabitats and major plant associations that demonstrate vertical zonation. Designated: 1974. Ownership: State.



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PAYNES PRAIRIE

The largest and most diverse freshwater marsh in northern Florida, Paynes Prairie is a superlative example of prairie formation in a karst area. Located within Paynes Prairie Preserve State Park, it is a major wintering ground for many species of waterfowl as well as providing habitat for other wildlife, including two endangered species. The site contains the Alachua sink, one of Florida's largest and most famous sinks. Designated: 1974. Ownership: State, private.

**SAN FELASCO
HAMMOCK**

San Felasco Hammock is the largest remaining example of northern Florida's climax forest ecosystem, the upland mesic hammock. Located primarily within San Felasco Hammock Preserve State Park, the site contains an extraordinary diversity of botanical resources supporting high quality woodland wildlife habitat. This is the most complex, diverse and productive of north Florida's forests. Designated: 1974. Ownership: State, private.

Baker County

**OSCEOLA RESEARCH
NATURAL AREA**

Osceola Research Natural Area, located within Osceola National Forest, includes an undisturbed mixed hardwood swamp with associated pine flatwoods and cypress swamp. The flatwoods are excellent wildlife habitat, and the presence of virgin cypress is a rare feature. Designated: 1974. Ownership: Federal.

Collier County

BIG CYPRESS BEND

Big Cypress Bend includes undisturbed virgin cypress, sawgrass prairie, and palmetto hammocks. Located within Fakahatchee Stand Preserve State Park, the site is probably the best sizeable example of a tropical swamp remaining in the Southeast. It contains the largest royal palm stand in the country. Designated: 1966. Ownership: State.

**CORKSCREW SWAMP
SANCTUARY**

Corkscrew Swamp Sanctuary contains a wide variety of habitats, including pond cypress, wet prairie, pineland, and the largest remaining stand of virgin bald cypress in North America. The sanctuary supports the largest wood stork rookery in the United States and is important for several other endangered species. Designated: 1964. Ownership: State, private.



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Columbia County

ICHETUCKNEE SPRINGS (extends into Suwannee County) Ichetucknee Springs is an illustration of a large artesian spring group and of the geologic history of the Floridian aquifer from which Florida's great springs emanate. Located within Ichetucknee Springs State Park, the site contains abandoned relict channels ancestral to the present underground solution channels. The artesian outflow aggregates 250 to 470 cubic feet per second, making it the third largest spring group in Florida. Designated: 1971. Ownership: State.

Highlands County

ARCHBOLD BIOLOGICAL STATION The Archbold Biological Station encompasses the largest known relatively undisturbed tract of contiguous natural communities characteristics of the Lakes Wales Ridge. The full range of moisture conditions (xeric-mesic-hydric) and most stages of plant succession are represented by high quality examples. Lake Annie is the highest quality water supply left in the system of valley sink lakes that extends northward from the site. A large number of endemic and rare species of plants and animals are located here. Designated: 1987. Ownership: Private.

Jackson County

FLORIDA CAVERNS NATURAL AREA Florida Caverns Natural Area is a unique disjunct relict community from a former temperate hardwood forest that has remained intact and isolated since at least the end of the Wisconsin glacial period. Located within Florida Caverns State Park, the cave harbors three species of bats, including the endangered Indiana bat, which uses the cave for winter hibernation. Designated: 1977. Ownership: State.

Lake County

EMERALDA MARSH (extends into Marion County) Emeraldal Marsh is representative of a virtually undisturbed inland freshwater riverine sawgrass marsh. Located within the Emeraldal Marsh Conservation Area, the bay hammock and surrounding aquatic vegetation provide an important fishery and nesting and feeding grounds for several species of waterfowl, including Florida and greater sandhill cranes, and bald eagles. Designated: 1974. Ownership: State, private.



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Levy County

MANATEE SPRINGS

Manatee Springs, located within Manatee Springs State Park, ranks about sixth in size among the great artesian springs of Florida. It is in close proximity to karst sinkholes, with proven underground connections to the headspring and the Suwanee River. Designated: 1971. Ownership: State.

**WACCASASSA BAY
STATE PRESERVE**

Waccasassa Bay State Preserve provides an extensive, undisturbed example of the coastal ecosystems that occur in northern Florida with the unique addition of the mangrove community. The entire transition from mangrove to saltmarsh to brackish marsh to freshwater marsh to hardwood hammock forest is superbly demonstrated here. Diversity of biota is very high and the area serves as habitat for at least three threatened or endangered species. Designated: 1976. Ownership: State.

Liberty County

TORREYA STATE PARK

Located along the Apalachicola River, Torreya State Park contains high river bluffs, a wide range of soil, water and nutrient conditions, as well as a full spectrum of microclimates. This range of niches supports a significant number of unique plants, the combination of which can be found in no other place in the world. Rare plant species include the endangered stinking-cedar and the Florida yew. The steep slopes and ravines also contain a wide assemblage of northern affinity trees, shrubs and herbs. Designated: 1976. Ownership: State.

Marion County

EMERALDA MARSH

(see Lake County)

RAINBOW SPRINGS

Located within Rainbow Springs State Park, Rainbow Springs is ranked second of Florida's great artesian springs on the basis of its rate of discharge, and ranked first as a single outlet spring. Designated: 1971. Ownership: State.

SILVER SPRINGS

Silver Springs is a tight cluster of springs with an outflow ranging between 600 and 1,100 cubic feet per second. Located within Silver Springs nature theme park, the springs are ranked as the largest artesian spring group in the United States and one of the great groups in the world. Designated: 1971. Ownership: Private.



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Martin County

**REED WILDERNESS
SEASHORE
SANCTUARY**

Encompassing the northern portion of Jupiter Island, the Reed Wilderness Seashore Sanctuary is an unaltered section of the east coast of Florida seashore. Located within Hobe Sound National Wildlife Refuge, the site includes semitropical plant associations of mangrove swamps, coastal strand and shell mound types, providing an increasingly rare nesting site for Atlantic loggerhead turtles. Designated: 1967. Ownership: Federal.

Monroe County

LIGNUMVITAE KEY

One of the highest keys in the Florida Keys chain, Lignumvitae Key provides a wide range of habitat, from wave-washed exposures of Key Largo limestone to mangrove swamp. Located within Lignumvitae Key Botanical State Park, the site is the largest and best example of tropical hammock forest known in the United States. Designated: 1968. Ownership: State.

Suwanee County

ICHETUCKNEE SPRINGS (see Columbia County)

Wakulla County

WAKULLA SPRINGS

One of the largest and deepest springs in Florida, Wakulla Springs is an independent freshwater ecosystem rich in aquatic vegetation, fish, turtles, alligators, and birds. Located within Edward Ball Wakulla Springs State Park, the site is lined with huge cypress trees and contains a well-developed hardwood hammock containing significant fossil evidence. Designated: 1966. Ownership: State.

GEORGIA (10)

Charlton County

OKEFENOKEE SWAMP

(extends into Clinch and Ware Counties) Okefenokee Swamp, located within the Okefenokee National Wildlife Refuge, is one of the largest and most primitive swamps in the country. It contains a diversity of ecosystems and is a refuge for native flora and fauna including many uncommon, threatened, and endangered species. Designated: 1974. Ownership: Federal.



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Chatham County

WASSAW ISLAND

Wassaw Island is the only island of the Golden Isles with an undisturbed forest cover. Located primarily within the Wassaw Island National Wildlife Refuge, it is one of the few remaining sea island ecosystems where natural processes of succession, erosion and deposition, relatively unaffected by human activities, are demonstrated. The vast salt marsh that lies between the sea island and the mainland is rich in biological productivity, sustaining a wide array of unusual animals. Designated: 1967. Ownership: Federal, private.

Clinch County

OKEFENOKEE SWAMP

(see Charlton County)

Columbia County

HEGGIE'S ROCK

Heggie's Rock is the best example in eastern North America of the remarkable endemic flora restricted to granite outcrops. The site is the least disturbed of all the major outcrops and illustrates the best community zonation. Twelve of the nineteen endemic species, subspecies, and varieties associated with well-exposed granitic flatrocks occur at this site. Designated: 1980. Ownership: Private.

Effingham County

**EBENEZER CREEK
SWAMP**

Ebenezer Creek Swamp is the best remaining cypress-gum swamp forest in the Savannah River basin. It illustrates the relationship and interactions between river and creek; providing spawning grounds for the anadromous striped bass and habitat for the American alligator. Designated: 1976. Ownership: Private.

Emanuel County

**CAMP E. F. BOYD
NATURAL AREA**

The Camp E. F. Boyd Natural Area is one of the best representatives of the upland sand ridge ecosystem of the Coastal Plain, a rapidly disappearing flood plain. The site also provides habitat for several rare plants and endangered species. Designated: 1974. Ownership: Private.



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Floyd County

MARSHALL FOREST

Marshall Forest is a loblolly pine-shortleaf pine forest believed to have originated following an intense fire at about the time the Cherokee Indians were forcibly removed to Oklahoma. The site has a ten-acre stand of virgin yellow poplar. Designated: 1966. Ownership: Private.

Harris County

**CASON J. CALLAWAY
MEMORIAL FOREST**

The Cason J. Callaway Memorial Forest is an outstanding example of transitional conditions between eastern deciduous and southern coniferous forest types. Several plants reach northern and southern limits here. The assemblage of species is among the most interesting and unique in the southeastern United States, with species such as mountain-laurel and titi occurring together. Designated: 1972. Ownership: Private.

McIntosh County

LEWIS ISLAND TRACT

One of the most extensive bottomland hardwood swamps in Georgia, the Lewis Island Tract contains stands of virgin bald cypress and associated swamp hardwood species. Located within the Lewis Island Natural Area, the site also supports several uncommon wildlife species. Designated: 1974. Ownership: State.

Rockdale County

PANOLA MOUNTAIN

Located within Panola Mountain State Park, Panola Mountain is the most natural and undisturbed monadnock of exposed granitic rock in the Piedmont biophysiographic province. Successional plant communities from base rock to oak-hickory forest are present here. There are a number of characteristic granite outcrop plants, including granite stonecrop, a rare endemic species. Designated: 1980. Ownership: State.

Tattnall County

**BIG HAMMOCK NATURAL
AREA**

Big Hammock Natural Area contains a great diversity of ecosystem types with an associated diversity of species. Of prime importance is the relatively undisturbed broadleaf evergreen hammock forest, which covers most of the tract and includes certain rare and endangered species, most notably the largest known population of Georgia plume. Designated: 1976. Ownership: State.



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Ware County

OKEFENOKEE SWAMP (see Charlton County)

GUAM (4)

FACPI POINT Facpi Point contains pillow lavas, intersecting dikes, and a massive sea stack of black coralline limestone. It is an illustration of the major episode of volcanism that created Guam Island. Designated: 1972. Ownership: Government of Guam.

FOUHA POINT Fouha Point contains exposures of volcanic rock with a nearby intertidal platform of two levels of coralline limestone. Designated: 1972. Ownership: Government of Guam.

MOUNT LAMLAM Mount Lamlam is a remnant of a great caldera. It is the third key site on Guam disclosing the major volcanism that created the island. Designated: 1972. Ownership: Government of Guam.

PUNTAN DOS AMANTES Puntan dos Amantes illustrates the limestone deposition and subsequent subterranean erosion phases of Guam's geologic history. The site contains a 370-foot high cliff exposure of massive limestone. Designated: 1972. Ownership: Government of Guam.

HAWAII (7)

Island of Hawaii

MAKALAWENA MARSH Makalawena Marsh is one of two remaining ponds on the island of Hawaii that supports a resident population of the endangered, non-migratory Hawaiian stilt, a nesting site for the Hawaiian coot, and the only known breeding site of the black-crowned night heron. Designated: 1972. Ownership: Private.

MAUNA KEA Mauna Kea is an exposed portion of the highest insular mountain in the United States. It contains the highest lake in the country and evidence of glaciation above the 11,000-foot level. It is the most majestic expression of shield volcanism in the Hawaiian Archipelago, if not the world. Designated: 1972. Ownership: State.



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Island of Maui

IAO VALLEY

Iao Valley and the volcanic rocks on its enclosing slopes illustrate the major episode of volcanism that created the western portion of the island of Maui. Erosion of the volcanic rocks has resulted in an amphitheater shaped valley. Designated: 1972. Ownership: State, private.

KANAHA POND

Kanaha Pond provides the most important waterbird habitat in Hawaii. It is one of the few remaining brackish-water ecosystems, providing refuge for both resident and migratory bird populations. Designated: 1971. Ownership: State.

Island of Molokai

NORTH SHORE CLIFFS

North Shore Cliffs provides the finest exposures of ancient volcanic rocks resulting from the major episode of volcanism creating Molokai Island. It is among the most ancient in the Hawaiian Island chain. Designated: 1972. Ownership: State, private.

Island of Oahu

DIAMOND HEAD

Diamond Head is one of the best exposed and preserved examples of a typical volcanic cone of altered basaltic glass. It shows the bedding structure of the cone and the character of the rock. Designated: 1968. Ownership: Federal, State.

KOOLAU RANGE PALI

The Koolau Range Pali is to the island of Oahu what the Great Western Divide is to Sequoia National Park. Faulting and stream erosion are among the principal processes which give the cliffs their configuration. Designated: 1972. Ownership: Private.

IDAHO (11)

Adams County

SHEEP ROCK

Sheep Rock, located within the Payette National Forest, provides the best view of the horizontally layered lavas that represent successive flows on the Columbia River Basalt Plateau. The two contrasting series of volcanic rocks separated by a major unconformity provides an unobstructed view of an important geologic phenomenon. Designated: 1976. Ownership: Federal.



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Bingham County

**HELL'S HALF ACRE
LAVA FIELD**

(extends into Bonneville County) Hell's Half Acre Lava Field is a complete, young, unweathered, fully exposed pahoehoe lava flow, lava whose surface is frequently molded smooth into forms representing huge rope coils. The site also provides an outstanding example of pioneer vegetation establishing itself on a lava flow. Designated: 1976. Ownership: Federal, State.

Blaine County

GREAT RIFT SYSTEM

(extends into Minidoka and Power Counties) The Great Rift System represents a tensional fracture in the Earth's crust that may extend to the crust-mantle interface. It also illustrates primary vegetation succession on very young lava flows. The Great Rift System is unique in North America and has few counterparts in the world. Designated: 1968. Ownership: Federal.

Bonneville County

**HELL'S HALF ACRE
LAVA FIELD**

(see Bingham County)

Butte County

BIG SOUTHERN BUTTE

The view from the Big Southern Butte illustrates the scope and dimensions of Quaternary volcanism in the western United States. It is the largest area of volcanic rocks of young age in the United States. Designated: 1976. Ownership: Federal.

Cassia County

**CASSIA SILENT CITY OF
ROCKS**

Cassia Silent City of Rocks contains monolithic landforms created by exfoliation processes on exposed massive granite plutons. It is the best example of bornhardts (weather-resistant rock left standing after erosion of surrounding rock) in the country. Designated: 1974. Ownership: Federal, State, private.

Elmore County

CRATER RINGS

Crater Rings are two adjacent and symmetrical pit craters that are among the few examples of this type of crater in the continental United States. The pit craters, which are volcanic conduits in which the lava column rises and falls, were formed by explosions followed by collapse. Designated: 1980. Ownership: Federal.



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Fremont County

BIG SPRINGS

Big Springs is the only first-magnitude spring in the country that issues forth from rhyolitic lava flows. It is the source of the South Fork of the Henrys Fork River. Designated: 1980. Ownership: Federal.

Gooding County

NIAGARA SPRINGS

Niagara Springs is the least developed of the large springs discharging into the Snake River from the Snake River plain aquifer system. It is outstandingly illustrative of the enormous volume of water transmitted through this aquifer. Designated: 1980. Ownership: Private.

Jefferson County

MENAN BUTTES

(extends into Madison County) Menan Buttes contains outstanding examples of glass tuff cones, which are found in only a few places in the world. Their large size and unusual composition make them particularly illustrative of an unusual aspect of basaltic volcanism. Designated: 1980. Ownership: Federal, private.

Madison County

MENAN BUTTES

(see Jefferson County)

Minidoka County

GREAT RIFT SYSTEM

(see Blaine County)

Power County

GREAT RIFT SYSTEM

(see Blaine County)

Shoshone County

**HOBO CEDAR GROVE
BOTANICAL AREA**

Hobo Cedar Grove Botanical Area is an outstanding example of pristine western red cedar forest. Two communities are represented: cedar/Oregon boxwood on the uplands and cedar/fern on the lowlands. Designated: 1980. Ownership: Federal.



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Twin Falls County

**HAGERMAN FAUNA
SITES**

Located in Hagerman Fossil Beds National Monument, Hagerman Fauna Sites is of international significance, as it contains the world's richest deposits of Upper Pliocene age terrestrial fossils. Designated: 1975. Ownership: Federal, State.

ILLINOIS (18)

Alexander County

**HORSESHOE LAKE
NATURE PRESERVE**

Horseshoe Lake Nature Preserve contains diverse aquatic and terrestrial flora and fauna and mature stands of bald cypress. The site is on the migration corridor of many waterfowl, as well as being an overwintering site for thousands of Canada geese. Designated: 1972. Ownership: State.

Carroll County

MISSISSIPPI PALISADES

Mississippi Palisades illustrates topography containing deep V-shaped valleys, caves and sinks, and massive cliffs along the Mississippi River. The site supports numerous species of plant and animal life. Designated: 1972. Ownership: State.

Cook County

**BUSSE FOREST NATURE
PRESERVE**

Situated on the flood plain and morainal uplands along Salt Creek, Busse Forest Nature Preserve, is one of the best remaining examples of mesic and dry-mesic upland forest in the eastern Central Lowlands biophysiographic province. The area has been protected for so long that there is no evidence of past logging throughout most of the site. Designated: 1980. Ownership: County.

MARKHAM PRAIRIE

Markham Prairie is the largest and highest quality prairie in Illinois and in large parts of adjacent states. As a mesic prairie intergrading between sand prairie and typical tall-grass prairie on loamy soil, it is a remnant of a distinct and formerly widespread biotic community type of the Central Lowlands biophysiographic province. The site is also an excellent example of undeveloped lakebed and beach ridge topography. Designated: 1987. Ownership: Federal, State, private.



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Jackson County

**LITTLE GRAND CANYON
AREA**

The Little Grand Canyon Area is an exceptional example of a large box canyon with vertical overhanging walls. The site contains a great diversity of ecosystems, including sandstone outcrops and overhangs, ravine slope forest, dry site oak-hickory forest, and hill prairies. The ravine is nationally known as a seasonal haven for a great variety of snakes that hibernate there. Designated: 1980. Ownership: Federal.

Johnson County

**LOWER CACHE RIVER
SWAMP**

(extends into Pulaski County) Lower Cache River Swamp is an outstanding remnant of the swampy flood plain forest and open swamp that once covered an extensive area at the junction of the Mississippi and Ohio River valleys. The site has many large trees including three trees larger than any on record for the species in the nation. Designated: 1980. Ownership: State, private.

**HERON POND-LITTLE
BLACK SLOUGH
NATURAL AREA**

Heron Pond-Little Black Slough Natural Area is the largest remaining cypress-tupelo swamp in Illinois. The site contains a heron rookery and the valley is an outstanding example of alluvial, colluvial, and lacustrine sedimentation within an entrenched meandering valley system. Designated: 1972. Ownership: State, private.

Lake County

**ILLINOIS BEACH NATURE
PRESERVE**

Illinois Beach Nature Preserve, located within Illinois Beach State Park, is an area of beach ridges that supports a great diversity of ecosystems, including sand savanna, sand prairie, wetland, and beach communities. The site supports over 60 species of animals and plants that are threatened or endangered in Illinois. Designated: 1980. Ownership: State.

**VOLO BOG NATURE
PRESERVE**

The Volo Bog Nature Preserve contains many unusual or rare plants that are characteristic of the classic northern quaking bog. Designated: 1972. Ownership: State.

**WAUCONDA BOG
NATURE PRESERVE**

Wauconda Bog Nature Preserve contains a mature bog with bog vegetation at their farthest southern extension in Illinois. This type of biotic community is unusual for this region. Designated: 1972. Ownership: State.



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McLean County

FUNKS GROVE

Funks Grove provides a rare example of the virgin forests once isolated on the prairies of the Midwest. The site illustrates a transition between the oak-hickory association of the region and the western mesophytic association to the east. Designated: 1974. Ownership: State, private.

Monroe County

**FULTS HILL PRAIRIE
NATURE PRESERVE**

Fults Hill Prairie Nature Preserve contains the largest complex of the highest quality, essentially undisturbed loess hill prairies along the Mississippi River in Illinois, including the largest single prairie opening. Designated: 1986. Ownership: State.

Piatt County

**ALLERTON NATURAL
AREA**

Allerton Natural Area provides an example of the rapidly disappearing Illinois stream valley ecosystem. The site contains relatively undisturbed examples of bottomland and upland forests. Designated: 1970. Ownership: State.

Pope County

BELL SMITH SPRINGS

Bell Smith Springs, located within the Shawnee National Forest, is a fragile area containing some of the best examples of ecosystems typical of sharply dissected sandstone substrates. The site also contains fine examples of landforms created by stream erosion and mass wasting. Designated: 1980. Ownership: Federal, private.

LUSK CREEK CANYON

Lusk Creek Canyon is an excellent example of a gorge-like valley formed by mass wasting and stream erosion in lower Pennsylvanian sandstones. The site also contains good examples of two major forest ecosystems and ten endangered or threatened Illinois plant species. Designated: 1980. Ownership: Federal, State.

Pulaski County

**LOWER CACHE RIVER
SWAMP**

(see Johnson County)



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Union County

**GIANT CITY
GEOLOGICAL AREA**

Located within Giant City State Park, Giant City Geological Area is an exceptional example of gravity sliding, consisting of massive joint-bounded sandstone blocks of Pennsylvanian age. The site supports a rich flora including xeric oak woodlands, oak-hickory and mesic forests dominated by sugar maple. Designated: 1980. Ownership: State.

**LaRUE-PINE HILLS
ECOLOGICAL AREA**

LaRue-Pine Hills Ecological Area, located within the Shawnee National Forest, contains one of the finest assemblages of diverse vegetation in the Midwest. The site represents species of northern, southern, eastern, and western affinities, including 40 species rare in Illinois. Designated: 1974. Ownership: Federal, State, private.

Wabash County

**FOREST OF THE
WABASH**

Forest of the Wabash, located within the Beall Woods Nature Preserve, contains essentially undisturbed upland and bottomland forests lying along the Wabash River. The upland stands are probably the finest remaining oak-hickory forest in this part of the country. Designated: 1965. Ownership: State.

INDIANA (30)

Crawford County

MARENGO CAVE

A textbook example of a cave in its middle stage of development, Marengo Cave is the most profusely decorated cave known in the Interior Lowlands biophysiographic province, with cave features of the highest quality. The cave is the location where five organisms were first identified and has had an extensive and continuous history of research and protective custody over the last century. Designated: 1984. Ownership: Private.

WYANDOTTE CAVE

Wyandotte Cave, located within the Harrison-Crawford State Forest, has 23 miles of explored passageways, vertical relief encompassing several levels, huge rooms, gigantic domepits, rubble breakdown and stalagmites. It is one of the great cave systems within the karst region of the east-central United States. Designated: 1972. Ownership: State.



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Fayette County

**SHRADER-WEAVER
WOODS**

An outstanding pre-settlement beech-maple forest, Shrader-Weaver Woods contains unusually large trees, such as a 56-inch diameter burr oak and a 34-inch diameter black maple. Designated: 1974. Ownership: State.

Floyd County

**OHIO CORAL REEF
(FALLS OF THE OHIO)**

(extends into Jefferson County, Kentucky) Within the Ohio River, the Ohio Coral Reef is a classic example of a Silurian and Devonian coral community. The site is the type locality for a number of coral species and nearly 900 nominal species have been founded on specimens collected here. Designated: 1966. Ownership: State.

Fountain County

**PORTLAND ARCH
NATURE PRESERE**

Portland Arch Nature Preserve contains massive crossbedded sandstone cliffs and a seven-foot high natural bridge. The site has many plant species unknown elsewhere in Indiana, some of which are relicts occurring due to the unusual climate created by the canyon. Designated: 1973. Ownership: State.

Gibson County

HEMMER WOODS

Illustrating the transition from lowland to upland forest, Hemmer Woods contains one of the best mixed lowland stands remaining in Indiana, the largest known specimens of tulip tree in the state, and a great abundance of wildflowers. Designated: 1973. Ownership: State, private.

Harrison County

HARRISON SPRING

The largest spring in Indiana, Harrison Spring is one of the best examples of alluviated cave springs in the United States due to its location in an abandoned meander loop, and the natural levee around its periphery. Designated: 1980. Ownership: Private.

Jefferson County

OFFICER'S WOODS

Officer's Woods is one of the finest remnants of beech-maple forest south of the Wisconsin-age glacial boundary in Indiana. The site contains two stands with slightly different composition, one of which contains an exceptionally high density of black gum. Designated: 1974. Ownership: Private.



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Lagrange County

**TAMARACK BOG
NATURE PRESERVE**

Tamarack Bog Nature Preserve, located within Pigeon River State Game Preserve, contains the largest, well-developed tamarack swamp-bog forest in Indiana. The site supports six distinct vegetation types and more than 34 mammal species. Designated: 1973. Ownership: State.

Lake County

HOOSIER PRAIRIE

Hoosier Prairie is the last large tract of prairie near the eastern margin of the "Prairie Peninsula." The site contains a great diversity of community types, with nearly 300 vascular plant species identified here. Designated: 1974. Ownership: State.

La Porte County

PINHOOK BOG

Located within Indiana Dunes National Lakeshore, Pinhook Bog is a living demonstration of the textbook description of ecological succession from pond to woodland. The site lies within a bowl-shaped depression likely to be a glacial kettle, and is surrounded by wooded hills. Designated: 1965. Ownership: Federal.

Lawrence County

**DONALDSON CAVE
SYSTEM AND WOODS**

Located within Spring Mill State Park, Donaldson Cave System and Woods is a tract containing 80 acres of prime virgin forest and a cave system associated with the Indiana karst region. Donaldson Cave includes three separate units that are interconnected by underground passageways. Designated: 1972. Ownership: State.

Montgomery County

**CALVERT AND PORTER
WOODS NATURE
PRESERVE**

Calvert and Porter Woods Nature Preserve contains one of the finest near-virgin remnant forests in the Tipton Till Plain of central Indiana. The site contains a great diversity of tree species due to a pronounced moisture gradient producing different habitats, and a great blue heron rookery. Designated: 1974. Ownership: State.

**PINE HILLS NATURAL
AREA**

Sharply dissected by deep, stream-carved canyons that have left narrow rock ridges or backbones, the Pine Hills Natural Area is probably the most remarkable example of incised meanders in the eastern United States. The site contains a variety of habitats and a number of plant species considered to be Pleistocene relicts. Designated: 1968. Ownership: State.



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Orange County

**PIONEER MOTHER'S
MEMORIAL FOREST**

Pioneer Mother's Memorial Forest, located within Hoosier National Forest, is one of the best examples of an original, undisturbed pre-settlement forest in Indiana. The site contains the finest examples of forest-grown walnut trees in the United States. Designated: 1974. Ownership: Federal.

RISE AT ORANGEVILLE

The Rise at Orangeville is the second largest spring in Indiana and the clearest illustration of subterranean stream resurgence in the famed Lost River karst area. Designated: 1972. Ownership: Private.

**TOLLIVER
SWALLOWHOLE**

Tolliver Swallowhole is an extraordinary example of the disappearing stream aspect of karst topography. The site contains an elongated channel with a small opening at the bottom of the west end of the channel that opens into a segment of the Lost River underground. Designated: 1972. Ownership: Private.

WESLEY CHAPEL GULF

Probably the largest sinkhole in Indiana, Wesley Chapel Gulf is the most significant and spectacular feature of the Lost River Basin, one of the world's great karst areas. The site is a classic illustration of a uvula, a feature formed by the coalescence of a series of sinkholes. Designated: 1972. Ownership: Federal.

Owen County

HOOT WOODS

Hoot Woods is a relatively undisturbed, isolated beech-maple forest in which near climax conditions prevails. Designated: 1973. Ownership: Private.

Parke County

**ROCKY HOLLOW-FALLS
CANYON NATURE
PRESERVE**

Rocky Hollow-Falls Canyon Nature Preserve, located within Turkey Run State Park, contains forested areas of virgin beech-maple stands, steep sandstone gorges that harbor virgin boreal relict populations of eastern hemlock and Canada yew, and some of the largest black walnut in the Midwest. Designated: 1974. Ownership: State.

Porter County

COWLES BOG

Located within Indiana Dunes National Lakeshore, Cowles Bog illustrates marsh and bog habitat, as well as transition to swamp. The site includes flora common to these habitats. Designated: 1965. Ownership: Federal.



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**DUNES NATURE
PRESERVE**

The Dunes Nature Preserve, located within Indiana Dunes State Park, is the best remaining example of undeveloped and relatively unspoiled dune landscape along the southern shore of Lake Michigan, a portion of which is known as the "Birthplace of American Ecology." The site also contains Ancient Pines Nature Area, a prehistoric forest now exposed by dune blowouts. Designated: 1974. Ownership: State.

Putnam County

BIG WALNUT CREEK

Big Walnut Creek is a branch of the Eel River formed as a result of glacial melt and postglacial water erosion. The site contains one of the few stands in Indiana where beech, sugar maple, and tulip poplar grow on alluvial Genesee soil and includes relict species of a postglacial forest that occupied the area 5,000 to 6,000 years ago. Designated: 1968. Ownership: State, private.

FERN CLIFF

Fern Cliff contains exceptional occurrences of mosses and liverworts, including a noteworthy number of rare species. The site is one of the best areas for bryophytes in the central states. Designated: 1980. Ownership: Private.

Randolph County

**CABIN CREEK RAISED
BOG**

Elevated some 10 feet above the general flood plain level of Cabin Creek, Cabin Creek Raised Bog is a fen (alkaline bog) that supports a very rich flora, including many species at or near their range limits. Designated: 1974. Ownership: Private.

**DAVIS-PURDUE
AGRICULTURAL
CENTER FOREST**

The Davis-Purdue Agricultural Center Forest is the best old growth oak-hickory forest on the Tipton Till Plain and possibly one of the finest such forests in the eastern United States. The site contains exceptionally large individuals of several tree species. Designated: 1974. Ownership: State.

Shelby County

MELTZER WOODS

A pre-settlement forest now in dynamic equilibrium, Meltzer Woods contains a juxtaposition of two contrasting forest types (beech-maple and lowland mixed forests) and exceptionally large individuals of several tree species. Designated: 1973. Ownership: Private.



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Spencer County

KRAMER WOODS

Kramer Woods is the only example of a Shumard's red oak-pin oak-hickory dominated stand of lowland mixed forest of any size in Indiana. Designated: 1973. Ownership: State.

Vanderburgh County

**WESSELMAN PARK
WOODS**

Wesselman Park Woods is one of the finest remaining large tracts of pre-settlement lowland mixed forest in Indiana. The site contains a number of exceptionally large trees and is unusual in that sweet gum and tulip tree are the dominant species. Designated: 1973. Ownership: Municipal.

Wabash County

**HANGING ROCK AND
WABASH REEF**

Hanging Rock and Wabash Reef consists of two, one-acre sites along the south bank of the Wabash River. Both contain natural exposures of limestone reef deposits characteristic of Silurian rocks of the midwestern United States, most of which are exposed only in quarries. Hanging Rock is an impressive natural exposure of an exhumed reef that rises 75 feet above the Wabash River. Wabash Reef, one of the best known fossil reefs in the world, has been the subject of numerous studies responsible for the development of modern reef theory. Designated: 1986. Ownership: Private.

IOWA (7)

Clay County

**DEWEY'S PASTURE AND
SMITH'S SLOUGH**

(extends into Palo Alto County) Dewey's Pasture and Smith's Slough includes a section of pothole lakes created during the last glacial epoch. The site contains considerable habitat diversity including wetlands, tallgrass prairie, and woodland, and supports a significant waterfowl population. Designated: 1975. Ownership: State.

Dickinson County

CAYLER PRAIRIE

Cayler Prairie is an example of the increasingly rare virgin prairie grassland. The site provides a unique outdoor laboratory. Designated: 1965. Ownership: State.



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Dubuque County

**WHITE PINE HOLLOW
PRESERVE**

White Pine Hollow Preserve contains the only known remaining white pine tract in Iowa. Designated: 1967. Ownership: State.

Hamilton County

**ANDERSON GOOSE
LAKE**

Anderson Goose Lake is one of the few essentially natural glacial pothole lakes remaining in Iowa. The site provides important waterfowl habitat. Designated: 1975. Ownership: Private.

Harrison County

LOESS HILLS

(see Monona County)

Howard County

HAYDEN PRAIRIE

A true prairie remnant, Hayden Prairie is where Iowa State University conducted research demonstrating that prairie communities decline when the quantity of litter exceeds annual herbage yield. Research has resulted in management to maintain the integrity of the prairie plant community. Designated: 1965. Ownership: State.

Monona County

LOESS HILLS

(extends into Harrison County) Comprised of the Turin and Little Sioux/Smith Lake sites, Loess Hills represents the best examples of loess topography (wind-blown silt) in the Missouri River Bluffs region. It is in this region of the United States where the deepest loess has accumulated, presenting the best example of this unusual type of landscape. Together, these sites express the representative landforms and native vegetation of classic loess deposits. The only known comparable area is located along the Yellow River in northern China. Designated: 1986. Ownership: State, private.

Palo Alto County

**DEWEY'S PASTURE AND
SMITH'S SLOUGH**

(see Clay County)



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Winneshiek County

COLD WATER CAVE

Cold Water Cave is an exceptional example of an extensive cave system well decorated with speleothems. It contains numerous vertical shafts and an unusually large, meandering underground stream that courses along most of the approximately 7.3 miles of cave passageways. Relatively young in geologic terms, the cave appears to be enlarging more rapidly than most caves in the United States. The cave atmosphere is also unusual for its typically low oxygen content and extremely high carbon dioxide content. Designated: 1987. Ownership: Private.

KANSAS (5)

Clark County

BIG BASIN PRESERVE

Big Basin Preserve contains excellent examples of collapse features formed by groundwater geological processes. The site is also illustrative of a bluestem-grama prairie, which is intensively grazed elsewhere in the central Great Plains. Designated: 1979. Ownership: State.

Douglas County

**BAKER UNIVERSITY
WETLANDS**

The Baker University Wetlands is an example of undisturbed wetland prairie. The site also provides breeding grounds for pintails, mallards and Canada geese. Designated: 1969. Ownership: Private.

BALDWIN WOODS

Baldwin Woods is a unique remnant oak-hickory stand approaching climax condition. The site is located at the western edge of the eastern deciduous forest. Designated: 1980. Ownership: Private.

Gove County

**MONUMENT ROCKS
NATURAL AREA**

Monument Rocks Natural Area includes pinnacles, small buttes, and spires of chalk of the Niobrara formation, and erosional remnants of sediments deposited in the ancient Kansas Sea of Cretaceous time. The site is a rich source of fossils of Cretaceous marine animals. Designated: 1968. Ownership: Private.



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Ottawa County

ROCK CITY

Rock City is a unique cluster of about 200 great spherical sandstone concretions occurring in the midst of rolling farmland. Designated: 1976. Ownership: Private.

KENTUCKY (6)

Boone County

BIG BONE LICK

Big Bone Lick, located within Big Bone Lick State Park, is unique in the Interior Low Plateaus physiographic province for its combination of salt springs and associated Late Pleistocene bone beds. Big Bone Lick has been referred to as the birthplace of vertebrate paleontology in North America. Designated: 2009. Ownership: State.

Henderson County

HENDERSON SLOUGHS

Henderson Sloughs is one of the largest wetlands remaining in Kentucky and an important habitat for waterfowl and other wildlife. The area is the "home" of John James Audubon. Designated: 1974. Ownership: Federal, State.

Jefferson County

**OHIO CORAL REEF
(FALLS OF THE OHIO)**

(see Floyd County, Indiana)

Laurel County

**ROCK CREEK
RESEARCH NATURAL
AREA**

Rock Creek Research Natural Area, located within the Daniel Boone National Forest, harbors one of the few virgin hemlock-hardwood forests remaining in Kentucky. Designated: 1975. Ownership: Federal.

Letcher County

**LILLEY CORNETT
WOODS**

Lilley Cornett Woods is probably the only surviving virgin tract of any size in the Cumberland Mountains section of the mixed mesophytic forest. Designated: 1971. Ownership: State.



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Meniffee County

RED RIVER GORGE (extends into Powell and Wolfe Counties) Red River Gorge, located within the Daniel Boone National Forest, contains examples of many geological formations, including 41 natural bridges. The site also supports an extremely diverse flora, including endemic, rare and relict species. Designated: 1976. Ownership: Federal, private.

Powell County

RED RIVER GORGE (see Meniffee County)

Russell County

CREELSBORO NATURAL BRIDGE Creelsboro Natural Bridge is the longest natural bridge, or natural tunnel, in the Highland Rim section of the Interior Low Plateaus biophysiographic province. The occasional diversion of Jim Creek through the tunnel into the Cumberland River is an outstanding illustration of subterranean stream diversion. This is the process that formed and continues to form the bridge. Designated: 1987. Ownership: Private.

Union County

HENDERSON SLOUGHS (see Henderson County)

Wolfe County

RED RIVER GORGE (see Meniffee County)

MAINE (14)

Aroostook County

CRYSTAL BOG Crystal Bog, an undisturbed, sphagnum bog is considered one of the largest and finest in Maine. Geologic features, including several eskers are characteristic examples of glacial formations in the state. Designated: 1973. Ownership: Private.

Cumberland County

NEW GLOUCESTER BLACK GUM STAND New Gloucester Black Gum Stand is a small, remnant, forested swamp dominated mostly by virgin black gum and occurs at the northernmost limit for this species. Designated: 1975. Ownership: Private.



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Franklin County

BIGELOW MOUNTAIN

(extends into Somerset County) In terms of size, condition and lack of disturbance, Bigelow Mountain possesses one of the best alpine vegetation zones among New England's 4,000-foot peaks. It is exceptionally scenic and wild, with some of the best summit views in the eastern United States. Designated: 1975. Ownership: State.

Kennebec County

**COLBY-MARSTON
PRESERVE**

The northern sphagnum bog within the Colby-Marston Preserve has distinct and well-defined vegetation zones and is highly valued for teaching and research purposes. Located in a deep kettle hole, the sphagnum mat exceeds a depth of 40 feet. Designated: 1973. Ownership: Private.

**PENNEY POND-JOE
POND COMPLEX**

Within an intertwining network of eskers, the Penney Pond-Joe Pond wetland complex consists of kettle hole bogs and ponds. It is part of the outwash plain of the Belgrade esker and supports a diversity of vegetative communities. Designated: 1973. Ownership: Private.

**APPLETON BOG
ATLANTIC WHITE
CEDAR STAND**

The Appleton Bog Atlantic White Cedar Stand is a large peatland with continuous forest cover and well developed hummock-and-hollow topography. The site supports large stands of virgin Atlantic white cedar, the most extensive growth of this species at the northeastern limit of its range. Designated: 1984. Ownership: Private.

Lincoln County

MONHEGAN ISLAND

The coastal and island flora on Monhegan Island is considered the only sizeable example in near virgin condition in the northeastern United States. The site supports dense, almost pure stands of red spruce, over 400 species of wildflower, and a variety of bird species. Designated: 1966. Ownership: Private.

Penobscot County

ORONO BOG

Occurring in a glacial depression, Orono Bog is a classic, northern sphagnum bog and illustrates zonation of flora from lowland and bog to upland forest. It is uniquely accessible to the public and for teaching and research purposes. Designated: 1973. Ownership: State, municipal, private.



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**PASSADUMKEAG MARSH
AND BOGLANDS**

One of the largest, unspoiled wetlands in the state of Maine, Passadumkeag Marsh and Boglands contains a unique blend of bog and marsh communities. The marsh is partially bounded by eskers, including the classic Passadumkeag Esker, or Enfield Horseback, known world-wide as an example of glacial geology. Designated: 1973. Ownership: Private.

Piscataquis County

GULF HAGAS

Gulf Hagas is a steep-walled, youthful gorge, cut by a wild river through folded and tilted slates and siltstones. The site illustrates the successive processes of sedimentation, rock formation, and erosion. Waterfalls, cliffs, and growth of spruce-fir forest on the gorge walls give the site unusual scenic beauty. Designated: 1968. Ownership: Federal.

MOUNT KATAHDIN

Mount Katahdin's kames, eskers, drumlins, kettleholes, moraines, and erratics provide a complete illustration of glacial geology. Virgin forests, alpine-tundra ecosystems, and unaltered lakes and streams add to the scenic and scientific value. Designated: 1967. Ownership: State.

THE HERMITAGE

The Hermitage contains one of the few undisturbed, old-growth white pine stands remaining in New England. Trees reach 36 inches in diameter and 120 feet in height. Designated: 1977. Ownership: Federal.

Somerset County

BIGELOW MOUNTAIN

(see Franklin County)

**NO. 5 BOG AND JACK
PINE STAND**

The No. 5 Bog and Jack Pine Stand contains a large peatland that exhibits a diversity of boreal vegetation associations and well-defined, surficial glacial features. A mature stand of jack and red pine occurs adjacent to the peatland. It is the only large, intermontane peatland and one of the few expansive, virgin landscapes in the northeastern United States. Designated: 1984. Ownership: State, private.

Washington County

**CARRYING PLACE COVE
BOG**

The coastal, raised plateau bog at Carrying Place Cove Bog, is one of only six such fully-featured peatlands in the United States. It is a tombollo that has been eroded by the sea from the north, resulting in a vertical erosion face. This cross-section exposes the entire developmental history of the peatland. Designated: 1980. Ownership: State.



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MARYLAND (6)

Baltimore County

LONG GREEN CREEK AND SWEATHOUSE BRANCH

Long Green Creek and Sweathouse Branch, located within Gunpowder Falls State Park, contains a maturing beech-tulip poplar-white oak forest, which will ultimately represent a climax mesic forest. The site also contains an outstanding rich herbaceous flora. Designated: 1977. Ownership: State.

Calvert County

BATTLE CREEK CYPRESS SWAMP

Battle Creek Cypress Swamp is one of the most northerly cypress swamps in the country. The site also contains a wide range of plant and animal life. Designated: 1965. Ownership: Private.

Cecil County

GILPIN'S FALLS

Gilpin's Falls is probably the best outcrop of undeformed early Paleozoic metavolcanic pillow basalts in the Middle Atlantic states. It is also a prime example of a fall zone stream. Designated: 1980. Ownership: Private.

Frederick County

SUGAR LOAF MOUNTAIN

(extends into Montgomery County) Sugar Loaf Mountain provides evidence regarding age and structural relationships of rocks in the Piedmont biophysiographic province. The site appears to be either an outlier to the east of the main mass of the Catoctin Mountain, or a root remnant of the ancient Appalachia land mass. Designated: 1969. Ownership: Private.

Garrett County

CRANESVILLE SWAMP NATURE SANCTUARY

(extends into Preston County, West Virginia) Cranesville Swamp Nature Sanctuary occupies a natural bowl where cool, moist conditions yield plant and animal communities more common in northern latitudes. Designated: 1964. Ownership: Private.

Montgomery County

SUGAR LOAF MOUNTAIN (see Frederick County)



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Prince Georges County

BELT WOODS

Belt Woods is one of the few remaining old-growth upland forests in the Atlantic Coastal Plain biophysiological province. It is an example of upland hardwood forest dominated by tulip poplar and white oak. The woods support a diverse bird population, including neotropical migrants. Designated: 1974. Ownership: State.

MASSACHUSETTS (10)

Berkshire County

**BARTHOLOMEW'S
COBBLE**

(see Litchfield County, Connecticut)

**COLD RIVER VIRGIN
FOREST**

The hemlock-northern hardwood forest within the Cold River Virgin Forest is considered a climax association and the only virgin stand in New England. As the steep topography prohibits logging, hemlocks and sugar maples exceed 400 years in age and average three feet in diameter. Designated: 1980. Ownership: State.

**MT. GREYLOCK OLD
GROWTH SPRUCE**

The Mt. Greylock Old Growth Spruce site contains potentially virgin, pure stands of old-growth red spruce. Occurring on the steep, northwest slopes of Mt. Greylock, the highest mountain in Massachusetts, they are the only old-growth, red spruce stands known to occur in southern New England. Designated: 1987. Ownership: State.

Bristol County

**ACUSHNET CEDAR
SWAMP**

Acushnet Cedar Swamp contains dense, nearly pure stands of Atlantic white cedar, forming one of the largest, wildest and most impenetrable swamps in Massachusetts. The wetland complex contains swamp, bog, pond and adjacent upland forest. Designated: 1972. Ownership: State.

Dukes County

GAY HEAD CLIFFS

The colorful Gay Head Cliffs, resting upon the continental shelf, yet detached from the mainland, rise to 150 feet above sea level and provide a cross-section of pre-glacial sediments overlain by fossil-bearing sands. It is the most extensive and scenic exposure of Cretaceous and Tertiary formations on the New England islands and Cape Cod. Designated: 1965. Ownership: Indian Trust (Wampanoag Tribe).



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Essex County

LYNNFIELD MARSH

(extends into Middlesex County) An inland, fresh-water marsh, Lynnfield Marsh is dominated by cattail and bisected by the Saugus River. The marsh provides habitat for numerous and rare bird species and affords much opportunity and value for public appreciation. Designated: 1972. Ownership: Municipal, private.

Franklin County

HAWLEY BOG

Hawley Bog, a cold, northern sphagnum-heath bog, occupies an old and shallow glacial lake basin. All major vegetation zones that demonstrate bog succession are present, from the central open water pond to the surrounding spruce-fir forest. Designated: 1974. Ownership: Private.

Hampden County

**FANNIE STEBBINS
REFUGE**

The Fannie Stebbins Refuge is a wetland complex containing mature, mixed-hardwood, floodplain forest, tree and shrub swamplands, cattail marshes, open meadow, and a few small ponds. A varied avifauna is supported by the diverse habitat within this floodplain of the Connecticut River. Designated: 1972. Ownership: Municipal, private.

Middlesex County

LYNNFIELD MARSH

(see Essex County)

Nantucket County

MUSKEGET ISLAND

An isolated, sandy island, Muskeget Island, is part of the terminal moraine marking the maximum extent of the last glacial ice sheet to reach the northeastern coast. It is the only known locality where the Muskeget vole is found and is considered the southernmost breeding area for grey seal. Designated: 1980. Ownership: Municipal, private.

Plymouth County

**NORTH AND SOUTH
RIVERS**

North and South Rivers is a large and diverse estuarine wetland system containing salt, brackish, and fresh water marshes. The two rivers are classic examples of drowned, river-mouth estuaries and support many bird and fish species. Designated: 1977. Ownership: State, municipal, private.



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Worcester County

POUTWATER POND

Poutwater Pond is an undisturbed, sphagnum-heath bog that illustrates ecological succession from open water in a glacial depression to upland forest. Designated: 1972. Ownership: State.

MICHIGAN (12)

Bay County

TOBICO MARSH

Tobico Marsh, located within Tobico Marsh State Game Area, is a relatively undisturbed area with three distinct habitats: a wide expanse of open water, marshland, and a mixed hardwood forest. The site is used by large numbers of migrating waterfowl. Designated: 1976. Ownership: State.

Berrien County

GRAND MERE LAKES

Surrounded by a buffer zone of dunes, Grand Mere Lakes is a unique ecological area containing four low areas created during the evolution of postglacial ancestors of Lake Michigan. The site illustrates the evolution of aquatic to terrestrial communities and supports many rare relict species. Designated: 1968. Ownership: State, private.

**WARREN WOODS
NATURAL AREA**

Warren Woods Natural Area is the last known stand of virgin beech-maple forest in southern Michigan. The site contains outstanding individual specimens of sycamore, beech, maple, and other northern hardwoods. Designated: 1967. Ownership: Private.

Cass County

NEWTON WOODS

Newton Woods is one of the last remaining old-growth, oak-mixed, hardwood stands on Michigan's lower peninsula. Designated: 1976. Ownership: State.

Gogebic County

PORCUPINE MOUNTAIN

(see Ontonagon County)

Ingham County

TOUMEY WOODLOT

Toumey Woodlot, located within the Michigan State University campus, is an extremely rare example of a virgin stand of beech-maple forest. The site is an important area for ecological research. Designated: 1976. Ownership: State.



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Jackson County

**BLACK SPRUCE BOG
NATURAL AREA**

Black Spruce Bog Natural Area is a boreal bog forest illustrating the climax stage of succession in a sphagnum bog ecosystem. The site contains an excellent stand of black spruce. Designated: 1976. Ownership: State.

Marquette County

**DUKES RESEARCH
NATURAL AREA**

Located within the Upper Peninsula Experimental Forest, the Dukes Research Natural Area is an undisturbed white cedar and mixed conifer swamp containing old-growth hardwood stands. Designated: 1974. Ownership: Federal.

Missaukee County

DEAD STREAM SWAMP

(extends into Roscommon County) Dead Stream Swamp, located within Houghton Lake State Forest, is a large example of a northern white cedar swamp, which is considered a climax stage in bog forest development. Designated: 1976. Ownership: State.

Oakland County

**HAVEN HILL STATE
NATURAL AREA**

Haven Hill State Natural Area, located within Highland State Recreation Area, contains all of southern Michigan's principal forest types in one small tract. The site supports 17 mammal and over 100 bird species. Designated: 1976. Ownership: State.

Ontonagon County

PORCUPINE MOUNTAIN

(extends into Gogebic County) Porcupine Mountain contains a large tract of white pine with the best and largest stand of virgin northern hemlock in the lake states and the largest relatively undisturbed northern hemlock hardwood forest west of the Adirondacks. The site contains excellent examples of wave-cut beaches marking former glacial lake shorelines. Designated: 1984. Ownership: State.

Roscommon County

DEAD STREAM SWAMP

(see Missaukee County)

**ROSCOMMON VIRGIN
PINE STAND**

Roscommon Virgin Pine Stand contains one of the best old-growth red-pine stands in the Central Lowlands biophysiographic province. Documented history of fires in 1798, 1888, and 1928 adds to the significance of the site. Designated: 1980. Ownership: State.



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Schoolcraft County

STRANGMOOR BOG

Located within Seney National Wildlife Refuge, Strangmoor Bog is one of the most southern, undisturbed patterned or stringed bogs in the country. The site is a result of the underlying arrangement of sand knolls or extinct dunes on a sloping sand plain. Designated: 1973. Ownership: Federal.

MINNESOTA (8)

Anoka County

**CEDAR CREEK NATURAL
HISTORY AREA-
ALLISON SAVANNA**

(extends into Isanti County) Cedar Creek Natural History Area-Allison Savanna is a relatively undisturbed area where three biomes meet (tall grass prairie, eastern deciduous forest and boreal coniferous forest.) Supporting 61 species of mammals and 183 species of birds, the site is a nationally and internationally famous research center. Designated: 1975. Ownership: State, private.

Beltrami County

**UPPER RED LAKE
PEATLAND**

One of the largest peatlands remaining in the conterminous United States, Upper Red Lake Peatland illustrates a variety of geological features and plant associations, especially the dominant and rare string bog. The site provides outstanding habitat for wildlife including endangered species. Designated: 1975. Ownership: Federal, State, Indian Trust (Red Lake Tribe), private.

Big Stone County

**ANCIENT RIVER WARREN
CHANNEL**

(extends into Traverse County, Minnesota and Roberts and Grant Counties, South Dakota) A channel cut by the Ancient River Warren during the Ice Age, Ancient River Warren Channel contains the Hudson Bay-Gulf of Mexico divide. A lake on each side of the channel provides evidence of the irregularities in Ice Age sedimentation. Designated: 1966. Ownership: State, private.

Cass County

**PINE POINT RESEARCH
NATURAL AREA**

Located within the Chippewa National Forest, Pine Point Research Natural Area contains undisturbed stands of red and mixed pine that have been protected for over 70 years. The site provides nesting habitat for the bald eagle and osprey. Designated: 1980. Ownership: Federal.



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Clearwater County

ITASCA NATURAL AREA Itasca Natural Area, located within Itasca State Park, contains some of the finest remaining stands of virgin red pine, spruce-balsam fir, and maple-basswood-aspen forest. The site supports 53 species of mammal and 141 bird species, including bald eagles. Designated: 1965. Ownership: State.

Isanti County

CEDAR CREEK NATURAL HISTORY AREA-ALLISON SAVANNA (see Anoka County)

Koochiching County

LAKE AGASSIZ PEATLANDS NATURAL AREA Lake Agassiz Peatlands Natural Area is an example of the extensive peatlands occupying the bed of ancient glacial Lake Agassiz, illustrating the process of peat accumulation over about 11,000 years. The site contains Myrtle Lake Bog, which developed contrary to the usual successional process of lake filling, and is an excellent example of both raised and string bogs. Designated: 1965. Ownership: State.

Lake County

KEELEY CREEK NATURAL AREA Keeley Creek Natural Area, located within Superior National Forest, contains a large tract of undisturbed mixed pine and black spruce forest with rare mature jack pine stands and significant upland bogs. Designated: 1980. Ownership: Federal.

St. Louis County

LAC LA CROIX RESEARCH NATURAL AREA Located within the Boundary Waters Canoe Area, Lac La Croix Research Natural Area consists of old-growth virgin pine forests. The site contains most of the physiographic and ecological features characteristic of the Boundary Waters region. Designated: 1980. Ownership: Federal.

Traverse County

ANCIENT RIVER WARREN CHANNEL (see Big Stone County)



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MISSISSIPPI (5)

Calhoun County

CHESTNUT OAK DISJUNCT

Chestnut Oak Disjunct is an isolated stand well removed from the established normal range of chestnut oak. Few, if any, chestnut oaks occur within the intervening 50 to 60 miles to the border of its normal range. This is the southwestern-most location known in Mississippi, and thus, the southwestern-most state within the tree's range. Designated: 1966. Ownership: Private.

Madison County

MISSISSIPPI PETRIFIED FOREST

Mississippi Petrified Forest is a relatively undisturbed accumulation of ancient fir and maple driftwood that was buried in Tertiary sands and covered with loess. Surface water has since eroded gullies, exposing the ancient logs. Designated: 1965. Ownership: Private.

Scott County

BIENVILLE PINES SCENIC AREA

Bienville Pines Scenic Area, located within the Bienville National Forest, is one of the largest protected old-growth loblolly pine stands in the region, and is one of the best examples of this ecosystem type. Designated: 1976. Ownership: Federal.

HARRELL PRAIRIE HILL

Harrell Prairie Hill is a tall grass prairie located within the Bienville National Forest. It is one of the last and most representative remnants of the Jackson Prairie, a disjunct of the Black Belt region in Mississippi and Alabama. Designated: 1976. Ownership: Federal.

Sharkey County

GREEN ASH-OVERCUP OAK-SWEETGUM RESEARCH NATURAL AREAS

Green Ash, Overcup Oak, and Sweetgum Research Natural Areas are located within the Delta National Forest, in the Mississippi River delta region. They consist of three noncontiguous remnants of very rare virgin bottomland hardwood forest. Some of the oldest sweetgum stands are 250 to 300 years old. Designated: 1976. Ownership: Federal.



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MISSOURI (16)

Barton County

GOLDEN PRAIRIE

Golden Prairie is an example of an essentially virgin tall grass prairie ecosystem. The site provides habitat for many species of flora and fauna, including a large population of greater prairie chicken. Designated: 1975. Ownership: Private.

Callaway County

TUCKER PRAIRIE

Tucker Prairie is a virgin tall grass prairie occurring within the transition zone between the oak-hickory forest and typical tall grass prairie. Designated: 1975. Ownership: Private.

Camden County

CARROLL CAVE

Carroll Cave contains a dendritic system of subsurface karst streams and tributaries. Designated: 1977. Ownership: Private.

Clay County

MAPLE WOODS NATURAL AREA

Maple Woods Natural Area contains a nearly virgin sugar maple and mockernut hickory forest. The combination of these two forest species is rare in this region. Designated: 1980. Ownership: State.

Crawford County

ONONDAGA CAVE

Onondaga Cave contains an unusually large and varied number of speleothems and a ponded stream with a mean flow of about a million gallons per day. Designated: 1980. Ownership: Private.

Marion County

MARK TWAIN AND CAMERON CAVES

Located on either side of Cave Hollow (a small valley), Mark Twain and Cameron Caves are exceptionally good examples of the maze type of cavern development. Designated: 1972. Ownership: Private.

Mississippi County

BIG OAK TREE

Located within Big Oak Tree State Park, the Big Oak Tree site is the only sizable known tract of essentially virgin wet-mesic bottomland hardwood forest remaining in the northern Mississippi Alluvial Plain section of the Gulf Coastal Plain biophysiographic province. Designated: 1986. Ownership: State.



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Oregon County

GRAND GULF

A spectacular dolomite chasm, Grand Gulf formed by the roof collapse of a 3/4-mile long cave passage as a result of coalescence of adjacent sinkholes. The site illustrates a variety of karst topography development processes, including subterranean stream piracy. Designated: 1971. Ownership: Private.

GREER SPRING

Greer Spring is the second largest spring in the Ozarks that discharges into a high quality, cascading stream. A very diverse forest surrounds the spring and river. Designated: 1980. Ownership: Private.

Phelps County

MARAMEC SPRING

Maramec Spring, located within Maramec Spring Park, is one of the largest springs in the Missouri Ozarks. The spring was a source of waterpower from 1826 to 1877 for an ironworks, the ruins of which are still visible. Designated: 1971. Ownership: Private.

Ripley County

CUPOLA POND

Located within Mark Twain National Forest, Cupola Pond is one of the most ancient sinkhole ponds in the Ozark plateaus. The site also contains a nearly pure stand of disjunct water tupelo. Designated: 1974. Ownership: Federal.

St. Clair County

TABERVILLE PRAIRIE

Taberville Prairie is one of the largest remaining virgin tall grass prairies containing typical prairie flora and fauna. Designated: 1975. Ownership: State.

Ste. Genevieve County

PICKLE SPRINGS

A deep, forested gorge, Pickle Springs contains one of the finest Pleistocene relict habitats in Missouri. The site supports numerous relict herbaceous plant species, including one rare moss of tropical affinity and several species characteristic of the Appalachian Mountains. Designated: 1975. Ownership: State.

Stone County

MARVEL CAVE

Marvel Cave has a dome-shaped sinkhole entrance with giant dome-pits below. The site includes one of the greatest dripstone units of all the Ozark caves. Designated: 1972. Ownership: Private.



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Taney County

TUMBLING CREEK CAVE A large, fragile, varied cave, Tumbling Creek Cave contains the most diverse fauna known for any cave west of the Mississippi River including a large colony of the endangered gray bat. Designated: 1980. Ownership: Private.

Warren County

WEGENER WOODS Wegener Woods is a rare, essentially virgin oak-hickory-dominated forest in a condition of gradual change to a sugar maple-dominated forest. The site offers an opportunity to study the composition and dynamics of pre-settlement condition eastern deciduous forests. Designated: 1975. Ownership: Private.

MONTANA (10)

Beaverhead County

**RED ROCK LAKES
NATIONAL WILDLIFE
REFUGE** Red Rock Lakes National Wildlife Refuge contains a series of relatively undisturbed, high-altitude ecosystem types representative of pre-European settlement conditions. The site represents an outstanding waterfowl production area, provides habitat for several uncommon species, and is instrumental in the survival of the trumpeter swan. Designated: 1976. Ownership: Federal.

Big Horn County

**CLOVERLY FORMATION
SITE** The Cloverly Formation Site contains early Cretaceous vertebrate fossils. Designated: 1973. Ownership: Indian Trust (Crow Tribe), private.

Carbon County

BRIDGER FOSSIL AREA The Bridger Fossil Area contains fossils of *Deinonychus antirrhopus*, a new genus and species of carnivorous dinosaur that was only about three feet tall and eight feet in length. Designated: 1973. Ownership: Federal.

Carter County

CAPITOL ROCK Capitol Rock, located within the Custer National Forest, is a remnant of the once continuous blanket of Tertiary deposits that covered much of the Great Plains. Late Cretaceous, Paleocene, Oligocene, and Miocene strata are well displayed. Designated: 1976. Ownership: Federal.



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Chouteau County

SQUARE BUTTE

Rising 2,500 feet above the valley bottom, Square Butte is a good example of a laccolith, an igneous rock intrusion between sedimentary beds. It provides one of the best examples of banded magmatic rock in the United States. Additionally, the butte's flat crest supports relatively undisturbed prairie grassland communities. Designated: 1980. Ownership: Federal, private.

Gallatin County

MIDDLE FORK CANYON

Middle Fork Canyon illustrates rocks deformed by the crustal movements that created the Rocky Mountains. It is an outstanding example of a canyon cut across the grain of the geologic structure by a superposed stream. Few places more clearly illustrate the effects of erosion and stream superposition. Designated: 1977. Ownership: Federal, private.

Garfield County

**HELL CREEK FOSSIL
AREA**

The Hell Creek formation and valley is the type locality for *Tyrannosaurus rex*, *Ankylosaurus magniventris*, and *Brachychampsa fontana*, the oldest known true alligator. The Hell Creek Fossil Area has also produced several specimen of *Triceratops prorsus* and is where over 95% of *T. rex* museum specimens have come from. Designated: 1966. Ownership: Federal, State, private.

McCone County

**BUG CREEK FOSSIL
AREA**

Located primarily within Charles M. Russell National Wildlife Refuge, the Bug Creek Fossil Area has produced abundant remains of small, Cretaceous mammals, including the type locality for five species new to science. Some of the fossils excavated provide evidence contradicting the belief that there was a sudden explosion of mammal species at the beginning of the Paleocene. Designated: 1966. Ownership: Federal, private.

Sanders County

**GLACIAL LAKE
MISSOULA**

Glacial Lake Missoula was the largest of several lakes impounded by the Cordilleran Ice Sheet during the Quaternary Period. The site contains the best examples of giant flood ripples in the North American continent. Ripples appear as ridges 15 to 20 feet high, 100 to 250 feet wide, and from 300 feet to one-half mile long. Designated: 1966. Ownership: Private.



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Sheridan County

MEDICINE LAKE SITE

Medicine Lake Site, located within the Medicine Lake National Wildlife Refuge, is an exceptional example of the processes of continental glaciation, including till, outwash, eskers, kames, and terrace deposits. A variety of grassland plant and animal species are found here. Designated: 1980. Ownership: Federal.

NEBRASKA (5)

Antelope County

ASHFALL FOSSIL BEDS

Ashfall Fossil Beds, located within Ashfall Fossil Beds State Historical Park, is one of the only locations where large numbers of fossil mammals have been found as whole, three-dimensionally preserved skeletons. The thick bed of volcanic ash at the site contains hundreds of extraordinarily complete skeletons of extinct rhinos, camels, three-toed horses and other vertebrates still lying in their death poses. Designated: 2006. Ownership: State.

Cherry County

**VALENTINE NATIONAL
WILDLIFE REFUGE**

Valentine National Wildlife Refuge is one of the few remaining examples of the sandhill tall grass prairie ecosystem unique to the central Great Plains. The site provides habitat for many rare species. Designated: 1976. Ownership: Federal.

Grant County

NEBRASKA SAND HILLS

Nebraska Sand Hills is the largest sand dunes complex in the Western Hemisphere. The site differs from other large dunes of the world because it is almost completely stabilized by vegetation. Designated: 1984. Ownership: State, private.

Lincoln County

**DISSECTED LOESS
PLAINS**

Dissected Loess Plains contains loess (wind blown silt) deposits that are among the thickest (200+ feet) in North America. Eroded canyons and deep valleys that occur at this site reveal the geological history of the Loess Plains better than any other place in the Great Plains. Designated: 1987. Ownership: Private.



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Sarpy County

FONTENELLE FOREST

The largest virgin forest in Nebraska, Fontenelle Forest also contains high bluffs, river flood plain of the Missouri River and 20 acres of true prairie. Designated: 1964. Ownership: Private.

NEVADA (6)

Clark County

VALLEY OF FIRE

Valley of Fire is an outstanding example of thrust faulting. A great fold has been exposed by erosion, revealing huge rock formations, deep canyons, and a great variety of colors. The site also supports gila monsters at the northern extreme of their range. Designated: 1968. Ownership: State.

Elko County

RUBY MARSH

(extends into White Pine County) Ruby Marsh, located within Ruby Lake National Wildlife Refuge, is one of the largest and finest natural wetlands in Nevada. It is a stopover and nesting area for many migratory birds, including the greater sandhill crane and trumpeter swan. Designated: 1972. Ownership: Federal.

Nye County

**HOT CREEK SPRINGS
AND MARSH**

Hot Creek Springs and Marsh supports the White River springfish, a relict species that is found in large numbers at this site. The site is outstanding both as a spring and a wetland area. Designated: 1972. Ownership: State.

ICHTHYOSAUR SITE

Ichthyosaur Site, located within Berlin-Ichthyosaur State Park, is the only known site containing fossil remains of 37 of the largest forms of Ichthyosaur; some up to 45 feet in length. Designated: 1973. Ownership: Federal, State, private.

LUNAR CRATER

Lunar Crater is a 400-acre depression (maar) that is thought to have been formed by a past volcanic explosion. It is one of two maars in the volcanic field of the Pancake Range. Designated: 1973. Ownership: Federal.



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**TIMBER MOUNTAIN
CALDERA**

Timber Mountain Caldera, located within Nellis Air Force Gunnery Range and Nevada Test Site, is a restricted area containing a remnant of an elliptical caldera developed in the late Miocene and early Pliocene. It covers eight to ten miles and is surrounded by a moat-like depression extending to the rim of an older caldera. Designated: 1973. Ownership: Federal.

White Pine County

RUBY MARSH (see Elko County)

NEW HAMPSHIRE (11)

Carroll County

HEATH POND BOG

Heath Pond Bog provides a classic example of bog succession from open water to sphagnum-heath-black spruce bog. It contains an exceptionally large number of plant species and has great value for scientific study. Designated: 1972. Ownership: State.

**NANCY BROOK VIRGIN
SPRUCE FOREST AND
SCENIC AREA**

(see Grafton County)

MADISON BOULDER

Measuring 83 feet long, 37 feet wide and 23 feet high, Madison Boulder, a rectangular granite boulder is the largest known glacial erratic in North America. It illustrates the power of an ice sheet to move large blocks of fractured bedrock over substantial distances. Designated: 1970. Ownership: State.

WHITE LAKE PITCH PINE

White Lake Pitch Pine contains a mature, undisturbed pitch pine and bear-oak forest unique in the height, diameter, and straightness of its trees. Comprising 90% of the canopy, the pitch pine grows straight, tall and up to 20 inches in diameter. Designated: 1980. Ownership: State.

Cheshire County

MOUNT MONADNOCK

Mount Monadnock, a prominent, isolated, relict mountain, is the type locality of a monadnock. The mountain also exhibits conspicuous effects of Pleistocene glacial erosion including striations, roche moutonnées or sheepbacks, and an over-steepened profile resulting from glacial plucking. Designated: 1987. Ownership: State, municipal, private.



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**RHODODENDRON
NATURAL AREA**

Rhododendron Natural Area is considered the largest, thriving stand of rhododendron in central and southern New England. The site is located at the northern limit of this species' range, where rhododendron is rare and localized. Designated: 1982. Ownership: State.

Coos County

**EAST INLET NATURAL
AREA**

East Inlet Natural Area contains a black spruce-tamarack bog and a virgin, balsam fir-red spruce forest. It provides the opportunity for study of edaphic influences on the environment. Designated: 1972. Ownership: Private.

FLOATING ISLAND

Floating Island, a floating heath bog, is surrounded by mixed bog swamp forest and an intricate complex of meandering river, oxbows and ponds. It is considered one of the finest wildlife areas in northern New England, providing critical habitat for species including osprey and bald eagle. Designated: 1972. Ownership: Federal.

**PONDICHERRY WILDLIFE
REFUGE**

Within Pondicherry Wildlife Refuge are two shallow, warm water ponds, surrounded by marsh, bog and forest that support an abundance of submerged, floating, and emergent vegetation, and a great variety of birds. The wetland complex is the type locality for a species of pondweed and spike-rush. Designated: 1972. Ownership: State, private.

Grafton County

FRANCONIA NOTCH

A deep, steep-sided mountain pass, Franconia Notch is an old stream valley, ground to a u-shape by glacial movement. Natural erosional features, including landslide scars, stream-cut gorges, and one of the most extensive talus slopes in the eastern United States illustrate land-shaping processes. Designated: 1971. Ownership: State.

**NANCY BROOK VIRGIN
SPRUCE FOREST AND
SCENIC AREA**

(extends into Carroll County) The montane stand of red spruce within Nancy Brook Virgin Spruce Forest and Scenic Area, may be the largest virgin forest tract in the northeastern United States. The diverse landscape includes classic high elevation ponds, landslides, steep valley walls, cascades, boulder streams, beaver clearings, mountain slopes, ridges, summits, and distant views. Designated: 1987. Ownership: Federal.



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Strafford County

SPRUCE HOLE BOG

Spruce Hole Bog, a true, kettle hole bog, is the last known to exist in southern New Hampshire. It illustrates characteristics of a typical sphagnum-heath bog, localized in a specialized geologic setting. Designated: 1972. Ownership: Municipal.

NEW JERSEY (11)

Bergen County

**PALISADES OF THE
HUDSON**

(extends into Rockland County, New York) Palisades of the Hudson is the best example of a thick diabase sill formation known in the United States. Columnar jointing, an olivine zone and thermal metamorphic effects are attributes found in rare combination at this site. The glaciated crest provides impressive evidence of the Pleistocene glacier. Designated: 1983. Ownership: State.

Cape May County

**STONE HARBOR BIRD
SANCTUARY**

Stone Harbor Bird Sanctuary is managed exclusively as a sanctuary for birds and is probably the greatest single influence increasing the heron populations in New Jersey. Designated: 1965. Ownership: Municipal.

Essex County

RIKER HILL FOSSIL SITE

Riker Hill Fossil Site is one of only two known localities of major size along the Northeastern coast where large numbers of dinosaur footprints are preserved in-situ. Designated: 1971. Ownership: County.

Middlesex County

PIGEON SWAMP

Pigeon Swamp contains a complex of habitats ranging from open ponds to upland hardwood forest. It is significant because it contains a sizeable example of mature inner coastal plain lowland hardwood forest. Designated: 1976. Ownership: State, private.

Morris County

GREAT SWAMP

Great Swamp, located within Great Swamp National Wildlife Refuge, contains a unique blend of unspoiled forest, swamp, and marshland that provides habitat for a variety of wildlife species. Designated: 1966. Ownership: Federal.



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TROY MEADOWS

Troy Meadows contains the last unpolluted freshwater marsh of large size in the region. It is an important habitat for a variety of bird and animal species. Designated: 1967. Ownership: State, private.

Ocean County

**MANAHAWKIN
BOTTOMLAND
HARDWOOD FOREST**

Manahawkin Bottomland Hardwood Forest is a mature bottomland hardwood forest dominated by sweetgum, red maple and black gum. It is one of the finest remaining examples of bottomland hardwood forest in the northern Atlantic Coastal Plain biophysiographic province. Designated: 1976. Ownership: State.

Passaic County

**GREAT FALLS OF
PATERSON-GARRETT
MOUNTAIN**

Great Falls of Paterson-Garrett Mountain provides an excellent illustration of the jointed basaltic lava flow that began a period of extrusion and intrusion throughout eastern North America in the early Mesozoic, influencing present day landforms in this region. Designated: 1967. Ownership: State, municipal.

Somerset County

**WILLIAM L. HUTCHESON
MEMORIAL FOREST**

William L. Hutcheson Memorial Forest is a virgin mixed oak upland forest dominated by white, red, and black oaks. It is probably the best remaining example of an old growth mixed forest in New Jersey. Designated: 1976. Ownership: Private.

**MOGGY HOLLOW
NATURAL AREA**

Moggy Hollow Natural Area contains a 90-foot gorge, which was the outlet for ancient glacial Lake Passaic. It is a superlative illustration of a phase of Ice Age glaciation. Designated: 1970. Ownership: Private.

Warren County

SUNFISH POND

Located within Worthington State Forest, Sunfish Pond is a spring-fed mountain lake surrounded by a hardwood forest. It is an outstanding illustration of glacial sculpture. Designated: 1970. Ownership: State.



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NEW MEXICO (12)

Chaves County

BITTER LAKE GROUP

Located within the Bitter Lake National Wildlife Refuge, the Bitter Lake Group contains more than 30 natural sinkhole depressions formed by solution of gypsum-bearing rocks. The highly saline artesian lakes provide habitat for the only inland occurrence of a marine alga and two rare fish species. The site offers one of the best examples of undisturbed shrub-grassland and the process of succession and restoration to natural conditions following a disturbance. Designated: 1980. Ownership: Federal.

MATHERS RESEARCH NATURAL AREA

Mathers Research Natural Area contains the best example of a shinnery oak-sand prairie community in the southern Great Plains biophysiographic province. The site nears the western edge of shinnery oak distribution. Designated: 1982. Ownership: Federal.

MESCALERO SANDS SOUTH DUNE

Mescalero Sands South Dune is the best example of an active sand dune system in the southern Great Plains biophysiographic province. A variety of successional stages from active dunes to a climax shinnery oak-sand prairie community are represented. Designated: 1982. Ownership: Federal, State, private.

Dona Ana County

KILBOURNE HOLE

Kilbourne Hole is an example of an uncommon volcanic feature known as a maar. A maar is a depression caused by a volcanic explosion that emits little volcanic material except gas. Additionally, the olivine and enstatite inclusions have been used in studies of the upper mantle. Designated: 1975. Ownership: Federal.

Harding County

BUEYEROS SHORTGRASS PLAINS

Bueyerros Shortgrass Plains is an example of the blue grama-buffalograss prairie of the Great Plains and is considered to be representative of the pre-cattle grazing era. Two of the three dominant natural grazing animals, antelope and prairie dogs, are still in the area. Designated: 1980. Ownership: Private.

Lincoln County

BORDER HILLS STRUCTURAL ZONE

Border Hills Structural Zone is one of several buckles on the Pecos slope located in otherwise gently dipping Permian strata. It is a rare example of wrench faulting found outside the Pacific Coast region. Designated: 1980. Ownership: Federal, private.



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FORT STANTON CAVE

Fort Stanton Cave is characterized by very long and large open passages containing distinctive examples of selenite needles, starbursts, and velvet flowstone. Designated: 1974. Ownership: Federal.

TORGAC CAVE

Torgac Cave contains abundant and intricate gypsum speleothems. The branching stalactites and helictites are so distinctive that the cave is the type site of Torgac-type helictites. Designated: 1974. Ownership: Federal.

Rio Arriba County

GHOST RANCH

Ghost Ranch has yielded an abundance of well-preserved *Coelophysis* skeletons within exposures of the Upper Triassic Chinle Formation. This reptile, one of the oldest and most primitive carnivorous dinosaurs, was known only from scanty fossil evidence until the 1947 discovery and excavation at this site. This discovery is considered by some paleontologists as one of the most important single fossil finds in the American Triassic. Designated: 1976. Ownership: Private.

VALLES CALDERA

(extends into Sandoval County) The Valles Caldera is a large circular depression, 12 to 15 miles in diameter, with scalloped walls rising from a few hundred to more than 2,000 feet above the present floor. Located primarily within the Valles Caldera National Preserve, the site is one of the largest calderas in the world and is an excellent example of a caldera advanced in history but still retaining the essential structures. Designated: 1975. Ownership: Federal.

Sandoval County

VALLES CALDERA

(see Rio Arriba County)

San Juan County

SHIP ROCK

Towering 1,400 feet above the surrounding plain, Ship Rock is an outstanding example of an exposed volcanic neck accompanied by radiating dikes. There are few such clear displays of the internal structure of a volcano. Designated: 1975. Ownership: Indian Trust (Navajo Tribe).



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Valencia County

GRANTS LAVA FLOW

Grants Lava Flow is one of the best examples of recent extrusive volcanism. Located within portions of the El Malpais National Monument and El Malpais National Conservation Area, it is about 32 miles long and 18 miles wide at its widest point. Its gigantic pressure ridges, collapse depression ponds, and lava tubes are outstanding. Designated: 1969. Ownership: Federal, Indian Trust (Acoma Pueblo), private.

NEW YORK (25)

Albany County

BEAR SWAMP

Bear Swamp is a low, swampy woodland consisting of red maple, yellow birch, black ash, white elm, white pine, and hemlock trees. The most outstanding features at the site are the relict stands of great laurel covering approximately 60 acres of the swamp. Designated: 1973. Ownership: Private.

Allegany County

MOSS LAKE BOG

Moss Lake Bog is a classic example of a postglacial sphagnum bog invading and filling a small kettle lake. The various stages of bog succession are well illustrated here. Designated: 1973. Ownership: Private.

Cattaraugus County

**DEER LICK NATURE
SANCTUARY**

Deer Lick Nature Sanctuary contains a gorge that clearly illustrates exposed stratifications of the Onondaga escarpment. The site also supports a mature northern hardwood forest. Designated: 1967. Ownership: Private.

Clinton County

CHAZY FOSSIL REEF

(see Grand Isle County, Vermont)

Dutchess County

THOMPSON POND

The Thompson Pond site contains sharply defined, well-developed ecosystems, from open pond to mountain cliffs, which illustrate great ecological diversity in a small area. The glacially-created pond, consisting of 75 acres of open water and a water depth of four feet, is fringed by cattail marshes, and reeds and water lilies in deeper water. Designated: 1973. Ownership: Private.



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Genesee County

- BERGEN-BYRON SWAMP** The Bergen-Byron Swamp encompasses diverse forest and wetland habitats that is unusually rich in plant and animal life. Designated: 1964. Ownership: Private.
- FOSSIL CORAL REEF** Fossil Coral Reef is an exposed fossil site in an abandoned limestone quarry surrounded by woodland. The reef is the finest display of Devonian coral reef in New York, and includes core, flanking, and off-reef deposits. Designated: 1967. Ownership: Private.
- OAK ORCHARD CREEK MARSH** (extends into Orleans County) Located within Iroquois National Wildlife Refuge, Oak Orchard Creek Marsh is a relatively undisturbed marsh, an ecosystem that is rare for this part of New York. Designated: 1973. Ownership: Federal.

Herkimer County

- MOSS ISLAND** Moss Island is part of an uplifted fault block of ancient crystalline rock. It contains the best exposure of glacial age potholes eroded by meltwater floods in the eastern United States. Designated: 1976. Ownership: State.

Jefferson County

- DEXTER MARSH** Dexter Marsh is a relatively undisturbed, extensive example of a large bay-head marsh complex at the eastern end of Lake Ontario. Designated: 1973. Ownership: State.
- IRONSIDES ISLAND** (extends into St. Lawrence County) Ironsides Island is a glacially-scoured granite knoll. The site's most significant feature is the breeding colony of great blue herons. Designated: 1967. Ownership: Private.
- LAKEVIEW MARSH AND BARRIER BEACH** Lakeview Marsh and Barrier Beach is one of the best and most extensive marshlands that lie in protected bays and behind barrier beaches along eastern Lake Ontario. The marsh-swamp-pond complex demonstrates great wetlands diversity. Designated: 1973. Ownership: State.



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Livingston County

FALL BROOK GORGE

Fall Brook Gorge represents one of the nation's finest exposures of Upper and Middle Devonian Age strata with significant fossil remains and a cap-rock waterfall. The gorge possesses a series of ecological communities in a small area that illustrate the response of plant and animal life to sharply contrasting microclimates. Designated: 1970. Ownership: Private.

Monroe County

HART'S WOODS

Hart's Woods is a rare remnant of the original beech-maple forest that once occupied a large glaciated area extending from southeastern Wisconsin to north-central New York. Designated: 1972. Ownership: Municipal.

MENDON PONDS PARK

Mendon Ponds Park contains a unique complex of glacial features including kames, eskers, esker fans, kettle holes, erratics, bogs, and ponds. Designated: 1967. Ownership: County.

Onondaga County

ROUND LAKE

Round Lake, located within Green Lakes State Park, is one of 11 meromictic lakes reported in the United States. The site also contains about 20 acres of outstanding virgin mesophytic forest adjoining the lake. Designated: 1973. Ownership: State.

Orleans County

**OAK ORCHARD CREEK
MARSH**

(see Genesee County)

Rockland County

**HOOK MOUNTAIN AND
NYACK BEACH STATE
PARK**

Hook Mountain and Nyack Beach State Park contains a portion of the Palisade sill. The site contains geological deposits that are characteristic of the filling of basins during the rifting and opening of the North Atlantic Basin 180-200 million years ago. Designated: 1980. Ownership: State.

**PALISADES OF THE
HUDSON**

(see Bergen County, New Jersey)

IONA ISLAND MARSH

Iona Island Marsh is a brackish estuarine marsh in a near natural state that fringes the Hudson River. The site also contains many rare plants. Designated: 1974. Ownership: State.



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St. Lawrence County

IRONSIDES ISLAND (see Jefferson County)

Saratoga County

PETRIFIED GARDENS Petrified Gardens includes one of the best exposures of fossil reefs made up of calcareous algae, known as cryptozoon. These types of algae represent a milestone in the evolution of plant life. Designated: 1967. Ownership: Private.

Seneca County

MONTEZUMA MARSHES Montezuma Marshes, located within the Montezuma National Wildlife Refuge, is a marsh dominated by broad-leaved cattail. A small, 100-acre area within the site, is one of the best examples of undisturbed swamp woodlands in New York or New England. Designated: 1973. Ownership: Federal.

Suffolk County

BIG REED POND Big Reed Pond, located within Theodore Roosevelt County Park, is a shallow freshwater pond surrounded by brackish marshes and ponds with natural dunes at the edge of the Atlantic Ocean. The environment supports deer and other wildlife. Designated: 1973. Ownership: County.

**LONG BEACH, ORIENT
STATE PARK**

Long Beach, Orient State Park is one of the finest remaining examples in New York of a sand-gravel spit illustrating succession from salt marsh to maritime forest. The site contains a breeding colony of common and roseate terns, species which are becoming scarce in other North Atlantic breeding grounds. Designated: 1980. Ownership: State.

Tompkins County

McLEAN BOGS McLean Bogs includes two spring-fed bogs, one acidic and one alkaline. The site also contains rare plant species and one of the best examples of a northern deciduous forest in New York. Designated: 1973. Ownership: Private.

Ulster County

**ELLENVILLE FAULT-ICE
CAVES**

The Ellenville Fault-Ice Caves, located within Sam's Point Preserve, contains the largest known exposed fault system in the United States, along with a series of ice caves formed from fault debris. Designated: 1967. Ownership: Private.



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Wayne County

ZURICH BOG

Zurich Bog is a good example of northern sphagnum bog and bog forest vegetation, both of which are uncommon in north-central New York. Designated: 1973. Ownership: Private.

Westchester County

MIANUS RIVER GORGE

The Mianus River Gorge contains an excellent climax hemlock forest and presents an exceptional illustration of piedmont physiography and geomorphology. Designated: 1964. Ownership: Private.

NORTH CAROLINA (13)

Alleghany County

STONE MOUNTAIN

(extends into Wilkes County) Stone Mountain, located within Stone Mountain State Park, is the best example of a monadnock in massive granite in North Carolina. Unique, endemic plants persist on the granite outcrops. Designated: 1974. Ownership: State.

Ashe County

**LONG HOPE CREEK
SPRUCE BOG**

(extends into Watauga County) Long Hope Creek Spruce Bog is one of the rarest plant communities in North Carolina and the Southeast, including plant species such as American yew and buckbean. Designated: 1974. Ownership: Private.

**MOUNT JEFFERSON
STATE NATURAL AREA**

Mount Jefferson State Natural Area contains virtually undisturbed northern red oak forests, and represents one of the best remaining examples of oak-chestnut forest in the Southeast. Designated: 1974. Ownership: State.

Beaufort County

**GOOSE CREEK STATE
PARK NATURAL AREA**

Goose Creek State Park Natural Area is an excellent example of a gently sloping mainland undergoing rapid ocean transgression. The site contains several diverse ecological communities including: brackish creeks and marshes, marsh transition areas, river swamp forest, and pine forest. Designated: 1980. Ownership: State.



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Brunswick County

GREEN SWAMP

Green Swamp is the largest and most unique mosaic of wetland communities in the Carolinas and is a refuge for rare plant and animal species. Designated: 1974. Ownership: Private.

SMITH ISLAND

(extends into New Hanover County) Smith Island, located within Fort Fisher State Recreation Area, is a barrier island complex representing one of the least disturbed areas remaining on the Atlantic Coast. The site contains one of the best unaltered examples of sand strand forest in existence, and a system of sand dunes. Salt marshes, tidal creeks, bays, and mudflats are used extensively by aquatic birds, and island beaches provide breeding habitat for loggerhead turtles. Designated: 1967. Ownership: State.

Dare County

**NAGS HEAD WOODS
AND JOCKEY'S RIDGE**

Nags Head Woods and Jockey's Ridge illustrates the entire series of dune development and plant succession, from shifting open dunes to forested stabilized dunes. Designated: 1974. Ownership: State, county, municipal, private.

Davie County

ORBICULAR DIORITE

The Orbicular Diorite site contains an unusual plutonic igneous rock consisting of hornblende, pyroxene, and feldspars. Designated: 1980. Ownership: Private.

Hyde County

**SALYER'S RIDGE
NATURAL AREA**

Salier's Ridge Natural Area, located within the Mattamuskeet National Wildlife Refuge, contains a rare example of mature loblolly pine forest in process of succession towards a deciduous forest. Designated: 1983. Ownership: Federal.

New Hanover County

SMITH ISLAND

(see Brunswick County)

Onslow County

BEAR ISLAND

Bear Island, located within Hammocks Beach State Park, contains one of the largest and best examples of coastal eolian landforms in the Atlantic Coastal Plain biophysiographic province. Dune movement has created a dynamic landscape of outstanding scenic beauty. Designated: 1980. Ownership: State.



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Surry County

PILOT MOUNTAIN

Pilot Mountain, located within Pilot Mountain State Park, is a classic monadnock that harbors disjunct vegetation from the Blue Ridge region. Designated: 1974. Ownership: State.

Wake County

**PIEDMONT BEECH
NATURAL AREA**

Piedmont Beech Natural Area, located within William B. Umstead State Park, is one of the best examples of mixed mesophytic forest in the eastern Piedmont of North Carolina. Portions of the site contain unusual examples of good, maturing stands of beech. Designated: 1974. Ownership: State.

Watauga County

**LONG HOPE CREEK
SPRUCE BOG**

(see Ashe County)

Wilkes County

STONE MOUNTAIN

(see Alleghany County)

Yancey County

**MOUNT MITCHELL STATE
PARK**

Mount Mitchell, located within Mount Mitchell State Park, is the highest mountain in the eastern half of the United States at 6,684 feet. The site supports the most extensive stand of Fraser fir remaining in the country. Designated: 1974. Ownership: State.

NORTH DAKOTA (4)

Billings County

**TWO-TOP MESA AND BIG
TOP MESA**

Located one mile apart, Two-Top Mesa and Big Top Mesa are in a badlands terrain of sandstones, siltstones and clay. The mesas are characterized by an unbroken cover of grass on flat relief. Designated: 1965. Ownership: Federal.

Cavalier County

RUSH LAKE

A large shallow, essentially undisturbed prairie pothole lake, Rush Lake is an important staging area for waterfowl. Designated: 1975. Ownership: Private.



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Kidder County

SIBLEY LAKE

A large, permanent alkaline lake, Sibley Lake provides a breeding and resting area for one of the largest and most diverse waterbird populations found in pothole lakes in North Dakota. Designated: 1975. Ownership: State, private.

Stutsman County

FISCHER LAKE

Fischer Lake is highly representative of the glacial moraine and pitted outwash plain surface of North Dakota. The site contains relatively undisturbed grassland and lush prairie woodlands. Designated: 1980. Ownership: State, private.

OHIO (23)

Adams County

**BUZZARDROOST ROCK-
LYNX PRAIRIE-THE
WILDERNESS**

Buzzardroost Rock-Lynx Prairie-The Wilderness consists of four areas that contain a number of different plant associations, including relict tall grass prairie, mixed mesophytic forest, relict boreal coniferous forest, and xeric mixed-oak forest. The site supports many rare or uncommon species and it has an almost 50-year history of scientific observations. Designated: 1967. Ownership: Private.

**SERPENT MOUND
CRYPTOEXPLOSIVE
STRUCTURE**

(extends into Highland and Pike Counties) Serpent Mound Cryptoexplosive Structure is a structure of undetermined origin exposed by differential erosion. It is the smaller of two such outstanding cryptoexplosive structures in the Interior Low Plateaus biophysiographic province and is the classic American example. Designated: 1980. Ownership: Private.

Ashland County

CLEAR FORK GORGE

Located within Mohican State Park, Clear Fork Gorge is a geologically significant area of the Mohican River valley. The site clearly illustrates evidence of stream reversal due to the Wisconsin glacier. Designated: 1967. Ownership: State.

CRALL WOODS

Crall Woods is a near-virgin remnant of maple-basswood-beech forest-type representing the original vegetation found in Ohio's glaciated till plain. Designated: 1974. Ownership: Private.



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Belmont County

DYSART WOODS

Dysart Woods contains one of the finest remaining examples of the once superb white oak forests of eastern Ohio. Designated: 1967. Ownership: State.

Butler County

HUESTON WOODS

(extends into Preble County) Hueston Woods, located within Hueston Woods State Park, is a noteworthy example of beech-maple climax forest that has never been cut. Designated: 1967. Ownership: State.

Champaign County

CEDAR BOG

Located within Cedar Bog State Memorial, Cedar Bog is an excellent example of a marl swamp. The site contains a white cedar stand preserved in virgin condition. Designated: 1967. Ownership: State, private.

Cuyahoga County

**ARTHUR B. WILLIAMS
MEMORIAL WOODS**

The Arthur B. Williams Memorial Woods contains a remarkably pristine remnant beech-maple forest. The site is among the finest timber stands remaining in Ohio. Designated: 1974. Ownership: Municipal.

TINKERS CREEK GORGE

Tinkers Creek Gorge contains a virgin oak-hickory and beech-maple-hemlock virgin forest. Designated: 1967. Ownership: Municipal.

Delaware County

**HIGHBANKS NATURAL
AREA**

(extends into Franklin County) A forested bluff overlooking the Olentangy River, the Highbanks Natural Area includes a healthy herbaceous layer as well as outstanding examples of oak-hickory, beech-maple, and flood plain hardwood forests. The bluffs are crested with a disjunct acid xeric community of lichens and mosses. Designated: 1980. Ownership: County.

Erie County

**GLACIAL GROOVES
STATE MEMORIAL**

Glacial Grooves State Memorial, located on Kelleys Island, is made up of very large limestone glacial grooves that measure several feet in depth. Designated: 1967. Ownership: Private.



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Fairfield County

BLACKLICK WOODS

Blacklick Woods is an outstanding example of relatively undisturbed, old-growth beech-maple and swamp forest communities of the type that once covered the flat till plain of central Ohio. Designated: 1974. Ownership: County.

Franklin County

**HIGHBANKS NATURAL
AREA**

(see Delaware County)

Fulton County

GOLL WOODS

Goll Woods, located within Goll Woods State Park Forest, is one of the best remaining examples of an oak-hickory dominated forest in Ohio. Designated: 1974. Ownership: State.

Geauga County

**HOLDEN NATURAL
AREAS**

(extends into Lake County) Holden Natural Areas is a complex of three natural areas. Steblins Gulch possesses geological formations of Chardon, Brea sandstone, Bedford and Cleveland types. Bole Forest is a northern hardwood virgin forest, and Hanging Rock Farm is a stand of northern hardwoods. The three areas serve as a unique control for arboretum lands abutting this landmark. Designated: 1967. Ownership: Private.

**WHITE PINE BOG
FOREST**

White Pine Bog Forest is the only remaining near-virgin remnant white pine boreal bog in Ohio. Designated: 1976. Ownership: Municipal, private.

Greene County

CLIFTON GORGE

Clifton Gorge is exemplary of interglacial and postglacial canyon-cutting into the dolomites of the Niagara Escarpment. Designated: 1967. Ownership: State.

**GLEN HELEN NATURAL
AREA**

Yellow Spring Creek, which flows through Glen Helen Natural Area, has deeply incised the dolomitic base rock of the area. Old-growth hardwoods dominate the valley area. Another significant feature along the creek is a waterfall that carved a large travertine bowl around its pool. Designated: October 1965. Ownership: Private.



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Hamilton County

**HAZELWOOD
BOTANICAL PRESERVE**

The Hazelwood Botanical Preserve is considered an ecological benchmark because of John G. Segelken's highly detailed study of the site's plant ecology, which was published in 1929. Designated: 1974. Ownership: State.

Highland County

**FORT HILL STATE
MEMORIAL**

Fort Hill State Memorial possesses excellent outcrops of Silurian, Devonian, and Mississippian sedimentary bedrock and a natural bridge. The site is also an example of glacial stream reversal. Designated: 1974. Ownership: Private.

**SERPENT MOUND
CRYPTOEXPLOSIVE
STRUCTURE**

(see Adams County)

Lake County

**HOLDEN NATURAL
AREAS**

(see Geauga County)

MENTOR MARSH

Mentor Marsh consists of marsh vegetation, aquatic plants, swamp and bottomland forest, and upland forest. As a migration stopover and year-around habitat for birds and mammals, the site is a rarity in heavily populated northern Ohio. Designated: 1964. Ownership: State, private.

Licking County

CRANBERRY BOG

The only known bog of its type in existence, Cranberry Bog is a "floating island" in Buckeye Lake. The vegetation in this cranberry sphagnum bog represents a relict of post-glacial time. Designated: 1968. Ownership: State.

Pike County

**SERPENT MOUND
CRYPTOEXPLOSIVE
STRUCTURE**

(see Adams County)



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Portage County

MANTUA SWAMP

Mantua Swamp contains many different wetland communities including a flood-plain swamp forest, cattail marshes, a beaver pond, and a relict boreal bog. Designated: 1976. Ownership: State, private.

Preble County

HUESTON WOODS

(see Butler County)

Wayne County

BROWN'S LAKE BOG

Brown's Lake Bog is one of the few well-preserved, virgin boreal acid bogs remaining in a region where wetlands have been drained for agricultural use. Designated: 1967. Ownership: Private.

OKLAHOMA (3)

Alfalfa County

**SALT PLAINS NATIONAL
WILDLIFE REFUGE**

Salt Plains National Wildlife Refuge contains the largest inland saline basin in the Central Lowlands biophysiographic province. The salt plains provide an important area for study of selenite crystal formation and is one of the few remaining nesting sites for inland least tern, snowy plover, and avocets in the southern Central Lowlands. The refuge is used heavily during migration by thousands of waterfowl and by the endangered whooping crane. Designated: 1983. Ownership: Federal.

Canadian County

DEVIL'S CANYON

Devil's Canyon is a deeply eroded box canyon supporting many disjunct mesic plant species whose natural ranges reach their western extremity about 200 miles east of this area. The close proximity of the mesic flora of the canyon bottom and the two more western plant communities of the canyon rim, is unusual. Nowhere else in Oklahoma is there such a quick transition from eastern deciduous forest type vegetation to an oak woodland-tall grass prairie. Designated: 1974. Ownership: Private.



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McCurtain County

**McCURTAIN COUNTY
WILDERNESS AREA**

McCurtain County Wilderness Area is one of the last undisturbed parts of the Oklahoma oak-pine forest. The site's overall size and high degree of integrity make it a classic example of a xeric upland oak-pine forest. Designated: 1974. Ownership: State.

OREGON (7)

Benton County

**WILLAMETTE
FLOODPLAIN**

Willamette Floodplain represents the largest remaining native unplowed example of bottomland interior valley grassland in the North Pacific Border biophysiological province. All of these grassland and shrubland communities have become exceedingly rare as most have been cultivated or converted to pastureland. Designated: 1987. Ownership: Federal.

Deschutes County

**HORSE RIDGE NATURAL
AREA**

Horse Ridge Natural Area is distinguished by a high quality example of western juniper woodland in vigorous condition. Designated: 1967. Ownership: Federal.

NEWBERRY CRATER

Newberry Crater, located within the Deschutes National Forest, is a basin at the top of a dormant, though young, volcano. It is the largest Pleistocene volcano east of the Cascade Range. Designated: 1976. Ownership: Federal.

Grant County

JOHN DAY FOSSIL BEDS

Sheep Rock is an icon of North American Tertiary vertebrate paleontology. Located within John Day Fossil Beds National Monument, the peak and surrounding badlands contains a remarkable sequence of very diverse fossils including early horses, rhinoceroses, canids, and over 30 other mammalian families entombed in reworked volcanic sediments. Designated: 1966. Ownership: Federal, private.

Lake County

**FORT ROCK STATE
MONUMENT**

Fort Rock State Monument is a striking example of a circular, fort-like volcanic outcrop. Designated: 1976. Ownership: State.



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Multnomah County

CROWN POINT

Crown Point is a promontory rising nearly vertically about 725 feet above the Columbia River. It provides a strategic vantage point for observing a classic illustration of riverine processes. Designated: 1971. Ownership: State.

Wasco County

**LAWRENCE MEMORIAL
GRASSLAND
PRESERVE**

The Lawrence Memorial Grassland Preserve is an excellent illustration of "biscuit and scabland" topography within the Columbia Plateau. It was formed by frost action during the Wisconsin glaciation period of the Pleistocene. The site is also known for its diverse plant communities. Designated: 1984. Ownership: Private.

PENNSYLVANIA (27)

Berks County

**HAWK MOUNTAIN
SANCTUARY**

Hawk Mountain Sanctuary offers an outstanding vantage point for observation of concentrated hawk migrations along the Kittanny Ridge. The site also contains an excellent illustration of geology and ecology of the eastern Appalachian region. Designated: 1965. Ownership: Private.

Bucks County

**MONROE BORDER
FAULT**

The Monroe Border Fault illustrates an episode of orogenic compression in which Precambrian rocks were thrust northward over lower Paleozoic deposits. Designated: 1980. Ownership: State, private.

Carbon County

**HICKORY RUN BOULDER
FIELD**

Located within Hickory Run State Park, the Hickory Run Boulder Field is a geologically significant field of unsorted, loosely packed boulders resulting from periglacial conditions. The large size of the boulders and the low (one percent) gradient of the field make it nationally unique. Designated: 1967. Ownership: State.



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Centre County

**BEAR MEADOWS
NATURAL AREA**

Bear Meadows Natural Area, located within Rothrock State Forest, includes a shallow peat bog surrounded by a buffer zone of typical Appalachian forest. The vast accumulation of pollen and spores in the peat has aided research and understanding of vegetation and climatic changes in the region. Designated: 1965. Ownership: State.

Chester County

**NOTTINGHAM PARK
SERPENTINE BARRENS**

Nottingham Park Serpentine Barrens support unique serpentine grasslands, pitch pine, and open savanna communities that are especially adapted to the shallow and highly metallic soils and are maintained by frequent fires and other disturbances. The site contains many rare and endemic species, including one of the northernmost occurrences of fame flower and one of the largest populations in the world of the serpentine aster. Designated: 2009. Ownership: County.

Clarion County

COOK FOREST

(extends into Forest County) Cook Forest, located within Cook Forest State Park, is a relict of the forest type that once covered northern Pennsylvania. The forest is predominately comprised of Eastern white pine along with Eastern hemlocks and mixed hardwood tree species. Designated: 1967. Ownership: State.

Cumberland County

**FLORENCE JONES
REINEMAN WILDLIFE
SANCTUARY**

(extends into Perry County) The Florence Jones Reineman Wildlife Sanctuary is a large, protected ecological community that illustrates the process of succession and restoration to natural conditions following disruptive change. The sanctuary also lies on the migration route of various hawk species. Designated: 1973. Ownership: Private.

Erie County

PRESQUE ISLE

Located within Presque Isle State Park, Presque Isle is a peninsula, or "flying spit", formed by sands carried by the currents of Lake Erie. It is an impressive illustration of this type of formation and is the largest in the Great Lakes region. Designated: 1967. Ownership: State.



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**TITUS AND WATTSBURG
BOGS**

Titus and Wattsburg Bogs is comprised of two different bogs representative of their ecosystem types; acid kettle hole bog and alkaline streamside fen. The bogs are noted for the rare and unusual species among their rich and divergent floras. Designated: 1977. Ownership: Private.

Fayette County

**FERNCLIFF PENINSULA
NATURAL AREA**

Located within Ohiopyle State Park, the Ferncliff Peninsula Natural Area is one of the best examples of a typical late-succession forest in the Allegheny Mountains. Designated: 1973. Ownership: State.

Forest County

COOK FOREST

(see Clarion County)

Lackawanna County

**NAY AUG PARK GORGE
AND WATERFALL**

Nay Aug Park Gorge and Waterfall illustrates active landscape-forming processes from erosion of differentially resistant rocks. The sedimentary rock units are important secondary features that demonstrate sedimentary processes, environments, and events in the history of the earth. Designated: 1989. Ownership: Municipal.

Lancaster County

**FERNCLIFF
WILDFLOWER AND
WILDLIFE PRESERVE**

The vegetation within the Ferncliff Wildflower and Wildlife Preserve is an excellent example of a mixed mesophytic forest that occupies the valleys and ravines of the oak-chestnut forest region. Designated: 1972. Ownership: Private.

Lawrence County

**McCONNELL'S MILL
STATE PARK**

McConnell's Mill State Park is an outstanding geological example of land and watershed formation indirectly resulting from glacial diversion of a stream. An important secondary characteristic at this site is the surrounding old growth forest. Designated: 1972. Ownership: State.

Luzerne County

**THE GLENS NATURAL
AREA**

(extends into Sullivan County) The Glens Natural Area, located within Ricketts Glen State Park, is a relict eastern deciduous forest containing examples of stream erosion and spectacular waterfalls. Designated: 1968. Ownership: State.



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Lycoming County

**REYNOLDS SPRING AND
ALGERINE SWAMP
BOGS** (see Tioga County)

McKean County

**TIONESTA SCENIC AND
RESEARCH NATURAL
AREAS** (extends into Warren County) The Tionesta Scenic and Research Natural Areas, located within the Allegheny National Forest, is the largest virgin forest in the hemlock-white pine/northern hardwood forest regions of North America. Designated: 1973. Ownership: Federal.

Monroe County

**TANNERSVILLE
CRANBERRY BOG** Tannersville Cranberry Bog is one of the best developed boreal bogs in Pennsylvania and perhaps the most southern black spruce-tamarack bog along the Eastern Seaboard. Designated: 1974. Ownership: Private.

Perry County

**BOX HUCKLEBERRY
SITE** Located within Tuscarora State Forest, the Box Huckleberry site is one of the few localities where the unusual box huckleberry plant is found. Box huckleberry is one of the oldest living organisms in the world. Designated: 1967. Ownership: State.

**FLORENCE JONES
REINEMAN WILDLIFE
SANCTUARY** (see Cumberland County)

**HEMLOCKS NATURAL
AREA** Hemlocks Natural Area, located within Tuscarora State Forest, contains a virgin forest that has more resemblance to the hemlock-northern hardwood forests than to the oak-chestnut forests in which it is located. Designated: 1972. Ownership: State.

**SUSQUEHANNA WATER
GAPS** The Susquehanna Water Gaps represents an exceptional viewshed of a geological process resulting in what is known as water gaps. Designated: 1968. Ownership: State.

Philadelphia County

**JOHN HEINZ NATIONAL
WILDLIFE REFUGE AT
TINICUM** The John Heinz National Wildlife Refuge at Tinicum contains a portion of the largest freshwater tidal wetland in Pennsylvania, including representative tidal marsh flora and fauna. Designated: 1965. Ownership: Federal.



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WISSAHICKON VALLEY

Located within Fairmont Park, the Wissahickon Valley is a symbol of natural area preservation within a vast urban complex. The site provides value in the study of natural landscape evolution from late Tertiary times to the present. Designated: 1964. Ownership: Municipal.

Snyder County

**SNYDER-
MIDDLESWARTH
NATURAL AREA**

The Snyder-Middleswarth Natural Area, located within Bald Eagle State Forest, is an outstanding example of a relict forest composed predominantly of hemlock, birch, and pine, with scattered oaks. Designated: 1967. Ownership: State.

Sullivan County

**THE GLENS NATURAL
AREA**

(see Luzerne County)

Tioga County

PINE CREEK GORGE

Pine Creek Gorge contains superlative scenery, geological and ecological value, and is one of the finest examples of a deep gorge in the eastern United States. Designated: 1968. Ownership: State, private.

**REYNOLDS SPRING AND
ALGERINE SWAMP
BOGS**

(extends into Lycoming County) Reynolds Spring and Algerine Swamp Bogs contains one of the finest and most representative high mountain bogs in the Allegheny Mountains section of Pennsylvania. The site is located primarily within Tioga State Forest. Designated: 1974. Ownership: State, private.

Warren County

**HEARTS CONTENT
SCENIC AREA**

Located within the Allegheny National Forest, the Hearts Content Scenic Area is a virgin forest site, consisting of white pine over 400 years old and hemlocks over 450 years old. Designated: 1973. Ownership: Federal.

TAMARACK SWAMP

Tamarack Swamp is an outstanding example of a large headwater swamp occurring in a glacially blocked stream valley. The two bogs, rich in wetland vegetation and including rare species, are the finest examples of acid kettle hole bogs in glaciated northwestern Pennsylvania. Designated: 1977. Ownership: State.

**TIONESTA SCENIC AND
RESEARCH NATURAL
AREAS**

(see McKean County)



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Wayne County

LAKE LACAWAC

Lake Lacawac is one of the southernmost lakes of glacial origin in the northeastern United States. The site contains a mixture of northern and southern forests and a portion of relict forest. Designated: 1968. Ownership: Private.

PUERTO RICO (5)

**BANO DE ORO NATURAL
AREA**

Containing virgin forest, Bano de Oro Natural Area is the only contiguous area in Puerto Rico that contains subtropical wet forest, rain forest, dwarf forest, and *Pterocarpus*. Located within the Caribbean National Forest, the site also supports many endemic plant and animal species. Designated: 1980. Ownership: Federal.

CABO ROJO

The scenic Cabo Rojo site is an excellent example of a tombolo (tied island) with two sand spits. The landform resembles a large letter Y with a bar across the top. Enclosed within the Y is a salt water lagoon. Located within the Cabo Rojo National Wildlife Refuge, the site includes mangroves, beaches, reddish cliffs, xeric vegetation and seabird nesting habitat. Designated: 1980. Ownership: Federal.

**MONA AND MONITA
ISLANDS**

The Mona and Monita Islands consists of two separate islands in the Caribbean, west of the main island of Puerto Rico. The sea caves on these islands are some of the largest, most extensive and most unusual in the world. The islands harbor a significant endemic biota and provide important seabird rookery areas. Designated: 1975. Ownership: Federal, Commonwealth of Puerto Rico.

PUERTO MOSQUITO

Puerto Mosquito is a deep inlet in the cliffed southern coast of Vieques Island. The most important element of the fauna that gives the bay uniqueness is the high permanent concentrations of dinoflagellates, in particular the luminescent *Pyrodinium bahamense*. The bay has the highest concentrations of bioluminescent dinoflagellates of the three luminescent bays in Puerto Rico and is considered the best example of a bioluminescent bay in the United States. Designated: 1980. Ownership: Federal, Commonwealth of Puerto Rico, municipal.



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RIO ABAJO FOREST

The Rio Abajo Forest is an excellent example of karst topography with numerous sinkholes and well-developed tower karst. Located within the Rio Abajo Forest Reserve, it is the only place in Puerto Rico where the great Eocene-Oligocene unconformity can be clearly seen. Designated: 1980. Ownership: Commonwealth of Puerto Rico.

RHODE ISLAND (1)

Washington County

ELL POND

The kettle hole pond and floating, sphagnum-ericaceous bog mat found at Ell Pond are bounded by red maple-Atlantic white cedar swamp and steep, glacially-abraded, granitic monadnocks. The presence of both hydric and xeric plant communities provides opportunity for ecological research and education. Designated: 1974. Ownership: State, private.

SOUTH CAROLINA (6)

Beaufort County

ST. PHILLIPS ISLAND

Approximately four miles in length and two miles wide, St. Phillips Island is unique among the barrier islands of Georgia, South Carolina and northern Florida, because it exists in a nearly undisturbed state with minimal development and past consumptive use. The site is also unique to the entire Atlantic Coast for its pronounced multiple vegetated beach dune ridges. Designated: 1986. Ownership: Private.

Berkeley County

**FRANCIS BEIDLER
FOREST**

(extends into Dorchester County) The Francis Beidler Forest harbors one of the last large virgin stands of bald cypress-tupelo gum swamp in the United States. A significant number of rare, unusual or range extensions for plants and animals occurs in this unique natural area. Its five major community types provide habitat for an extremely rich diversity of species. Designated: 1979. Ownership: Private.



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Dorchester County

**FRANCIS BEIDLER
FOREST**

(see Berkeley County)

Lancaster County

**FLAT CREEK NATURAL
AREA AND 40 ACRE
ROCK**

Located within the Forty Acre Rock Heritage Preserve, Flat Creek Natural Area and 40 Acre Rock contains the largest remaining undisturbed granitic flat-rock outcrop in the Carolina Piedmont. The flat-rock vegetation includes 13 rare or endemic species and 20 other species characteristic of these outcrops. Chestnut, oak, mockernut, hickory, sweetgum and pignut hickory trees abound on the southeast facing slopes. Flat Creek Dike is one of the thickest in eastern North America (1,123 feet). Taken together, these geological and biological features in such close proximity represent an unusual outdoor laboratory. Designated: 1984. Ownership: State.

McCormick County

**JOHN DE LA HOWE
FOREST**

The John De La Howe Forest is an old-growth stand of oak-pine forest protected against fire and timbering since 1797. It is one of the best remaining examples of this forest type in the Piedmont. Designated: 1976. Ownership: State.

**STEVENS CREEK
NATURAL AREA**

Located within the Steven's Creek Heritage Preserve, Stevens Creek Natural Area is a Pleistocene relict ecosystem that harbors a flora considered extraordinary for its combination of plants one would expect to find either in mountain coves or in more southern localities. The old growth forest dominating the area is also unusual in the Piedmont biophysiographic province, a region with a long history of human development. Designated: 1979. Ownership: State.

Richland County

**CONGAREE RIVER
SWAMP**

The Congaree River Swamp is the most extensive, mature cypress-gum swamp and bottomland hardwood forest complex in South Carolina. Located within Congaree National Park, the site provides a sanctuary for wildlife. Designated: 1974. Ownership: Federal.



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SOUTH DAKOTA (12)

Brule County

RED LAKE

One of the largest remaining natural and unmanipulated prairie pothole lakes, Red Lake is a valuable waterfowl breeding and resting area. Designated: 1975. Ownership: State.

Charles Mix County

BIJOU HILLS

Bijou Hills is an excellent example of an erosional remnant of soft clays and shales capped by a channel sandstone and quartzite. Designated: 1976. Ownership: Private.

Custer County

CATHEDRAL SPIRES AND LIMBER PINE NATURAL AREA

Cathedral Spires and Limber Pine Natural Area, located within Custer State Park, is an excellent, rare example of joint-controlled weathering of granite. The site also supports a disjunct relict stand of limber pine. Designated: 1976. Ownership: State.

Fall River County

MAMMOTH SITE OF HOT SPRINGS

Mammoth Site of Hot Springs contains one of the largest concentrations of mammoth remains in the United States. The site also contains bones of other vertebrates including peccary, bear, coyote, camel, and rodents. Designated: 1980. Ownership: Private.

Grant County

ANCIENT RIVER WARREN CHANNEL

(See Big Stone County, Minnesota)

Gregory County

FORT RANDALL EAGLE ROOST

Located on the Missouri River, the Fort Randall Eagle Roost is a prime winter roosting area for bald and golden eagles. Designated: 1967. Ownership: Federal, private.

Harding County

THE CASTLES

Steep-walled, flat-topped buttes standing 200 to 400 feet above the surrounding prairie, The Castles contains exposed rock of Upper Cretaceous, Paleocene, Oligocene, and Miocene Ages. Cretaceous and Tertiary beds contain a variety of flora and fauna fossils. Designated: 1976. Ownership: Federal.



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Jackson County

SNAKE BUTTE

Snake Butte illustrates one of two types of sand calcite deposits in the world. Designated: 1967. Ownership: Indian Trust (Oglala Sioux Tribe).

Kingsbury County

LAKE THOMPSON

The largest natural lake bed in South Dakota, Lake Thompson contains a large undisturbed and unmanipulated marsh. The site is an outstanding waterfowl breeding and resting area. Designated: 1975. Ownership: State.

Lake County

BUFFALO SLOUGH

Buffalo Slough provides excellent examples of a prairie pothole (a product of glacial activity) with native emergent vegetation, and a native bluestem prairie. The site is used extensively by many species of waterfowl and small mammals. Designated: 1980. Ownership: State.

Marshall County

SICA HOLLOW

(extends into Roberts County) Sica Hollow displays many facets of natural history, including the glacial story of the River Warren, pothole lakes on the upland of Coteau, grasslands and prairie, and ravines where eastern deciduous forests grow. The site includes the eastern face of the escarpment of the Coteau des Prairies. Designated: 1967. Ownership: State.

Meade County

BEAR BUTTE

A cone-shaped mass of igneous rock standing alone 1,300 feet above the surrounding plains, Bear Butte illustrates the geological processes of igneous intrusion, folding and faulting, and exposure by differential erosion. Designated: 1965. Ownership: State.

Roberts County

ANCIENT RIVER WARREN CHANNEL (see Big Stone County, Minnesota)



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**COTTONWOOD SLOUGH-
DRY RUN**

Cottonwood Slough-Dry Run is a glaciated finger outlet of the world's largest Pleistocene glacial lake. The site contains a completely undisturbed wetland complex including potholes, streams, shallow open water, lakes, and marsh. Designated: 1975. Ownership: State, private.

SICA HOLLOW

(see Marshall County)

TENNESSEE (13)

Coffee County

**ARNOLD ENGINEERING
DEVELOPMENT
CENTER NATURAL
AREAS**

The Arnold Engineering Development Center Natural Areas consists of two non-contiguous tracts containing an extremely rare virgin swamp forest and a pristine example of an open marsh. Both tracts contain disjunct plant species whose distribution is normally confined to the Atlantic Coastal Plain biophysiographic province. Designated: 1974. Ownership: Federal.

MAY PRAIRIE

May Prairie is the largest and best relict prairie remaining in Tennessee. Such relict communities are critical to understanding the complex natural history of the eastern deciduous forest biome. Many regionally rare species occur here. Designated: 1974. Ownership: State.

Cumberland County

**GRASSY COVE KARST
AREA**

The Grassy Cove Karst Area is one of the nation's best illustrations of karst development and underground drainage, containing several smaller caves within the area. Designated: 1973. Ownership: Private.

Franklin County

DICK COVE

Dick Cove contains a near virgin forest and is one of the few such areas in Tennessee. Since the forest exists at the eastern boundary of the western mesophytic forest region, it is important for the study of forest relationships between the mixed mesophytic and western mesophytic regions. Designated: 1973. Ownership: Private.



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Grundy County

CONLEY HOLE

Conley Hole is one of the most spectacular and outstanding examples of a pit cave in the United States. The cave is dangerous, and entrance is limited to adequately equipped, experienced speleologists. Designated: 1973. Ownership: Private.

SAVAGE GULF

Located within Savage Gulf State Natural Area, Savage Gulf contains the best and largest virgin forest left in the mixed mesophytic region of the eastern deciduous forest. Designated: 1971. Ownership: State.

Hardeman County

McANULTY'S WOODS

McAnulty's Woods is the only known example in western Tennessee of the upland forests of the Mississippi Embayment section of the western mesophytic forest region. Designated: 1973. Ownership: Private.

Lake County

REELFOOT LAKE

(extends into Obion County) Reelfoot Lake is an area of cypress swamps, sawgrass jungles, water lily glades and scattered bodies of open water. This mosaic of habitats was formed in the winter of 1811-12 as a result of shocks known as the New Madrid earthquake, the most severe of any recorded in the country. Located within the Reelfoot National Wildlife Refuge and Reelfoot Lake State Natural Area, the site contains domes, sunken lands, fissures, sinks, sand blows and large landslides. Designated: 1966. Ownership: Federal, State.

Monroe County

**LOST SEA (CRAIGHEAD
CAVERNS)**

The Lost Sea cavern system includes the largest known underground lake in the country, an abundance of crystal clusters called anthodites, stalactites, stalagmites, and a waterfall. The site once yielded bones and footprints of a giant Pleistocene jaguar. Designated: 1974. Ownership: Private.

Obion County

REELFOOT LAKE

(see Lake County)



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Rhea County

PINEY FALLS

Piney Falls, located within Piney Falls State Natural Area, contains a rare virgin mixed mesophytic forest stand representative of the primeval eastern deciduous forest biome. Designated: 1974. Ownership: State.

Van Buren County

BIG BONE CAVE

Big Bone Cave is significant primarily because of the discoveries of giant ground sloth bones in the cave passages. Scarcely less significant are discoveries of the bones of an herbivore about the size of a bear, and other animals. Located within Big Bone Cave State Natural Area, artifacts of the War of 1812 and Civil War saltpeter mining operations are also remarkably well preserved in the cave. Designated: 1973. Ownership: State.

Warren County

**CUMBERLAND CAVERN
(HIGGINBOTHAM AND
HENSHAW CAVES)**

Cumberland Cavern, known to be at least 27 miles in extent, is one of the longer cave systems in the country. Two interconnecting caves contain stalagmites, stalactites, helictites, flowstone, cave pearls, botryoidal coral, gypsum flowers, needles, and pure white gypsum snow, as well as a wide variety of cave life. Designated: 1973. Ownership: Private.

Wilson County

**CEDAR GLADES
NATURAL AREA**

Cedar Glades Natural Area, located within Cedars of Lebanon State Forest, represents the largest and best remaining example of the cedar glade community. Thousands of acres of this plant community type, once common in central Tennessee, have been destroyed, endangering the endemic flora of this community type. Designated: 1973. Ownership: State.

TEXAS (20)

Anderson County

CATFISH CREEK

Catfish Creek is one of the few remaining undisturbed riparian habitats in the western Gulf Coastal Plain biophysiographic province. Located primarily within the Gus Engeling Wildlife Management Area, the site supports several wildlife species that are rare in the state. Designated: 1983. Ownership: State, private.



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Armstrong County

**PALO DURO CANYON
STATE PARK**

(extends into Randall County) Palo Duro Canyon is a canyon cut by waters of a fork of the Red River. This spectacular canyon contains cross-sectional views of sedimentary rocks representing four geological periods and is an excellent example of a landform that has been created by running water. Triassic and Pliocene vertebrate fossils have been found in the area. Designated: 1976. Ownership: State.

Bailey County

**MULESHOE NATIONAL
WILDLIFE REFUGE**

Muleshoe National Wildlife Refuge contains shallow, flat-bottomed depressions, called saline lake beds, and shortgrass grama grasslands characteristic of the high plains. The lake beds attract enormous seasonal concentrations of waterfowl, including the largest concentration of wintering cranes in the United States. Designated: 1980. Ownership: Federal.

Bandera County

**LOST MAPLES STATE
NATURAL AREA**

(extends into Real County) Lost Maples State Natural Area is an excellent illustration of Edwards Plateau flora and fauna, including a relict population of bigtooth maple. It contains the largest known nesting population of the endangered golden-cheeked warbler. Designated: 1980. Ownership: State.

Blanco County

**LITTLE BLANCO RIVER
BLUFF**

Little Blanco River Bluff is an unspoiled example of the natural assemblage of flora characterizing the limestone bluff communities of the Edwards Plateau. The site supports diverse flora, including an estimated 250 species in 25 families. Designated: 1982. Ownership: Private.

Burnet County

LONGHORN CAVERN

Located within Longhorn Cavern State Park, Longhorn Cavern was formed in limestone of Ordovician Age at least 450 million years old. Unsurpassed as a natural exhibit of features such as calcite crystals, potholes, solution domes, channels and pits, the cave is an outstanding example of features formed during the phreatic (groundwater) phase of development. Designated: 1971. Ownership: State.



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Cameron County

BAYSIDE RESACA AREA

Bayside Resaca Area, located within Laguna Atascosa National Wildlife Refuge, contains an excellent example of a resaca, (meandering channel) that supports a variety of vegetation, including several types of coastal salt marsh communities. The site provides habitat for a number of rare and unusual bird species that enter the United States only at the southern tip of Texas. Designated: 1980. Ownership: Federal.

Colorado County

**ATTWATER PRAIRIE
CHICKEN PRESERVE**

Attwater Prairie Chicken Preserve, located within Attwater Prairie Chicken National Wildlife Refuge, contains the only significant segment of gulf coastal prairie. The area provides habitat for the endangered Attwater's prairie chicken. Designated: 1968. Ownership: Federal.

Comal County

**NATURAL BRIDGE
CAVERNS**

Natural Bridge Caverns is among the top two or three noteworthy caves of the Balcones Fault and Edwards Plateau area of Texas. A multilevel cavern system, it contains beautiful and unusual "fried egg" speleothems and intricate helictites. Designated: 1971. Ownership: Private.

Ector County

**ODESSA METEOR
CRATER**

Odessa Meteor Crater is one of only two known meteor sites in the country. It contains two meteorite impact craters, with the larger of the two measuring 550 feet in diameter. Meteorites of nickel-iron composition have been found in the craters and within a two square mile north and northwest of the area. Designated: 1965. Ownership: County.

Edwards County

DEVIL'S SINK HOLE

Devil's Sink Hole is a deep, bell-shaped, collapsed limestone sink with cave passages extending below the regional water table. Located within Devil's Sinkhole State Natural Area, it is the best example of a collapsed sink along the Balcones Fault and within the Edwards Plateau region of Texas. The sinkhole provides habitat for a colony of bats estimated to number in the several millions. Designated: 1972. Ownership: State.



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Gillespie County

ENCHANTED ROCK

(extends into Llano County) Enchanted Rock, located within Enchanted Rock State Natural Area, is one of the largest rock mountains in the United States. It is a classic illustration of a batholith and of the exfoliation process. The coarse-grained pink granite is massive and uniform in composition and texture, and is some of the oldest igneous rock known in North America. Designated: 1971. Ownership: State.

Hays County

EZELL'S CAVE

Ezell's Cave is biologically significant because it houses at least 36 species of cave fauna, including six endemic aquatic species and one major order of small crustaceans formerly thought to have been restricted to the Mediterranean area. Designated: 1971. Ownership: Private.

Hidalgo County

**SANTA ANA NATIONAL
WILDLIFE REFUGE**

Santa Ana National Wildlife Refuge is a living museum of the lowland forested area of the Lower Rio Grande Valley. The refuge's jungle-like vegetation provides habitat for over 400 species of birds and about one half of all butterfly species found in the United States. Designated: 1966. Ownership: Federal.

Kendall County

CAVE WITHOUT A NAME

Cave Without A Name contains rare and nationally outstanding examples of speleothems, one of the more important faunas in the Hill Country area, including a species of state-wide significance, and regionally important paleontological deposits that are potentially of state or national importance. Designated: 2009. Ownership: Private.

Llano County

ENCHANTED ROCK

(see Gillespie County)

Montague County

GREENWOOD CANYON

Greenwood Canyon, located along a tributary of the Braden Branch, is a rich source of early Cretaceous mammalian fossils. The site has produced specimens of several new taxa. Designated: 1975. Ownership: Private.



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Randall County

**HIGH PLAINS NATURAL
AREA**

High Plains Natural Area, located within Buffalo Lake National Wildlife Refuge, is one of the best developed, least disturbed natural shortgrass climax communities remaining in the Great Plains biophysiographic province. Designated: 1980. Ownership: Federal.

**PALO DURO CANYON
STATE PARK**

(see Armstrong County)

Real County

**LOST MAPLES STATE
NATURAL AREA**

(see Bandera County)

Somervell County

DINOSAUR VALLEY

Dinosaur Valley, located within Dinosaur Valley State Park, contains the only known source of distinct and full-grown sauropod footprints. The trackways are among the first clearly defined for sauropods in North America. These tracks provided evidence relating to locomotion and foot structure for these large dinosaurs. Designated: 1968. Ownership: State.

Sutton County

CAVERNS OF SONORA

Caverns of Sonora contains unusual formations, such as bladed helictites and coralloid growths, and is of exceptional beauty. Designated: 1965. Ownership: Private.

Tarrant County

**FORT WORTH NATURE
CENTER AND REFUGE**

Fort Worth Nature Center and Refuge contains outstanding examples of the unique oak-hickory forest associations called cross timbers. The site also has good examples of prairie, riparian forests, marshes and limestone ledges. Designated: 1980. Ownership: Municipal.



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UTAH (4)

Emery County

CLEVELAND-LLOYD DINOSAUR QUARRY

The Cleveland-Lloyd Dinosaur Quarry has provided more than 10,000 fossil bones from at least seven different genera of the Jurassic Period, representing more than 60 individual animals. The unique predator trap is unduplicated in any other classic dinosaur beds known anywhere in the world. Designated: 1965. Ownership: Federal.

Garfield County

LITTLE ROCKIES

The Little Rockies exhibits excellent exposures of intrusive plugs or stocks with associated sills, dikes and laccoliths, all of which were first studied, described and named there. The mountains have figured prominently in development of the concept of forceful igneous emplacement in relatively flat-lying sediments. It represents the classic site of such formations to geologists around the world. Designated: 1975. Ownership: Federal, State.

Salt Lake County

NEFFS CANYON CAVE

Neffs Canyon Cave, located within the Wasatch National Forest, is an extremely dangerous cave with no significant horizontal passages. Most passages dip steeply at a 45-60 degree gradient. The site is an excellent example of a cave formed by the capture of a surface stream. Designated: 1977. Ownership: Federal.

Washington County

JOSHUA TREE NATURAL AREA

Joshua Tree Natural Area is the only Joshua tree forest in Utah and the northernmost stand of tree yuccas in the country. The site clearly illustrates the flora and fauna of the Joshua tree association and includes a number of plants and animals that reach the northern edge of their range. Designated: 1966. Ownership: Federal.



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VERMONT (12)

Addison County

BATTELL BIOLOGICAL PRESERVE

The virgin hemlock-northern hardwood stand within Battell Biological Preserve illustrates a pristine, climax, New England forest. Hemlocks reach a diameter of 30 to 40 inches and heights over 100 feet. Located on a steep, rocky mountain slope, the undisturbed site is used primarily for educational purposes. Designated: 1976. Ownership: Private.

CORNWALL SWAMP

Cornwall Swamp, a forested wetland, is considered to be the largest, unbroken red maple swamp in Vermont. The swamp contains abundant and diverse shrub and fern growth and at its center, Northern white cedar replaces red maple as dominant. Designated: 1973. Ownership: State, municipal, private.

LITTLE OTTER CREEK MARSH

Little Otter Creek Marsh, a large, unspoiled, fresh water wetland, supports a rich variety of marsh vegetation and numerous breeding and migrating bird species. Four streams flow through the shallow marsh, considered the best large expanse of marsh land in Vermont and possibly New England. Designated: 1973. Ownership: State, private.

Bennington County

FISHER-SCOTT MEMORIAL PINES

An old-growth stand of white pine, Fisher-Scott Memorial Pines illustrates the successional white-pine subclimax forest typical to New England. The even-aged trees reach heights of 120 feet and diameters of 40 inches and are the largest pines in Vermont. Designated: 1976. Ownership: State.

Chittenden County

CAMEL'S HUMP

(see Washington County)

MOUNT MANSFIELD NATURAL AREA

(extends into Lamoille County) On the upper slopes and summit ridge of Mount Mansfield Natural Area occur virgin, red spruce-balsam fir forest, extensive alpine tundra, and rare arctic flora not found elsewhere in the northeast. The site includes "The Chin," the highest peak in Vermont and the 600-foot cliffs of scenic and historic "Smuggler's Notch." Designated: 1980. Ownership: State.



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Franklin County

FRANKLIN BOG

Franklin Bog is a cold, northern sphagnum-heath bog containing a small, dark-water pond, surrounded by an enormous floating mat that is dominated by sphagnum moss and low-growing leatherleaf. Black spruce and tamarack dominate the forested perimeter. Designated: 1973. Ownership: Private.

Grand Isle County

CHAZY FOSSIL REEF

(extends into Clinton County, New York) Chazy Fossil Reef represents the oldest known occurrence of a biologically diverse fossil reef in the world, the earliest appearance of fossil coral in a reef environment, and the first documented example of the ecological principle of faunal succession. Designated: 2009. Ownership: Federal, State, private.

Lamoille County

MOLLY BOG

Molly Bog illustrates a classic, early successional, cold northern bog. The site contains a small, dark-water pond, floating mat of sphagnum moss and heath plants, and black spruce-tamarack forest. Designated: 1973. Ownership: State, private.

**MOUNT MANSFIELD
NATURAL AREA**

(see Chittenden County)

Orleans County

BARTON RIVER MARSH

A large, shallow, freshwater marsh, Barton River Marsh is considered one of the best in New England. The wetland and winding Barton River drain northward into Lake Memphremagog and provide prime habitat for waterfowl and marsh birds. Designated: 1973. Ownership: State.

**LAKE WILLOUGHBY
NATURAL AREA**

Lake Willoughby, a deep, cold-water lake within Lake Willoughby Natural Area lies in a u-shaped trough cut into granite by glacial scouring. Mountains and 1,500-foot cliffs rise abruptly from the lake's east and west shores. It is the deepest lake in Vermont and one of the most significant and scenic examples of glacial erosion in the northeast. Designated: 1967. Ownership: State.



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Rutland County

GIFFORD WOODS

Gifford Woods is an old-growth, northern hardwood, climax forest characterized by the great height and large diameters of its canopy layer, representation of all-age and size trees, and a rich herbaceous understory. Trees reach 40 inches in diameter, over 100 feet in height and a portion of the stand is considered near virgin. Designated: 1980. Ownership: State.

Washington County

CAMEL'S HUMP

The mountain and metamorphic rock of Camel's Hump illustrate the complex, anticlinal deformation that formed the Green Mountains, and support the second largest extent of alpine-tundra in Vermont. Altitude-related zonation of biota is demonstrated by the transition from treeless ridge, to alpine-heath vegetation, to boreal fir, red spruce-birch and hardwood forests. Designated: 1968. Ownership: State.

VIRGIN ISLANDS (7)

St. Croix

GREEN CAY

Green Cay is the nesting ground for the American oyster catcher, brown pelican and other shore birds. Located within Green Cay National Wildlife Refuge, the site is also one of only two islands where the endangered St. Croix ground lizard, now extinct on St. Croix, still exists. Designated: 1980. Ownership: Federal.

SANDY POINT

Sandy Point, located within Sandy Point National Wildlife Refuge, is the only place in the United States or American Territories which is regularly used for nesting by the endangered leatherback sea turtle. In addition, unique sand spits enclose a salt pond at this site. Designated: 1980. Ownership: Federal.

SALT RIVER BAY

The submarine canyon at the mouth of Salt River Bay provides habitat for deep water corals, sponges and fishes. The site is primarily located within the Salt River Bay National Historical Park and Ecological Preserve and also includes Sugar Bay, the shores of which support the best remaining stands of mangrove in the Virgin Islands. These undisturbed stands illustrate the zonation of red, black, and white mangrove and support a multitude of bird species. Overall, the Salt River Estuary is an excellent example of mixed carbonate and clastic sedimentation processes. Designated: 1980. Ownership: Federal, private.



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VAGTHUS POINT

Vagthus Point is the best-known locality for Upper Cretaceous fossils in the Virgin Islands. In addition, it is the only known site in the world in which *Barrettia* and *Titanosarcophages* are found together. Designated: 1980. Ownership: Private.

St. John

LAGOON POINT

Lagoon Point is an excellent example of a Caribbean fringing reef and is unique, because unlike Buck Island or Tague Bay, this site represents a protected reef. The site also includes a mangrove area and a salt pond. Designated: 1980. Ownership: Virgin Islands Government, Private.

St. Thomas

COKI POINT CLIFFS

The Coki Point Cliffs are one of the rare localities on St. Thomas Island where fossils are found. There are very few locations where fossiliferous Lower Cretaceous rocks are exposed and this, the only place in the Virgin Islands, is quite rich in *Caprinuloidea rudistids*, a marine bivalve, as well as other fossils. Designated: 1980. Ownership: Private.

WEST END CAYS

The West End Cays are unique in the Virgin Islands region because of the nesting sea birds. Only in the Cordillera, Desecheo, and Mona and Monito Islands in Puerto Rico are there similar nesting sites free of interference from rodents and humans. These isolated islands are one of the few nesting sites for species such as the blue-faced booby, the Bahama duck and the endangered brown pelican. Designated: 1980. Ownership: Virgin Islands Government.

VIRGINIA (10)

Accomack County

**VIRGINIA COAST
RESERVE**

(extends into Northampton County) The Virginia Coast Reserve is an extensive, relatively undisturbed barrier island-lagoon complex serving as a valuable refuge for migratory shorebirds, waterfowl and colonial nesting birds. Designated: 1979. Ownership: State, private.

Augusta County

GRAND CAVERNS

Grand Caverns contains unique shield formations as well as draperies, flowstone, stalactites and stalagmites. Designated: 1973. Ownership: Regional Park Authority.



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Bath County

**BUTLER CAVE-
BREATHING CAVE**

Butler Cave-Breathing Cave includes two major cave systems that contain a 40-foot waterfall, a natural bridge, unusually fine "floating" crystalline formations, and an underground lake. Designated: 1973. Ownership: Private.

King George County

**CALEDON NATURAL
AREA**

Caledon Natural Area is one of the best examples of oak-tulip poplar-dominated virgin upland forest in the country. Designated: 1974. Ownership: State.

Northampton County

**VIRGINIA COAST
RESERVE**

(see Accomack County)

Orange County

MONTPELIER FOREST

Montpelier Forest, located within President James Madison's Montpelier, represents the best example of mature forest dominated primarily by tulip poplar and spicebush in the Piedmont biophysiographic province. This very old, mature forest is composed of mainly oak, hickory, and poplar. Designated: 1987. Ownership: Private.

Page County

LURAY CAVERNS

Luray Caverns, discovered in 1878, is ornately decorated with cascades, columns, stalactites, stalagmites and pools. Designated: 1973. Ownership: Private.

Rockbridge County

RICH HOLE

Rich Hole, located within the George Washington National Forest, is an outstanding example of a "cove" hardwood forest. This well-protected watershed contains a virgin forest with remarkably large oak and hickory trees. Designated: 1974. Ownership: Federal, private.



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Suffolk City

GREAT DISMAL SWAMP

The Great Dismal Swamp site is a remnant of the original Great Dismal Swamp containing geological and ecological elements unique in the nation. The variety of flora and fauna makes it a superb outdoor laboratory for the study of ecological processes. Designated: 1972. Ownership: Federal.

Sussex County

**CHARLES C. STEIRLY
NATURAL AREA**

The Charles C. Steirly Natural Area, is a small essentially virgin stand of climax bald cypress-water tupelo swamp forest. Designated: 1974. Ownership: State.

Virginia Beach

**SEASHORE NATURAL
AREA**

Seashore Natural Area, located within First Landing State Park, contains parallel dunes that are densely wooded with two distinct forest types of semitropical character. The site is also a sanctuary for abundant wildlife. Designated: 1965. Ownership: State.

WASHINGTON (17)

Adams County

**DRUMHELLER
CHANNELS**

(extends into Grant County) Drumheller Channels are the most spectacular example in the Columbia Plateau biophysiographic province of "butte-and-basin" scabland; an erosional landscape characterized by hundreds of isolated, steep-sided hills surrounded by a braided network of underfit channels. It illustrates the dramatic modification of the Columbia Plateau volcanic terrain by late Pleistocene catastrophic glacial outburst floods. These floods occurred at a scale remaining unparalleled on earth, either in the geologic record or in historical account. Designated: 1986. Ownership: Federal, State, private.

Asotin County

**GRANDE RONDE FEEDER
DIKES**

The Grande Ronde Feeder Dikes is the best example of basalt dikes, the congealed feeder sources of the Columbia River basalt plateau. The site illustrates how these flows originated by eruption along multiple fissures. Designated: 1980. Ownership: Private.



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**GRANDE RONDE
GOOSENECKS**

Grande Ronde Goosenecks, a 1,500-foot deep canyon that follows a tortuous path along meanders, illustrates regional uplift and forced entrenchment of a stream. Designated: 1980. Ownership: Federal, State, private.

Benton County

WALLULA GAP

(extends into Walla Walla County) Wallula Gap is the largest, most spectacular, and most significant of the several large water gaps through basalt anticlines in the Columbia River basin. Designated: 1980. Ownership: Federal, municipal, private.

Clallam County

POINT OF ARCHES

Point of Arches, located within a relatively isolated part of Olympic National Park, illustrates a pristine spectrum of environmental conditions from rocky tidelands to climax upland vegetation. The site is also an outstanding exhibit of sea action in sculpturing a rocky shoreline. Designated: 1971. Ownership: Federal, State.

Douglas County

**BOULDER PARK AND
McNEIL CANYON
HAYSTACK ROCKS**

Boulder Park and McNeil Canyon Haystack Rocks is composed of two adjacent sites that together contain the greatest concentration and most illustrative examples of glacial erratics (large glacier-transported boulders) in the Columbia Plateau biophysiographic province. As the visible products of dynamic glacier processes, they provide important evidence for the direction of movement and location of glacier ice on the Columbia Plateau during the last glaciation. Due to the lack of vegetation in this area, these sites are also probably the most illustrative examples of glacial erratics in the United States. Designated: 1986. Ownership: State, private.

**SIMS CORNER ESKER
AND KAME COMPLEX**

Sims Corner Esker and Kame Complex contains the best examples in the Columbia Plateau biophysiographic province of landforms resulting from stagnation and rapid retreat of the ice sheet during the last glaciation. The ice stagnation features at the site, including eskers and kame deposits, are highly visible and well-preserved owing to the arid climate and lack of vegetation, and so are perhaps the most illustrative of such features in the United States. Designated: 1986. Ownership: Federal, State, private.



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**THE GREAT GRAVEL
BAR OF MOSES
COULEE**

The Great Gravel Bar of Moses Coulee contains the largest and best example of a pendent river bar formed by catastrophic glacial outburst floods that swept across the Columbia Plateau prior to the last Pleistocene glaciation. The impressive scale of this feature, deposited in Moses Coulee, provides dramatic evidence for the violent flood waters that formed and once filled the coulee. As a constructional landform, it thus serves as a complement to Drumheller Channels, which was eroded during the same flood events further downstream. Designated: 1986. Ownership: State, private.

**WITHROW MORaine AND
JAMESON LAKE
DRUMLIN FIELD**

Withrow Moraine and Jameson Lake Drumlin Field contains the best examples of drumlins and the most illustrative segment of the only Pleistocene terminal moraine in the Columbia Plateau biophysiographic province. Both features together provide readily observable evidence of the large-scale depositional and erosional processes that accompany continental glaciation. They are also the only such glacial features in the world to show a clear geological relationship to catastrophic flooding, which occurred prior to the last advance of the ice sheet. Designated: 1986. Ownership: Private.

Grant County

**DRUMHELLER
CHANNELS**

(see Adams County)

GRAND COULEE

Grand Coulee is an illustration of a series of geological events including outpourings of lava, advance and recession of glacial ice, retreat of waterfalls, and the cutting of the Columbia River channel. Designated: 1965. Ownership: Federal, State, private.

Kittitas County

**GINKGO PETRIFIED
FOREST**

The Ginkgo Petrified Forest contains thousands of logs petrified in lava flows containing an unusually large number of tree species. Logs of the ginkgo tree, rarely found as fossil wood, are located here. Designated: 1965. Ownership: State.

**UMTANUM RIDGE WATER
GAP**

Umtanum Ridge Water Gap is one of the anticlinal ridges in the Yakima Folded Ridges subsection of the Columbia Basin. The site illustrates the geological processes of tectonic folding and antecedent stream cutting. Designated: 1980. Ownership: Federal, State, private.



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Okanogan County

DAVIS CANYON

Davis Canyon contains one of the largest and least disturbed examples of antelope bitterbrush-Idaho fescue shrub steppe remaining in the Columbia Plateau biophysiographic province. Designated: 1986. Ownership: State, private.

Pierce County

NISQUALLY DELTA

(extends into Thurston County) The Nisqually Delta is an unusually fine example of an estuarine ecosystem. It is the only natural resting area for migratory waterfowl in the southern Puget Sound region. Designated: 1971. Ownership: Federal, State, private.

Thurston County

MIMA MOUNDS

The Mima Mounds area is a prairie containing unusual soil pimples of black silt-gravel. The mounds range in height from barely perceptible to a maximum of seven feet. Designated: 1966. Ownership: State.

NISQUALLY DELTA

(see Pierce County)

Walla Walla County

WALLULA GAP

(see Benton County)

Whitman County

ROSE CREEK PRESERVE

Rose Creek Preserve is considered to be the best remaining example of the aspen phase of the hawthorne-cow parsnip habitat type in the Columbia Plateau. The site is highly valuable for scientific research. Designated: 1984. Ownership: Private.

**STEPTOE AND KAMIAK
BUTTES**

Steptoe and Kamiak Buttes are isolated mountain peaks of older rock surrounded by basalt, rising above the surrounding lava plateau. These peaks are outliers of the Couer d' Alene Mountains of Idaho. Designated: 1965. Ownership: State, county, private.



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WEST VIRGINIA (13)

Greenbrier County

ORGAN CAVE SYSTEM

The Organ Cave System, which contains seven caves including Organ Cave, is the largest cave system in West Virginia. The site is also noted for its saltpeter troughs and vats. Designated: 1973. Ownership: Private.

LOST WORLD CAVERNS

Lost World Caverns features terraced pedestal-like stalagmites, flowstone, curtains, rimstone, domepits, and waterfalls. Designated: 1973. Ownership: Private.

Monroe County

GREENVILLE SALTPETER CAVE

Greenville Saltpeter Cave is the largest of the saltpeter caves in West Virginia. The cave contains rimstone pools and saltpeter deposits. Designated: 1973. Ownership: Private.

Pendleton County

GERMANY VALLEY KARST AREA

The Germany Valley Karst Area is one of the largest cove or intermountain karst areas in the country. The site is unique because all the ground water recharge and solution activities are linked with precipitation within the cove. Designated: 1973. Ownership: Federal, private.

SINNETT-THORN MOUNTAIN CAVE SYSTEM

The Sinnett-Thorn Mountain Cave System includes rooms at various levels connected by crawlways and vertical shafts, and contains waterfalls and deep pits. Designated: 1973. Ownership: Private.

Pocahontas County

CRANBERRY GLADES BOTANTICAL AREA

Cranberry Glades Botanical Area, located within the Monongahela National Forest, is the largest and best example of "cranberry glades" in West Virginia. The natural cold air drainage and moist substrate provide an ideal setting for a northern sphagnum bog. The site contains three major vegetation types: bog forest, shrub thickets, and open glade. Designated: 1974. Ownership: Federal.

GAUDINEER SCENIC AREA

(extends into Randolph County) Gaudineer Scenic Area, located within the Monongahela National Forest, represents the best remaining virgin red spruce forest in West Virginia. Designated: 1974. Ownership: Federal.



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Preston County

CATHEDRAL PARK

Cathedral Park contains a remnant virgin hemlock forest and dense thickets of rhododendron on a cool, poorly drained substrate. Designated: 1965. Ownership: State.

**CRANESVILLE SWAMP
NATURE SANCTUARY**

(see Garrett County, Maryland)

Randolph County

BLISTER RUN SWAMP

Blister Run Swamp, located within the Monongahela National Forest, represents a good, high-altitude balsam fir swamp at probably its southernmost extension. The swamp provides habitat for several uncommon and rare plants. Designated: 1974. Ownership: Federal.

**GAUDINEER SCENIC
AREA**

(see Pocahontas County)

**SHAVERS MOUNTAIN
SPRUCE-HEMLOCK
STAND**

Shavers Mountain Spruce-Hemlock Stand, located within the Monongahela National Forest, represents an old-growth red spruce-hemlock stand, locally known as a "spruce flat." The area is a disjunct component of the more northern hemlock-white pine-northern hardwood forest region. Designated: 1974. Ownership: Federal.

Tucker County

BIG RUN BOG

Big Run Bog, located within the Monongahela National Forest, contains a relict Pleistocene high-altitude northern sphagnum-red spruce bog that is far south of its normal range. It harbors large numbers of rare plants and animals. Designated: 1974. Ownership: Federal.

CANAAN VALLEY

Located mostly within Canaan Valley National Wildlife Refuge, Canaan Valley contains a large aggregation of Pleistocene habitats seldom found in the eastern United States. It is unique as a northern boreal relict community at this latitude by virtue of its size, elevation, and diversity. Designated: 1974. Ownership: Federal, State, private.

**FISHER SPRING RUN
BOG**

Fisher Spring Run Bog, located within the Monongahela National Forest, is an excellent example of a sphagnum-red spruce bog vividly illustrating vegetation zonation. Designated: 1974. Ownership: Federal.



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WISCONSIN (18)

Ashland County

KAKAGON SLOUGHS

Kakagon Sloughs is an excellent representative of a true freshwater delta by virtue of its large size, complex mixture of marsh, bog and dune vegetation types, and undisturbed condition. The site is one of the finest marsh complexes on the upper Great Lakes. Designated: 1973. Ownership: Indian Trust (Bad River Indian Tribe), private.

Bayfield County

MOQUAH BARRENS RESEARCH NATURAL AREA

Located within the Chequamegon National Forest, Moquah Barrens Research Natural Area is representative of the jack pine-scrub oak barrens (savannas) of the glacial outwash area of northwestern Wisconsin. Designated: 1980. Ownership: Federal.

Buffalo County

CHIPPEWA RIVER BOTTOMS

Chippewa River Bottoms is the largest single stand of bottomland hardwood forest along the once widespread post-glacial forest. The site includes a large great blue heron rookery. Designated: 1973. Ownership: Federal, State.

Dane County

CAVE OF THE MOUNDS

Cave of the Mounds provides an exceptional illustration of two principal modes of limestone cave formation (speleogenesis): the solution of cave passageways by "vadose" water flowing above, and by "phreatic" groundwater flowing below the water table. The cave is richly decorated with cave formations of most known varieties, including stalagmites measuring 18 feet in height, and many colorful displays of mineral deposits, including pure calcite. Designated: 1987. Ownership: Private.

Door County

RIDGES SANCTUARY- TOFT'S POINT-MUD LAKE AREA

Ridges Sanctuary-Toft's Point-Mud Lake Area is a series of sand ridges and swales with associated boreal forest and bog vegetation. The site contains unusually high species diversity, as well as the best mixed stand of large red and white pine, hemlock, and northern hardwoods on the western shore of Lake Michigan. Designated: 1967. Ownership: State, private.



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Fond du Lac County

SPRUCE LAKE BOG

Spruce Lake Bog, located within Kettle Moraine State Forest, is a superb, unspoiled example of a northern bog. The site possesses relict flora and fauna from early post-glacial times. Designated: 1973. Ownership: State, private.

Forest County

**BOSE LAKE HEMLOCK
HARDWOODS**

Located within Nicolet National Forest, Bose Lake Hemlock Hardwoods is a mature northern hardwood-hemlock stand that contains the best virgin stand of hemlock in Wisconsin. Designated: 1980. Ownership: Federal.

Grant County

**WYALUSING HARDWOOD
FOREST**

Wyalusing Hardwood Forest, located within Wyalusing State Park, exhibits high biological diversity illustrating nine major vegetation types. The site contains several rare plant species and abundant wildlife, including some endangered species. Designated: 1973. Ownership: State.

Green County

ABRAHAM'S WOODS

Abraham's Woods is a remnant of regional climax maple-basswood forest, a vegetation type rare in southern Wisconsin. Designated: 1973. Ownership: State.

Iowa County

**AVOCA RIVER-BOTTOM
PRAIRIE**

Avoca River-Bottom Prairie is the largest intact prairie in Wisconsin. The site contains a nearly full complement of plant species. Designated: 1980. Ownership: State.

Kenosha County

CHIWAUKEE PRAIRIE

The best remaining wet prairie in Wisconsin, Chiwaukee Prairie is a remnant of a once widespread vegetation type along the southern shores of Lake Michigan. The site includes several rare plant species. Designated: 1973. Ownership: State, private.

Manitowoc County

POINT BEACH RIDGES

Consisting of alternating ridges and swales, Point Beach Ridges was formed by previous water levels of Lake Michigan. The site exhibits a range of successional vegetation states. Designated: 1980. Ownership: State.



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Marquette County

SUMMERTON BOG

Summerton Bog is a relatively large, undisturbed, and floristically diverse area. The site illustrates the slow, natural invasion of post-glacial plant communities into a predominantly relict glacial community, and provides habitat for many rare plant and animal species. Designated: 1973. Ownership: Private.

Oneida County

**FINNERUD FOREST
SCIENTIFIC AREA**

Finnerud Forest Scientific Area is an excellent representative of the northern coniferous forest complex. The site is one of the few sizeable areas in the lake states containing red pine forest over 100 years of age. Designated: 1973. Ownership: State.

Ozaukee County

CEDARBURG BOG

Cedarburg Bog is the largest and most outstanding bog in southeastern Wisconsin. The site serves as a refugium for many northern species of plants and birds and provides habitat for a great variety of wildlife. Designated: 1973. Ownership: State, private.

Sauk County

BARABOO RANGE

An example of an exhumed mountain range, Baraboo Range illustrates a changing landscape through geologic time. The climate, soils, fauna, and vegetation exhibit great local diversity. Designated: 1980. Ownership: State, private.

Sawyer County

**FLAMBEAU RIVER
HEMLOCK-HARDWOOD
FOREST**

Flambeau River Hemlock-Hardwood Forest, located within Flambeau River State Forest, is the best and largest remnant of the old-growth conifer-hardwood forest in Wisconsin. Severely damaged by a windstorm in 1977, the site is in the process of regeneration. Designated: 1973. Ownership: State.

Vernon County

**KICKAPOO RIVER
NATURAL AREA**

Kickapoo River Natural Area contains the largest undisturbed concentration of exposed seeping sandstone in Wisconsin. The site is a good example, in the driftless area of southwest Wisconsin, of a river with many entrenched meanders. Additionally, the combination of geologic factors has created a multitude of diverse microhabitats that support many flora species, some of which are endangered. Designated: 1975. Ownership: Federal, State.



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WYOMING (6)

Albany County

BIG HOLLOW

Big Hollow is a 40-square mile wind deflation basin scoured out by high winds during a prehistoric dry period. The hollow represents a classic case of "topographic reversal" and is the largest demonstrable example of its type in the 48 contiguous states. The site has typical natural wind-swept high altitude vegetation and examples of salt- and selenium-tolerant species. Designated: 1980. Ownership: Federal, private.

COMO BLUFF

(extends into Carbon County) Como Bluff is one of the most significant Mesozoic vertebrate localities in the world. The first and best examples of Jurassic mammals, including the discovery of 80 new vertebrate species, were found at this site. Designated: 1966. Ownership: Federal, State, private.

SAND CREEK

(extends into Larimer County, Colorado) Sand Creek possesses the most spectacular examples of cross-bedded sandstone and "topple blocks" in North America. Excellent geological, paleontological, and botanical features mark the importance of the area. Designated: 1984. Ownership: Federal, State, private.

Big Horn County

CROOKED CREEK NATURAL AREA

Crooked Creek Natural Area is a rich source of fossils of Early Cretaceous land vertebrates and is one of only three known areas representing this period of life on the North American continent. It has produced eight new species and three new genera of dinosaurs. Designated: 1966. Ownership: Federal.

Carbon County

COMO BLUFF

(see Albany County)

Fremont County

RED CANYON

Red Canyon is a scenic, well-developed example of a dissected cuesta, consisting of gently sloping plains bounded on one edge by an escarpment. The site exposes an outstanding section of Permo-Triassic red beds and displays the northeast flank of the Wind River Range structure. Designated: 1980. Ownership: Federal, State, private.



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Teton County

TWO OCEAN PASS

Situated on the Continental Divide, Two Ocean Pass is located in the Bridger-Teton National Forest. Waters from the meadow at this pass divide to flow in opposite directions, toward the Gulf of Mexico and toward the Pacific Ocean. The site is the immigration route of the cutthroat trout from the Snake River (Pacific drainage) to Yellowstone Lake of the Missouri River Drainage (Atlantic drainage). It illustrates a natural phenomenon of animal distribution and dispersal. Designated: 1965. Ownership: Federal.