DEFENDERS COMMENTS: MONUMENTS UNDER REVIEW

BASIN AND RANGE NATIONAL MONUMENT

President Obama established Basin and Range National Monument in 2015 through Presidential Proclamation 9297.73 The monument spans more than 700,000 acres within Lincoln and Nye counties in Nevada and is managed by the Bureau of Land Management (BLM).74

A recent assessment analyzed ecological values of Basin and Range by mapping and comparing a random sample of equivalent size areas in the region.75 Based on this science-based analysis, the monument ranked at 92 percent for ecological connectivity and 88 percent on ecological intactness. Basin and Range is species rich and diverse, scoring 98 percent on rarity-weighted species richness. Additionally, the monument is highly resilient to climate change, with a score of 75 percent for climate resilience.

Scientists, archaeologists, and historians are conducting a wide range of research at Basin and Range. Research projects include cave formations' link to prehistoric climate, the relationship between the landscape and its human inhabitants, and broad-scale studies of wildlife habitat connectivity and migration corridors.76

The Designation of Basin and Range National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."77 The facts demonstrate that President Obama's designation in Basin and Range was necessary to protect the diversity of ecosystems found within the monument.

Terrestrial Ecosystems

Basin and Range is unique, a biological crossroads where the Mojave Desert meets the sagebrush steppe of the Great Basin region. The monument contains a stunning and unique diversity of ecosystem types including sagebrush, mixed desert shrublands, and montane pine forests.78

Sagebrush Ecosystem.

The sagebrush ecosystem is made up of several plant species including big sagebrush, black sagebrush, and little sagebrush, all of which support BLM sensitive species such as the sage-grouse and rare pygmy rabbit. The sagebrush ecosystem is one of the most imperiled in the United States.

Mixed Desert Shrubland Ecosystem.

Flora such as the endemic white river catseye, saltbrush, Indian rice grass, and several cactus species make up the desert shrubland. Fauna species include the mule deer, pronghorn, cottontail rabbit, kit fox, western burrowing owl, golden eagle, ferruginous hawk, and countless reptile species.

Montane Pine Forest Ecosystem.

The middle and higher elevation forest ecosystems contain flora such as the Utah juniper, curl-leaf mahogany, ponderosa pine, bristlecone pine, and lumber pine. Fauna includes the mountain lion, mountain bluebird, and bobcat.

Riparian Areas and Corridors

The Great Basin riparian and aquatic ecosystems make up a very small portion of the land surface, but support a large a large amount of biodiversity in the region. The riparian areas occur in small

isolated patches throughout the region. The riparian areas provide habitat for the endangered southwestern willow flycatcher and other species.79 Aquatic conservation is also crucial in dry areas due to limited water sources. Monument status provides for the proper conservation of riparian areas and corridors.

Ecological Condition
The designation of Basin and Range appropriately recognized and protected an intact and functional landscape. Remote landscapes relatively unmodified by human intrusion and development are increasingly rare in the region and the nation.
Most of Basin and Range lies within the Central Basin and Range ecoregion which was recently analyzed in a Rapid Ecoregional Assessment (REA) completed by NatureServe and partners as part of the BLM's landscape approach to resource planning.80 An important landscape characteristic measured and mapped in the REA is *landscape condition.* The REA's evaluation of landscape condition provides "one composite view of the relative impacts of land uses across the entire ecoregion." Basin and Range National Monument scores high for landscape condition, particularly compared to surrounding areas with lower landscape condition levels due to localized development and roads.

Habitat Connectivity
Basin and Range provides for regionally significant landscape-level connectivity, an important and rare ecological feature in western landscapes. The proclamation describes Basin and Range as "one of the largest ecologically intact landscapes in the Great Basin region, providing habitat connectivity and migration corridors for a wide variety of animal species."89

The Designation of Basin and Range National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats
Habitat for fish and wildlife qualify for protection as scientific objects under the Antiquities Act. Basin and Range provides essential habitat for a wide variety of wildlife and plant species including rare, endemic and at-risk species and key habitat areas for species listed under the Endangered Species Act (ESA).

Species Listed Under the Endangered Species Act
The U.S. Fish and Wildlife Service's Information for Planning and Consultation90 web tool indicates that the following ESA-listed have the potential to occur within the Basin and Range National Monument (see Table below).

Common Name	**Scientific Name**	**Federal ESA Status**
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened
Hiko White River Springfish	*Crenichthys baileyi grandis*	Endangered
Pahranagat Roundtail Chub	*Gila robusta jordani*	Endangered
White River Spinedace	*Lepidomeda albivallis*	Endangered
White River Springfish	*Crenichthys baileyi baileyi*	Endangered

The BLM's Ely Approved Resource Management Plan (RMP), which includes Basin and Range National Monument, notes the following regarding special status species:

> The goal of the Special Status Species program is to conserve, maintain, and restore special status species populations and their habitats; support the recovery of federally listed

> threatened and endangered species; and preclude the need to list additional species. The objective of the program is to manage suitable habitat for special status species in a manner that will benefit these species directly or indirectly and minimize loss of individuals or habitat from permitted activities.91

The impacts of human threats to these species, such as habitat loss and invasive species, are high to very high, but the monument protection helps to reduce or prevent these threats.

Wide-ranging Species

Basin and Range supports a number of game species including desert bighorn sheep, mule deer, Rocky Mountain elk, and pronghorn. These are all landscape species that rely on large, connected habitat areas to make seasonal movements.92

BEARS EARS NATIONAL MONUMENT

Bears Ears National Monument represents a significant historic and cultural landscape within the United States

There is no disputing the fact that the Bears Ears National Monument represents a truly significant historic and cultural landscape within the United States. As discussed with great detail within the monument's Proclamation, the archeological and historical record of the significance of the Bears Ears landscape is extremely clear. And there is no disputing the fact that the landscape within the monument is sacred to Native American tribes. The facts demonstrate that President Obama was well within his discretion in designating the land necessary to protect the unique historic and cultural values and resources found within the Bears Ears landscape. In fact, the Bears Ears National Monument represents a mere sliver of historic and cultural resources that were once present throughout a region, but have been lost; protection of these historic and cultural values is therefore of paramount importance.

In addition, Bears Ears National Monument is appropriately sized to protect natural resources and scientific objects as authorized under the Antiquities Act, including remote and intact ecosystems, watersheds, vegetation and community types, and habitat for fish and wildlife, including rare, endemic, sensitive and imperiled species.

The designation of Bears Ears National Monument protects and provides for the proper care and management of significant and rare landscape and ecosystem values

Bears Ears National Monument protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. The Antiquities Act provides the President with the authority to protect and properly management landscapes and ecosystems for their scientific and other values.

The designation of Bears Ears National Monument appropriately recognized and protected a uniquely scientifically unique landscape: A relatively intact and functional western landscape. Remote landscapes relatively unmodified by human intrusion and development are increasingly rare within the region and nation. A recent study demonstrated that Bears Ears ranks in the 90th percentile or higher for ecological intactness and connectivity compared to other equivalently sized random samples from western lands and jurisdictions.[50] This means that the Bears Ears landscape demonstrates less human modification than 90 percent of other comparable western landscapes – a true measure of ecological and scientific distinction that can only be protected under the current size and configuration of the monument. A similar analysis for the same area conducted by the Bureau of Land Management (BLM) came to the same conclusion.[51]

The Bears Ears National Monument also provides for regionally significant landscape-level connectivity, a significant and rare ecological feature in western landscapes. Connectivity is one of the most crucial factors in the conservation of fish and wildlife populations. The recognition and protection of wildlife connectivity corridors facilitates migration, dispersal, and gene flow between Bears Ears National Monument and surrounding protected areas.[52]

The Bears Ears National Monument also appropriately protects a highly resilient landscape. Resilient landscapes will be better able to provide conservation values and other key ecosystem services to society into the future. The importance of Bears Ears National Monument for fish and wildlife species is not limited to its present value. According to the BLM's Rapid Ecoregional Assessment for the Colorado Plateau, much of the Bears Ears National Monument area is projected to experience low to moderate potential for impacts from climate change and other stressors.[53] By contrast, large areas to the east and west of Bears Ears are likely to face more severe impacts. The

relative climate resilience of Bears Ears underscores the importance of protecting its habitats and species from other stressors.

Bears Ears National Monument provides for the proper care and management of a diversity of terrestrial, aquatic and riparian ecosystems, vegetation and plant community types, including an inordinate level of rare ecosystem types compared to other lands within the region. These features have incredibly high scientific value due to their diversity, intactness and rarity. Vegetation diversity is higher within the boundaries of the Bears Ears National Monument than more than 63 percent of other western lands of equivalent size.[54] The monument's Proclamation describes in significant factual detail the types of ecosystems, plant communities and vegetation types found within the monument. The extent of the monument is necessary to protect these appropriately recognized unique and irreplaceable scientific ecological features.

Riparian plant communities recognized and protected within Bears Ears National Monument are worth noting, given the tremendous importance of water resources in the 21st century west. Regionally endemic riparian-dependent plants including the Kachina Daisy, alcove columbine and cave primrose depend on riparian and aquatic ecological features protected within Bears Ears National Monument. Riparian ecosystems support a wide number of species including the endangered Southwestern Willow Flycatcher, which requires moist riparian vegetation near saturated areas and surface water in order to breed. A large portion of their habitat has been lost and degraded across the species range due to water diversion, livestock grazing, urban development, and other human induced habitat changes.

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[55] Indeed, the Bears Ears Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Obama designated the land necessary to protect the diversity of ecosystems found within the Bears Ears National Monument.

The designation of Bears Ears National Monument protects and provides for the proper care and management of significant and rare fish and wildlife habitat values

Habitat for fish and wildlife qualify for protection as scientific objects under the Antiquities Act. Bears Ears National Monument provides essential habitat for a wide variety of fish, wildlife and plant species, including rare, endemic and at-risk species, including key habitat areas for species listed under the Endangered Species Act (ESA). Altering the configuration of the monument would remove lawful protections for these objects of scientific interest.

Bears Ears National Monument provides habitat values that are significant to the region, and the configuration of the monument is necessary for the proper care and management of these habitat values. The monument supports high levels of species richness, mammal and reptile diversity compared to other western lands.[56] Over 15 species of bats, including at-risk Townsend's big eared and spotted bats, can be found throughout the monument. The monument supports the only habitat within Utah for Abert's squirrels, which are found primarily in the monument's Abajo Mountains. Populations in Utah are vulnerable to habitat loss and degradation, and at-risk of elimination. Alteration of the monument would remove proper protections for this species.

Bears Ears National Monument protects and provides for the proper management of a number of at-risk species, including those listed under the ESA. The U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation[57] web tool indicates that the following ESA-listed have the potential to occur within the Bears Ears National Monument (Table 1). In addition, 32 species

listed by the U.S. Forest Service as "sensitive" are known to or may occur within the monument boundaries.

Table 1 ESA-listed species with the potential to occur within the Bears Ears National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
California Condor	*Gymnogyps californianus*	experimental, non-essential
Gunnison Sage-grouse	*Centrocercus minimus*	threatened
Mexican Spotted Owl	*Strix occidentalis lucida*	threatened*
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	threatened
Bonytail Chub	*Gila elegans*	endangered
Colorado Pikeminnow	*Ptychocheilus Lucius*	endangered*
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	endangered
Humpback Chub	*Gila cypha*	endangered
Razorback Sucker	*Xyrauchen texanus*	endangered*
Jones Cycladenia	*Cycladenia humilis* var. *jonesii*	threatened
Navajo Sedge	*Carex specuicola*	threatened

* Designated critical habitat for these species overlaps the monument area.

The Bears Ears National Monument provides proper protections for unique and rare plant species. For example, the Navajo Sedge was listed as threatened under the ESA in 1985. The species' range is restricted to a small area of northeastern Arizona, a tiny sliver in northwestern New Mexico, and a small area in southeastern Utah. San Juan County Utah contains the largest portion of the species' range, and Bears Ears contains a significant portion of the species' recognized distribution area.[58] The northern extent of the species range, which overlaps the Monument, has suitable habitat[59] where there may be species occurrences and/or connectivity and recovery areas. Though there is a USFWS recovery plan for the species, the plan does not include recovery criteria. Utah has no state laws that protect rare plants on private or state lands. Thus, it is paramount that the species be offered all of the protections Bears Ears affords in order to recover.

Similarly, the monument also provides critical habitat for the threatened Mexican spotted owl (*Strix occidentalis lucida*) which uses the monument's unique system of canyons, caves and cliffs for nesting. The Manti-La Sal National Forest, a large portion of which is located within the Bears Ears National Monument, is the largest contiguous habitat for the species.

The Mexican spotted owl is threatened throughout its range by habitat loss, degradation, and fragmentation caused by logging, urban development, water development and agriculture. Bears Ears National Monument appropriately protects regionally significant habitat that makes an essential contribution to the recovery of the species. The Bears Ears proclamation recognizes the federally Endangered Southwestern Willow Flycatcher as a monument object that must be protected. The northern extent of the Southwestern Willow Flycatcher's range occurs in southern Utah and includes the BENM area. The species depends on riparian areas with dense vegetation, with a preference for areas with willow concentrations, though the bird has adapted to non-native tamarisk encroachment into riparian habitat. A key threat to the species is the loss and degradation of riparian habitat. Protecting Southwestern Willow Flycatcher habitat along the outer edges of the species range is essential, due to climate change altering species' ranges. In fact, the ranges of many bird species are expected to move north.[60]

Five threatened and endangered fish species: bonytail chub (*Gila elegans*), Colorado Pikeminnow (*Ptychocheilus lucius*), Greenback Cutthroat Trout (*Oncorhynchus clarki stomias*), Humpback Chub (*Gila cypha*), Razorback Sucker (*Xyrauchen texanus*), have the potential to occur in Bears Ears National Monument, according to the USFWS.[61] The modification of streamflows through damming and

diversions has been a major threat to these species. The monument contains designated critical habitat under the ESA for the Colorado Pikeminnow and Razorback Sucker. The Razorback Sucker population, in particular, is in trouble and experienced a rapid decline of 80 percent in the last few decades;[62] the International Union for Conservation of Nature considers the species to be critically endangered.

The monument designation also appropriately recognizes the scientific value of protecting rare and endemic species, such as the Kachina Daisy (*Erigeron kachinensis*) which is unique to the Colorado Plateau in southwestern Colorado and southeastern Utah and is known to occur in just four counties, including San Juan County in Utah, and occurs in Bears Ears. Nineteen of 22 occurrences have been recorded in Utah since 1983.[63] Mining, energy development, and water projects could threaten the species' water supply, and climate change is also a threat.[64] The Kachina Daisy is ranked S2 (imperiled) by NatureServe, a U.S. Forest Service Sensitive Species, a Bureau of Land Management Sensitive Species, and on the Utah Native Plant Society Rare Plant List.[65]

Mesas and canyon heads provide habitat for species such as mule deer, elk, and once-secure but now at-risk populations of bighorn sheep. The Desert Bighorn Sheep (*Ovis Canadensis nelsoni*) population in southeastern Utah experienced a dramatic population decline beginning in about 1920, before which the population was believed to be abundant.[66] Surveys put the total individual count at 135 sheep in 1966. Utah's wildlife department conducted translocations of the animals into the region throughout the 1970s, and the population increased to 2,700 by 2003. The species is a Forest Service Sensitive Species, and NatureServe ranks it as S3 (vulnerable).[67]

BERRYESSA SNOW MOUNTAIN NATIONAL MONUMENT

President Obama established the Berryessa Snow Mountain National Monument in 2015 through Presidential Proclamation 9298.[73] The monument spans more than 330,000 acres within Lake, Napa, Yolo, Colusa, Glenn, Mendocino and Solano counties in the northern interior coastal ranges of California and is jointly managed by the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS).

There is a long a robust history of support for the protection of the Berryessa Snow Mountain area, which, despite the ecological, recreational and economic benefits of the area, faced an uncertain future due to development threats exacerbated by climate change stressors. Legislation introduced in Congress in 2012 would have designated the region as a National Conservation Area. Due to the public campaign to protect Berryessa Snow Mountain prior to the national monument proclamation, the monument enjoys broad support from more than 200 local businesses, the State of California, more than 60 elected officials – including a resolution by the California Legislature – several chambers of commerce, thousands of individuals from gateway communities and beyond, conservation organizations, tribes, and user groups including hikers, horse riders, mountain bikers, OHV enthusiasts, anglers, whitewater boaters and hunters.

The BLM and the USFS are currently undertaking a joint management planning effort for the monument, drawing on some of the best aspects of each agency's current management practices of BLM's Ukiah Field Office and the Mendocino National Forest. This public process will be critical to determining the future management of the Berryessa Snow Mountain National Monument for years to come.

The Designation of Berryessa Snow Mountain National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Antiquities Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[74] Indeed, the Berryessa Snow Mountain Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Obama designated the land necessary to protect the diversity of ecosystems found within the Berryessa Snow Mountain National Monument.

Berryessa Snow Mountain National Monument protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to the surrounding regional landscape. The Antiquities Act provides the President with the authority to protect and properly manage landscapes and ecosystems for their scientific and other values.

The Berryessa Snow Mountain National Monument contains some of the most scenic and biologically diverse landscapes in northern California, spanning rolling oak woodlands and lush creek canyons, unique geological and biological features and rugged mountaintops. These lands provide clean water for millions of northern California residents and crucial habitat for a wide variety of plant and animal species, some of which are found nowhere else on earth. As such, the monument serves as a living laboratory for scientific research, including at several sites within the national monument boundaries. The region has been home to Native Americans for at least 11,000 years and the national monument protects important cultural heritage sites. Many tribes, including the Yuki, Nomlaki, Patwin, Pomo, Huchnom, Wappo, and Lake Miwok, and Wintum all played a

role in the history of this region, one of the most linguistically diverse in California.[75]
A recent assessment analyzed ecological values of the Berryessa Snow Mountain National Monument by mapping and comparing a random sample of equivalent size areas in the region.[76] Based on this science-based analysis, the monument ranked at 95 percent for ecological system type rarity. The Monument ranks high for species richness and diversity, scoring at 91 percent for avian diversity, 67 percent for reptile diversity, and 91 percent on rarity-weighted species richness. Additionally, the monument is highly resilient to climate change, with a score of 92 percent for climate resilience.

Habitat Connectivity

Berryessa Snow Mountain provides for regionally significant landscape-level connectivity, an important and rare ecological feature in western landscapes. The monument supports a number of wide-ranging species, including tule elk, mule deer, mountain lions and black bears. These species all rely on large, well-connected habitat for seasonal migration and to support extensive home ranges. The terrain of Berryessa Snow Mountain stretches across 100 miles, from nearly sea level in the south near Lake Berryessa, to over 7,000 feet in the north on Snow Mountain, providing ecological connectivity across dozens of ecosystems that remain largely intact and devoid of human development. This unbroken landscape is an internationally recognized biodiversity hotspot that provides critical opportunities for species movement both seasonally and into the future as wildlife and plant communities adapt to changing climatic conditions.

The Designation of Berryessa Snow Mountain National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats

As discussed above, habitat for fish and wildlife qualify for protection as scientific objects under the Antiquities Act. Berryessa Snow Mountain provides essential habitat for a wide variety of fish, wildlife and plant species, including rare, endemic and at-risk species, including key habitat areas for species listed under the Endangered Species Act (ESA). Altering the configuration or management of the monument would remove lawful protections for the fish, wildlife and plant species found within the monument.

Berryessa Snow Mountain provides habitat values that are significant to the region, and the configuration of the monument is necessary for the proper care and management of these habitat values. Berryessa Snow Mountain protects and provides for the proper management of a number of at-risk species, including those listed under the ESA. Cache Creek, a designated Wild and Scenic River in California, flows through an exceptional, intact riparian corridor and is home to one of the largest wintering bald eagle populations in the state.

Due to the unique geologic history of the Berryessa Snow Mountain region, located near the convergence of the North American and Pacific tectonic plates, much of the area has diverse topography with important values for plants and wildlife. The region has a significant concentration of serpentine soils formed by seismic activity and the influence from ancient oceans. These outcrops of serpentine, California's State rock, lack nutrients most plants need and often contain heavy metals toxic to most plants. This results in plant assemblages that are unique to this region and found nowhere else on earth, many of which are listed as sensitive, rare or threatened under Federal or State law. These serpentine outcrops within the monument have been researched for their botanical, ecological and evolutionary importance and will remain important living laboratories into the future. The Bear Creek headwaters provide an exceptional example of the Berryessa Snow Mountain's serpentinite-based endemism and biodiversity with more than 450 plant species, including a magnificent array of wildflowers, along with cypress, manzanita, and willow. Nearly half of

California's 108 species of dragonfly and damselfly are found here, as well as 16 reptiles and amphibians, six rare insects, and 80 species of butterflies. This area has been an important focus of scientific studies on climate change, including studies of range shifts and isolated populations of species during Pleistocene changes in climate, and on post-fire succession.
The U.S. Fish and Wildlife Service's Information for Planning and Consultation[85] web tool indicates that the following ESA-listed have the potential to occur within the Basin and Range National Monument (see Table below).

Common Name	**Scientific Name**	**Federal ESA Status**
Marbled Murrelet	*Brachyramphus marmoratus*	Threatened
Northern Spotted Owl	*Strix occidentalis caurina*	Threatened*
Western Snowy Plover	*Charadrius alexandrinus nivosus*	Threatened
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened
California Red-legged Frog	*Rana draytonii*	Threatened*
California Tiger Salamander	*Ambystoma californiense*	Threatened
Delta Smelt	*Hypomesus transpacificus*	Threatened
Steelhead	*Oncorhynchus (=Salmo) mykiss*	Threatened*
California Freshwater Shrimp	*Syncaris pacifica*	Endangered
Conservancy Fairy Shrimp	*Branchinecta conservatio*	Endangered
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	Threatened
Burke's Goldfields	*Lasthenia burkei*	Endangered
Clara Hunt's Milk-vetch	*Astragalus clarianus*	Endangered
Contra Costa Goldfields	*Lasthenia conjugens*	Endangered
Few-flowered Navarretia	*Navarretia leucocephala ssp. Pauciflora (=N. pauciflora)*	Endangered
Keck's Checker-mallow	*Sidalcea keckii*	Endangered
Lake County Stonecrop	*Parvisedum leiocarpum*	Endangered
Loch Lomond Coyote Thistle	*Eryngium constancei*	Endangered
Many-flowered Navarretia	*Navarretia leucocephala ssp. plieantha*	Endangered
Sebastopol Meadowfoam	*Limnanthes vinculans*	Endangered
Showy Indian Clover	*Trifolium amoenum*	Endangered
Slender Orcutt Grass	*Orcuttia tenuis*	Threatened*
Water Howellia	*Howellia aquatilis*	Threatened

* Designated critical habitat for these species overlaps the monument area.

Berryessa Snow Mountain National Monument is Consistent with Multiple-use Policy and Provides Significant Social and Economic Benefits to the Region and Communities

Berryessa Snow Mountain National Monument offers residents and visitors many types of outdoor recreational activities, including hiking, hunting, fishing, camping, off-highway vehicle use, horseback riding, mountain biking and rafting. An independent economic report found that a monument designation will likely increase visitation, in turn generating an additional $26 million in economic activity for local communities over five years.[86] Existing water rights and grazing rights were protected through the national monument proclamation and hunting and fishing regulations remain with the State of California.

CARRIZO PLAIN NATIONAL MONUMENT

President Clinton established the Carrizo Plain National Monument (CPNM or Carrizo Plain) in 2001 through Presidential Proclamation 7393. The monument spans more than 204,000 acres, administered by the Bureau of Land Management (BLM) within San Luis Obispo and Kern counties in central California.

As described in the Carrizo Plain's management plan:

> The CPNM adjoins some of the most intensively managed agricultural lands and petroleum deposits in the U.S. and is less than 100 air miles from Los Angeles. However, the area remains relatively isolated and undeveloped, and retains an intact landscape character. Prominent features include the white alkali flats of Soda Lake, vast open grasslands, and a broad plain rimmed by mountains. The plain is home to diverse communities of wildlife and plant species including several listed as threatened or endangered. The area is culturally important to Native Americans. It is traversed by the San Andreas Fault, which has carved alleys and created and moved mountains. The CPNM is surrounded by several small, unincorporated communities, with larger population centers along the U.S. 101 corridor to the west and San Joaquin Valley to the east.[73]

Interest in the conservation of the Carrizo Plain area began in earnest in the 1980s. A changing weather pattern and lack of water for irrigation had essentially brought an end to the decades of dryfarming that had occurred on the Carrizo Plain, and the land reverted to livestock grazing as its primary use. As the neighboring San Joaquin Valley continued to be converted into intensive agriculture, industrial, and urban land uses, interest increased in the Carrizo Plain as the largest remnant of the San Joaquin Valley grassland ecosystem. In 1988, the Nature Conservancy (TNC) concluded a real estate transaction with Occidental Petroleum Co., transferring more than 82,000 acres of land on the floor of the Carrizo Plain into the ownership of TNC. This acreage, combined with the already existing public domain lands, allowed for the establishment of a large natural area managed by TNC, the BLM, and the California Department of Fish and Game. These three "managing partners" worked on a comprehensive management plan for the area over the years and ultimately created the "Carrizo Plain Natural Area." The 82,000 acres held by TNC were transferred to BLM by 1989 with the intention to restore the original native-dominated vegetation of the region. Livestock grazing would continue as the primary land management tool, but would be done on an as-needed basis for management of grass biomass rather than a simple commodity.

Just as the Carrizo Plain Natural Area was formally established in the mid-1980s, efforts began to provide stronger federal recognition and protection for the area with the introduction of legislation to create a Carrizo Plain National Conservation Area. This legislation slowly worked its way through Congress but never received a formal vote for establishment. President Clinton's Carrizo Plain National Monument proclamation was the ultimate success of twenty years of citizen efforts and significant expenditure of both public and private funds to formally recognize the ecological treasure that is the Carrizo Plain.

A recent assessment analyzed ecological values of the Carrizo Plain by mapping and comparing a random sample of equivalent size areas in the region.[74] This science-based analysis found the Carrizo Plain ranked extremely high in bird diversity at 96 percent and reptile diversity at 82 percent; rarityweighted species richness scored 95 percent. These results affirm the importance of CPNM to wildlife in this unique environment.

The Designation of Carrizo Plain National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems,

ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[75] Indeed, the Carrizo Plain Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Clinton designated the land necessary to protect the diversity of ecosystems found within the Carrizo Plain National Monument. The Carrizo Plain protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to the surrounding regional landscape. The Antiquities Act provides the President with the authority to protect and properly manage landscapes and ecosystems for their scientific and other values. Carrizo Plain National Monument contains numerous scattered sites of cultural or religious importance to Native Americans, including village middens, bedrock mortar milling features, and elaborate world-class pictographs. The monument includes crucial habitat for a wide array of rare or endangered plant and animal species and is part of the largest core recovery area for a suite of imperiled San Joaquin Valley Grassland species including the charismatic San Joaquin kit fox and the elusive blunt-nosed leopard lizard. As the largest remnant of San Joaquin Valley grasslands ecosystem, there is vast habitat for larger animals of interest and value, such as pronghorn and tule elk, objects to be protected that have been subjects of reintroduction efforts by the California Department of Fish and Wildlife. There are unusual plant assemblages, some unique to the Carrizo Plain and just a few nearby sites. There is the distinctive trace of the great San Andreas Fault, which runs the entire length of the monument, a desert-like landscape bounded by two rugged mountain ranges. The strongest earthquake in California's recorded history ripped through the San Andreas Fault in 1857, wrenching the western side of the Carrizo Plain thirty-one feet northward. The area is also rich in significant fossil assemblages, including terrestrial fossil mammal remains that date back 13 million to 25 million years. These features warranted protection of the Carrizo Plain and drew the interest of scientists, ecologists, anthropologists, archeologists and many others for years prior to establishment of the monument.

Ecosystems

The Carrizo Plain lies at a unique biological crossroads where California's central Coast Ranges meet the drier, more desert-like San Joaquin Valley. On the floor of the CPNM is Soda Lake, southern California's largest remaining natural alkali wetland and the only closed-basin found in the coastal mountains. Salts are concentrated in Soda Lake as water evaporates, leaving deposits of sulfates and carbonates that give a ghostly glimmer to the valley floor. Despite the harsh saline environment, many plants and animals are well-adapted to these conditions. This area is an especially important stopover on the Pacific Flyway during the winter months, when Soda Lake comes alive with thousands of migratory birds, long-billed curlews, sandhill cranes and mountain plovers, all of which are monument objects to be protected.

The diversity of ecosystems within the Carrizo Plain National Monument is illustrated by the sheer number of different plant communities highlighted in the management plan. These include valley sink scrub, valley saltbrush scrub, spiny saltbrush scrub, upper Sonoran saltbrush scrub, interior Coast Range saltbrush scrub, Diablan sage scrub, nonnative grasslands, juniper oak cismontane woodland, cismontane juniper woodland and scrub, blue oak woodland and Alvord oak woodland, biological soil crusts, lichens and bryophytes, vernal pools and other ephemeral aquatic habitats, and riparian systems including springs, seeps, and the Cuyama River. The distinct topography and geology of the Carrizo Plain contribute to the area's rich biological diversity.

Ecological Condition
The designation of Carrizo Plain appropriately recognized and protected an intact and functional landscape. Remote landscapes relatively unmodified by human intrusion and development are increasingly rare in the region and the nation. Carrizo Plain is one of the most remote areas in California, yet it is less than 100 miles from Los Angeles, the second largest metropolitan area in the United States. Because of its remoteness, the Carrizo Plain is renowned for its dark skies and deafening silence – a true rarity in California, home to nearly 40 million people.

Habitat Connectivity
Carrizo Plain provides for regionally significant landscape-level connectivity, an important and rare ecological feature in western landscapes. The monument supports a number of species that rely onlarge, well-connected habitats, including tule elk, pronghorn and San Joaquin kit fox. The diverse terrain of Carrizo Plain stretches approximately 50 miles from north to south and up to 15 miles east to west, including rugged mountain ranges and broad, flat grasslands, providing ecological connectivity across dozens of ecosystems that remain largely intact and devoid of human development. This unbroken landscape provides critical opportunities for species movement both seasonally and into the future as wildlife and plant communities adapt to changing climatic conditions.

The Designation of Carrizo Plain National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, Plants and Habitats
As discussed above, habitat for wildlife and plants qualify for protection as scientific objects under the Antiquities Act. Carrizo Plain provides essential habitat for a wide variety of plant and wildlife species, including rare, endemic and at-risk species, and key habitat areas for species listed under the Endangered Species Act (ESA). Altering the configuration or management of the monument would remove lawful protections for the wildlife and plant species found within the monument.
Carrizo Plain National Monument's management plan stresses the protection and restoration of native wildlife and vegetative communities as monument objects. These objects to protect include the "flora and fauna characteristic of the San Joaquin Valley region; habitat for the long-term conservation of the many endemic plant and animal species that inhabit the area; endangered, threatened, and rare animal species such as San Joaquin kit fox, California condor, blunt-nosed leopard lizard, giant kangaroo rat, San Joaquin antelope squirrel, longhorn fairy shrimp, and vernal pool fairy shrimp; the migratory birds, cranes, curlews, and mountain plovers that use Soda Lake; populations of pronghorn antelope and Tule elk; and San Joaquin grassland ecosystem flora, including rare and sensitive plant species such as California jewelflower, Hoover's woolly- star, San Joaquin woolly-threads, pale-yellow layia, forked fiddleneck, Carrizo peppergrass, Lost Hills saltbush, Temblor buckwheat, recurved larkspur, and Munz's tidy-tips." The management plan recognizes the "primary importance as habitat for threatened and endangered species, rare natural communities, species recovery, and regional conservation; the uniqueness of the CPNM as a significant undeveloped portion of the once vast San Joaquin Valley ecosystem; and the importance of restoring and maintaining a mosaic of natural communities and successional stages to benefit the biodiversity inherent in the ecosystem."[84]
With more than 90 percent of San Joaquin Valley grassland, scrub and wetland habitats converted to intensive agricultural, urban and industrial land uses, the Carrizo Plain National Monument has remained largely intact with native wildlife dominating this large landscape. Due to the rarity of these ecosystems, the CPNM plays a significant role in the conservation and recovery of several San

Joaquin Valley special status species. The National Audubon Society also designated the Carrizo Plain as a Globally Important Bird Area, which if degraded or lost would leave a lasting negative impact on bird populations.

At-risk Species

Carrizo Plain National Monument provides habitat values that are significant to the region, and the configuration of the monument is necessary for the proper care and management of these habitat values. Carrizo Plain protects and provides for the proper management of a number of at-risk species, including those listed under the ESA. The monument supports more than 40 special status animals and has been identified as a core recovery area of natural lands targeted for protection in the *Recovery Plan for Upland Species of the San Joaquin Valley, California*.[85] As such, management of the monument focuses on the recovery and protection of at-risk and rare species.

Special Status Wildlife Species within the Carrizo Plain National Monument

Common Name	**Scientific Name**	**Status**
San Joaquin Kit Fox	*Vulpes macrotis mutica*	Federal Endangered, State Threatened
Giant Kangaroo Rat	*Dipodomys ingens*	Federal Endangered,State Endangered
Blunt-Nosed Leopard Lizard	*Gambelia sila*	Federal Endangered, State Fully Protected Species
San Joaquin Antelope Squirrel	*Ammospermophilus nelsoni*	State Threatened, BLM sensitive species
California Condor	*Gymnogyps californianus*	Federal Endangered, State Endangered, State Fully Protected Species
Greater Sandhill Crane	*Grus canadensis tabida*	State Threatened
Lesser Sandhill Crane	*Grus canadensis canadensis*	State Species of Special Concern
Western Burrowing Owl	*Athene cunicularia hypugea*	State Species of Special Concern, BLM sensitive species
Mountain Plover	*Charadrius montanus*	State Species of Special Concern, BLM sensitive species
Western Spadefoot Toad	*Spea hammondii*	State Species of Special Concern, BLM sensitive species
Kern Primrose Sphinx Moth	*Euproserpinus euterpe*	Federal Threatened
Longhorn Fairy Shrimp	*Branchinecta longiantenna*	Federal Endangered
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	Federal Threatened

CASCADE-SISKIYOU NATIONAL MONUMENT

President Clinton established the Cascade-Siskiyou National Monument (Cascade-Siskiyou) in 2000 through Presidential Proclamation 7318[74] and President Obama expanded the monument in 2017 through Presidential Proclamation 9564.[75] The monument spans more than 100,000 acres within Jackson and Klamath Counties in Oregon and Siskiyou County in California and is managed by the Bureau of Land Management (BLM).

A recent assessment analyzed ecological values of the Cascade-Siskiyou by mapping and comparing a random sample of equivalent size areas in the region.[76] Based on this science-based analysis, the monument ranked at 97 percent for ecological system type rarity and 96 percent for ecological system diversity. The Cascade-Siskiyou is highly ranked for species richness and diversity, scoring at 95 percent for mammal diversity, 86 percent for avian diversity, 67 percent for reptile diversity, and 99 percent for rarity-weighted species richness. Additionally, the monument is highly resilient to climate change, with a score of 94 percent for climate resilience.

The Designation of Cascade-Siskiyou National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[77] Indeed, the Cascade-Siskiyou Proclamations describe in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that Presidents Clinton and Obama designated the land necessary to protect the diversity of ecosystems found within the Cascade-Siskiyou National Monument.

Cascade-Siskiyou protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. The Antiquities Act provides the President with the authority to protect and properly manage landscapes and ecosystems for their scientific and other values.

In fact, Cascade-Siskiyou was the first national monument established explicitly to protect biological diversity.[78] In 2000, President Clinton declared:

> (T)he Cascade-Siskiyou National Monument is an ecological wonder, with biological diversity unmatched in the Cascade Range. This rich enclave of natural resources is a biological crossroads – the interface of the Cascade, Klamath, and Siskiyou ecoregions, in an area of unique geology, biology, climate, and topography…The monument is home to a spectacular variety of rare and beautiful species of plants and animals, whose survival in this region depends upon its continued ecological integrity.[79]

President Obama enlarged the monument in 2017 in recognition that boundary adjustments were necessary to protect the area's unique biological diversity[80]:

> Cascade-Siskiyou's biodiversity, which provides habitat for a dazzling array of species, is internationally recognized and has been studied extensively by ecologists, evolutionary biologists, botanists, entomologists, and wildlife biologists.[81]

Cascade-Siskiyou is a Unique Biological Crossroads

Cascade-Siskiyou is unique, a biological crossroads where the Siskiyou Mountains, the Cascade Range, Oregon and California Interior Valleys and Great Basin ecoregions converge. The monument therefore hosts a unique diversity of ecosystem and habitat types that are a priority for

protection due to their rarity and role in conserving regional biological diversity. President Obama recognized the unique ecosystem diversity of the Cascade-Siskiyou region in 2017:

> Ranging from the high slopes of Shasta red fir to lower elevations with Douglas fir, ponderosa pine, incense cedar, and oak savannas, the topography and elevation gradient of the area has helped create stunningly diverse ecosystems. From ancient and mixed-age conifer and hardwood forests to chaparral, oak woodlands, wet meadows, shrublands, fens, and open native perennial grasslands, the landscape harbors extraordinary and varied and diverse plant communities.[82]

Cascade-Siskiyou Supports Significant Aquatic Values

As Soda Mountain Wilderness Council et al. note in their comment letter on Cascade-Siskiyou:

> The Monument is notable for its water resources, particularly the area's intact watersheds, headwater streams, and riparian habitats exhibiting high levels of ecological integrity that are now increasingly rare elsewhere in the Pacific states and throughout the country. The Monument's extensive network of streams encompasses both undisturbed headwater and lowland reaches, as well as numerous springs and regionally important wetlands. These aquatic systems support a high diversity of sensitive and unique aquatic species that are known to be indicators of cold, high-quality water, including locally endemic populations of Jenny Creek redband trout and Jenny Creek sucker, river otter, western pond turtle, Cascades frog, Oregon spotted frog, lesser bladderwort, and numerous springsnail taxa, some of which have been found nowhere else (internal citations omitted).

Cascade-Siskiyou Provides for Regionally Significant Landscape-level Connectivity

Landscape connectivity is also an increasingly important factor in the conservation of fish, wildlife, and plant populations.[87] Habitat loss, degradation and fragmentation pose the most important threat to the survival of native species, contributing to the shrinking distribution of many wildlife populations in North America. Landscapes fragmented by development and roads lead to increased mortality[88] for wide-ranging wildlife, including big game and large carnivores. Local populations, especially those of at-risk species, can decline and disappear without connectivity to support immigration.

The recognition and protection of habitat connectivity and wildlife corridors facilitates migration, dispersal, plant pollination, and gene flow within and across monument boundaries. Establishing new areas and expanding existing protected areas is necessary to allow species to shift their ranges to adapt to climate change.[89] Connecting these habitat cores is also essential: wildlife corridors increase movement between isolated habitat patches by approximately fifty percent, compared to areas that are not connected by corridors.[90]

Cascade-Siskiyou provides for regionally significant landscape-level connectivity, an important and rare ecological feature in western landscapes. President Obama in 2017 noted that "Since 2000, scientific studies of the area have reinforced that the environmental processes supporting the biodiversity of the monument require habitat connectivity corridors for species migration and dispersal."[91]

And, as Soda Mountain Wilderness Council et al. note in their comment letter on Cascade-Siskiyou:

> The Monument serves as an important biological corridor that facilitates the movement of plants and animals between adjacent ecoregions. Because the Monument functionally connects forested habitats in the Siskiyou Mountains with those in the Cascades, it acts as a natural "land bridge" that facilitates the flow of plants and animals between these distinct ecoregions. Connectivity is one of the most critical factors in the conservation of fish and

> wildlife because it facilitates species migration, dispersal and gene flow between populations in adjoining areas of habitat.

Former Forest Service ecologist Tom Atzet underlined the unique significance of the Monument's connectivity function when he identified the area as

> "...an important link for [species] migration, dispersion and the process of evolution in the Northwest." Consistent with this statement, a number of studies have identified the Monument area as a key linkage for the movement of plants and animals between adjacent ecoregions (internal citations omitted).

The Designation of Cascade-Siskiyou National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats

Habitat for fish and wildlife qualify for protection as scientific objects under the Antiquities Act. Cascade-Siskiyou provides essential habitat for a wide variety of fish, wildlife and plant species, including rare, endemic and at-risk species, including key habitat for species listed under the Endangered Species Act (ESA) including the northern spotted owl, coho salmon, Oregon spotted frog, Gentner's fritillary, shortnose sucker and Lost River sucker. Altering the configuration or management of the monument would remove lawful protections for the fish, wildlife and plant species found within the monument.

As Soda Mountain Wilderness Council et al. document in their comment letter on Cascade-Siskiyou:

> The Monument supports an exceptionally high diversity of plant and animal species, especially for an area of this relatively small size. The Monument is known to be particularly species-rich in terms of small mammals, birds, endemic fish, vascular and non-vascular plants, butterflies, aquatic mollusks and other invertebrates. Numerous factors contribute to creating and sustaining this high species diversity, including the Monument's complex topography, varied soils and geology, strong climatic gradients, connectivity between ecoregions, and unique evolutionary history.

Examples of individual species identified as Monument objects of interest include those currently listed as threatened or endangered under the federal Endangered Species Act (e.g. Northern Spotted Owl, Oregon spotted frog, Gentner's Fritillary); endemic and/or highly localized species with primary or important populations located within the Monument (e.g. Greene's mariposa lily, Ashland thistle, Mardon skipper butterfly, springsnails in the genus *Juga* and *Fluminicola*); and species that are candidates for federal listing and/or of special conservation concern in Oregon and California due to their increasing rarity and substantial loss of habitat (Pacific fisher, Oregon Vesper Sparrow, Northern Goshawk, Western pond turtle) (citations omitted).

GOLD BUTTE NATIONAL MONUMENT

President Obama established the Gold Butte National Monument (Gold Butte) on December 28, 2016, through Presidential Proclamation 9559.[73] The monument spans 296,937 acres of Clark County in southeast Nevada and is administered by the Bureau of Land Management (BLM).
A recent assessment analyzed ecological values of Gold Butte by mapping and comparing a random sample of equivalent size areas in the region.[74] Based on this scientific analysis, the monument ranked at 92 percent for ecological intactness and 90 percent for ecological connectivity. Gold Butte is species rich and diverse, scoring at 87 percent for reptile diversity, 69 percent in avian diversity, and 87 percent for rarity-weighted species richness. Additionally, the monument is highly resilient to climate change, with a score of 82 percent for climate resilience.

The Designation of Gold Butte National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[75] Indeed, the Gold Butte Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Obama designated the area necessary to protect the diversity of ecosystems found within the Gold Butte National Monument.
The ecological importance of Gold Butte National Monument has long been recognized by the BLM, as evidenced by the designation of the entire area of monument designation within Areas of Critical Environmental Concern (ACEC)[76] under FLPMA in both the 1998 Resource Management Plan and the 2014 Draft Revision. The relevance and importance criteria[77] for several ACECs that encompass lands within the area later designated as Gold Butte National Monument are discussed in detail in the BLM's 2014 Las Vegas and Pahrump Draft Resource Management Plan and Environmental Impact Statement.[78] Under the EIS's Preferred Alternative, the following ACECs are designated based on their relevant and important values:

> Gold Butte, Part A (183,441 acres) -- Relevant and important values identified: Scenic values, cultural/historic values, desert tortoise, relict leopard frog
> Gold Butte, Part B (116,734 acres) -- Relevant and important values identified: Scenic values, cultural/historic values, desert tortoise, relict leopard frog, desert bighorn sheep, Las Vegas buckwheat, and Las Vegas bearpoppy
> Gold Butte, Part C (Virgin Mountains) (35,707 acres) -- Relevant and important values identified: Scenic values, cultural/historic values, relict forest stands, and desert bighorn sheep
> Gold Butte Townsite (159 acres) -- Relevant and important values identified: Cultural/historic values and historic mining sites
> Devil's Throat (639 acres) -- Relevant and important values identified: Natural hazard area
> Red Rock Spring (638 acres) -- Relevant and important values identified: Cultural/historic values and relict leopard frog
> Whitney Pocket (160 acres) -- Relevant and important values identified: Cultural/historic values

Unfortunately, the ACECs established prior to national monument designation were not sufficient to protect the resources found in these areas. The Friends of Gold Butte organization surveyed the area between November 2014 and July 2015 and documented "significant damage" to natural and cultural resources in nominally protected ACECs within the Gold Butte area:[79]

- "evidence of unauthorized water infrastructure that is being constructed across several miles of desert that is designated as ACEC," including water tanks, tire water troughs, piping and trenches;
- "multiple, illegal vehicle intrusions that have impacted archaeological sites and petroglyph sites; historic sites such as the Mud Wash corral and Gold Butte Townsite; and sensitive desert ecosystems including riparian areas, crypto-biotic soil, stretches of desert pavement, and unique red sand dunes; and sensitive bearpoppy restoration areas," with damage to desert pavement, trampling of cactus and other vegetation, and incursions into sensitive riparian areas; and
- "vandalism, [including] the looting of historic gravesites and damage to signs in Gold Butte, as well as cutting of fences, defacing of informational kiosks and removals of signage."

These documented incursions and vandalism underscore the need for the added protection conveyed by national monument status. This is further highlighted by placing Gold Butte in a regional context. BLM has identified the area as an important contributor to regional mitigation goals in its Regional Mitigation Strategy for the Dry Lake Solar Energy Zone.[80] The strategy identifies Gold Butte as a key target for mitigation actions to compensate for the unavoidable impacts of solar development in the Dry Lake SEZ:

> They consist of restoration and preservation measures prescribed for the Gold Butte Area of Critical Environmental Concern (ACEC), but for which sufficient resources have been unavailable. The Gold Butte ACEC is in the same ecological zone (ecoregion) and subzone as the Dry Lake SEZ and is of the same vegetation community. The Gold Butte ACEC provides habitat for all of the wildlife, including the special status species, found in the Dry Lake SEZ. Under the terms of this strategy, funding derived from mitigation fees for the Dry Lake SEZ will not be sufficient to fund all of the potential restoration and protection needs in the Gold Butte ACEC, but they will allow significant progress toward achieving the management objectives for the ACEC: to preserve the extraordinary resource values found there while providing for human use and enjoyment.

Given that, as described above, ACEC designation has not proven sufficient to protect the resources found in this unique area, unimpeded and undiminished protection under national monument status is critically important to protect these resources and ensure the success and durability of mitigation investments.

Gold Butte protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. The Antiquities Act provides the President with the authority to protect and properly management landscapes and ecosystems for their scientific and other values.

The monument prioritizes the protection and enhancement of the following ecosystem types and resident endemic species.

Terrestrial Ecosystems

Gold Butte is a unique landscape where the Mojave Desert meets snow-capped mountains. The monument contains a stunning and unique diversity of ecosystem types, including arid desert, shrub steppe, pinyon-juniper woodlands, and high elevation ponderosa pine forests.

High Elevation: Ponderosa Pine-White Fir Ecosystem

The high-elevation regions of the Virgin Mountains (up to 8,000 feet) form a "sky island" above the

surrounding desert and scrub ecosystem types and represent a "transition between ecosystems in the southwest. At the highest points of the Virgin Mountains, visitors can hike through Ponderosa pine and white fir forests, and visit the southernmost stand of Douglas fir in Nevada. In this area, visitors are also treated to a rare sight: the Silver State's only stand of the Arizona cypress."[81] The Las Vegas RMP adds that, "Floristically, vegetation in the Virgin Mountains has a closer affinity to the Colorado Plateau and Rocky Mountains and represents the westernmost distribution of some species." These forested mountain ecosystems provide habitat for numerous bat, small mammal, raptor, and migratory bird species, as well as "exemplary high mountain habitat" (crucial and winter habitat) for the desert bighorn sheep, a BLM-sensitive species.[82]

Mid-Elevation: Pinyon-Juniper and Sagebrush Communities

Gold Butte's "lower to middle elevations of the area are home to stands of pinyon pine, Utah juniper, sagebrush, and acacia woodlands, along with occasional mesquite stands. By adding structural complexity to a shrub-dominated landscape, these woodlands provide important breeding, foraging, and resting places for a variety of creatures, including birds and insects, and support a number of plant species."[83] Pinyon-juniper communities and scrub and sagebrush step support a number of BLM-sensitive species, like Brewer's sparrow, Bendire's and LeConte's thrashers, pinyon jay, loggerhead shrike and raptors such as burrowing owl, sharp-shinned hawk, northern goshawk, Coopers hawk, American kestrel, and red-tailed hawk.

Low Elevation: Mojave Desert Ecosystem Types

The Presidential Proclamation describes in detail the value of the low-elevation desert habitat types protected by Gold Butte National Monument:

> The arid eastern Mojave Desert landscape that dominates the area is characterized by the creosote bush and white bursage vegetative community that covers large, open expanses scattered with low shrubs. Blackbrush scrub, a slow-growing species that can live up to 400 years, is abundant in middle elevations. Both creosote-bursage and blackbrush scrub vegetation communities can take decades or even centuries to recover from disturbances due to the long-lived nature of the plant species in these vegetative communities and the area's low rainfall.[84]

Rare and endemic plant communities of Gold Butte include gypsum soil-dependent species like sticky ringstem, Las Vegas buckwheat, and Las Vegas bearpoppy (state listed as critically endangered in Nevada[85]). These slow-growing specialist plants are threatened by gypsum mining outside of the monument and by unregulated off-highway vehicle use throughout their range. Other species are endemic to sand and gravel soils, like threecorner milkvetch and sticky wild buckwheat. The region is also home to other iconic species like Joshua trees, Mojave yucca, several varieties of cactus and other rare plants like the Rosy two-tone beardtongue and the Mokiak milkvetch.

Washes, Riparian Areas and Springs

Located within one of the most arid regions of the country, water is life in Gold Butte National Monument. The Virgin Mountains are regular recipients of snow and are thus a key contributor to the Virgin River, which feeds Lake Mead. The federally endangered southwestern willow flycatcher, which require moist riparian vegetation near saturated areas and surface water in order to breed, has designated critical habitat along the Virgin River,[86] and thus depends on water originating in Gold Butte National Monument and flowing through the Monuments streams and washes. The federally threatened yellow-billed cuckoo utilizes similar habitats and also has range in the area A large portion of these riparian habitats have been lost and degraded across the species' range due to water

diversion, livestock grazing, urban development, and other human induced habitat changes. Springs, including Quail Spring, Horse Spring, Bear Paw Spring and Red Rock Spring, all of which are priority management areas for translocated populations of the relict leopard frog, which was recently removed from the federal ESA candidate species status due to intensive conservation efforts.[87]

Ecological Condition

The designation of Gold Butte appropriately recognized and protected an intact and functional western landscape. Remote landscapes relatively unmodified by human intrusion and development are increasingly rare in the region and the nation.

Gold Butte National Monument lies within the Mojave Basin and Range ecoregion and was recently analyzed in a Rapid Ecoregional Assessment (REA) completed by NatureServe and partners as part of the BLM's landscape approach to resource planning.[88] An important landscape characteristic measured and mapped in the REA is *landscape condition,* The REA's evaluation of landscape condition provides "one composite view of the relative impacts of land uses across the entire ecoregion." The REA found that nearly the entire area of Gold Butte contains among the highest scoring areas for landscape condition in the ecoregion.

Habitat Connectivity

Regional connectivity in the northeastern Mojave Basin and Range ecoregion is constrained by substantial natural and anthropogenic barriers, namely the Colorado River, Grand Canyon, Lake Mead, Interstate 15 and the city of Las Vegas. Gold Butte National Monument is an important linkage between northwestern Arizona (Grand Canyon-Parashant National Monument) and other parts of the ecoregion.

Climate Change Resilience

The Mojave Basin and Range REA included several measures of climate change impacts.[97] While the Gold Butte National Monument area is forecast to undergo substantial changes in temperature and precipitation over the course of this century, the REA's climate envelope modeling to 2060 forecasts that the entire area of the monument will have continued or expanded potential habitat for Sonora-Mojave Creosotebush-White Bursage Desert Scrub, and a substantial portion will have persistent or expanded habitat for Mojave Mid-Elevation Mixed (Joshua tree-blackbrush) Desert Scrub.

The national monument is thus forecast to be a climate refugia for the threatened Mojave desert tortoise. Since the Monument currently contains designated critical habitat for the tortoise,[98] the forecast likelihood that the region will continue to be suitable for decades into the future underscores the importance of continued protection of Gold Butte. Indeed, the high likelihood of Mojave desert tortoise habitat resilience in Gold Butte figures prominently in its primacy as a mitigation location for the Dry Lake Solar Energy Zone (SEZ):

- The Mojave Basin and Range REA (NatureServe 2013) suggests that creosotebursage vegetation in the Gold Butte ACEC may persist longer under climate change than the other nominated ACECs.
- Niche modeling, completed by the National Park Service for the Lake Mead National Recreation Area, suggests, under future climate change, high-quality desert tortoise habitat will remain in the Gold Butte ACEC while most of the adjacent desert tortoise habitat in the national recreation area will decline and disappear.[99]

The REA's climate envelope modeling also suggests that Gold Butte will persist as habitat for desert bighorn sheep and potentially expanded habitat for the Gila monster.

The Designation of Gold Butte National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats

Habitat for fish and wildlife qualify for protection as scientific objects under the Antiquities Act. Gold Butte provides essential habitat for a wide variety of fish, wildlife and plant species, including rare, endemic and at-risk species, including key habitat areas for species listed under the Endangered Species Act (ESA).

Altering the configuration or management of the monument would remove lawful protections for the fish, wildlife and plant species found within the monument, which are considered to be objects of scientific interest.

Species Listed under the Endangered Species Act

As described above, Gold Butte provides critical habitat for the Mojave desert tortoise and is projected to remain as viable habitat even in light of climate-driven changes to temperature and precipitation. The U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation[100] web tool indicates that the following ESA-listed have the potential to occur within the Gold Butte National Monument (see Table below).

Common Name	**Scientific Name**	**Federal ESA Status**
California Condor	*Gymnogyps californianus*	Endangered, except where listed as experimental pop.
California Least Tern	*Sterna antillarum*	Endangered
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered*
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened*
Yuma Clapper Rail	*Rallus longirostris yumanensis*	Endangered
Desert Tortoise	*Gopherus agassizii*	Threatened*
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Threatened
Razorback Sucker	*Xyrauchen texanus*	Endangered*
Roundtail Chub	*Gila robusta*	Proposed Threatened
Virgin River Chub	*Gila seminuda (=robusta)*	Endangered
Woundfin	*Plagopterus argentissimus*	Endangered

* Designated critical habitat for these species overlaps the monument area.

At-risk Species

Due to the recent designation of Gold Butte National Monument, a management plan and comprehensive species list are not yet available for the designated area. Nonetheless the available information attests to the area's importance for a wide array of wildlife. The monument proclamation[101] names 15 species of interest that are found in the monument, including six (western burrowing owl, Costa's hummingbird, Bendire's thrasher, Lucy's warbler, black-chinned sparrow and gray vireo) that are U.S. Fish and Wildlife Service (USFWS) birds of conservation concern (BCCs) for the Sonoran and Mojave Desert bird conservation region.[102]

Additional information on species that are likely present in Gold Butte comes from the Clark County Multi-Species Habitat Conservation Plan,[103] which covers 79 species, and includes a further 103 species for evaluation and 51 as "Watch List" species. The covered species include four mammals, eight birds (including two ESA listed and two USFWS BCC species), fifteen reptiles (eleven of which are also listed in the Monument Proclamation), one amphibian, ten invertebrates and 41 plant species). As the entirety of Gold Butte lies within Clark County, and it contains a wideundoubtedly contribute to the conservation of many of these imperiled species.

Wide-ranging Species

Gold Butte supports a number of ungulates including pronghorn antelope, mule deer, and desert bighorn sheep. BLM has designated the area as bighorn sheep crucial habitat; Bighorn sheep winter range; mule deer crucial summer habitat; and mule deer winter range.[104] Several predator species also have habitat in the monument, including mountain lions, bobcats and foxes.

Gold Butte National Monument is Consistent with Multiple-use Policy and Provides Significant Social and Economic Benefits to the Region and Communities

The Gold Butte National Monument is consistent with the multiple-use policies of the federal land management agencies. The natural resource and management values conserved within the monument will best meet the present and future needs of the American people. Recreation, watershed, wildlife and fish, natural scenic, scientific and historical values are all provided by the monument. The monument designation was judicious, conserving resources while allowing for the continuation of some uses. Multiple use must be viewed in a broad context with the acknowledgement that not every use must occur on every acre; while the Gold Butte National Monument protected certain values, other various values and uses can be emphasized in other areas. The economic value of these types of uses to the state of Nevada is considerable. The Outdoor Industry Association[105] estimates that in 2012, the last year for which data is available, outdoor recreation generated $14.9 billion in consumer spending in Nevada, supporting 148,000 jobs, $4.8 billion in wages, and $1 billion million in state and local tax revenue. Based on the 2012 state population of 2,755,000 people, outdoor recreation generated $362.98 in tax revenue per Nevada resident, one of the highest per capita values in the nation. In California, by comparison, outdoor recreation generated $171.18 per resident and in Utah $299.72.

GRAND CANYON-PARASHANT

President Clinton established the Grand Canyon-Parashant National Monument (Parashant) in 2000 through Presidential Proclamation 7265. The monument spans more than 1 million acres within Mohave County in northwest Arizona and is jointly managed by the Bureau of Land Management (BLM) and National Park Service (NPS).

A recent assessment analyzed ecological values of Parashant by mapping and comparing a random sample of equivalent size areas in the region.[73] Based on this science-based analysis, the monumentranked 98 percent on ecological connectivity and 96 percent on ecological intactness. The Parashant is species rich and diverse, scoring 86 percent on reptile diversity, 67 percent in bird diversity, and 82 percent on rarity-weighted species richness. Additionally, the monument is highly resilient to climate change, with a score of 87 percent for climate resilience.

Federal land managers are conducting a wide range of scientific research at Grand Canyon-Parashant. Some projects include research related to acoustical monitoring, viewsheds, caves, water quality, re-introduction of the relict leopard frog, restoration of Pakoon Springs, invasive plant species, vegetation mapping, long-term monitoring of large and small arid springs in the Mojave Desert, post-fire restoration of the Mojave Desert ecosystem, and dark sky monitoring.[74]

Designation of Grand Canyon-Parashant National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[75] Indeed, the Parashant Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Clinton designated the land necessary to protect the diversity of ecosystems found within the Grand Canyon-Parashant National Monument.

Parashant protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. The Antiquities Act provides the President with the authority to protect and properly management landscapes and ecosystems for their scientific and other values.

The management plan for the monument prioritizes the protection and enhancement of the following ecosystem types and resident endemic species.

Ecosystems

Parashant is unique, a biological crossroads where the Mojave Desert meets the Colorado Plateau and the Great Basin. The monument contains a stunning and unique diversity of ecosystem types, including arid desert, riparian areas, shrub steppe, pinyon-juniper woodlands, and high elevation ponderosa pine forests.

Ponderosa Pine Ecosystem

Parashant's ponderosa pine forests, the forests of the Mt. Trumbull area in particular, are documented biological resources of scientific interest. The monument designation supports scientific research into these forests and emphasizes the protection and ecological restoration of the Mt. Trumbull pine forests. A change or revocation of the monument's protections could have significant implications for the Mt. Trumbull area; the 88,654 acre Mt. Trumbull Resource

Conservation Area (RCA) is revoked in the monument management plan "because the Monument provides adequate protection of resources" for the area.[76]
Ponderosa pine forests within the monument support a variety of wildlife including Merriam's turkey, Kaibab squirrel, and mule deer, as well as a number of raptors including sharp-shinned hawk, northern goshawk, Coopers hawk, American kestrel and red-tailed hawk. These forests also support a variety of bats and migratory birds. The monument management plan allocated over 18,000 acres of ponderosa pine habitat in the Mt. Trumbull and Mt. Logan areas to protected Kaibab squirrels, which are considered to be imperiled within the state of Arizona.

Mojave Desert Ecosystem
The Mojave Desert ecosystem supports endemic plant species such as creosote bush, Joshua tree, Mojave yucca and cacti and endemic animal species such as the threatened desert tortoise and chuckwalla.

Mojave-Great Basin Transition Zone Ecosystem
The Mojave-Great Basin Transition Zone ecosystem supports endemic plant species such as black brush, Joshua tree, Mojave yucca, and cacti and endemic animal species such as desert tortoise, chuckwalla and desert bighorn sheep.

Pinyon-Juniper Communities
Pinyon-juniper communities support mule deer and raptors such as sharp-shinned hawk, northern goshawk, Coopers hawk, American kestrel, and red-tailed hawk.

Interior Chaparral Ecosystem
The Interior Chaparral ecosystem supports endemic plant species such as manzanita, silk tassel and live oak and endemic animal species such as black-chinned sparrow and also mule deer. An endemic subspecies of soaptree yucca is associated with this community.

Plains-Grasslands Ecosystem
The Plains-Grasslands ecosystem supports endemic plant species such as galleta, sand dropseed, Indian ricegrass, blue grama, black grama, needle and thread grass, four-wing saltbush, shadescale, winterfat, and Mormon tea and endemic animal species such as pronghorn antelope, Cassin's sparrow and Brewers's sparrow.

Sagebrush Communities
Sagebrush communities within the monument support Vesper sparrows and lark sparrows, Brewer's sparrows, sage sparrows, black-throated sparrows, gray flycatchers, sage thrashers, long-billed curlews and burrowing owls.

Riparian Areas and Corridors
Parashant is a key contributor to the Grand Canyon watershed, containing tributaries that feed the Colorado River, which was also a primary factor in determining the monument's boundaries.[77] Springs, including Tassi and Pakoon Springs in the Grand Wash Trough, support sensitive riparian ecosystems and plant communities within the Mojave Desert. Tassi Spring's riparian habitat supports a diversity of bird and mammal populations, as well as the Grand Wash Spring snail, a candidate for listing under the Endangered Species Act.[78] The Pakoon Springs complex is the largest in the monument and is suitable for the reintroduction of relict leopard frogs, Grand Wash Spring snails and other at-risk species. The monument designation supports the protection and restoration

of these unique and rare aquatic features.
Riparian plant communities recognized and protected within Parashant are worth noting, given the tremendous importance of water resources in the 21st century west. Riparian communities support rare and at-risk species such as southwestern willow flycatcher, Mexican spotted owl, common black hawk, Lucy's warbler, and speckled dace.
The endangered southwestern willow flycatcher, which requires moist riparian vegetation near saturated areas and surface water in order to breed. A large portion of their habitat has been lost and degraded across the species range due to water diversion, livestock grazing, urban development, and other human induced habitat changes.

Ecological Condition
The designation of Parashant appropriately recognized and protected an intact and functional western landscape. Remote landscapes relatively unmodified by human intrusion and development are increasingly rare in the region and the nation. Parashant is one of the most remote areas in the United States outside of Alaska.
Most of Parashant lies within the Mojave Basin and Range ecoregion and was recently analyzed in a Rapid Ecoregional Assessment (REA) completed by NatureServe and partners as part of the BLM's landscape approach to resource planning.[79] An important landscape characteristic measured and mapped in the REA is *landscape condition*. The REA's evaluation of landscape condition provides "one composite view of the relative impacts of land uses across the entire ecoregion." Except for a very small area, the REA found that Parashant is among the highest scoring areas for landscape condition in the region.

Wildlife Habitat Connectivity
Parashant provides for regionally significant landscape-level connectivity, an important and rare ecological feature in western landscapes. Additionally, the management plan for Parashant emphasizes the maintenance of habitat connectivity and wildlife movement to enhance wildlife populations. For example, the plan states that for the imperiled desert tortoise, "[h]abitat connectivity will be maintained, providing sufficiently frequent contact between tortoises to maintain genetic diversity."[88]

The Designation of Grand Canyon-Parashant National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plant Habitats and Values
Habitat for fish and wildlife qualify for protection as scientific objects under the Antiquities Act. Parashant provides essential habitat for a wide variety of fish, wildlife and plant species, including rare, endemic and at-risk species, including key habitat areas for species listed under the Endangered Species Act (ESA).
Altering the configuration or management of the monument would remove lawful protections for the fish, wildlife and plant species found within the monument, which are considered to be objects of scientific interest.
The monument's management plan stresses the protection and restoration of all native wildlife communities, as monument objects. The management plan emphasizes the reintroduction and/or augmentation of pronghorn antelope, mule deer, desert bighorn sheep, Merriam's turkey, Kaibab squirrel and other populations of special status species.[89]

At-risk Species
Parashant provides habitat values that are significant to the region, and the configuration of the

monument is necessary for the proper care and management of these habitat values. Parashant protects and provides for the proper management of a number of at-risk species, including those listed under the ESA. The monument supports 73 rare, sensitive or ESA-listed animals and plants. Management of the monument focuses on the recovery and protection of at-risk and rare species. The monument's management plan states that "(t)he Monument will provide a block of remote, contiguous habitat that will serve as refugia for populations of special status species."[90]
Special status species not listed under the ESA with the potential to occur within the monument include chuckwalla, banded Gila monster, northern leopard frog, relict leopard frog, lowland leopard frog, endemic springsnails, Virgin spikedace, desert sucker, flannelmouth sucker, ferruginous hawk, northern goshawk, western burrowing owl, peregrine falcon, common black hawk, and white-faced ibis. Some rare plant species include the Parashant milkvetch, foothill ash, orange kallstroemia, yellow bluestem, spike pappusgrass, and leafy pondweed.

Species Listed under the Endangered Species Act
The U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation[91] web tool indicates that the following ESA-listed have the potential to occur within the Grand-Canyon Parashant National Monument (see Table below). Additionally, the USFWS's biological opinion for the Parashant management plan identifies three additional listed species associated with the monument: Brady Pincushion Cactus (*Pediocactus bradyi*), which is endangered, and Jones' Cycladenia (*Cycladenia humilis* var. *jonesii*), Siler Pincushion Cactus (*Pediocactus* (=*echinocactus*,=*utahia*) *sileri*), and Welsh's Milkweed (*Asclepias welshii*), which are threatened.[92]

ESA-listed Species with Potential to Occur within the Grand Canyon-Parashant National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
California Condor	*Gymnogyps californianus*	Endangered, except where listed as experimental population – areas of Arizona, Nevada, Utah
California Least Tern	*Sterna antillarum*	Endangered
Mexican Spotted Owl*	*Strix occidentalis lucida*	Threatened
Southwestern Willow Flycatcher*	*Empidonax traillii extimus*	Endangered
Yellow-billed Cuckoo*	*Coccyzus americanus*	Threatened
Yuma Clapper Rail	*Rallus longirostris yumanensis*	Endangered
Desert Tortoise*	*Gopherus agassizii*	Threatened
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Threatened
Bonytail Chub	*Gila elegans*	Endangered
Humpback Chub*	*Gila cypha*	Endangered
Razorback Sucker*	*Xyrauchen texanus*	Endangered
Virginia River Chub	*Gila seminude*	Endangered
Woundfin	*Plagopterus argentissimus*	Endangered
Fickeisen Plain Cactus	*Pediocactus peeblesianus fickeiseniae*	Endangered
Gierisch Mallow	*sphaeralcea gierischii*	Endangered
Holmgren Milk-vetch	*Astragalus holmgreniorum*	Endangered

* Designated critical habitat for these species overlaps the monument area.

The Parashant management plan establishes the protection of threatened and endangered species as a primary goal within the monument, stating that "(a)ll federally listed threatened and endangered

species found in the Monument will be recovered."

The management plan places a conservation emphasis on particular listed species, for example, stating, as a desired future condition: "The Mojave population of desert tortoise will be recovered and delisted."[93] The monument management plan allocated 171,709 acres to the Pakoon Wildlife Habitat Area (WHA) for the protection of desert tortoise and its designated critical habitat, along with numerous management guidelines. A change or revocation of the monument's protections for desert tortoise would have dire consequences for the protection of the species because the Pakoon Area of Critical Environmental Concern (ACEC), which was established for the protection of the species prior to the designation of the monument, was revoked in the monument management plan because of the protections offered under monument status.[94]

The monument offers protection for several listed species that are endemic to the region or have very restricted ranges. For example, the brady pincushion cactus is endemic to northwestern Arizona. In Arizona, the Jones' Cycladenia is known to occur on only a few sites in Mojave County.[95] The Fickeisen plain cactus is known to only two counties in Arizona, including Mojave.[96] The Holmgren milkvetch has a very restricted range in northwestern Arizona and southwestern Utah.[97] The impacts of human threats to these species, such as off-road vehicle use and livestock grazing, are high to very high, but the monument protection enables management to address and limit such threats.

Wide-ranging Species

Parashant supports a number of ungulates including mule deer, pronghorn antelope and desert bighorn sheep, which are a vulnerable species in the state of Arizona. These are all landscape species that rely on large, connected habitat areas to make season movements. Crucial mule deer winter range is provided in Whitmore Canyon and Andrus Point and prioritized for protection within the management plan. Bighorn sheep habitat areas, including the 114,288-acre Grand Wash Cliffs habitat area, are prioritized within the management plan.

The Parashant management plan emphasizes the role of predators, such as mountain lions, in maintaining the integrity of plant and animal communities. Large predators also require large, intact areas due to their territorial natures and extensive home ranges. Protection under monument designation enables a management system that can address and mitigate conflicts that can develop between human uses and predators. The Parashant management plan stresses human/wildlife coexistence and conflict avoidance and resolution.

HANFORD REACH NATIONAL MONUMENT

President Clinton established Hanford Reach National Monument (Hanford Reach or "Monument") in 2000 through Presidential Proclamation 7319. The Monument spans nearly 200,000 acres in southeastern Washington, near the Tri-Cities of Richland, Kennewick and Pasco, and at the intersection of Benton, Franklin, Adams and Grant counties. The Monument is jointly managed by the U.S. Department of Energy and U.S. Fish and Wildlife Service, with a very small portion also managed by Washington Department of Fish and Wildlife.

A recent assessment analyzed ecological values of Hanford Reach by mapping and comparing a random sample of equivalent size areas in the region.[73] Based on this science-based analysis, the Monument ranked 98 percent for ecological connectivity and 96 percent for ecological intactness. The Monument is species rich and diverse, scoring at 85.6 percent for reptile diversity, 66 percent for bird diversity, and 82 percent on rarity-weighted species richness. Additionally, the Monument is highly resilient to climate change, with a score of 86.5 percent for climate resilience.

In recognition of these biological values, nearly all of Hanford Reach is also managed as a unit of the National Wildlife Refuge System, the only network of federal lands and waters dedicated to wildlife conservation. Encompassing 566 refuges with at least one in every U.S. state and territory, the Refuge System is essential to protecting our nation's astounding diversity of wildlife, supports innumerable recreational and educational opportunities and generates billions of dollars in local, sustainable economic revenue. Designation of the Monument and subsequent and management plans incorporated the preexisting Saddle Mountain National Wildlife Refuge on Hanford Reach, established by permit in the northern portion of Hanford Reach.

In Executive Order 13792, the administration implies that the Hanford Reach National Monument inappropriately protects cultural, historic and scientific resources and that the Monument perhaps includes more land than is necessary to protect such resources. There is no legal basis nor facts supporting this suggestion.

The Designation of Hanford Reach National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Antiquities Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[76] In fact, the Hanford Reach proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the Monument boundaries. The facts demonstrate that President Clinton designated the area necessary to protect the diversity of ecosystems found within Hanford Reach along the Columbia River, including remote and intact ecosystems, watersheds, vegetation and community types, and habitat for fish, birds and other wildlife, including rare, endemic, sensitive and imperiled species.

Towering above the east bank of the Hanford Reach are the majestic White Bluffs—light colored cliffs, up to 250 feet high. The sediments comprising the White Bluffs are from an ancestral river and are nearly two miles wide within the Monument. Swallows, red-tailed hawks, kestrels, great horned owls, and prairie falcons use the sheer cliffs for nesting. Beyond the White Bluffs, vast upland areas at Hanford contain some of the very best of what little remains of the sagebrush steppe ecosystem that once dominated eastern Washington and much of the Columbia Basin plateau extending across three states. The river shoreline and adjacent Wahluke Slope provide large blocks of intact habitat supporting diverse native plants and animals, including more than 40 mammals, almost 200 species of birds, and 700 species of plants. A total of 127 populations/occurrences of thirty rare plant taxa—a tremendous number of rare plants in an area of this size—are documented

on the Hanford Site, and seven rare plant species associated with the riverine emergent wetlands are found at various places along the Hanford Reach.

Remote landscapes relatively unmodified by human intrusion and development are increasingly rare within the region and nation. In a 2003 report, the Nature Conservancy found that "less than 40% of the great shrub-steppe ecosystem that once dominated the Columbia Plateau of Washington, Oregon, and Idaho has escaped development to date."[77] Additionally, much of the remaining unconverted shrub-steppe exists in a highly degraded condition. This makes the Hanford Site's relatively undisturbed shrub-steppe, riverine, and riparian habitats increasing valuable as more of these old habitats are developed and converted to other uses. The Hanford Reach National Monument also provides for regionally significant landscape-level connectivity. Landscape connectivity is an increasingly important factor in the conservation of fish, wildlife, and plant populations.[78] Habitat loss, degradation and fragmentation pose the most important threat to the survival of native species, contributing to the shrinking distribution of many wildlife populations in North America. Landscapes fragmented by development and roads lead to increased mortality[79] for wide-ranging wildlife, including big game and large carnivores. Local populations, especially those of at-risk species, can decline and disappear without connectivity to support immigration.

The recognition and protection of habitat connectivity and wildlife corridors facilitates migration, dispersal, plant pollination, and gene flow within and across Monument boundaries. Establishing new areas and expanding existing protected areas is necessary to allow species to shift their ranges to adapt to climate change.[80] Connecting these habitat cores is also essential: wildlife corridors increase movement between isolated habitat patches by approximately fifty percent, compared to areas that are not connected by corridors.[81]

The Hanford Reach National Monument conserves a diversity of upland, aquatic and riparian ecosystems, vegetation and plant community types, including an inordinate amount of rare ecosystem types compared to other lands within the region. Riparian habitats are particularly important to conservation of fish, birds, and invertebrates, as well as native vegetation that provide food and cover for a multitude of wildlife species.[82]

The Designation of Hanford Reach National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats

Hanford Reach National Monument provides essential habitat for a wide variety of fish, wildlife and plant species, including rare, endemic and at-risk species, including key habitat areas for species listed under the Endangered Species Act (ESA). Altering the configuration of the Monument would remove lawful protections for these objects of scientific interest.

The Hanford Reach National Monument provides habitat values that are significant to the region, and the configuration of the Monument is necessary for the proper care and management of these habitat values. According to the U.S. Fish and Wildlife Service, 43 species of fish, including threatened and endangered salmon and trout; 42 mammal species; 258 bird species; 4 amphibian species; 11 reptile species; and over 1,500 invertebrate species have been documented within the Monument.[83]

The Hanford Reach National Monument protects a number of at-risk species, including plants and animals listed under the ESA (Table 1). The Washington Department of Fish and Wildlife lists additional state-listed species in the Monument (Table 2).[84] According to the U.S. Department of Energy, at least 48 plant and animal species that occur on public lands bordering Hanford Reach are considered rare, threatened or endangered.[85]

Table 1. Federally Recognized At-risk Species with Potential to Occur within Hanford Reach National Monument

Common Name	Scientific Name	Federal Status
Chinook Salmon (Upper Columbia (spring run))	*Oncorhynchus tshawytscha*	Endangered
Pygmy Rabbit	*Brachylagus idahoensis*	Endangered
Bull Trout	*Salvelinus confluentus*	Threatened
Steelhead (Upper Columbia)	*Oncorhynchus mykiss*	Threatened
Umtanum Desert Buckwheat	*Eriogonum codium*	Threatened
White Bluffs Bladderpod	*Physaria douglasii* ssp. *tuplashensis*	Threatened
Bald Eagle	*Haliaeetus leucocephalus*	Species of Concern
Peregrine Falcon	*Falco peregrinus*	Species of Concern
Persistent-Sepal Yellow-cress	*Rorippa calycina*	Species of Concern

Table 2. State Recognized At-risk Species with Potential to Occur within Hanford Reach National Monument

Common Name	Scientific Name	State Status
Pygmy Rabbit	*Brachylagus idahoensis*	Endangered
Ferruginous Hawk	*Buteo regalis*	Threatened
Umtanum Desert Buckwheat	*Eriogonum codium*	Threatened
White Bluffs Bladderpod	*Physaria douglasii* ssp.*tuplashensis*	Threatened
White Pelican	*Pelecanus erythrorhynchos*	Threatened
Black-Tailed Jackrabbit	*Lepus californicus*	Candidate
Bull Trout	*Salvelinus confluentus*	Candidate
Burrowing Owl	*Athene cunicularia*	Candidate
Chinook Salmon (Upper Columbia(spring run))	*Oncorhynchus tshawytscha*	Candidate
Golden Eagle	*Aquila chrysaetos*	Candidate
Sockeye Salmon (Ozette Lake)	*Oncorhynchus nerka*	Candidate
Steelhead (Middle Columbia)	*Oncorhynchus mykiss*	Candidate
Steelhead (Upper Columbia)	*Oncorhynchus mykiss*	Candidate
Townsend's Ground Squirrel	*Urocitellus townsendii townsendii*	Candidate
Washington Ground Squirrel	*Urocitellus washingtoni*	Candidate

The significance of the Reach as both a migration corridor and spawning habitat for the Northwest's dwindling stocks of salmon is well documented. The Reach offers riffles, gravel bars, oxbow ponds, and backwater sloughs that support some of the most productive spawning areas in the Northwest. Approximately 80 percent of the upper Columbia Basin's fall chinook salmon spawn within the Hanford Reach.[86] As the last free-flowing, non-tidal stretch of the Columbia River, the Reach also serves as a migration corridor for several stocks of salmon and steelhead that spawn upstream of the Monument.

Forty-five other fish species important to the ecology of the Monument also occur in the Reach, including several fish species of special concern, such as mountain suckers, sandrollers, and Paiute and reticulate sculpins. A land locked isolated population of white sturgeon also occurs in the Reach. These waters may provide the only remaining, significant spawning habitat for this huge fish on the main stem of the Colombia River.[87]

The Monument also provides critical habitat for the threatened and sensitive bird species. As described in President Clinton's proclamation, the Hanford Reach National Monument contains significant breeding populations of nearly all grassland and sagebrush steppe dependent birds, including loggerhead shrike, sage sparrow, sage thrasher, and ferruginous hawk. The Hanford Reach

and surrounding wetlands provide important stop-over habitat for migratory and resident birds. The Monument also provides wintering habitat for bald eagles, white pelicans, and many species of waterfowl, such as mallards, green-winged teal, pintails, goldeneye, gadwall, and buffleheads.
Two plant species, the White Bluffs bladderpod and the Umtanum desert buckwheat, were discovered on the Hanford Site and are not known to exist anywhere else. Both the Umtanum desert buckwheat and White Bluffs bladderpod were listed as "threatened" under the ESA in 2013. Several other rare plant populations exist in the area, including dwarf evening primrose, Piper's daisy, Snake River cryptantha, and desert dodder.[88] The Monument's status and protections are essential to protecting these rare and sensitive plant species and communities in the region.

Hanford Reach National Monument is Consistent with Multiple-use Policy and Provides Significant Social and Economic Benefits to the Region and Communities

Hanford Reach National Monument supports a variety of multiple uses compatible with the purposes of the designation. Public use of the Monument doubled from approximately 20,000 visitors at the time of designation in 2000 to 43,000 annual visitors today. The Monument provides visitors a wide range of recreational options. Angling is the most popular activity, occurring yearround.
The Monument has become a local and regional destination for salmon, steelhead, sturgeon and bass anglers. There are also regionally-significant opportunities for hunting waterfowl, upland birds and big game such as deer and elk. In fact, the largest elk in the state of Washington live in and frequent the Monument.[89] Visitors also enjoy hiking, birdwatching, horseback riding and nature photography at the Monument. The Columbia River itself is an especially popular feature for visitors to the Monument for boating, kayaking and canoeing, in addition to hunting and fishing.
Outdoor recreation is an increasingly important sector of the national and state economies, contributing a staggering $730 billion to the national economy annually.[90] The Outdoor Industry Association estimated that in 2012, the last year for which data is available, outdoor recreation generated $22.5 billion in consumer spending in Washington, $7.1 billion in wages, $1.6 billion in state and local tax revenue, and supported 227,000 jobs.[91] Based on the 2012 state population of 6,897,000[92] people, outdoor recreation generated $234.68 in tax revenue per Washington resident, one of the highest per capita values in the nation. Additional analysis has found that conserving public lands, such as Hanford Reach National Monument, helps to "helps safeguard and highlight the amenities that attract people and businesses."[93]
The economic benefits provided by national monuments is reflected in communities surrounding Hanford Reach in Benton, Franklin and Grant counties. These communities experienced strong growth after its designation, continuing previous growth trends. From 2001, the year after the Monument was designated, to 2015, the region's population grew by 37 percent, employment grew by 33 percent, real personal income grew by 59 percent, and real per capita income grew by 17 percent.[94] These trends mirror those documented in other parts of the West where national monuments have been designated. Eliminating, or reducing the size or protections afforded Hanford Reach National Monument could have negative impacts on local economies and communities that have come to depend on the designation.

IRONWOOD FOREST NATIONAL MONUMENT

President Clinton established the Ironwood Forest National Monument (IFNM or "Monument") in 2000 through Presidential Proclamation 7320.[73] The Monument spans approximately 128,917 acres overlapping Pima and Pinal counties in southern Arizona and is administered by the Bureau of Land Management (BLM).

A recent assessment analyzed ecological values of the IFNM by mapping and comparing a random sample of equivalent size areas in the region.[74] This science-based analysis found the monumentranked extremely high for biodiversity: 94 percent in mammal diversity, 94 percent in reptile diversity, and 83 percent in bird diversity. These findings affirm the Monument's importance to wildlife in southern Arizona.

The IFNM is renowned for its biodiversity. Tersey et al. (2001) noted that, "[w]ith more than 670 species of plants and animals documented within the boundaries of the IFNM, it is one of the most biologically diverse areas within the Sonoran Desert and in the southwestern United States. Many of these plants and animals are found nowhere else in the United States… ."[75]

Of unique botanical interest is Ragged Top, an area within the IFNM that supports more than 400 plant species, representing about 72 percent of plan species found in the Monument. The BLM's Proposed Resource Management Plan and Final Environmental Impact Statement (IFNM PRMP/FEIS) for the Monument stated that "[t]he high diversity, structure, and composition of plants in this area support both a high abundance and high diversity of wildlife."[76]

The Designation of Ironwood Forest National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Antiquities Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[77] The facts demonstrate that President Clinton's designation in Ironwood Forest was necessary to protect the diversity of ecosystems found within the Monument.

Ecosystems

The President's proclamation for the Monument was clear that ecosystems were important, qualifying objects needing protection. It states, for example,

> Stands of ironwood, palo verde, and saguaro blanket the monument floor beneath the rugged mountain ranges, including the Silver Bell Mountains. Ragged Top Mountain is a biological and geological crown jewel amid the depositional plains in the monument. The geologic and topographic variability of the monument contributes to the area's high biological diversity.[78]

The Monument's ecosystems, some rare and sensitive, are essential to supporting the diversity of wildlife referenced herein.

Desert Ironwood Forest

Abundant, viable populations of ironwood trees are an indicator of ecological integrity for the Sonoran Desert. The trees can live over 800 years and "generate a chain of influences on associated understory plants, affecting their dispersal, germination, establishment, and rates of growth."[79] As described in the Proclamation, ironwood forests benefit wildlife and other plants, including raptors, desert bighorn sheep, saguaro cactus, native bees, and cereus.[80] The lesser long-nosed bat, a federally endangered species, follows the blooming seasons for ironwood and other species on its annual migrations north and south, and the bat's range overlaps the ironwood forest range.

Jojoba – Chaparral
This community is a rare vegetation type in IFNM, covering about 1,600 acres or 0.8 percent of the Monument.[81] It is threatened by livestock grazing. Jojoba is a nutrient-rich food source for desert bighorn sheep, mule deer, and jackrabbits. The community attracts a diversity of birds such as crissal thrashers and brown towhees.[82]

Curly Mesquite Grassland
This ecosystem, found in the Roskruge Mountains, is an threatened ecosystem that provides habitat for several at-risk species including: cactus ferruginous pygmy-owls, big free-tailed bats, and mesquite mice. Desert scrub has encroached on curly mesquite grasslands, especially at lower elevations.[83]

Paloverde – Saguaro
This iconic cactus community provides habitat for a range of wildlife and plant species. Examples include imperiled birds of prey like the crested caracara and ferruginous pygmy-owl and bats like the big free-tailed bat and Mexican long-tongued bat, which is a BLM sensitive species.

Caves, Abandoned Mines, and Crevices
These unique landscape features provide important hibernacula for bats, many of them imperiled. Bats known to occur in the Monument that depend on these structural elements include California leaf-nosed bat, cave myotis, greater western mastiff bat, pale Townsend's big-eared bat (a BLM sensitive species), pocketed free-tailed bat (a BLM sensitive species), and western small-footed myotis.[84]

Riparian and Xeroriparian Ecosystems
Riparian and xeroriparian communities are vital for many desert-dwelling species. A few examples of riparian ecosystems and wildlife associates include xeroriparian and rufous-winged sparrow; Sonoran riparian deciduous woodland and Abert's towhee and Mississippi kite; streamside cottonwoods and willows and cactus ferruginous pygmy-owl and tropical kingbird; and broadleaf riparian deciduous forest and western red bat.[85]

Other Ecosystems of Concern
The IFNM PRMP/FEIS identified the following ecosystems of concern in the Monument: cactus dunes, cholla forest, and creosote.[86] Additionally, rare seeps and springs support imperiled species such as the Arizona giant sedge, which is a BLM sensitive species.

Other Ecosystems
Some less vulnerable ecosystems are also essential for at-risk wildlife in the Monumentt.[87] For example, mesquite bosques help support the cactus ferruginous pygmy-owl, big free-tailed bat, and mesquite mouse. The lesser long-nosed bat and western small-footed myotis are associated with oak woodlands and oak-pine forests. Swainson's hawks, western burrowing owls, lesser long-nosed bats, and pocketed free-tailed bat (a BLM sensitive species) depend on desert grasslands in theMonument. Desert scrub uplands are important for Mississippi kites, Swainson's hawks, western burrowing owls, big free-tailed bats, California leaf-nosed bats, lesser long-nosed bats, and pale Townsend's big-eared bats.

Wildlife Habitat Connectivity
The monument designation will enable the BLM to continue improving wildlife habitat connectivity

within the Monument and work with adjacent landowners to improve connectivity across the Monument boundaries. Connectivity is a major focus in the IFNM resource management plan (RMP). The RMP outlines six goals and objectives[96] and a set of actions[97] aimed at maintaining and enhancing wildlife corridors between habitat cores. Examples include working with neighboring landowners to "minimize degradation, loss, and fragmentation" of wildlife habitat and, more specifically, Manage and/or conserve areas identified as important for the viability of priority species andbighorn sheep populations, including, but not limited to lambing areas and movement corridors. Within 10 years, enhance habitat conditions in movement corridors so they are conducive to wildlife movement.[98]
At the time of designation, the IFNM's population of desert bighorn sheep were restricted to a very small area—a problem that should be addressed through management that reduces isolation and fragmentation.

Intactness
Ironwood National Monument lies within the Sonoran Desert ecoregion, which was recently analyzed in a Rapid Ecoregional Assessment (REA) completed by the Conservation Biology Institute as part of the BLM's landscape approach to resource planning.[99] Two important landscape characteristics measured and mapped in the REA are landscape intactness and potential for climate change impact. As defined in the REA, "[i]ntactness is a measure of naturalness as well as an attribute that can be defensibly supported by existing geospatial datasets, mapped, and reasonably tracked through time. Because vegetative cover represents wildlife habitat, it serves as a surrogate to estimate the status of species that depend on that habitat, particularly since spatial data for the predisturbance distribution or abundances of various wildlife species are typically not available." Consequently, areas with high intactness scores are particularly important for wildlife habitat. IFNM has a relatively high intactness score, with most habitat within the monument scoring "high" or "moderately high."

Resiliency
The REA also modeled potential for climate change impact, an important measure of the projected importance of habitat over time as climate warming leads to changes in temperature, precipitation and vegetative type. The REA used a fuzzy logic model and identified as "high" potential for climate impact any area that is modeled to undergo a change in vegetation type; the analysis also weighed other relevant factors, including modeled changes in temperature, precipitation and runoff. The REA found IFNM is dominated by "low" and "moderately low" potential for climate-related ecosystem change. The combination of relatively high intactness and particularly low climate change impact demonstrate the importance of IFNM as wildlife habitat, now and in the future.

The Designation of Ironwood Forest National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats
Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a variety of wildlife, including rare and at-risk species. This includes species listed under the Endangered Species Act (ESA) (see Table below) and those identified as sensitive by the BLM. As described in the Monument proclamation:

> Ironwood is the dominant nurse plant in this region, and the Silver Bell Mountains support the highest density of ironwood trees recorded in the Sonoran Desert. Ironwood trees provide, among other things, roosting sites for hawks and owls, forage for desert bighorn sheep, protection for saguaro against freezing, burrows for tortoises, flowers for native bees,

dense canopy for nesting of white-winged doves and other birds, and protection against sunburn for night blooming cereus.[100]

The ironwood-bursage habitat in the Silver Bell Mountains is associated with more than 674 species, including 64 mammalian and 57 bird species. Within the Sonoran Desert, Ragged Top Mountain contains the greatest richness of species. The monument is home to species federally listed as threatened or endangered, including the Nichols turk's head cactus and the lesser long-nosed bat, and contains historic and potential habitat for the cactus ferruginous pygmy-owl. The desert bighorn sheep in the monument may be the last viable population indigenous to the Tucson basin.[101] Altering the size or configuration of the monument would remove protections for many of these species. The Monument provides habitat values that are significant to the region, and the current configuration of the monument is necessary for the proper care and management of these habitat values. A goal of the IFNM is to "[m]anage allowable activities and uses to protect the following priority species: game species, bighorn sheep, mule deer, javelina, burrowing owls, migratory birds, and special status species to sustain healthy populations."[102]

At-risk Species

The IFNM PRMP/FEIS lists 66 at-risk species that occur or are believed to occur in the Monument.[103] There are approximately 24 BLM sensitive species associated with the Monument.[104] The U.S. Fish and Wildlife Service lists 37 migratory birds of conservation concern relevant to the IFNM that are also protected under the Migratory Bird Treaty Act.[105]

The following Arizona Species of Greatest Conservation Need (SGCN) are believed to use the Monument: lowland leopard frog, Abert's towhee, Arizona Bell's vireo, rufous-winged sparrow, Swainson's hawk, Baboquivari talussnail, western yellow bat, western burrowing owl, California leafnosed bat, cave myotis, and greater western mastiff bat.

There are at least nine plants that occur on the Monument that are included on the Arizona Rare Plant List: Graham nipple cactus, Needle-spined pineapple cactus, Nichol Turk's head cactus, Pima Indian mallow, Pima pineapple cactus, Arizona giant sedge, Arizona Sonoran rosewood, Bartram stonecrop, and Gentry indigo bush.[106]

The mesquite mouse is endemic to the region.

Species Listed under the Endangered Species Act

ESA-listed Species with Potential to Occur within Ironwood Forest National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
Jaguar	*Panthera onca*	Endangered
Lesser Long-nosed Bat	*Leptonycteris curasoae yerbabuenae*	Endangered
Sonoran Pronghorn	*Antilocapra americana sonoriensis*	EXPN
California Least Tern	*Sterna antillarum browni*	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Threatened
Sonoyta Mud Turtle	*Kinosternon sonoriense longifemorale*	Proposed Endangered
Nichol's Turk's Head Cactus	*Echinocactus horizonthalonius* var. *nicholii*	Endangered
Pima Pineapple Cactus	*Coryphantha scheeri* var. *robustispina*	Endangered

Wide-ranging Species

The IFNM supports a number of native ungulates, including the desert bighorn sheep, which is vulnerable in Arizona,[107] mule deer, and pronghorn. Wide-ranging carnivores include mountain lions, bobcats, and coyotes. The Monument is also within the historic range of endangered jaguars and Mexican gray wolves.

MARIANAS TRENCH MARINE NATIONAL MONUMENT

President George W. Bush established Marianas Trench Marine National Monument (Marianas Trench Monument or "Monument") in 2009 through Presidential Proclamation 8335.[117] The Monument protects 95,216 square miles of ocean environments in the Mariana Archipelago, east of the Philippines. Monument designation and management are divided into three units. The Department of the Interior, through the U.S. Fish and Wildlife Service (FWS), and in consultation with the Department of Commerce, administers the Volcanic Unit (submerged lands within 1 nautical mile of 21 designated submerged volcanic sites) and the Trench Unit (extensive, submerged lands encompassing the Mariana Trench); the Department of Commerce, through the National Oceanic and Atmospheric Administration (NOAA), has primary management authority for fisheries in waters within the Islands Unit (the waters and submerged lands around the three northernmost Mariana Islands).

The Volcanic and Trench units of the Monument were added to the National Wildlife Refuge System in 2009, as Mariana Arc of Fire and Mariana Trench national wildlife refuges, respectively. They conserve some of the most unique geological features and biological resources in the world and in the Refuge System, the only network of federal lands and waters dedicated to wildlife conservation. Encompassing 566 refuges with at least one in every U.S. state and territory, the Refuge System is essential to protecting our nation's astounding diversity of wildlife, supports innumerable recreational and educational opportunities and generates billions of dollars in local, sustainable economic revenue. Replete with unusual life forms and unexplored habitats, Mariana Arc of Fire and Mariana Trench refuges are exceptional wildlife refuges.

The marine environment of Marianas Trench Monument contains objects of great historic and scientific interest. Only recently have scientists visited the incredible depths of the Monument, discovering previously unknown biological, chemical and geological wonders. Their expeditions have confirmed the presence of some of the deepest living fishes in the world, a tremendous diversity of marine life and numerous uncounted and undescribed species from every phylum.[118] NOAA plans to continue conducting comprehensive oceanographic and ecological surveys of the Monument's unique coral reefs, unusual habitats and lifeforms.[119] Much scientific study still remains to fully explore and understand the ecological relationships, and oceanographic and geological phenomena of the area. The designation provides a unique opportunity to determine scientific benchmarks and references for comparing protected and unprotected areas in terms of climate change, and the ability for species to survive in extremely harsh conditions. Both the known and potential scientific findings and important marine resources within Marianas Trench Monument clearly demonstrate that President Bush was well within his discretion under the Antiquities Act in designating the monument.

Marianas Trench Marine National Monument Protects Sensitive Ecosystems, Habitats and Geological Features of Significant Historic and Scientific Interest

The proclamation establishing Marianas Trench Monument describes in great factual detail the unique ecosystems, geological formations and chemical environment at the Monument that support a diverse assemblage of marine species and rare biological communities of high ecological value.[120] The Monument comprises 21 submerged volcanoes, one of only two natural liquid carbon dioxide sites in the world, and a vast almost completely unexplored submarine canyon, the deepest place onEarth.[121] It safeguards these extraordinary habitats and provides for marine life that is adapted to each habitat type. Courts have upheld that the Antiquities Act provides the President with the discretion to protect ecosystems, ecosystem features and large habitats. For example, in *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[122] As described below, the biological,

ecological and geological features found in Marianas Trench Monument qualify as objects of scientific and historic interest meriting protection under the Antiquities Act.

Mariana Trench

The Trench Unit of the Monument protects the crescent-shaped Mariana Trench, stretching 940 nautical miles long by 38 nautical miles wide within the U.S. Exclusive Economic Zone and containing the deepest known points in the global ocean, deeper than the height of Mount Everest above sea level.[123] The Mariana Trench was created geologically when the Pacific Plate plunged beneath the Philippine Sea Plate into the Earth's mantle. It includes more than 50,000 unexplored acres and is recognized by the international scientific community as the oldest geological place on the ocean floor.[124]

Undersea Mud Volcanoes and Thermal Vents

The Volcanic Unit of the Monument protects an arc of 21 undersea mud volcanoes and thermal vents, representing the only place in the world with huge hydrogen-releasing mud volcanoes. This area supports unusual life forms in some of the harshest conditions imaginable. The hydrothermal vents release highly acidic and boiling water with temperatures that can reach up to 572 degrees Fahrenheit. The species that survive here show an incredible resistance to temperature extremes. The vents release hydrogen sulfide and other minerals that become important components of the food chain when they are consumed by barophilic bacteria, which are then consumed by other microorganisms that are the basis of a vast marine food web.[125]

Champagne Vent and Sulfur Cauldron

The Volcanic Unit also protects other unique features of the Monument, including the Champagne Vent and Sulfur Cauldron. The Champagne Vent, located at the Eifuku submarine volcano more than one mile below sea level, produces almost pure liquid carbon dioxide, a phenomenon observed at only one other site on Earth. The world's only convecting pool of liquid sulfur, dubbed the Sulfur Cauldron, exists at the Daikoku submarine volcano. The only other known location of molten sulfur is on a moon of the planet Jupiter.[126]

Coral Reefs

The Island Unit of the Monument protects rare reef habitats that support marine biological communities dependent on basalt rock formations, unlike those throughout the remainder of the Pacific. These coral reef ecosystems are among the most biologically diverse in the Western Pacific and safeguard a wide variety of unexplored seamount and hydrothermal vent life. They comprise the most diverse assemblages of stony corals in the Western Pacific, including more than 300 species, the greatest number of any reef area in U.S. waters.[127] Three of the coral species found in the Monument are listed as threatened under the Endangered Species Act. The reef habitats in the Monument support a multitude of apex predators, some of the largest reef fish biomass in the Mariana Archipelago and are vital to the long-term study of tropical marine ecosystems.[128]

Maug Crater Lagoon

The submerged caldera at the island of Maug represents yet another rare phenomenon found within the Monument. Maug Crater is one of only a few known places on Earth where photosynthetic and chemosynthetic communities co-exist. The caldera is 820 feet, an unusual depth for lagoons. The lava dome in the center of the crater rises to within 65 feet of the water's surface. Hydrothermal vents along the side of the dome release acidic water at scalding temperatures adjacent to a coral reef that ascends to the sea surface, replete with microbial mats and tropical fish.[129]

Marine Waters
The waters of the Monument are rich with marine life, sheltering a diversity of permanent, seasonal and transient species. Fish concentrate at the underwater volcanoes, drawing apex predators. Thebenthic bottoms of the Monument also safeguard a variety of species, including rare lifeforms suited to darkness, extreme temperatures and high pressure in the deep sea.[130]

Marianas Trench Marine National Monument Protects Rare and Imperiled Marine Species of Significant Historic and Scientific Interest
Fish and wildlife qualify for protection as objects of historic and scientific interest under the Antiquities Act. Marianas Trench Monument provides vital habitat for a variety of rare and endemic fish and wildlife, including imperiled species listed under the Endangered Species Act (ESA).

Fish
More than 400 diverse fish species are found in the waters of and around the Marianas Trench Monument, from some of the deepest living fish species to tropical reef fish.[131] Pelagic species include blue marlin, sharks, mahi mahi, sharks, spearfish, sailfish and wahoo.[132] One area in the Island Unit of the Monument contains the highest density of sharks anywhere in the Pacific. These waters of the northern islands of the Archipelago support the greatest amounts of large fish biomass in the Mariana Islands. Species such as the rare bumphead parrotfish, which has been depleted throughout much of its range and is listed as threatened by the International Union for Conservation of Nature, thrive here. [133]

Marine Mammals
Many species of whales and dolphins are found in the waters of the Monument, including three local species protected under the ESA: the sperm whale, humpback whale and sei whale. Other cetaceans include short-finned pilot whales, pygmy killer whales, Byrde's whales, Cuvier's beaked shales, spinner dolphins, bottlenose dolphins, pantropical spotted dolphins, striped dolphins, Risso's dolphins, and rough-toothed dolphins.[134] All of these marine mammals are protected under the Marine Mammal Protection Act.

Reptiles
The Monument safeguards imperiled sea turtles, including the endangered green turtle and endangered hawksbill.[135] These rare turtles rely on both foraging and migratory habitat preserved by the Monument.

Seabirds
More than two dozen species of seabirds inhabit the area around Marianas Trench Monument, and may utilize its waters for foraging. Three such species are listed under the Endangered Species Act and all migratory species are protected under the Migratory Bird Treaty Act.

Invertebrates
More than one hundred species of macroinvertebrates, including sea urchins, crabs, gastropods and abalone have been documented in the Islands Unit of the Monument alone.[136] Cusk eels, anglerfish, pelagic sea cucumbers, squat lobsters, shrimp and arthropods that exhibit deep-sea gigantism have all been found in the Monument.

Xenophyophores
During a 2011 research expedition to the Mariana Trench, scientists documented the deepest known

existence of xenophophores or "giant amoebas," single-celled, sponge-like animals that live exclusively in deep sea environments. Studies show that these species are likely to resist high doses of heavy metals[137].They are just one example of the many amazing discoveries in deep-sea biology that we may find in the Monument.

Imperiled Species

At least 17 species listed under the ESA may occur within or around the monument. They may be permanent residents of the Monument (such as corals), or may only exhibit transient use of the Northern Islands waters at certain times of the year, as with some whale and bird species.[138]

ESA-listed Species That Use Marianas Trench Marine National Monument

Common Name	Scientific Name	Federal ESA Status
Hawaiian petrel	*Pterodroma sandwichensis*	Endangered
Newell's shearwater	*Puffinus auricularis*	Threatened
Short-tailed albatross	*Phoebastria albatrus*	Endangered
Blue whale	*Balaenoptera musculus*	Endangered
Fin whale	*Balaenoptera physalus*	Endangered
Humpback whale	*Megaptera novaeangliae*	Endangered
Sei whale	*Balaenoptera borealis*	Endangered
Sperm whale	*Physeter macrocephalus*	Endangered
Green sea turtle	*Chelonia mydas*	Threatened
Hawksbill turtle	*Eretmochelys imbricata*	Endangered
Leatherback turtle	*Dermochelys coriacea*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Endangered
Olive ridley sea turtle	*Lepidochelys olivacea*	Threatened
Scalloped hammerhead shark	*Sphyrna lewini*	Threatened
Needle coral	*Seriatopora aculeata*	Threatened
No common name coral	*Acropora globiceps*	Threatened
Blunt coral	*Acropora retusa*	Threatened

The Size and Protections Afforded Marianas Trench Marine National Monument are Necessary for the Proper Care and Management of Marine Species and Ecosystems of Historic and Scientific Interest

The biological requirements and function of species and habitats in Marianas Trench Monument require both the size designated and the protections President Bush provided the area almost a decade ago. The size was narrowly tailored not to exceed the smallest area compatible with the proper care and management of the objects to be protected. The area within the Monument's boundaries supports a diverse and increasingly rare assemblage of fish and wildlife as compared to other areas within the Western Pacific. It preserves an extraordinary part of our planet that extends from shallow water reef ecosystems to uncommon geological formations and the deepest depths of ocean habitat. The monument proclamation provides for the proper care and management of these exceptionally important and unique resources. Altering its configuration or management would remove lawful protections for the species, natural features and fragile ecosystems—objects of historic and scientific interest—that the monument was established to conserve.

Scientists recommend protecting 30 percent of the world's oceans to fulfill an intergenerational legacy of ocean resource sustainability; at present, less than three percent of the world's oceans areprotected.[139] Existing uses of Marianas Trench Monument are appropriately limited to scientific exploration and research, public education programs, traditional access by indigenous people,

recreational fishing where it does not harm the Monument, and programs for monitoring and law enforcement.[140] Current management will not only provide essential research for understanding comparatively little known marine ecosystems, but also ensure the area serves as a marine reserve for conserving and restoring fish stocks for the benefit of current and future generations.

Numerous scientific studies demonstrate that well-designed and strictly enforced marine reserves increase the density, diversity and size of fish, invertebrates and other organisms vital to wildlife conservation, as well as to recreational and commercial fishing.[141] Growth of fish biomass in fully protected areas on average increases to four times than in fished areas. Reserves also safeguard more apex predators, many of which are rare or absent from unprotected areas.[142] The Monument's ability to conserve and restore highly fished predatory species (e.g., sharks, grouper, lobster, etc.) restores key ecological functions and species interactions that can have strong cascading effects on lower trophic levels.[143]

MOJAVE TRAILS NATIONAL MONUMENT

Direction in Executive Order 13792 implies that Mojave Trails National Monument inappropriately protects cultural, historic and scientific resources and that the monument perhaps includes more area than is necessary to protect these historic and scientific objects. There is simply no legal basis nor facts supporting this suggestion. In fact, a review of the record and resources protected within Mojave Trails clearly demonstrate that President Obama did not abuse his discretion under the Act in designating this monument.

Mojave Trails National Monument Represents a Significant Historic and Cultural Landscape within the United States

Mojave Trails National Monument represents a truly significant historic and cultural landscape within the United States. As discussed with great detail within the monument's Proclamation,[73] the archeological and historical record of the significance of the Mojave Trails landscape is extremely clear. There is no disputing the fact that the Mojave Trail has been used for centuries and is important to Native American tribes. The more recent, historic use of the Government Road (aka Mojave Road) and Highway 66 through the Monument also testifies to its significance. The facts demonstrate that President Obama was well within his discretion in designating the land necessary to protect the unique historic and cultural values and resources found within the Mojave Trails landscape. In fact, this Monument represents a mere sliver of historic and cultural resources that were once present throughout a region, but have been lost; protection of these historic and cultural values is therefore of paramount importance.

In addition, Mojave Trails National Monument is appropriately sized to protect natural resources and scientific objects as authorized under the Antiquities Act. This includes remote and intact ecosystems, watersheds, vegetation and community types, and habitat for fish and wildlife, including rare, endemic, sensitive and imperiled species.

The Designation of Mojave Trails National Monument Protects and Provides for the Proper Care and Management of Significant Landscape and Ecosystem Values

Mojave Trails National Monument protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. These ecological values have been assessed and extensively planned for through the 1994-2005 West Mojave Coordinated Resource Management Plan and the 2008-2016 Desert Renewable Energy Conservation Plan (DRECP) efforts.

The designation of Mojave Trails National Monument appropriately recognized and protected a scientifically unique landscape: a relatively intact and functional western landscape. Remote landscapes relatively unmodified by human intrusion and development are increasingly rare within the region and nation as a whole. The Mojave Trails National Monument also provides for regionally significant landscape-level connectivity, a significant and rare ecological feature in western landscapes. Connectivity is one of the most crucial factors in the conservation of fish and wildlife populations. The recognition and protection of wildlife connectivity corridors facilitates migration, dispersal, and gene flow between Mojave Trails National Monument and surrounding protected areas, including 13 wilderness areas, the Mojave National Preserve and Joshua Tree National Park. The Mojave Trails National Monument also appropriately protects a highly resilient landscape. Resilient landscapes are best able to provide conservation values and other key ecosystem services to society into the future. The importance of Mojave Trails National Monument for wildlife species is not limited to its present value. Much of this Monument is projected to experience low to moderate potential for impacts from climate change; making it a key investment.

Designation of the Mojave Trails National Monument provides for an increased emphasis on the proper care and management of a diversity of terrestrial, aquatic and riparian ecosystems, vegetation and plant community types, including an inordinate level of rare ecosystem types compared to other lands within the region. These features have incredibly high scientific value due to their diversity, intactness and rarity. Vegetation diversity is higher within the boundaries of the Monument compared to adjacent public lands. The monument's Proclamation describes in significant factual detail the types of ecosystems, plant communities and vegetation types found within the monument. The extent of the monument is necessary to protect these appropriately recognized unique and irreplaceable scientific ecological features.

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the Court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[74] Indeed, the Mojave Trails Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument. The facts demonstrate that President Obama designated the land necessary to protect the diversity of ecosystems found within the Mojave Trails National Monument.

The Designation of Mojave Trails National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Wildlife Habitat Values

Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a variety of wildlife, including rare and at-risk species. This includes key habitat for species listed under the Endangered Species Act (ESA) and those identified as sensitive by the United States Bureau of Land Management (BLM; Table 1). Altering the configuration of the monument would remove protections for many of these species. The Monument provides habitat values that are significant to the region, and the current configuration of the monument is necessary for the proper care and management of these habitat values. The monument supports high species richness compared to other California Desert lands; including critical habitat designated for California's state reptile, the threatened Agassiz's desert tortoise (*Gopherus agassizii*); and the increasingly at-risk Desert bighorn sheep (*Ovis canadensis nelsoni*).

Table 1. Rare & Protected Species of the Mojave Trails National Monument

Common Name	Scientific	Name Status
Agassiz's desert tortoise	*Gopherus agassizii*	State/federally Threatened
Desert bighorn sheep	*Ovis canadensis nelsoni*	State Protected/BLM
Western pond turtle	*Emys marmorata*	State Protected/BLM
Mojave fringed-toed lizard	*Uma scoparia*	BLM Sensitive
Least Bell's vireo	*Vireo bellii pusillus*	State/federally Endangered
Southwestern Willow	*Empidonax traillii extimus*	State/federally Endangered
Golden eagle	*Aquila chrysaetos*	State/federally Protected
White-margined beardtongue	*Penstemon albomarginatus*	BLM Sensitive

The Designation of Mojave Trails National Monument Protects and Provides for Current Uses and Appropriate Access

As described by the BLM[75], Mojave Trails National Monument is "a stunning mosaic of rugged mountain ranges, ancient lava flows, and spectacular sand dunes. Protection of this area will preserve its natural, cultural and historic legacy while preserving traditional uses of the area." BLM has also informed the public that the Presidential Proclamation designating the Monument provides

latitude for existing uses and activities. Livestock grazing in the authorized Lazy Daisy allotment can continue according to BLM guidelines. Rock-hounding opportunities too, will continue under BLM's rock collecting guidelines. Vehicle access will also continue according to previous travel management planning efforts. A planning effort is even underway to ensure uses and activities occurring within the monument continue in a manner which safeguards Monument objects in need of careful management. The public has been provided assurances that BLM will complete this planning in an open and transparent manner; with a specific advisory subgroup selection process initiated in February,[76] but delayed by the administration.

Administration of Mojave Trails National Monument Continues to be Consistent with Multiple-use Policy and Provides for Significant Social and Economic Benefits to the Region and Local Communities

Mojave Trails monument designation is consistent with the multiple-use policies of the BLM; the federal agency which managed these public lands prior to monument designation and who will continue to manage these public lands into the future. Natural resource values managed under Monument designation and planning processes will best meet the present and future needs of the American people. Recreation, range, watershed, wildlife, natural scenic, scientific and historical values are all protected in the Monument. Boundary designation was judicious, encompassing the smallest possible acreage to adequately protect namesake natural resources; while allowing for the continuation of primary existing uses cherished by local communities. The current and future management of these public lands must be viewed in a broad context, with the acknowledgement that not every use must occur on every acre. Further, the many uses and opportunities provided within and adjacent to the Monument will not be affected by its previous designation. This is a "settled" designation that needs no re-visitation; as it has incorporated local concerns.

Notably, economic growth in the California Desert communities surrounding the Monument are expected to expand[77] and such growth is welcome. National monument status appears to convey sufficient importance to inspire visitation on a level nearly equivalent to national park status. A recent report, "*West Is Best: How Public Lands in the West Create a Competitive Economic Advantage*"[78] has found that the West's national monuments offer growing high-tech and services industries a competitive advantage, which is a major reason why the western economy has outperformed the rest of the United States economy in key measures of growth–employment, population, and personal income–during the last four decades. As the West's economy shifts toward a knowledge-based economy, research shows that protected federal public lands support faster rates of job growth and are correlated with higher levels of per capita income. Leading economists, including three Nobel laureates, even previously urged President Obama to create new protected areas such as national parks, wilderness, and monuments. In a 2016 letter,[79] signed by more than 100 economists and academics in related fields from across the country, the President was urged to "create jobs and support businesses by investing in our public lands infrastructure and establishing new protected areas such as parks, wilderness, and monuments."

Numerous studies by Headwaters Economics and others—carefully scrutinized to pass scientific muster and credibility—have concluded that protected federal public lands in the West, including lands in non-metro counties, can be an important economic asset that extends beyond tourism and recreation to attract people and businesses.

NORTHEAST CANYONS AND SEAMOUNTS NATIONAL MONUMENT

President Barack Obama established the Northeast Canyons and Seamounts Marine National Monument on September 15, 2016, under Proclamation 9496.[116] The importance of the Northeast Canyons and Seamounts Marine National Monument (Monument) as a biodiversity hotspot, as habitat for many rare and imperiled marine species, and for its deep-sea cold-water corals cannot be overstated. President Obama was well within his discretion to determine that the Monument should be designated to protect the objects of scientific interest contained within its boundaries.

The Monument consists of two distinct areas located within waters of the United States offshore of New England and the mid-Atlantic region, 130 miles southeast of Cape Cod, Massachusetts, and covers a total area of 4,913 square miles in Georges Bank within the U.S. EEZ. One area of 3,961 square miles covers four underwater seamounts (Bear, Mytilus, Physalia, and Retriever) that rise as high as 7,000 feet above the ocean floor and reach nearly to the ocean's surface. These seamounts (extinct volcanoes), higher than any mountain peak east of the Rockies, are the only ones found in U.S. Atlantic waters. The other area of 941 square miles covers three submarine canyons on the edge of the continental shelf (Oceanographer, Lydonia, and Gilbert), all deeper than the Grand Canyon. The Monument will be jointly managed by the National Oceanic and Atmospheric Administration utilizing its authorities under the Magnuson-Stevens Fishery Conservation and Management Act, the Endangered Species Act, and the Marine Mammal Protection Act, and other appropriate authorities, and the U.S. Fish and Wildlife Service, utilizing its authorities under the National Wildlife Refuge System Administration Act, the Refuge Recreation Act, the Endangered Species Act, and other appropriate authorities. The agencies are charged with preparing a joint management plan within three years of the Proclamation, in consultation where appropriate with the Departments of Defense and State.

A. The Unique Marine Ecosystems of the Monument Constitute Objects of Scientific Interest

According to the Proclamation, "The canyon and seamount area contains objects of historic and scientific interest . . . . the canyons and seamounts themselves, and the natural resources and ecosystems in and around them."[117] The Monument was appropriately designated to protect objects of scientific interest in the submerged lands and waters of the areas, as per criterion (iii) of Exectuve Order 13792. Both the seamounts, which function as oases of life in the deep sea, as well as the canyons, teem with a rich diversity of marine life. Oceanographic conditions concentrate pelagic and highly migratory species. Rich upwellings of deep-sea nutrients support a large food web, from microscopic phyto- and zooplankton at the bottom, schools of forage fish, krill, and squid in the middle, and sharks, sea turtles, tuna, swordfish, and massive whales at the top. Many seabird species, including the iconic Atlantic puffin also rely on this area for foraging and overwintering. In all, the Monument includes eight different major and interconnected marine habitat types from the continental shelf edge down to the abyssal plain.[118]

Both areas have been the subject of intense scientific interest from oceanographic researchers for decades. Scientists from government and academic institutions have studied these areas from research vessels, submarines, and remotely operated underwater vehicles. Recent technological advances in underwater exploration technologies have yielded new information about these unique, isolated environments and the ecological and biological resources they contain. Beyond the scientific community, these expeditions have engaged the interest of the general public as well; when NOAA's Office of Ocean Exploration and Research undertook the 36-day Northeast U.S. Canyons Expedition in 2013 with NOAA Ship *Okeanos Explorer* and its remote-operated underwater vehicle *Deep Discoverer*, more than half a million people tuned in to the live video feeds documenting the incredible diversity of marine life in never-before seen underwater landscapes.[119] These videos, photos, and other information continue to educate the public through NOAA's Ocean Explorer

website.[120]
Much research remains to be conducted to fully explore and understand the lifeforms, ecological relationships, and oceanographic and geological phenomena of the Monument. The Monument provides a unique scientific opportunity to determine benchmarks and scientific references for comparing protected and unprotected areas in terms of climate change, and resource development impacts. The Monument also provides an important buffer for ocean resilience and fisheries recovery.

1. *The Monument's Deep-Sea Corals are Objects of Great Scientific Interest*
To date, more than 70 species of deep-sea corals have been discovered in the monument, growing on the canyon walls. Scientific expeditions have found at least two dozen species of coral found nowhere else on earth. Unlike their tropical cousins, cold-water coral species do not rely on symbiotic algae for food and do not require sunlight; rather, their polyps collect tiny organisms from the surrounding nutrient-rich waters. These corals grow only millimeters per year over hundreds, or thousands, of years, and can grow as big as small trees. Specimens of deep-water black corals have been determined to be more than four thousand years old, the oldest marine organisms detected to date.
The centuries-old cold-water coral complexes and associated structure-forming fauna such as sponges and anemones are the foundation of this deep-sea ecosystem. They provide food, spawning and nursery habitat, and shelter for innumerable invertebrates such as worms, starfish, and lobsters, depend on deep-sea coral habitats.
Deep-sea corals are invaluable objects of scientific interest. Because they are so long-lived, scientists can analyze trace elements and isotopes incorporated into their calcium-based skeletons to learn about historic changes in global climate and ocean current systems. Research into coral and sponge communities has yielded advances in cancer treatments, human bone synthesis, and optic cables. Scientists are currently investigating compounds discovered in deep-sea coral ecosystems for their potential use in new medicines.
Because deep-sea corals are fragile and slow-growing, they are highly vulnerable to human disturbance. A bottom-trawl fishing net can destroy in mere seconds coral colonies that took hundreds or thousands of years to grow. Deep-sea corals are also extremely vulnerable to oil and gas exploration and development. Climate change, and the resulting ocean acidification, are changing the ocean's chemistry, causing slower growth and weaker skeletons in corals. Because of these species' high sensitivity to disturbance, long recovery times if damaged, and low ecological resilience, it is critical to protect them from all extractive industry impacts through the monument designation.

2. *The Monument's Diversity and Abundance of Marine Wildlife are Objects of Great Scientific Interest*
Fish and wildlife qualify for protection as objects of historic and scientific interest under the Antiquities Act. The Monument provides important three-dimensional habitat for a large diversity of endemic and migratory marine wildlife species, offering food, shelter, and nursery habitats otherwise unavailable in the surrounding marine environment. To date, more than 320 marine species have been identified in the canyons area, while another 630 species have been described in the seamounts area. Whales and dolphins, including humpback whales and endangered North Atlantic right whales, sperm whales, fin whales, and sei whales, are known to concentrate in the Monument. Similarly, the Monument provides important habitat for sea turtles, including the Kemp's ridley, the smallest and most endangered of the world's sea turtle species, as well as loggerheads and leatherbacks. Because of the rich foraging grounds, highly migratory fish species, such as tuna, billfish, mahi mahi, and ten species of sharks (including great white sharks), are attracted to the Monument. The Monument is also an important feeding ground for myriad seabird species, including the vulnerable Atlantic puffin

as well as gulls, shearwaters, storm petrels, gannets, skuas, and terns, among others.
Monument waters are habitat for many species protected by federal law. All marine mammal species occurring within the Monument are protected by the MMPA. ESA-listed species occurring in Monument waters include:

Common Name	**Scientific Name**	**ESA Status**
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened (NW Atlantic DPS)
North Atlantic right whale	*Eubalaena glacialis*	Endangered
Sperm whale	*Physeter microcephalus*	Endangered
Sei whale	*Balaenoptera borealis*	Endangered
Fin whale	*Balaenoptera physalus*	Endangered

B. The Designation is Situated Only on Submerged Lands and Waters Owned or Controlled by the United States
Both Monument areas consist solely of waters of the United States and underlying submerged lands, lands owned or controlled by the federal government within the U.S. EEZ. As demonstrated above, it is entirely within the president's discretionary authority under the Antiquities Act to designate national monuments consisting of submerged lands and the overlying waters within the U.S. EEZ. The Monument encompasses only about 1.5 percent of U.S. waters along the Atlantic coast.

C. The Monument Designation Was Narrowly Tailored to the Smallest Area Compatible with Its Proper Care and Management
The Monument's size was narrowly tailored not to exceed the smallest area compatible with the proper care and management of the objects to be protected. In response to fishing industry pressure and in order to exclude areas more actively fished, the final designation contained only 40% of the total canyon and inter-canyon area originally proposed. President Obama explicitly determined that the final designation "constitutes the smallest area compatible with the proper care and management of the objects to be protected."[121] Thus, there is no justification under criterion (i) of Executive Order 13792 to recommend any changes to the Monument.
The biological requirements and function of species and habitats within the Monument require the size and protections designated by President Obama. The Monument proclamation provides for the proper care and management of these exceptionally important and unique resources. Altering its configuration or management would remove lawful protections for the wildlife species and fragile ecosystems—objects of historic and scientific interest—that the Monument was established to conserve.
Scientists recommend protecting 30 percent of the world's oceans to fulfill an intergenerational legacy of ocean resource sustainability; at present, less than three percent of the world's oceans are protected.[122] Protecting the Monument as designated will not only provide essential research for understanding comparatively little known marine ecosystems, but also ensure the area serves as a marine reserve for conserving and restoring fish stocks for the benefit of current and future generations.
Numerous scientific studies demonstrate that well-designed and strictly enforced marine reserves increase the density, diversity and size of fish, invertebrates and other organisms vital to wildlife conservation, as well as to recreational and commercial fishing.[123] Growth of fish biomass in fully protected areas on average increases to four times than in fished areas. Reserves also safeguard more

apex predators, many of which are rare or absent from unprotected areas.[124] The Monument's ability to conserve and restore highly fished or overfished species (e.g., sharks, lobster, etc.) restores key ecological functions and species interactions that can have strong cascading effects on lower trophic levels.[125]

E. The Monument Will Have Only Minimal Effects on Commercial Fisheries

The Monument's deep and rugged canyon and seamount areas historically have been some of the least fished in U.S. Atlantic waters, and were not of significant importance for any federal fishery.[127] Only between six and eight commercial red crab and/or lobster vessels actively fish in the Monument area for at least part of the year. To put these numbers in perspective, more than 3000 vessels hold federal permits to fish for lobster in U.S. waters (and more than 10,000 vessels are statelicensed).

Although the Monument will eventually be closed to commercial fishing for red crab and lobster, these fisheries were provided with a seven-year transition period to exit the monument area. Other commercial fisheries were given 60 days to transition out of the Monument area. However, the impacts of the closure to these fisheries are not significant. For example, for the pelagic longline fishery, primarily targeting swordfish and tuna, the Monument area constitutes much less than one percent of the total area actively fished by the longliners, and provided less than one-half of one percent of the fleet's average annual revenues between 2006 and 2012. Conversely, as a marine protected area, the Monument may ultimately benefit regional fisheries by increasing the yield of commercially important species in areas adjacent to the Monument.[128] The monument remains open to all recreational fishing and military activity. Thus, no justification exists pursuant to criteria (iii) and (iv) of Executive Order 13792 to recommend any changes to the Monument.

ORGAN MOUNTAINS DESERT PEAKS NATIONAL MONUMENT

President Obama established the Organ Mountains-Desert Peaks National Monument (OMDPNM or "Monument") in 2014 with Presidential Proclamation 9131.[73] The Monument spans approximately 496,330 acres within Doña Ana County in southern New Mexico. It is managed by the Bureau of Land Management (BLM).

The Monument includes five mountain ranges in southern New Mexico within the Chihuahuan Desert biome—the Doña Ana, Organ, Portillo, Robledo, and Sierra de las Uvas. The volcanic and limestone mountains and an otherwise diverse geology as well as several elevation gradients provide a range of ecosystems and habitat types upon which many wildlife and plant species depend.

A recent assessment analyzed ecological values of the OMDPNM by mapping and comparing a random sample of equivalent size areas in the region.[74] This science-based analysis found the monument ranked extremely high in reptile diversity at 97 percent, bird diversity at 94 percent, and mammal diversity at 98 percent. Rarity-weighted species richness scored 94 percent. These results demonstrate that the Monument is incredibly important for southern New Mexico's wildlife.

The Designation of Organ Mountains-Desert Peaks National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[75] Indeed, the Monument Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Obama designated the land necessary to protect the diversity of ecosystems found within the Monument.

The OMDPNM protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. The Antiquities Act provides the President with the authority to protect and properly management landscapes and ecosystems for their scientific and other values.

The President's Proclamation for the Monument made clear that ecosystems were important objects needing protection. It states, for example,

> Throughout the area, the characteristic plants of the Chihuahuan desert are evident. Tobosa grasslands can be found in the desert flats, punctuated by creosote bush and mesquite, as well as sacahuista, lechuguilla, and ferns. In the Sierra de las Uvas Mountains, black grama grasslands appear on the mesas while juniper woodlands and Chihuahuan vegetation give way to higher elevation montane communities. Formed by a series of alluvial fans, bajadas extend out from the base of the area's mountains and provide purchase for oak species, Mexican buckeye, prickly pears, white fir, willow, catsclaw mimosa, sotol, agave, ocotillo, flowering cactus, barrel cactus, brickellbush, and tarbush. The Potrillo Mountains are home to desert shrub communities that also include soaptree yucca and four winged saltbush.[76]

The Monument's ecosystems, some rare and at risk, are essential to supporting the diversity of wildlife referenced above.

Ecosystems

Several vegetative communities named as monument objects are at risk of extirpation and inability to support the plant and animal associates that depend on them. For example, all black grama grassland communities are ranked from vulnerable to imperiled by NatureServe, and at least two

types of Tobosa grassland communities are at risk.[77]
In the arid southwest, riparian ecosystems are particularly important to wildlife and need protection that monument designation can provide, for example from livestock grazing. Monument status may enable managers to devote resources to restoring degraded riparian areas. Riparian communities such as Boxelder/Velvet Ash, Netleaf Hackberry/Wingleaf Soapberry, and Coyote Willow/Deergrass that occur on the Monument[78] are all at risk.[79]

Wildlife Habitat Connectivity
The OMDPNM Greater Potrillo Mountains area is a biotic linkage for species in the southwestern U.S. and northern Mexico.[88]

The Designation of Organ Mountains-Desert Peaks National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats
Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a variety of wildlife, including rare and at-risk species. This includes species listed under the Endangered Species Act (ESA) (see Table below) and those identified as sensitive by the BLM. The following are proclamation statements that make this clear.
The Organ Mountains are home to alligator juniper, gray oak, and mountain mahogany, as well as the endemic Organ Mountain evening primrose, Organ Mountains giant hyssop, Organ Mountains paintbrush, Organ Mountains pincushion cactus, Organ Mountain figwort, Organ Mountains scaleseed, night-blooming cereus, Plank's Catchfly, and nodding cliff daisy, and likely the endangered Sneed's pincushion cactus.[89]
The area also supports diverse wildlife. Across the Organ Mountains-Desert Peaks landscape, many large mammal species can be found, such as mountain lions, coyotes, and mule deer. The Organ Mountains were also historically home to desert bighorn sheep. Raptors such as the golden eagle, red-tailed hawk, and endangered Aplomado falcon soar above the area's grasslands and foothills, where they prey on a variety of mice, rock squirrels, and other rodents, including the Organ Mountains chipmunk.[90]
The area's exceptional animal diversity also includes many migratory and grassland song birds and a stunning variety of reptiles, such as black-tailed, western diamondback, and banded rock rattlesnakes; whipsnakes and bullsnakes; and tree, earless, Madrean alligator, and checkered whiptail lizards. Birds such as Gambel's quail, black-throated sparrow, ladderbacked woodpecker, verdin, black-tailed gnatcatcher, lesser nighthawk, Scott's oriole, and cactus wren also make their homes here, along with many species of bats. Other mammals, including black-tailed jackrabbits, cactus mice, and kangaroo rats, inhabit the area. One of several species of rare terrestrial snails in the area, the Organ Mountain talussnail, is also endemic.[91]
Altering the configuration of the Monument would remove lawful protections for the wildlife and plant species found within the Monument, which are considered to be objects of interest. The Monument provides habitat values that are significant to the region, and the current configuration of the Monument is necessary for the proper care and management of these habitat values.

At-risk Species
OMDPNM provides habitat values that are significant to the region, and the size and configuration of the Monument are necessary for the proper care and management of these habitat values. The BLM will be developing a management plan that is protective of species Monument's objects first and foremost, many of which are rare, endemic, and imperiled species that are vulnerable to extinction and need the protections monument status can afford.

At least three species associated with OMDPNM are BLM sensitive species and also designated as Species of Greatest Conservation Need (SGCN) by the state of New Mexico[92] including the: Organ Mountains chipmunk, reticulated Gila monster, Townsend's big-eared bat, and pale Townsend's bigeared bat. The American peregrine falcon and western red bat are designated as threatened in New Mexico; the Western narrow-mouth toad is endangered in the state.[93]

The Monument hosts several imperiled endemic species that require special protection such as the following mollusks: Organ Mountain woodlandsnail, Organ Mountain talussnail, and Doña Ana talussnail (also a SGCN). Endemic plants that are also on New Mexico's rare plant list[94] include: Organ Mountain giant hyssop, Organ Mountain paintbrush, Organ Mountain evening primrose, nodding cliff daisy, Smooth figwort, and also the sand prickly pear, which is endangered in New Mexico and also a BLM sensitive species.

The desert night-blooming cereus is a New Mexico endangered species. Other New Mexico rare plants include: grayish-white giant hyssop, Standley's whitlow grass, Organ Mountain pincushion cactus, Vasey's bitterweed, and supreme sage.

Species Listed Under the Endangered Species Act

The U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation[95] web tool indicates that the following ESA-listed in the table below have the potential to occur within the OMDPNM (see Table below).

ESA-listed Species with Potential to Occur within Organ Mountains-Desert Peaks National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
Least Tern	*Sterna antillarum*	Endangered
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	Endangered, except where listed as experimental pop.
Piping Plover	*Charadrius melodus*	Threatened
Red Knot	*Calidris canutus rufa*	Threatened
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened
Chiricahua Leopard Frog	*Rana chiricahuensis*	Threatened
Beautiful Shiner	*Cyprinella formosa*	Threatened
Sneed Pincushion Cactus	*Coryphantha sneedii* var. *sneedii*	Endangered

The Monument is in the heart of the northern aplomado falcon range in the U.S. Along with its federal ESA listing, it is also listed as endangered by the state of New Mexico. The birds are associated primarily with open grassland habitat with mesquite and yuccas for perching scattered throughout. Secondary habitat includes scrub and woodland patches. The northern aplomado falcon is endangered for several reasons.[96] Historic causes of the bird's decline include pesticide exposure, from chemicals such as DDT, that cause egg thinning and reproductive failure and also intense livestock grazing, which caused shrub encroachment. Shrub encroachment, loss of habitat to agricultural conversion, livestock grazing, and more frequent and prolonged droughts are current threats. With the exception of drought, these threats can be mitigated through appropriate habitat restoration and protection of this object that the Monument's future management plan must provide.

The endangered Sneed pincushion cactus has a very restricted range in the U.S. to southcentral New Mexico including around Las Cruces, New Mexico, which is in the middle of the Monument

complex. The U.S. Fish and Wildlife Service (USFWS) has stated that while the species' threat level is high so is its potential for recovery, because threats are understood and easily mitigated.[97] The USFWS also noted the need for improved monitoring of the species in its 2014 5-year review of thespecies' status.[98] Alleviating threats and adequate monitoring are management actions that protection by the monument status can provide.

Wide-ranging Species

The OMDPNM supports a number of ungulates including the desert bighorn sheep, which is critically imperiled in New Mexico,[99] mule deer, and pronghorn. Wide-ranging carnivores include mountain lions, bobcats, and coyotes. The monument is also within the historic range of the American bison, jaguar, and Mexican gray wolf. These are all landscape species that rely on large, connected areas.

PACIFIC REMOTE ISLANDS MARINE NATIONAL MONUMENT

The Pacific Remote Islands Marine National Monument ("PRI" or "Monument") harbors a nearly unfathomable wealth of biodiversity. Indeed, the Monument "contains the most widespread collection of marine species under a single country's jurisdiction . . . ."[116] To protect that wealth, President George W. Bush established the PRI on January 9, 2009.[117] Compelled by the same values that prompted its designation in the first instance, President Barack Obama subsequently expanded the Monument on September 25, 2014.[118] Presidents Bush and Obama acted well within their discretion to determine that the Monument should be designated, and subsequently expanded, to protect the objects of scientific interest contained within its boundaries.

The PRI encompasses roughly 370,000 square nautical miles in and around the Wake, Baker, Howland, and Jarvis Islands, the Johnson and Palmyra Atolls, and the Kingman Reef.[119] The Secretary of the Interior, through the U.S. Fish and Wildlife Service, is responsible for managing the Monument, in consultation with the Secretary of Commerce, through the National Marine Fisheries Service. At Howland, Baker, and Jarvis Islands, Palmyra Atoll, and Kingman Reef, the terrestrial areas, reefs, and waters out to 12 nautical miles are part of the National Wildlife Refuge System. The land areas at Wake Atoll and Johnston Atoll are under the jurisdiction of the U.S. Air Force, but the surrounding waters out to 12 nautical miles are also protected units of the National Wildlife Refuge System. [120] For the waters from the 12 nautical mile refuge boundary to the 50 nautical mile monument boundary, the National Marine Fisheries Service manages fisheries-related activities.[121]

The Designation of Pacific Remote Islands Marine National Monument Protects and Provides for the Proper Care and Management of Unique Marine Landscapes and Ecosystems

The islands and their surrounding waters host "some of the healthiest marine ecosystems remaining in the world."[122] Consequently, the Monument contains "nearly four times as many shallow-water, reef-building coral species as the Florida Keys, and [is] home to hundreds of fish species, dozens of seabird species, and an untold number of invertebrate species, including many found nowhere else" in the world.[123] The singularly pristine condition of the PRI is likely due to minimal human disturbance, which has spared the Monument from much of the degradation facing similar marine environments in U.S. waters.[124]

Largely owing to its relatively undisturbed condition, the Monument's value as an experimental control is self-evident. The PRI and its protected objects are a vital baseline for understanding and combating the growing threats imposed by climate change. Accordingly, a tremendous amount of scientific research has been, and will continue to be, conducted within the boundaries of the PRI. Beyond the inherent value of its ecosystems and biotic communities, the Monument also provides invaluable economic support to this country's fisheries and the Americans that rely upon their continued health. For that reason, several fisheries advocates support the continued protection of the PRI.

From its vibrant coral reefs to its unexplored depths, the PRI protects a broad array of marine landscapes, which in turn support invaluable ocean ecosystems. Considered to be an essential component "of the most widespread collection of marine- and terrestrial-life protected areas on the planet under a single country's jurisdiction," the Monument is truly an icon of our shared national heritage.[125] Within the context of the Antiquities Act's plain meaning, each of these landscapes and its attendant ecosystem is of great scientific interest.

Wake and Johnston Atolls

Wake Atoll is the northernmost atoll included in the Monument and, importantly, it is "perhaps the oldest living atoll in the world."[126] The peripheral waters of Wake Atoll contain a thriving shallow

coral ecosystem, which supports at least 323 species of fish. Moving out from Wake Atoll, the seabed "descends sharply to great depths" and gives way to pristine deep-sea and open-ocean ecosystems.[127]

Much like Wake, Johnston is also "an ancient atoll" and sits at the northernmost reaches of the Line Islands Archipelago.[128] The waters surrounding the Johnston Atoll are home to at least 45 species of shallow-water corals that support unusually high concentrations of fish communities, as well as healthy populations of large predators. These remote and untouched reefs are "a genetic stepping stone from the Remote Islands to the Hawaiian Islands for invertebrates, other reef fauna, corals, and dolphins."[129] Four distinct habitats are protected on Johnston: "low-lying islets consisting of the remains of corals and shells, shallow coral reefs to depths of 150 meters, deeper reefs to depths of 1,000 meters or more, and the slope of the ancient volcano on which the island rests."[130]

The seas adjacent to both Wake and Johnston Atolls contain some of the most significant objects of scientific interest within the entire Monument—seamounts. The PRI's approximately 165 seamounts are underwater mountains that rise from the seabed but fail to break the ocean's surface.[131] "Nearly all seamounts are volcanoes" and as such, they provide a glimpse into the formation of the Earth's landmasses.[132] In sharp contrast to the largely planar seabed, seamounts tower above the ocean floor and shape the patterns of ocean currents and nutrient exchange. As marine crossroads, these seamounts are veritable cornucopias of marine biodiversity. Importantly, "[l]ess than 0.2% of seamounts globally hav[e] been explored, and 15-44% of the species on a seamount or seamount group are found nowhere else on earth, which makes seamounts extraordinary biodiversity hotspots."[133] Indeed, scientists consider seamounts to be "'lost worlds' having enormous pools of undiscovered species" and estimate that "[r]oughly 5-10% of invertebrates found on each survey of a seamount are new to science."[134]

Howland, Baker, and Jarvis Islands

The Howland, Baker, and Jarvis Islands are geological remnants of a more violent time in the Earth's natural history. A product of Cretaceous-era volcanoes, these islands began to form some 120 to 75 million years ago. Today, the Islands' volcanic, nutrient-rich soils and adjacent waters support a coral ecosystem with measured rates of biodiversity higher than those in either Hawaii or Florida.[135] Below the photic zone (i.e. the surface layer of the ocean that receives sunlight), theislands are fringed by deep coral forests where scientists have reported certain species that are 5,000 years or older.[136]

The appurtenant waters of Howland, Baker, and Jarvis Islands also sustain thriving open-ocean ecosystems. In fact, the Islands' adjacent waters accommodate a "fish biomass double that of the Papahānaumokuākea Marine National Monument, and *16 times* that of the main Hawaiian Islands, due to the Equatorial Undercurrent that moves from west to east along the equator, creating localized nutrient-rich upwellings in [the] shallows next to the islands."[137] Further, the concentration of top marine predators "exceeds that of the Great Barrier Reef or Kenyan Marine Protected Areas."[138] Taken together, these various ecosystems provide researchers with crucial insights into the resilience of marine environments across the globe.

Palmyra Atoll and Kingman Reef

The Palmyra Atoll and Kingman Reef are also located in the Line Islands Archipelago and together, they are considered "the most pristine coral reefs in the world, with a fully inverted food web."[139] Indeed, "Kingman Reef is the most pristine of any reef under U.S. jurisdiction."[140] Consequently, the Reef has a "greater proportion of apex predators than at any other studied coral reef ecosystem in the world."[141] Generally, coral reef ecosystems are extremely susceptible to human-induced stressors that leave these ecological marvels unable to recover and lost to history.[142] However,

isolated coral reefs—such as those found around Palmyra Atoll and Kingman Reef—are considered by scientists to be particularly resilient to human threats and these ecosystems are the most likely to survive over the long-term.[143]

The Pacific Remote Islands Marine National Monument Protects Vast Biological Assemblages, Including Threatened and Endangered Species, of Great Scientific Interest

Beyond the plethora of corals protected within the Monument, exceptional geologic formations—and their associated habitat-types—further support a dense and thriving network of biotic communities. The Supreme Court has repeatedly recognized the statutory propriety in utilizing the Antiquities Act to protect wildlife as objects of scientific interest.[144] To that end, the PRI protects wildlife values ranging from a kaleidoscope of reef fish found nowhere else in the world, to species on the brink of extinction, and to species that were previously thought to have vanished from planet.

Reef Fish

The PRI's nutrient-rich shallow waters and coral reefs attract fish species from hundreds of miles around. In the waters around Howland, Jarvis, and Baker Islands, researchers have recorded approximately 340 distinct species of fish, as well as giant clams (*Tridacna maxima*) that are particularly sensitive to sedimentation and auxiliary effects. Likewise, around Palmyra Atoll and Kingman Reef, more than 418 discrete species of fish have been described by scientists.[145]

The sheer volume of prey found in and around the Monument attracts many apex predators as well. By providing a mechanism for self-regulation, these predators are crucial component of marine ecosystem health. In 2003, studies estimated that large predatory fishes, such as tuna, had declined by nearly 90%.[146] Yet in the PRI, these predators find a haven. For example, a 2005 study projected that sharks composed nearly 62% of the fish biomass found around Kingman Reef.[147] The integrity of the predator-prey relationships at Kingman Reef affords recorded rates of fish biomass that are roughly four times greater than those found along the coast of Kiritimati, a densely populated island in the vicinity of Kingman Reef.[148]

Seabirds

The upland portions of the PRI are vital nesting and foraging colonies for many pelagic bird species, including sooty terns (*Onychoprion fuscatus*), lesser frigatebirds (*Fregata ariel*), red-footed boobies (*Sula sula*), red-tailed tropicbirds **(***Phaethon rubricauda*), black-footed (*Phoebastria nigripes*) and Laysan (*Phoebastria immutabilis*) albatrosses, and the endangered white-throated storm-petrel (*Nesofregetta fuliginosa*). In total, "[a]n estimated 14 million seabirds representing 19 species use the islands as critical stopover points, as well as breeding areas and feeding grounds."[149] Palmyra Atoll alone is home to 11 different seabird nesting colonies, which includes one of the largest red-footed booby colonies in the world.[150] Impressively, bristle-thighed curlews (*Numenius tahitiensis*) will crossapproximately 2,500 miles of open ocean to reach their over-wintering grounds on Palmyra.[151] Notably, while seabird populations are generally declining globally, after the PRI was designated, biologists began to document the return of many pelagic species that had long been absent from the Monument's boundaries.[152]

Importantly, these avian colonies are not attracted to the upland portions of the Monument alone; rather, these seabirds rely upon the health of the surrounding waters for hunting and foraging. Indeed, many of the species will travel over 300 miles a day to scour the Monument's waters for food.[153] By seeking out schools of fish driven to the surface by schools of tuna, these seabirds and their foraging patterns once again demonstrate the importance of apex predators and their role in

larger ecosystems of the PRI.[154]

Sea Turtles

Sea turtles are living fossils from another era in this planet's natural history. They have survived on Earth for over 150 million years.[155] With the advance of modern technology, sea turtle species across the globe are now at the threshold of extinction.[156] In the PRI, however, at least five species of protected sea turtles find respite.[157] For species such as the leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and olive ridley (*Lepidochelys olivacea*) sea turtles, the Monument's waters are home to ancient migration routes, which they now traverse free from the perils posed by commercial fishing.[158] Moreover, the green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) sea turtles use the shores of Palmyra Atoll, Baker, Howland, and Jarvis Islands to give birth to the next generation of these oceanic nomads.[159]

Marine Mammals

The vibrant shallows and nutrient-rich depths of the Monument attracts over 22 different species of marine mammals to the PRI.[160] Although these species are protected under the Marine Mammal Protection Act,[161] the sheer number and variety of marine mammals occurring within the Monument's boundaries further demonstrates the inherent ecological value of the PRI and theobjects it protects. Specifically, the waters adjacent to the Johnston Atoll supports six different species of threatened or endangered whales, including the sperm (*Physeter microcephalus*), blue (*Balaenoptera musculus*), sei (*Balaenoptera borealis*) and North Pacific right (*Eubalaena japonica*) whales.[162] The endangered Hawaiian monk seal (*Monachus schauinslandi*) is also an occasional visitor in the shallows surrounding the Johnston Atoll.[163] Off the shores of the Palmyra Atoll and Kingman Reef, moreover, researchers have observed large schools of the rare melon-headed whale (*Peponocephala electra*) and rediscovered a species of beaked whale once thought to be extinct.[164]

Threatened and Endangered Species

Within the PRI, a multitude of threatened and endangered species find safe harbor. For many of these species, the Monument is their last remaining habitat and its continued protection is essential to their survival. Although not an exhaustive list, the intersection between species protected by the Endangered Species Act[165] ("ESA") and by the Monument's designation is significan:

ESA-listed Species with Potential to Occur within the Pacific Remote Islands Marine National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
Short-tailed albatross	*Phoebastria albatrus*	Endangered
Green sea turtle	*Chelonia mydas*	Endangered
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Endangered
Olive ridley sea turtle	*Lepidochelys olivacea*	Endangered
Sei whale	*Balaenoptera borealis*	Endangered
Humpback whale	*Megaptera novaeangliae*	Endangered
Fin whale	*Balaenoptera physalus*	Endangered
Sperm whale	*Physeter microcephalus*	Endangered
Blue whale	*Balaenoptera musculus*	Endangered
North Pacific right whale	*Eubalaena japonica*	Endangered
Hawaiian monk seal	*Monachus schauinslandi*	Endangered

In addition to sheltering ESA-listed species, the Monument also provides an invaluable "first line of defense" against extinction. By protecting species potentially at risk of extinction and the habitats on which they rely, the PRI preventively bolsters populations that might otherwise become threatened or endangered—before species-specific intervention becomes necessary.

The Scientific Interests of the Objects Protected by the Pacific Remote Islands Marine National Monument are Evidenced by the Ongoing Research Conducted Within the Designation's Boundaries

As noted above, the PRI has been largely untouched by human-induced stressors that adversely affect similar marine ecosystems. Consequently, the Monument provides a unique experimental control that allows researchers to further understand the true extent of the damage wrought by humanity on our marine environments.[166] Yet just as the Monument provides insight into human impacts, it also allows scientists to search for ways to halt or reverse the disturbing trend toward the destruction of our oceans.

One example of research conducted within the PRI includes DNA analyses conducted by the National Oceanic and Atmospheric Administration through which scientists seek to understand the interconnectivity of several bottom-fish species.[167] Through this investigation, NOAA researchers are gaining a better understanding of the environmental habitat of bottomfish species and the extent of the interconnections between populations of Johnston Atoll and the Hawaiian Archipelago.[168] Federal agency researchers, led by NOAA scientists, are also studying the effects of climate change on the coral reefs within the PRI.[169] As keystone species, these corals are crucial to the future viability of our marine ecosystems—including the fisheries on the periphery of the Monument. However, those corals are also extremely susceptible to climate change and its effects on the marine environment. Therefore, understanding how these species react to climate change has become an integral component in assessing the health of the oceans.

The Designation of the Pacific Remote Islands Marine National Monument and Its Sustained Protection Provides Economic Benefits to U.S. Traditional, Recreational, and Commercial Fisheries

Beyond the inherent value of its ecosystems, the PRI's continued protection also provides significant economic benefits to commercial fisheries and other communities that rely upon the Monument's health. Foremost among these is the demonstrated increase in harvestable catch at the Monument's boundaries.

Numerous scientific studies demonstrate that well-designed and strictly enforced marine reserves increase the density, diversity and size of fish, invertebrates and other organisms vital to wildlife conservation, as well as to recreational and commercial fishing.[170] Research has routinely confirmed that fish population fecundity and density is remarkably higher within marine protected areas (MPAs).[171] Growth of fish biomass in fully protected areas on average increases to four times than in fished areas. Reserves also safeguard more apex predators, many of which are rare or absent from unprotected areas.[172] The Monument's ability to conserve and restore fish species restores key ecological functions and species interactions that can have strong cascading effects on lower trophic levels.[173] Likewise, the individuals of that population also grow older and larger within MPAs.[174] As a result, commercial fisheries benefit from "spillover effects" along the MPAs periphery, which results in higher allowable yields with reduced efforts.[175]

Within the Monument's boundaries, recreational fisheries also benefit from the lack of competition with commercial operations. At least one analysis has demonstrated that recreational fisheries yield higher "value added" returns to the U.S. economy—without the destructive effects associated with traditional commercial fishing.[176] Consequently, many communities that rely upon the Monument's

fisheries support its continued protection.[177]

The Size of the Pacific Remote Islands Marine National Monument is the Smallest Area Compatible with the Proper Care and Management of the Objects Protected

Both proclamations designating and expanding the PRI explicitly stated that the Monument areas reserved under those proclamations constituted "the smallest area compatible with the proper care and management of the objects to be protected."[178] Thus, there is no justification under criterion (i) of Executive Order 13792 to recommend any changes to the Monument.

Given the unique nature of the marine objects and values protected therein, the PRI's size is a necessary concomitant of their proper care and management. The unique marine ecosystem values protected by the PRI are entirely reliant upon its present size. While the open-ocean portions of the PRI are home to their own ecosystems, they also provide a necessary buffer to safeguard other pristine conditions within the Monument. As President Bush recognized in his proclamation, the PRI contains "genetic and larval stepping stone[s]" tied together by the Equatorial Undercurrent running throughout the Monument's boundaries.[179] President Obama acknowledged the same when he found that "the Pacific Remote Islands area, including adjacent areas, is tied together by regional oceanographic currents that drive marine species larval transport and adult migrations that shape the broader Pacific ecosystem."[180]

Scientists recommend protecting 30 percent of the world's oceans to fulfill an intergenerational legacy of ocean resource sustainability; at present, less than three percent of the world's oceans are protected.[181] Protecting the Monument as designated will not only provide essential research for understanding comparatively little known marine ecosystems, but also ensure the area serves as a marine reserve for conserving and restoring fish stocks for the benefit of current and future generations.

The interconnectivity of marine systems is undeniable. Stressors placed on these systems echo throughout in a manner unlike that found in a terrestrial setting. Thus, modern "science strongly supports protecting large areas that provide for all major needs of marine species."[182] Consequently, the size of the PRI is a necessary concomitant to the proper care and management of the ecosystem and wildlife objects protected therein.

PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT

The Original Designation and Subsequent Expansion of Papahānaumokuākea Marine National Monument Protect and Provide for the Proper Care and Management of Significant and Rare Marine Ecosystem Objects and Values

The area now protected by the Papahānaumokuākea Marine National Monument is the result of a unique bipartisan conservation legacy stretching back more than 100 years in U.S. history. Six U.S. presidents have acted to protect the Northwest Hawaiian Islands, beginning in 1903 with President Theodore Roosevelt reserving islands and atolls for seabird conservation. In 1940, President Franklin D. Roosevelt established the Hawaiian Islands National Wildlife Refuge, for which President Lyndon B. Johnson provided additional protections in 1967. President Ronald Reagan created the Midway Atoll National Wildlife Refuge in 1988. In 2000, President Bill Clinton established the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, thereby creating the largest single nature preserve in the U.S. at that point in time.

On June 15, 2006, President George W. Bush established the Northwestern Hawaiian Islands Marine National Monument under the Antiquities Act by Proclamation 8031.[117] On February 28, 2007, President Bush amended the Proclamation to rename the monument Papahānaumokuākea to reflect native Hawaiian language and culture.[118] As originally designated, the Monument included approximately 139,793 square miles of emergent and submerged lands and waters of the United States. The original Monument was approximately 100 nautical miles wide, extending approximately 50 miles seaward from the Northwestern Hawaiian Islands for a total extent of around 1,200 miles around coral islands, seamounts, banks, and shoals.[119] The Monument designation encompassed areas already identified for conservation and protection under federal law, including the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve,[120] the Midway Atoll National Wildlife Refuge and the Battle of Midway National Memorial,[121] and the Hawaiian Islands National Wildlife Refuge.[122]

President Bush's Proclamation 8031 describes the objects of historic or scientific interest which the Monument was established to protect:

> The area . . . supports a dynamic reef ecosystem with more than 7,000 marine species, of which approximately half are unique to the Hawaiian Island chain. This diverse ecosystem is home to many species of coral, fish, birds, marine mammals, and other flora and fauna including the endangered Hawaiian monk seal, the threatened green sea turtle, and the endangered leatherback and hawksbill sea turtles. In addition, this area has great cultural significance to Native Hawaiians and a connection to early Polynesian culture worthy of protection and understanding.[123]

President Bush explicitly found that the designated Monument constituted "the smallest area compatible with the proper care and management of the objects to be protected."[124]

Subsequently, President Barack Obama expanded the Papahānaumokuākea National Monument to adjacent waters and submerged lands on September 15, 2016, under Proclamation 9496.[125] This proclamation stated:

> As required by the Antiquities Act, the adjacent area contains objects of historic and scientific interest . . . . [these objects] are geological and biological resouces that are part of a highly pristine deep sea and open ocean ecosystem with unique biodiversity and that constitute a sacred cultural, physical, and spiritual place for the Native Hawaiian community.[126]

The expansion added another 442,781 square miles of waters under the control of the United States to the Monument.[127] As described in this proclamation, the expansion was necessary to protect the objects of scientific and historic interest protected under the original Monument designation, based on scientific research demonstrating that many wildlife species inhabit or utilize previously unknown

geographic ranges in those adjacent areas.[128] President Obama also explicitly found that the reserved lands constitute "the smallest area compatible with the proper care and management of the objects to be protected."[129]

The 2006 proclamation delegated primary responsibility for the marine areas of the Monument to the National Oceanic and Atmospheric Administration (NOAA), in consultation with the U.S. Fish and Wildlife Service (FWS). It delegated sole responsibility for management of the areas of the Monument overlaying the two National Wildlife Refuges and the Battle of Midway National Memorial to the FWS in consultation with NOAA.[130] Following the original designation, NOAA, in consultation with FWS and the State of Hawaii, worked to develop a coordinated management plan for the original Monument area with significant input from the public, a plan that was finalized in 2008.[131] The 2016 proclamation directed NOAA and FWS to prepare a joint management plan for the expanded Monument area.[132]

A. The Unique Terrestrial, Reef, and Marine Ecosystems of the Monument Constitute Objects of Scientific Interest

1. *The Monument's Ecosystems Are Objects of Great Scientific Interest*

The Monument consists of one of the largest, if not the largest, marine protected areas in the world. Dotted with small islands, islets, and atolls surrounded by coral reefs, the Monument contains a complex array of marine and terrestrial ecosystems. These range from 4600 meters below sea level to 275 meters above sea level, from abyssal seas and plains, deep pelagic basins, submarine escarpments, seamounts, and submerged banks, to deep and shallow coral reefs and shallow lagoons, and to littoral shores, dunes, dry coastal grasslands and shrublands, and even a hypersaline lake. The Monument represents a complete cross section of a Pacific archipelagic ecosystem.

Terrestrial Habitats

The Hawaiian Archipelago is the longest and most remote island chain on Earth, 2,600 miles away from the closest continental land mass. It formed from a volcanic hot spot in the center of the North Pacific Ocean, which has been creating islands in Hawaii for at least 80 million years. As a result, there is no geological connection to any continent, and the geographic isolation from continents has made colonization by plants and animals very difficult. The natural rate of successful colonization is estimated to be about one species every 35,000 years. The isolation and low colonization rate has allowed the Archipelago to develop many unique ecosystems, with many species evolving over thousands of years into unique species found nowhere else on the planet. Land areas are very limited in the Monument; the ten islands and atolls of the chain compose less than six square miles of the entire Monument area. Nevertheless, these relatively tiny areas are of tremendous ecological importance, especially to seabirds and imperiled plant species. The land areas consist of both "high" islands, where the basalt rock from volcanic formation is still above the ocean's surface, and low-lying islands and atolls, islands composed of sedimented material, coral rubble, or uplifted coral reefs.

The only coral atolls in the United States are found in the Northwest Hawaiian Islands. Coral atolls develop in a ring around a high volcanic island; as the volcano erodes and subsides back into the sea, the corals continue to grow, staying near the surface. After millions of years, the volcanic rock sinks beneath the surface, with only coral skeletons and living coral remaining. Coral-rubble islets form in atoll environments by currents and wave energy; these small, ephemeral land areas provide important breeding and nesting areas for green turtles and seabirds as well as haul out areas for monk seals. Both atolls and islets provide a virtually predator-free haven for seabirds and haul-out habitat for turtles and seals to rest and reproduce.

Fresh water is a limiting factor for terrestrial animals and plants on these land areas. It is available to these species on atolls and other low-lying islands due to the hydrological feature known as a freshwater lens, a convex area of fresh water that floats on the denser seawater below.

Seamounts, Guyots, and Banks

The Monument contains extensive areas of relatively shallow underwater habitats (from 0 to 600 feet below the water's surface). These consist of seamounts (undersea volcanoes that never reached 20 the ocean's surface), guyots (undersea volcanoes that were once above the ocean's surface but have since submerged to form flat-topped undersea mountains) and banks (shallow areas that can be a submerged part of a land mass). More than 30 submerged ancillary banks and seamounts surround the islands and atolls of the Monument. These biological hotspots support abundant plant and animal communities, with fish and corals especially concentrated near the tops of seamounts and guyots.

Shallow Coral Reefs and Deep-water Corals

The Monument contains the largest coral reef system in the United States. Shallow-water, reef forming corals provide a framework for the ecological community of the reef ecosystem. Fifty-seven species of stony corals are known to occur in the shallow subtropical waters of the Monument, with 17 species found only in the Hawaiian Archipelago.

The Monument's coral reefs are undisturbed by fishing or tourism, and support a nearly-pristine ecosystem with high levels of reef fish endemism and density. In turn, these abundantly healthy reef fish communities support a predator-dominated ecosystem, with extraordinarily abundant large, predatory fish, such as sharks, giant trevally, and Hawaiian groupers, that are rarely seen and heavily overfished in populated areas of the world.

The Monument's shallow coral reefs are invaluable objects of scientific interest. Although the Monument's reefs are relatively isolated from human impacts due to the protections bestowed by the Monument designation, they remain threatened by global disturbances such as coral diseases, global-warming-induced bleaching events, and global-warming-induced ocean acidification. The shallow-water coral reefs of the Monument are critically important for scientific research, not only as reference points to provide a comparison for less-protected or unprotected coral reefs elsewhere in the world, but also to understand the potential adaptability and resilience of these reefs to environmental change.

The Monument also has deepwater coral beds at depths of 1,200 to 1,330 feet. The Monument's deepwater corals are even more diverse than those in shallow waters, comprising more than 200 species. Unlike shallow-water corals, deepwater coral species do not rely on symbiotic algae for food and do not require sunlight; rather, their polyps collect tiny organisms from the surrounding nutrient-rich waters. These corals grow only millimeters per year over hundreds, or thousands, of years.

The centuries-old cold-water coral complexes and associated structure-forming fauna such as sponges and anemones are the foundation of their deep-sea ecosystem. They provide food, spawning and nursery habitat, and shelter for innumerable invertebrate and vertebrate species.

The Monument's deep-sea corals are also invaluable objects of scientific interest. Because they are so long-lived, scientists can analyze trace elements and isotopes incorporated into their calcium-based skeletons to learn about historic changes in global climate and ocean current systems. Research into coral and sponge communities has yielded advances in cancer treatments, human bone synthesis, and optic cables. Scientists are currently investigating compounds discovered in deep-sea coral ecosystems for their potential use in new medicines.

2. *The Monument's Terrestrial and Marine Species Are Objects of Great Scientific Interest For Their Diversity, Their Abundance, Their Endemism, and/or Their Status as Protected Species*

The geomorphological history and isolation of the Monument archipelago have led to an extremely high level of biodiversity and endemism. Of the nearly 7,000 presently known marine species in the Monument, twenty-five percent are endemic. More than twenty percent of the fish species present are found only in the archipelago, while the rate of endemism in coral species is more than forty percent. The Monument also protects species currently unknown to science, which are of great scientific interest. More than 90 percent of all ocean species are estimated to be unknown to science; new species are discovered nearly every time scientists conduct surveys in the Monument.

Some of the major groups of marine wildlife protected by the Monument include:

Seabirds and Shorebirds

A number of the islands and atolls now protected under the Monument designation were originally reserved to conserve breeding populations of seabirds and shorebirds as far back as 1903 and 1909 by President Theodore Roosevelt.[133] "[N]ative birds were the first wildlife species for which the Monument area was managed for conservation purposes by the U.S. Government."[134] Today, the Monument protects one of the largest and most important assemblages of seabirds and shorebirds in the world; 22 species of seabirds, numbering approximately 14 million birds, are represented, while 47 species of shorebirds have been recorded. The islands and atolls provide not only breeding and nesting habitat but also stopover or wintering habitat for boreally breeding shorebirds. Many of these species also forage in the waters of the Monument.

The Monument provides especially important habitat protections for bird species such as the bristlethighed curlew, a migratory shorebird that becomes flightless during its autumnal molt and has suffered significant population losses on other Pacific islands populated by domestic dogs, cats, and pigs. Five species of endangered or threatened birds make their home in the Monument. One such species is the endangered Laysan duck, the rarest native waterfowl in the U.S.. Once widespread across the Hawaiian Islands, the species now survives only on Laysan Islands and Midway Atoll National Wildlife Refuges (within the Monument area). All three of the Pacific albatrosses (Laysan, black-footed, and the endangered short-tailed) breeding in the North Pacific are found on Midway Atoll NWR within the Monument.

Fish

The Monument protects a diversity and abundance of reef fish species characterized by a high degree of endemism, particularly at the northern end of the archipelago, which boasts endemism rates well over 50%. Biodiversity hot spots such as that protected by the Monument are vital to global marine conservation. In turn, the healthy reef fish populations, remarkable for their abundance as well as the size of the fish, support large populations of apex predators such as sharks, giant trevally, and Hawaiian groupers that are not found outside the Monument where fishing pressures have converted apex-predator-dominated ecosystems into herbivorous-fish-dominated ecosystems. In the Monument, 54% of the total fish biomass consists of apex predators, compared to only 3 percent in the main Hawaiian Islands.

The Monument boasts a number of shark species, many of which are in decline globally. These include oceanic whitetip, silky, Galapagos, tiger, grey reef, and other species. The Monument also provides important habitat for pelagic migratory species, including billfish, tuna, and wahoo, that are commercially and recreationally important. Because so many of these species have been overfished worldwide, resulting in a biomass of only about ten percent of pre-industrial levels worldwide, the Monument's protections for healthy and robust large predatory fish populations are more important than ever.

Sea Turtles

Of the seven species of marine turtles, five (loggerhead, green, olive ridley, leatherback, and hawksbill) occur in the Monument, all of which are protected under the Endangered Species Act. Of these species, only the green turtle comes ashore to bask and breed. French Frigate Shoals within the Monument is the site of the principal rookery for the entire Central North Pacific Distinct Population Segment, with more than 90 percent of the population nesting there, with smaller numbers nesting at Lisianski and Pearl and Hermes Atoll). The Monument provides important foraging habitat for this and other distinct population segments of green turtles.

Marine Mammals

All marine mammals found in the Monument are protected by the Marine Mammal Protection Act, and a number of these are also protected by the Endangered Species Act. The Monument's marine and littoral ecosystems provide essential habitat for the vast majority of the remaining Hawaiian monk seals, the most endangered pinniped in the U.S. and one of the most endangered in the world. The Monument is also home to more than 20 species of whales and dolphins, five of which are also listed under the Endangered Species Act. The most abundant large whales are sperm whales and Bryde's whales, while the most abundant small toothed whales are pilot whales, rough-toothed dolphins, Fraser's dolphins, spotted dolphins, and striped dolphins. Both spinner and bottlenose dolphin populations are resident year-round in the Monument. Dwarf and pygmy sperm whales as well as Cuvier's beaked whales are also estimated to be quite abundant. Some whale species, such as fin, sei, and minke whales migrate through the Monument, while others use it seasonally for breeding and birthing. Researchers have demonstrated that the Monument contains two-thirds of the humpback whale wintering habitat in the Hawaiian Archipelago.

Endangered and Threatened Species

The terrestrial and marine habitats of the Monument are critical to the survival of many imperiled species, the distributions of which may be highly or entirely restricted to the area. Many species of plants and animals known to occur in the Monument are protected by the federal Endangered Species Act (ESA). There are undoubtedly many more that might be eligible for listing.
The 23 ESA-listed species, some of which depend entirely on the Monument for their existence, include:

Common Name	**Scientific Name**	**ESA Status**
Marine turtles		
Green	*Chelonia mydas*	Threatened (Central North Pacific DPS)
Leatherback	*Dermochelys coriacea*	Endangered
Loggerhead	*Caretta caretta*	Threatened
Olive ridley	*Lepidochelys olivacea*	Threatened/Endangered
Hawksbill	*Eretmochelys imbricate*	Endangered
Marine mammals		
Sperm whale	*Physeter microcephalus*	Endangered
Sei whale	*Balaenoptera borealis*	Endangered
Fin whale	*Balaenoptera physalus*	Endangered
Blue whale	*Balaenoptera musculus*	Endangered
North Pacific right whale	*Eubalaena japonica*	Endangered
Hawaiian monk seal	*Monachus schaunislandi*	Endangered
Terrestrial birds		
Laysan duck	*Anas laysanensis*	Endangered

Laysan finch	*Telepyza cantans*	Endangered
Nihoa millerbird	*Acrocephalus familiarus kingi*	Endangered
Nihoa finch	*Telespyza ultima*	Endangered
Seabirds		
Short-tailed albatross	*Phoebastria albatrus*	Endangered
Plants		
No common name	*Cyperus (=Mariscus)pennatiformis* spp *bryanii*	Endangered
No common name	*Amaranthus brownie*	Endangered
No common name	*Schieda verticillata*	Endangered
Kamanomano	*Cenchrus agrimoniodes* var *laysanensis*	Endangered
Lou`lu	*Pritchardia remota*	Endangered
`Ohai	*Sesbania tomentosa*	Endangered

C. The Monument Designation Was Narrowly Tailored to the Smallest Area Compatible with its Proper Care and Management

As stated above, the Monument's designation and subsequent expansion were narrowly tailored not to exceed the smallest area compatible with the proper care and management of the objects to be protected, as required by the Antiquities Act. Thus, there is no justification under criterion (i) of Executive Order 13792 to recommend any changes to the Monument.

The biological requirements and function of species and habitats within the Monument require the size and protections designated by Presidents Bush and Obama. The Monument proclamations provide for the proper care and management of these exceptionally important and unique resources. Altering its configuration or management would remove lawful protections for the wildlife species and fragile ecosystems—objects of historic and scientific interest—that the Monument was established to conserve.

Given the unique nature of the marine objects and values protected therein, the Monument's size is a necessary concomitant of their proper care and management. The unique marine ecosystem values protected by the Monument are entirely reliant upon its present size. While the open-ocean portions of the Monument are home to their own ecosystems, they also provide a necessary buffer to safeguard other pristine conditions within the Monument. Wide-ranging, highly mobile species, such as sharks, marine mammals, and sea turtles, require large-scale conservation areas.

Scientists recommend protecting at least 30 percent of the world's oceans to fulfill an intergenerational legacy of ocean resource sustainability; at present, less than three percent of the world's oceans are protected.[136] Protecting the Monument as designated will not only provide essential research for understanding comparatively little known marine ecosystems, but also ensure that the area serves as a marine reserve for conserving and restoring fish stocks for the benefit of current and future generations.

Numerous scientific studies demonstrate that well-designed and strictly enforced marine reserves increase the density, diversity and size of fish, invertebrates and other organisms vital to wildlife conservation, as well as to recreational and commercial fishing.[137] Growth of fish biomass in fully protected areas on average increases to four times than in fished areas. Reserves also safeguard more apex predators, many of which are rare or absent from unprotected areas.[138] The Monument's abilityto conserve and restore fish stocks restores key ecological functions and species interactions that can have strong cascading effects on lower trophic levels.[139]

Research has demonstrated that marine protected areas such as the Monument yield the greatest conservation benefits when they are large, remote, strongly protected, protected for a long time, and enforced; MPA conservation benefits increase exponentially with these features. Effective marine reserves have more large fish, a much greater fish biomass, and a much greater apex predator

biomass than fished areas. The Monument, as designated and expanded, is the nation's, if not the world's, pre-eminent marine protected area.

D. The Monument Was Designated Only After an Extensive Public Process and Stakeholder Engagement

Both the Monument designation and expansion processes underwent significant public comment and involvement and enjoyed overwhelming support from the Native Hawaiian community as well as the general public. Representatives from Commerce, Interior, and the Council on Environmental Quality met with key stakeholders, including state and county government leaders, Native Hawaiians, fishermen, scientists, and environmental groups. Both U.S. senators and the governor of Hawaii supported the expansion, as did state and local political representatives, who sent dozens of letters in support. Thus, the Monument designation was made with adequate public outreach and coordination with relevant stakeholders, as per EO 13792. Accordingly, no justification exists pursuant to criterion (v) of Executive Order 13792 to recommend any changes to the Monument.

RIO GRANDE DEL NORTE NATIONAL MONUMENT

President Obama established the Rio Grande del Norte National Monument (RGDNNM or "Monument") in 2013 with Presidential Proclamation 8946.[73] The Monument spans approximately 242,455 acres within Rio Arriba and Taos counties in northern New Mexico. It is managed by the Bureau of Land Management's (BLM) Taos Field Office.

A recent assessment analyzed ecological values of the RGDNNM by mapping and comparing a random sample of equivalent size areas in the region.[74] This science-based analysis found the Monument ranked extremely high in mammal diversity at 91 percent and high in bird diversity at 83 percent. The Monument also scored high in ecological intactness at 70 percent and ecological connectivity at 65 percent. These results show that RGDNNM is very important for wildlife and the ecosystems upon which they depend.

The Monument's proclamation illustrates the area's unique and special features within the landscape:

> In far northern New Mexico, the Río Grande Wild and Scenic River flows through a deep gorge at the edge of the stark and sweeping expanse of the Taos Plateau. Volcanic cones, including the Cerro de la Olla, Cerro San Antonio, and Cerro del Yuta, jut up from this surrounding plateau. Canyons, volcanic cones, wild rivers, and native grasslands harbor vital wildlife habitat, unique geologic resources, and imprints of human passage through the landscape over the past 10,000 years.[75]

The BLM is currently developing a management plan to protect the objects and other natural resources of the RGDNNM.

The designation of Rio Grande del Norte National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[76] Indeed, the Monument Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Obama designated the area necessary to protect the diversity of ecosystems found within the Monument.

Ecosystems

The President's Proclamation for the Monument made clear that ecosystems were important objects needing protection. It states, for example,

> This northern New Mexico landscape also exhibits significant ecological diversity in these different geologic areas. From the cottonwood and willows along the Río Grande corridor, to the expansive sagebrush plains above the gorge on the Taos Plateau, the piñons at the base of Ute Mountain, and the spruce, aspen, and Douglas fir covering the mountain'snorthern slopes, the diversity of both ecosystems and species allows for, and has been the subject of, substantial scientific research.[77]

The Río Grande gorge connects the northern reaches of the river's watershed with its middle and lower stretches. Deep within the gorge, beneath soaring cliffs that rise hundreds of feet above the river, stands of willow and cottonwood thrive in riparian and canyon ecosystems that have been present since the river first appeared in the Río Grande Rift Valley.[78]

The Monument's ecosystems, some rare and at risk, are essential to supporting the diversity of wildlife referenced above.

The Río Grande del Norte National Monument contains a diversity of geologic formations as well

as the Rio Grande river with a diversity of ecosystems. From the sagebrush and grassland plains at an average elevation of 7,000 feet, dotted by volcanic cones reaching to 10,093 feet and covered in pinyon-juniper forests to the steep canyons with rivers lined with southwestern riparian vegetation. The Monument is an important area for wintering animals, and provides a corridor by which wildlife move between mountain ranges as well as north and south along the Rio Grande.
There is significant ecological diversity within and amongst these different geologic areas. From the cottonwood and willows along the Río Grande corridor, to the expansive sagebrush plains above the gorge on the Taos Plateau, the piñons at the base of Ute Mountain, and the spruce, aspen, and Douglas fir covering the mountain's northern slopes, the diversity of both ecosystems and species allows for, and has been the subject of, substantial scientific research. Some of the major ecosystem types the occur within the Monument area include those described below.

Intermountain Basin Shrub Steppe and Big Sagebrush Shrubland
These ecosystems are the most widespread on the Monument. They are characterized by aridity and openness, occurring on low slopes.[79] The vegetative communities occur on well-drained deep soils. Intermountain Basin shrub steppe has a higher proportion of grass cover; some of these grasses include blue grama, curly bluegrass, alkali sacaton, needle-and-thread, Indian ricegrass, James' galleta, muttongrass, saltgrass, and Salinas lyme grass. Sagebrush occurs in the shrub steppe but does not dominate, and other typical shrubs include horsebrush, mormon tea (or Ephedra), rabbitbrush, and winterfat. In Intermountain Basin sagebrush shrubland, sagebrush dominates, particularly basin big sagebrush and Wyoming sagebrush, with shrubs and, to a lesser extent, grasses intermixed—bitterbrush, mountain snowberry, rabbitbrush. Both ecosystems are vulnerable to the spread of nonnative invasive species such as cheatgrass and Japanese brome. There are several New Mexicovulnerable to critically imperiled wildlife species associated with these ecosystems such as the grasshopper sparrow, Bendire's thrasher, brown-capped rosy-finch, Cassin's finch, ferruginous hawk, golden eagle, loggerhead shrike, mountain plover, pinyon jay, sage thrasher, silky pocket mouse, northern pocket gopher subspecies, and Virginia's warbler.[80]

Inter-Mountain Basins Semi-Desert Grassland
These arid grasslands are typically found on loamy or sandy soils and in open landscapes such as plains, alluvial flats, and mesas.[81] Drought-tolerant, perennial bunchgrasses typically dominate these ecosystems such as blue grama, James' galleta, Indian ricegrass, muhly, needle-and-thread, or threeawn. Intermittent shrubs can include broom snakeweed, blackbrush, saltbush, winter-fat, jointfir, and sagebrush. Wildlife species found in these ecosystems can include sagebrush lizard, vesper sparrow, gophersnake, desert horned lizard, cattle egret, grasshopper sparrow, and rattlesnake. Some New Mexico at-risk species associated with the grassland ecosystems include, brown-capped rosy-finch, burrowing owl, ferruginous hawk, golden eagle, loggerhead shrike, longbilled curlew, mountain plover, Gunnison's prairie dog, silky pocket mouse, northern pocket gopher subspecies (*Thomomys talpoides agrestis*), dwarf milkweed, fringed myotis, and grama grass cactus.[82]

Southern Rocky Mountain Pinyon-Juniper Woodland
This ecosystem occurs in lower elevation open areas in the Southern Rockies and is dominated by two-needle pinyon and one or both of one-seed or Rocky Mountain juniper.[83] Associated grasses and shrubs include Arizona fescue, blue grama, James' galleta, Scribner's needlegrass, Bigelow's sagebrush, Gambel oak, and mountain-mahogany. A few wildlife species associated with this ecosystem include common checkered whiptail, eastern collared lizard, and eastern fence lizard. Some New Mexico at-risk species associated with the grassland ecosystems include ferruginous

hawk, flammulated owl, Grace's warbler, olive-sided flycatcher, pinyon jay, Cyanic milkvetch, Ripley milkvetch, small-footed myotis, and fringed myotis.[84]

Southern Rocky Mountain Ponderosa Pine Woodland
This is a widespread ecosystem in the Rocky Mountains but it's occurrence is significant but not abundant in the RGDNNM. It can occur on a variety of slope inclines. Ponderosa pine trees dominated but other trees can include pinyon, aspen, juniper, and Douglas-fir. Shrubs and grasses make up understory plants such as sagebrush, bitterbrush, choke cherry, bearberry, Gambel oak, manzanita, mountain-mahogany, cliffrose, wild rose, snowberry, grama grasses, western wheatgrass, and needlegrass. Several New Mexico at-risk species are associated with the Monument such as Virginia's warbler, flammulated owl, Cassin's finch, Grace's warbler, olive-sided flycatcher, Lewis's woodpecker, Ripley milkvetch, small-footed myotis, and long-legged myotis.

Rocky Mountain Subalpine-Montane Riparian Woodland
Some tree species associated with this ecosystem include aspen, cottonwood, Douglas-fir, and shrubs, grasses, and wildflowers occur in the understory.[85] A few species associated with the ecosystem in the Monument include American beaver, dusky shrew, and western jumping mouse; there are at-risk species such as Yuma skipper, New Mexican meadow jumping mouse, fringed myotis.[86]

Rocky Mountain Cliff, Canyon and Massive Bedrock
This ecosystem occurs along the Rio Grande and is characterized by steep canyon cliffs with unstable talus and scree slopes; small patches of dense vegetation may include shrubs and/or trees.[87] Raptors such as golden eagles, prairie falcons, red-tailed hawks, and peregrine falcons use this type of habitat in the Monument for nesting, and perching, and hunting. Bats such pale Townsend's bigeared bat, small-footed myotis, fringed myotis, big free-tailed bat, which are all BLM sensitive species, use cliff crevices for roosting and hibernating. The critically imperiled brown-capped rosyfinch also depends on this ecosystem in the RGDNNM.[88]

Open Water
The following at-risk species use the Rio Grande: Rio Grande cutthroat trout, Rio Grande sucker, Rio Grande chub, and River otter

Playas, Marshes, and Wetlands
These ecosystems provide standing, sometimes ephemeral, moisture that is scarce in the arid region of the Monument. The Great Basin fritillary butterfly and Yuma myotis are example of atrisk species that use these habitats.

Riparian Areas and Corridors
The Rio Grande cuts north to south through the RGDNMN, making this iconic river the primary water source and riparian area in the Monument. The Monument Proclamation, quoted below, highlights the importance of the Rio Grande.
The Río Grande gorge connects the northern reaches of the river's watershed with its middle and lower stretches. Deep within the gorge, beneath soaring cliffs that rise hundreds of feet above the river, stands of willow and cottonwood thrive in riparian and canyon ecosystems that have been present since the river first appeared in the Río Grande Rift Valley. The river provides habitat for fish such as the Río Grande cutthroat trout as well as the recently reintroduced North American river otter. The Río Grande del Norte is part of the Central

Migratory Flyway, a vital migration corridor for birds such as Canada geese, herons, sandhill cranes, hummingbirds, and American avocets. Several species of bats make their home in the gorge, which also provides important nesting habitat for golden eagles and numerous other raptor species, as well as habitat for the endangered southwestern willow flycatcher.[89]
According to the U.S. Fish and Wildlife Service (USFWS), there are 32 migratory bird that are designated Bird of Conservation Concern associated with the RGDNNM.[90] These species are protected by the Migratory Bird Treaty Act. Some of these include the American bittern, bald eagle, Bendire's thrasher, Brewer's sparrow, Cassin's finch, Ferruginous hawk, sage thrasher, prairie falcon, and loggerhead shrike.
The Río Grande Wild and Scenic River, located within the Río Grande del Norte National Monument, includes 74 miles of the river as it passes through the 800-foot deep Río Grande Gorge. The Rio Grande and Red River designation was among the original eight rivers designated by Congress as wild and scenic in 1968. In 1994, the designation was extended by legislation to include an additional 12.5 miles of the Rio Grande. The designated area includes 56 miles of the Rio Grande from the Colorado/New Mexico state line to just beyond BLM's County Line Recreation Site and the lower 4 miles of the Red River.[91]

Wildlife Habitat Connectivity
The Rio Grande del Norte is a crucial link in a habitat connectivity zone that enables wildlife to move across large areas of federal, state, tribal and private lands in the Upper Rio Grande landscape. There are three national forest units in the Upper Rio Grande basin that are connected by the Rio Grande del Norte National Monument: The Santa Fe, Carson and Rio Grande National Forests. The monument connects the Sangre de Cristo mountains on the east side and the San Juan Mountains to the west. In addition, the monument connects vital migratory bird habitats in the south to those in the north. The RGDNNM proclamation states that the "Río Grande del Norte is part of the Central Migratory Flyway, a vital migration corridor for birds such as Canada geese, herons, sandhill cranes, hummingbirds, and American avocets."[100]
State and federal agencies: New Mexico Department of Game and Fish (NMDGF), Colorado Parks and Wildlife (CPW), New Mexico Department of Transportation, US Forest Service, BLM including Taos Field Office and RGDNNM personnel, USFWS, are coordinating to identify and protect wildlife linkages where wildlife such as mule deer, elk, pronghorn, and wide-ranging carnivores move across the Upper Rio Grande Landscape. They are working with landowner groups, university scientists, conservation organizations, and others on this initiative.

The Designation of Rio Grande del Norte National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats
Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a great diversity of wildlife, including rare and at-risk species. This includes species listed under the Endangered Species Act (ESA) (see Table below) and those identified as sensitive by the BLM. Below are proclamation statements that make this clear.
The river provides habitat for fish such as the Río Grande cutthroat trout as well as the recently reintroduced North American river otter. … Several species of bats make their home in the gorge, which also provides important nesting habitat for golden eagles and numerous other raptor species, as well as habitat for the endangered southwestern willow flycatcher.[101]
Bald eagles roost above the river in winter and fly out over the Taos Plateau's sagebrush shrub habitat and native grasslands, which stretch for thousands of acres to the west. The vast plateau harbors a significant diversity of mammals and birds, from the eagles, hawks,

falcons, and owls soaring above the plateau to the small mammals on which they prey. Many other bird species, including Merriam's turkey, scaled quail, mourning dove, mountain plover, and loggerhead shrike, can be seen or heard on the plateau. Large mammals, including the Rocky Mountain elk, mule deer, pronghorn, and Rocky Mountain bighorn sheep, find their winter homes on the plateau alongside a population of rare Gunnison's prairie dogs. The Río Grande del Norte also provides habitat for many species of predators, including the ringtail, black bear, coyote, red fox, cougar, and bobcat.[102]

Altering the size or configuration of the monument would remove protections for many of these species. The Monument provides habitat values that are significant to the region, and the current configuration of the monument is necessary for the proper care and management of these habitat values.

At-risk Species

A number of species will benefit from the RGDNNM management once a final plan is adopted that prioritizes the protection of the Monument's objects and other natural resources.

The Gunnison's prairie dog is a BLM sensitive species and New Mexico Species of Greatest Conservation Need (SGCN).[103] Prairie dogs are keystone or highly interactive species that provide habitat for other species. They live in colonies and dig complex burrow networks where other species seek shelter, and many predators hunt and eat prairie dogs. Several at-risk species associated with the Monument benefit from prairie dogs and their colonies such as burrowing owls, ferruginous hawks, bald eagle, and loggerhead shrike—all BLM sensitive species and SGCN—and mountain plover, a SGCN. Threats to Gunnison's prairie dogs include shooting, poisoning, off-road vehicle use near their colonies, non-native invasive plants and plague. These are all threats that proper management can help address—even plague; the Monument could help distribute a vaccine to resident prairie dogs.

There are several imperiled bat species that rely on cliff and other habitats such as BLM sensitive species: long-eared myotis, small-footed myotis, fringed myotis, long-legged myotis, Yuma myotis, and big free-tailed bat and also the pale Townsend's big-eared bat, which is a BLM sensitive species and also a SGCN. Many bat species are sensitive to human disturbance, a manageable threat.

At risk fish include the flathead chub, a BLM sensitive species, and the Rio Grande chub and Rio Grande sucker, both SGCN.

BLM sensitive plants include the grama grass cactus and Ripley's milkvetch

Species Listed under the Endangered Species Act

The table below includes species listed under the Endangered Species Act that are associated with the Monument area, according to the U.S. Fish and Wildlife Service.[104]

Common Name	**Scientific Name**	**Federal ESA Status**
Canada Lynx	*Lynx canadensis*	Threatened
New Mexico Meadow Jumping Mouse	*Zapus hudsonius luteus*	Endangered
North American Wolverine	*Gulo gulo luscus*	Proposed Threatened
Gunnison Sage-grouse	*Centrocercus minimus*	Threatened
Least Tern	*Sterna antillarum*	Endangered
Mexican Spotted Owl	*Strix occidentalis lucida*	Endangered
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened

Wide-ranging Species

The RGDNNM supports a number of ungulates including the desert bighorn sheep, elk, mule deer, and pronghorn. Wide-ranging carnivores include mountain lions, black bears, bobcats, and coyotes. The Monument is also within the historic range of the gray wolf. These species need large landscapes and connected habitat for their long-term survival.

ROSE ATOLL MARINE NATIONAL MONUMENT

President George W. Bush established Rose Atoll Marine National Monument (Rose Atoll Monument or "Monument") in 2009 through Presidential Proclamation 8337.[117] The Monument spans more than 8,600,000 acres of emergent and submerged lands and waters of and around Rose Atoll in American Samoa. One of the smallest atolls in the world, Rose Atoll includes two low elevation sandy islets atop a coralline algal reef that encloses a lagoon. It is the easternmost Samoanisland and the southernmost point of the United States.[118] The Monument is principally managed by the U.S. Fish and Wildlife Service in consultation with the National Oceanic and Atmospheric Administration, with the Government of American Samoa as a cooperating agency in management planning.

Rose Atoll Marine National Monument includes Rose Atoll National Wildlife Refuge, which comprises approximately 20 acres of emergent land and 1,600 acres of lagoon habitat. The Refuge was established in 1973 by cooperative agreement with the Government of American Samoa.[119] It is the southernmost unit of the National Wildlife Refuge System, our only network of federal lands and waters dedicated to wildlife conservation. Encompassing 566 refuges with at least one in every U.S. state and territory, the Refuge System is essential to protecting our nation's astounding diversity of wildlife, supports innumerable recreational and educational opportunities and generates billions of dollars in local, sustainable economic revenue. As one of only two national wildlife refuges located south of the equator, Rose Atoll Refuge is a unique and exceptional unit of the Refuge System.[120]

As directed in the monument proclamation, the marine areas of Rose Atoll Marine National Monument outside of the Refuge were added to the Fagatele Bay National Marine Sanctuary in 2012, when it was also renamed the National Marine Sanctuary of American Samoa.[121]

The lands, submerged lands, waters and marine environment of Rose Atoll Monument contain objects of significant historic and scientific interest. The marine and terrestrial communities on and around Rose Atoll provide an unparalleled opportunity for scientific research and afford a rare baseline for biological and geological research of low elevation Pacific islands. Marine biologists are conducting research projects related to species monitoring and underwater mapping of the Monument's coral reefs, providing an invaluable record of change in this ecosystem over time.[122] Over the last century, approximately 300 papers and reports have been written describing the geology, geography, biology, meteorology and history of the area.[123] The facts concerning the important marine resources within Rose Atoll Monument clearly demonstrate that President Bush was well within his discretion under the Antiquities Act in designating the monument.

Rose Atoll Marine National Monument Protects Sensitive Ecosystems and Habitats of Significant Historic and Scientific Interest

The Rose Atoll Proclamation describes in great detail the dynamic ecosystem preserved in the Monument that support a diverse assemblage of terrestrial and marine species of high ecological value.[124] The atoll has all the major habitats and associated biological groups found on Pacific atolls, and provides for island and marine species groups that are adapted to each habitat type. The Monument also conserves deep ocean habitats. Courts have upheld that the Antiquities Act provides the President with the discretion to protect ecosystems, ecosystem features and large habitats. For example, in *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[125]

Reef

The most striking feature of Rose Atoll is the pink hue of fringing reef created by the dominance of a crustose coralline algae, which is also the primary reef-building species in the shallow depths of the

atoll. It is vital to maintain these living coralline algae as all shallow water and terrestrial organisms in the Monument depend on the growing platform these corals create, which is resistant to physical and bio-erosion from wave action.[126] The outer reef of the atoll slopes down to a depth of more than 650 feet, dominated by mixed corals and coralline algae to depths of 150 feet. The Monument preserves approximately 113 species of corals, and the coral communities are quite distinctive and different from those found at other islands in Samoa. Dominant corrals at Rose Atoll include *Favia, Acropora, Porites, Montipora, Asteopora, Montastrea* and *Pocillopora*.[127]

Lagoon
Rose Atoll Monument shelters a lagoon about 1.2 miles wide and up to approximately 65 feet deep. The shallow lagoon and its substrates, from benthic bottom cover of sand and patch reefs to limestone blocks and coral pinnacles, offer habitat for a unique assemblage of fish and the largest population of faisua (giant clams) in American Samoa.[128]

Beach Strand
The Monument's two islands, dubbed Rose and Sand, are about 14 and 7 acres respectively. As the only terrestrial rat-free areas in American Samoa, their sandy beach strand habitat is a vital nesting site for federally protected seabirds and sea turtles.[129]

Littoral Forest
The tropical wet littoral forest ecosystem is very rare in the Pacific Islands due to human development in most locations. The littoral forest on the islands of Rose Atoll Monument provide nesting sites for arboreal and ground nesting seabirds as well as native land hermit crabs and migratory shorebirds. Rose Island contains the only *Pisonia* forest community remaining in Samoa.[130]

Intertidal
The north end of Rose Island is characterized by an expanse of sand and rubble that is exposed at low tide. Seabirds congregate and rest at this intertidal zone, which also provides foraging habitat for reef fish and shorebirds.

Ava
The ava connects the Monument's lagoon with the open ocean, controlling water flow in and out of the lagoon, as well as the transportation of sediment that has created and maintained the islands in roughly the same location since 1873. It is essential to protect and maintain the size and location of the ava as it is key to the current function of the many habitats at Rose Atoll. It is also a major passageway for fish, and shelters species that require calmer waters to breed. Sharks and other predators congregate at the mouth of the ava waiting for prey.[131]

Deep Water Habitat
The Monument additionally protects deeper water ecosystems surrounding the atoll that are rich with marine life. Much of this area has yet to be fully documented. However, in spring 2017, the National Oceanic and Atmospheric Administration ship, *Okeanos Explorer* collected important baseline data on the deep water habitats of the Monument, with preliminary results indicating that new species have been discovered.[132]

Rose Atoll Marine National Monument Protects Rare and Imperiled Terrestrial and Marine Species of Significant Historic and Scientific Interest
Fish and wildlife qualify for protection as objects of historic and scientific interest under the

Antiquities Act. Rose Atoll Monument provides vital habitat for a variety of rare and endemic fish, reptiles, birds, invertebrates and marine mammals, including imperiled species listed under the Endangered Species Act (ESA). Species that face depletion elsewhere, some of which have declined worldwide by as much as 98 percent, are found in abundance at Rose Atoll Monument.[133]

Fish

The fish communities at Rose Atoll Monument are distinct from others in the Samoan Archipelago, with high species density and diversity. The species assemblages also differ from similar areas with a higher density of planktivorous and carnivorous fish than found elsewhere in the archipelago. The Monument contains approximately 272 species of reef fish, with scientists first discovering at least seven species there.[134] Pelagic fish species found outside the lagoon include various tuna, mahi mahi, billfish, barracuda and sharks. Rare Maori wrasse, large parrotfishes and blacktip, whitetip and gray reef sharks are abundant at Rose Atoll Monument. A new species of cardinal fish was found in the lagoon in 2006.[135] Snappers, jacks, groupers, unicorn fishes and many others also frequent the waters in the Monument.

Reptiles

The threatened green and endangered hawksbill turtles use the Monument's protected island beaches and lagoon, which support both migratory breeding populations of turtles as well as a small resident population of juveniles.[136] In fact, the Monument contains the largest number of nesting turtles in American Samoa, and is one of the last remaining refuges for these imperiled species in the Central Pacific.[137] Satellite tagging has demonstrated that the green turtles at Rose Atoll migrate between American Samoa and other Pacific island nations.

Birds

Approximately 97 percent of the seabird population of American Samoa resides at Rose Atoll Monument, making it the most important seabird colony in the region.[138] The two islands provide important nesting and roosting habitat for 12 species of seabirds protected under the Migratory Bird Treaty Act, including terns, noddies, boobies, frigatebirds and tropicbirds.[139] Fives species of federally protected migratory shorebirds and one species of migrant forest bird, the long-tailed cuckoo, use the islands for feeding, resting and roosting.[140]

Invertebrates and Mollusks

There are at least two species of federally protected corals found at Rose Atoll Monument. Tunicates, stalked crinoids and unusual sea stars have been observed during deep diving submersible surveys. In addition, and unlike the rest of the Samoan Archipelago where they are harvested by humans, the Monument's lagoon supports high densities of the spectacularly colored giant clams (*Tridacna maxima*). These mollusks are listed under the Convention on International Trade in Endangered Species (CITES) and have suffered serious depletion throughout their range due to over-harvesting.[141]

Marine Mammals

Endangered hump back whales, pilot whales and dolphins of the genus *Stenella* have all been observed within Rose Atoll Monument.[142] All of the marine mammals found in the Monument are protected under the Marine Mammal Protection Act.

Imperiled Species

The International Union for Conservation of Nature has listed many fish, birds, corals and other

species that use the Monument "vulnerable" and "near threatened."[143] At least five species known to use Rose Atoll Monument are also listed under the ESA.

ESA-listed Species That Use Rose Atoll Marine National Monument

Common Name	Scientific Name	Federal ESA Status
Green Turtle	*Chelonia mydas*	Threatened
Hawksbill Turtle	*Eretmochelys imbricata*	Endangered
Stony Coral	*Acropora globiceps*	Threatened
Stony Coral	*Acropora retusa*	Threatened
Humpback Whale	*Megaptera novaeangliae*	Endangered

The Size and Protections Afforded Rose Atoll Marine National Monument are Necessary for the Proper Care and Management of Marine Species and Ecosystems of Historic and Scientific Interest

The biological requirements and function of species and habitats within Rose Atoll Monument require the size and protections President Bush provided the area almost a decade ago. The area within Rose Atoll's boundaries supports a diverse and increasingly rare assemblage of fish and wildlife as compared to other areas within the Samoan Archipelago. The monument proclamation provides for the proper care and management of these exceptionally important and unique resources. Altering its configuration or management would remove lawful protections for the terrestrial and marine species and fragile ecosystem—objects of historic and scientific interest—that the monument was established to conserve.

Scientists recommend protecting 30 percent of the world's oceans to fulfill an intergenerational legacy of ocean resource sustainability; at present, less than three percent of the world's oceans are protected.[144] Existing uses of Rose Atoll Monument are appropriately limited to study and monitoring carried out by the Fish and Wildlife Service, National Marine Fisheries Service and the American Samoa government.[145] Current management will not only provide essential research for understanding comparatively little known marine ecosystems, but also ensure the area serves as a marine reserve for conserving and restoring fish stocks for the benefit of current and future generations.

Numerous scientific studies demonstrate that well-designed and strictly enforced marine reserves increase the density, diversity and size of fish, invertebrates and other organisms vital to wildlife conservation, as well as to recreational and commercial fishing.[146] Growth of fish biomass in fully protected areas on average increases to four times than in fished areas. Reserves also safeguard more apex predators, many of which are rare or absent from unprotected areas.[147] The Monument's ability to conserve and restore highly fished predatory species (e.g., sharks, grouper, lobster, etc.) restores key ecological functions and species interactions that can have strong cascading effects on lower trophic levels.[148]

SAN GABRIEL MOUNTAINS NATIONAL MONUMENT

President Obama established the San Gabriel Mountains National Monument (SGMNM or "Monument") in 2014 with Presidential Proclamation 9194.[73] The Monument spans approximately 346,177 acres within Los Angeles County in southern California. It is managed by the U.S. Forest Service.

The National Park Service, which conducted an assessment of the region in 2011, considers the San Gabriel Mountains a "nationally significant region," in part due to the high biodiversity of the area.[74] California ranks highest of all U.S. states in biodiversity and species endemism, according toNatureServe.[75] Southern California is a biodiversity hotspot with a large array of imperiled wildlife and plant species. The San Gabriel Mountains are among the most biologically diverse regions in the state based on measures of species richness, species endemism, and species rarity. The mountains have among the highest levels of amphibian, bird, mammal, and reptile richness; vegetation community richness; plant rarity; and invertebrate rarity.[76] The area contained within the Monument boundaries exhibits a high and increasingly rare level of ecological integrity.

Owing to intensive and expansive urbanization in Los Angeles County, the region is also among the most ecologically threatened in the country. The Monument is a popular destination for Los Angeles metro area residents. Monument status is providing the Forest Service the ability to manage significant human uses in ways that are more protective of sensitive ecosystems and at-risk species. Some species listed under the Endangered Species Act (ESA) depend on habitats within the Monument that had become degraded by overuse. The Forest Service is now developing a management plan for SGMNM that prioritizes protecting Monument objects, including ecosystems, vegetative communities, and wildlife and plant species. Additionally, Monument managers have begun developing a travel management plan that is intended to be a blueprint for sustainable transportation to and from the Monument for visitors.

A recent assessment analyzed ecological values of the SGMNM by mapping and comparing a random sample of equivalent size areas in the region.[77] This science-based analysis found the Monument ranked extremely high in bird diversity at 97 percent and reptile diversity at 86 percent; rarity-weighted species richness scored 96 percent. The Monument is also predicted to be resistant to climate change effects with a ranking of 94 percent. Ecological system type rarity scored at 88 percent and ecological system diversity at 78 percent. These results affirm the importance of the Monument to California's wildlife and ecosystems.

The Designation of San Gabriel Mountains National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Antiquities Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[78] Indeed, the SGMNM Proclamation describes in great detail the diversity of qualifying ecosystem types and natural and scientific features found within the Monument's boundaries. The facts demonstrate that President Obama's designation was necessary to protect the diversity of natural values found within the Monument.

Ecosystems

The President's proclamation for the Monument was clear that ecosystems were important, qualifying objects needing protection. It states, for example,

Climatic contrasts in the San Gabriels range from the northern slope desert region, home to Joshua trees and pinyon pines, to high-elevation white fir and a notable stand of 1,000-yearold

limber pines. Vegetation communities, including chaparral and oak woodland, represent a portion of the rare Mediterranean ecosystem found in only 3 percent of the world. Mediterranean climate zones have high numbers of species for their area.[79]
The Monument's ecosystems, some rare and sensitive, are essential to supporting the diversity of wildlife referenced herein.

Chaparral Ecosystems
California is known for its chaparral ecosystems. There are three types of chaparral vegetative communities within the Monument: chamise-redshank chaparral, mixed chaparral, and montane chaparral. Chemise-redshank chaparral is a vulnerable ecosystem.[80] Mixed chaparral includes about 240 plant species.[81] California's montane chaparral community is vulnerable to threats, and about 70 percent is degraded and fragmented across the state.[82] The remaining intact areas are protected by designated wilderness such as those within the SGMNM and on other Forest Service lands.
Some of the vertebrate wildlife associated with chaparral include a number of endemic species and those with restricted ranges, such as San Diego black-tailed jackrabbit, California pocket mouse, bigeared woodrat, Merriam chipmunk, agile kangaroo rat,[83] Blainville's horned lizard, and southern California legless lizard; several species that the California Department of Game and Fish[84] considers at-risk and has designated Species of Greatest Conservation Need (SGCN), such as long-eared Myotis, long-legged myotis, ring-tail, California vole, Gilbert's skink; as well as more common species, such as North American opossum, broad-footed mole, desert cottontail, brush rabbit, cactus deer mouse, striped skunk, spotted skunk, bobcat, mule deer, and southern alligator lizard.[85]

Juniper and Pinyon-Juniper Woodlands
Both juniper-dominated and pinyon-juniper woodlands occur along the northern slopes of the San Gabriel Mountains in the Monument.[86] Other plants associated with these ecosystems include buckwhests, yuccas, penstemons, and native grasses. The ecosystem provides food and shelter for an abundance and diversity of wildlife.[87] For example, a variety of birds and mammals rely on juniper berries. The pinyon mouse is a pinyon-juniper obligate species. Some endemic and near-endemic species occur in and around the SGMNM; examples include the San Diego black-tailed jackrabbit, Merriam chipmunk, San Diego pocket mouse, Panamint kangaroo rat, and agile kangaroo rat. Large mammals, such as desert bighorn sheep and mule deer browse, graze and find shelter among the trees and other seek prey: badgers, bobcats, coyotes, gray foxes, ringtails, skunks, weasels, and others. Smaller mammals that occur in the ecosystem: desert cottontail, California ground squirrel, Botta's pocket gopher, Merriam kangaroo rat, cactus deer mouse, and dusky-footed Woodrat (an SGCN). Gilbert's skink and other reptiles use this habitat. Birds such as Steller's and pinyon jays and Clark's nutcrackers eat pinyon seeds.

Joshua Tree Woodland
The iconic Joshua tree, a named object in the President's Proclamation, dominates Joshua tree woodland. Joshua tree woodlands occur around the northern base of the San Gabriel Mountains in low slope areas.[88] The ecosystem provides habitat for associated species, such as perching and nesting sites for birds and other plant life including smaller shrubs, sagebrush, and creosote bushes.[89]A variety of small mammals use the ecosystem such as California Mole, Interior Long-legged Bat, California Jack Rabbit, Mexican woodrats, Merriam's kangaroo rats, southern grasshopper mice (SGCN) and other mice species, squirrels, jackrabbits; some eat Joshua tree fruits. Antelope squirrels eat the fruits and cache the seeds. Mexican woodrats use the tree's spiny leaves as protection around their burrows. Ladder-backed woodpeckers may be Joshua tree associates in California. A host of birds use the Joshua tree woodland habitat: American kestrels, ash-throated

flycatchers, common nighthawks, cactus wrens, loggerhead shrikes, northern mockingbirds, northern flickers, orangecrowned warblers, and Scott's orioles. Desert spiny lizards and small desert night lizards use Joshua tree bark for hibernacula.

Montane Hardwood

This ecosystem occurs in the middle to higher elevations in the San Gabriel Mountains. The community includes an understory of chaparral associates like coffeeberry and manzanita, and an overstory of a variety of pines, bigcone Douglas-fir, bigleaf maple, California black oak and other oaks, incense-cedar, California-laurel, and white alder.[90] Wildlife found in this habitat include a number of amphibians and reptiles, jays, woodpeckers, squirrels, mule deer, and black bears.

Ponderosa Pine Forest

The ponderosa pine ecosystem occurs in the eastern higher elevations of the SGMNM. Plants within this community include Pacific dogwood, manzanita, ceanothus, mountain-misery, and others.[91] The habitat is used by California condors and migratory deer. The ponderosa pine tree itself provides food, cover, and bird perching and nesting habitat for many species.[92] Small mammals such as chipmunks, ground and tree squirrels, deer mice, shrews, and voles feed on stems and roots. Deer, elk, hares, porcupines, and rabbits browse the trees. Seed-eating passerines flock to ponderosas including Cassin's finches, Clark's nutcrackers, chickadees, evening grosbeaks, juncos, pine siskins, several sparrow species, varied thrushes, and others. Tree cavity associates use mature ponderosa trees and snags for shelter and nesting.

Jeffrey Pine Forest

The Jeffrey pine ecosystem is associated with firs and other pines as well as black cottonwood and understory of ceanothus and scrub oak, and it can be found between pinyon-juniper and subalpine conifer communities in the San Gabriel Mountains.[93] Jeffrey pine trees are used for cover and their seeds, bark, foliage provide food for wildlife.[94] Animals that use the ecosystem include American black bears, mule deer, California ground squirrels, Douglas squirrels, least chipmunks, western gray squirrels, Townsend's chipmunks, yellow-pine chipmunks, deer mice, American crows, California quail, Clark's nutcrackers, mountain chickadees, northern flickers, nuthatches, sparrows, flammulated owls, and yellow-blotched and San Gabriel Mountain salamanders.

Lodgepole Pine and Subalpine Coniferous Forests

These ecosystems occur at the highest elevations of the San Gabriel Mountains. Both are dominated by lodgepole pine and also limber pine and white fir, with occasional occurrences of aspen and mountain hemlock and narrow endemic alpine plants.[95] The ecosystem supports at least 31 mammal species, 50 bird species, and others.[96] Ground-nesting birds, such as spruce grouse, feed on lodgepole pine needles. Various chipmunks, mice, squirrels, and birds eat lodgepole seeds. The trees and snags provide nesting and sheltering sites for cavity-nesting birds. Deer use these forests. At least three at-risk mammals occur in these ecosystems, which are California Species of Conservation Need: agile kangaroo rat, lodgepole chipmunk, and the San Bernardino flying squirrel.[97] Amphibians and reptiles can also be found in these forests, such as the southern alligator lizard.

Wet Meadows

Scattered montane wet meadows occur in SGMNM; these habitats are dominated by grasses and herbaceous plants in areas surrounded by conifer forests.[98] A few at-risk species associated with

montane wet meadows in the Monument include the San Bernardino dusky shrew, Calliope hummingbird, McGillivray's warbler, Lincoln sparrow, and San Gabriel Mountains greenish blue butterfly.[99]

Important Riparian Areas

Monument status allows the Forest Service to prioritize the protection of riparian areas, essential for SGMNM and threatened and endangered species. The San Gabriel River branches into three main forks—West, North, and East. The River and its tributaries are essential habitats for fish such as the Santa Ana sucker, Santa Ana speckled dace, arroyo chub, and amphibian such as the California redlegged frog and San Gabriel Mountains slender salamander.[100] Little Rock Creek provides significant habitat for endangered yellow-legged frogs near the higher elevation headwaters and endangered arroyo toads in the lower reaches. The creek also provides habitat for California red-legged frog populations. Little Rock Creek is long and drains through the desert. The upper reaches remain remote and largely unroaded, making this high-integrity habitat valuable for frog conservation and recovery.[101] Vincent Gulch and Vincent Gulch above Prairie Fork provide habitat for a mountain yellow-legged frog population, and the impending management plan could conserve and contribute to the recovery of the species by keeping closed a jeep trail that runs along Prairie Fork.[102] Though much of Big Tujunga Creek flows outside of the SGMNM boundaries, the creek is essential for the Santa Ana sucker, arroyo chub, and may provide recovery habitat for the Santa Ana speckled dace within the Monument.

Large Landscape Conservation

Scientists have understood for decades that large, intact, connected landscapes protected from human development and habitat degradation are essential for maintaining viable wildlife populations.[103] Larger areas tend to include a broader diversity of habitats and habitat characteristics and can accommodate more species than smaller areas[104] and better provide for wide-ranging species with extensive home ranges such as large carnivores and ungulates that move between seasonal habitats. The optimal size of a given protected area depends on the habitat needs of the species that occur there, whether residents or migrants. Different species have varied habitat requirements over their life cycle that can depend on both a diversity of habitat types and patch size.[105] The composition and distribution of species in an area can also change over time due to periodic disturbance, such as wildfire, and ecological successional stage. Larger areas offer greater representation of habitat diversity, characteristics and patch size, and are therefore more resilient to disturbances and stressors and supportive of the species that depend on them.[106]

The boundaries of many monuments subject to the current review have been demarcated with these central ecological concepts in mind. Presidents' proclamations have, for example, named wideranging wildlife, including mule deer, bighorn sheep, pronghorn, elk, mountain lions, and others as monument objects. The importance of sufficiently large areas to protect biological objects must be considered in the review process.

Wildlife Habitat Connectivity

Landscape connectivity is also an increasingly important factor in the conservation of fish, wildlife, and plant populations.[107] Habitat loss, degradation and fragmentation pose the most important threat to the survival of native species, contributing to the shrinking distribution of many wildlife populations in North America. Landscapes fragmented by development and roads lead to increased mortality[108] for wide-ranging wildlife, including big game and large carnivores. Local populations, especially those of at-risk species, can decline and disappear without connectivity to support immigration.

The recognition and protection of habitat connectivity and wildlife corridors facilitates migration, dispersal, plant pollination, and gene flow within and across monument boundaries. Establishing new areas and expanding existing protected areas is necessary to allow species to shift their ranges to adapt to climate change.[109] Connecting these habitat cores is also essential: wildlife corridors increase movement between isolated habitat patches by approximately fifty percent, compared to areas that are not connected by corridors.[110]
The President's Proclamation designating the SGMNM included a wildlife "connectivity corridor" as a monument object "important for wide ranging species, such as mountain lions."[111]

The Designation of San Gabriel Mountains National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats
Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a variety of wildlife, including rare and at-risk species. This includes species listed under the Endangered Species Act (ESA) (see Table below) and those identified as sensitive by the Forest Service. Below are proclamation statements that make this clear.
The San Gabriels' rivers not only provide drinking water but are also areas of high ecological significance supporting rare populations of native fish, including the threatened Santa Ana sucker. The San Gabriel River supports rare arroyo chub and Santa Ana speckled dace, a species found only in the Los Angeles Basin. Little Rock Creek tumbles down from the northern escarpment to the Mojave Desert below and supports important populations of the endangered mountain yellow-legged frog and arroyo toad, as well as the threatened California red-legged frog.[112]
Altering the configuration of the monument would remove protections for many of these species. The Monument provides habitat values that are significant to the region, and the current configuration of the monument is necessary for the proper care and management of these habitat values.

At-risk Species
As stated above, the Monument is incredibly species-rich and includes a vast array of at-risk wildlife and plants. The President's Proclamation designating the SGMNM gave object status to "52 Forest Service Sensitive Plants and as many as 300 California-endemic species."[113]
A few of the Forest Service sensitive plant species include: crested milkvetch, San Antonio milkvetch, slender mariposa-lily, San Gabriel River dudleya, San Gabriel Mountains dudleya, andmany-stemmed dudleya, fragrant pitcher sage, and Rock Creek broomrape. The Joshua tree is also an at-risk plant.
There are Forest Service amphibian sensitive species that occur on the Monument such as yellowblotched salamander and San Gabriel Mountains slender salamander. Other at-risk amphibians that may occur on the SGMNM include Coast range newt and arboreal salamander.
Several bird species associated with the Monument that are both Forest Service sensitive species and California SGCN include northern goshawk, bald eagle, and California spotted owl (currently under review by the Fish and Wildlife Service for listing under the ESA). The gray vireo is also a Forest Service sensitive species. Other species that are SGCN include black swift, yellow warbler, song sparrow, and yellow-breasted chat. Additional at-risk species associated with SGMNM include the tree swallow, Swainson's thrush, American dipper, warbling vireo, Lawrence's goldfinch, California gnatcatcher, Rufous-crowned sparrow, Bell's sage sparrow, flammulated owl, northern saw-whet owl, Williamson's sapsucker, white-headed woodpecker, hermit thrush, and Virginia's warbler.
Fish, such as the arroyo chub and Santa Ana speckled dace, are both SGCN and Forest Service

sensitive species.
Among the invertebrate pollinators that are Forest Service sensitive species are the San Emigdio blue butterfly and San Gabriel Mountains blue butterfly.
The Nelson's bighorn sheep, pallid bad, and Townsend's big-eared bat are among mammal species that are both Forest Service sensitive species and SGCN. Several at-risk bats are known to or may occur on the SGMNM such as Yuma myotis, western small-footed myotis bat, spotted bat, western mastiff bat.[114]
There are several at risk reptiles associated with the Monument. The San Bernardino Mountain kingsnake, two-striped garter snake, and San Bernardino ringneck snake are Forest Service sensitive species. The southwestern pond turtle is a SGCN. The California legless lizard is both an SGCN and Forest Service sensitive species. Others reptiles at risk include the sagebrush lizard and rosy boa.

Species Listed under the Endangered Species Act

ESA-listed Species with Potential to Occur within San Gabriel Mountains National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
California Condor	*Gymnogyps californianus*	Endangered
Coastal California Gnatcatcher	*Polioptila californica californica*	Threatened
Least Bell's Vireo	*Vireo bellii pusillus*	Endangered
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Desert Tortoise	*Gopherus agassizii*	Threatened
Arroyo (=arroyo Southwestern) Toad	*Anaxyrus californicus*	Endangered*
California Red-legged Frog	*Rana draytonii*	Threatened
Mountain Yellow-legged Frog	*Rana muscosa*	Endangered*
Santa Ana Sucker	*Catostomus santaanae*	Threatened*
Unarmored Threespine Stickleback	*Gasterosteus aculeatus williamsoni*	Endangered
Riverside Fairy Shrimp	*Streptocephalus woottoni*	Endangered
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	Threatened
Braunton's Milkvetch	*Astragalus brauntonii*	Endangered
Gambel's Watercress	*Rorippa gambellii*	Endangered
Marsh Sandwort	*Arenaria paludicola*	Endangered
Nevin's Barberry	*Berberis nevinii*	Endangered
San Fernando Valley Spinefower	*Chorizanthe parryi* var. *fernandina*	Proposed Threatened
Slender-horned Spinefower	*Dodecahema leptoceras*	Threatened
Spreading Navarretia	*Navarretia fossalis*	Threatened
Thread-leaved Brodiaea	*Brodiaea filifolia*	Threatened

* Designated critical habitat for these species overlaps the monument area.

The California condor's historic range covers a large area in the western U.S., from the Pacific coastline and east into western Montana, Wyoming, and Colorado. The species was once believed to be extinct in the San Gabriel Mountains but birds have been sighted in recent years, and the region contains suitable habitat: remote roosting sites on cliffs, nesting sites in tall trees, and foothill rangelands.[115] The Monument provides undeveloped refuge, in a heavily populated southern California, where the birds will not be disturbed by oil and gas development and mining under new claims.
The SGMNM contains suitable habitat and has the potential to contribute significantly the least Bell's vireo's recovery. The species depends on riparian woodlands. Loss of habitat due to large-scale development around the Monument along with invasive species outside and inside the Monument

threaten the bird.[116] Long-term camping in least Bell's vireo habitat is also a threat, which can be remedied by the SGMNM management plan.

The Santa Ana sucker is endemic to the Santa Ana River, San Gabriel river, and the Los Angeles River but its populations are now isolated in the East, North, and West forks of the San Gabriel River.[117] As indicated above, the viability and recovery of the species depend on management that prioritizes protecting management objects; the new management approach enabled by the designation will allow the Forest Service to better protect and contribute to the recovery of such endangered and threatened species.

The mountain yellow-legged frog has been extirpated from nearly all of its historic range, which included nearly all of southern California's desert and coastal slopes of the Palomar, San Bernardino, San Gabriel, and San Jacinto mountains.[118] The remaining isolated, small populations occur in the San Gabriel Mountains' headwater streams. Designated critical habitat helps protect these populations, and monument protection will allow management that better balances human uses with species needs to help promote recovery.

The California red-legged frog population in the state has declined due to habitat loss and degradation, livestock grazing, predation and competition form non-native species, off-road vehicle use, reservoir construction, and poor water quality. Livestock grazing no longer occurs in sensitive areas. Management under the mandate of the monument proclamation requires the Forest Service to address threats to the species under its control such as water quality, off-road vehicles, and nonnative species.

The SGMNM contains critical habitat for the arroyo toad, a highly endangered species. There are restoration projects ongoing in Upper Big Tujunga Canyon and Little Rock Creek aimed to restore the species' habitat.[119]

Wide-ranging Species

The SGMNM supports a number of ungulates, including the desert bighorn sheep and mule deer. Wide-ranging carnivores include mountain lions, black bears, bobcats, and coyotes. The Monument is also within the historic range of the gray wolf. These species need large landscapes and connected habitat for their long-term survival.

SAND TO SNOW NATIONAL MONUMENT

President Obama established the Sand to Snow National Monument (Sand to Snow) in 2016 through Presidential Proclamation 9396.[73] The monument spans more than 150,000 acres and is jointly managed by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS).

In Sand to Snow, a variety of non-profit and state organizations have acquired a great majority of the privately held lands in the area to protect their natural resources, and most of these acquired lands had been transferred to the United States of America by 2008. Sand to Snow National Monument protects one of the most biologically diverse mountain ranges in the United States, and serves as a scenic backdrop for communities that are built around eco-tourism and a rural lifestyle. At least 66 rare plant species are found in the monument, as well as a great number of rare or endangered birds, reptiles, and insects. Big Morongo Preserve includes many known cultural sites, including former Native American habitat locations and homesteading history. In the Black Lava Butte area, petroglyphs and pictographs are abundant and highly sensitive to illegal collection given the relative ease of access to the area.

A recent assessment analyzed ecological values of the Sand to Snow National Monument by mapping and comparing a random sample of equivalent size areas in the region.[74] Based on this science-based analysis, the Monument ranks high for species richness and diversity, scoring at 92 percent for reptile diversity, 77 percent for mammal diversity, 73 percent for bird diversity, and 82 percent on rarity-weighted species richness. The Monument ranked at 78 percent for ecological system type rarity. Additionally, the monument is highly resilient to climate change, with a score of 77 percent for climate resilience.

The Designation of Sand to Snow National Monument Protects and Provides for the Proper Care and Management of Ecosystems, Habitats, Fish, Wildlife, and Plants

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[75] Habitat for fish and wildlife also qualify for protection as scientific objects under the Antiquities Act.

Sand to Snow protects and provides for the proper care and management of exceptionally important and unique ecosystem and fish, wildlife and plant species values. Indeed, the Sand to Snow Proclamation describes in great factual detail the diversity of qualifying ecosystem and habitat types and fish, wildlife and plant species found within the monument boundaries. The facts demonstrate that President Obama designated the land necessary to protect the diversity of ecosystems and species found within the Sand to Snow National Monument. Altering the configuration or management of the monument would remove lawful protections for the ecosystems, habitat, fish, wildlife and plant species found within the monument.

The area contained within the monument "includes an extraordinary diverse range of ecosystems" including coastal, Mojave Desert and Sonoran Desert ecosystem types. Big Morongo Canyon, which is found in the transition between the Mojave and Colorado deserts, "is among the largest desert riparian habitats in California" and "has been recognized as among the most important avian habitats in the State." Sand to Snow also harbors the southernmost stand of quaking aspen trees in California, which support populations of California spotted owls.[76]

In addition, the monument supports 12 federally listed threatened and endangered animal species and a "tremendous diversity of other wildlife species" including 240 species of birds, including 32 species of migratory birds of conservation concern, which draw birders from around the world. The monument also supports 1,600 different species of plants, including 14 federally listed threatened or endangered species of flowering plants.[77]

The ecological and biological values within Sand to Snow contribute to scientific research, knowledge and understanding. Federal land managers are conducting a wide range of scientific investigations at Sand to Snow including the ecological effects of climate and land use change, wildfire and invasive species.

Habitat Connectivity

Sand to Snow, which includes a unique transverse range in the San Bernardino Mountains, provides for regionally significant landscape-level connectivity – in particular with Joshua Tree National Park to the east – an important and rare ecological feature on western landscapes.

SONORAN DESERT NATIONAL MONUMENT

President Clinton established the Sonoran Desert National Monument (SDNM or Monument) in 2001 with Presidential Proclamation 7397.[73] The Monument spans approximately 486,149 acres within Maricopa and Pinal counties in southern Arizona. It is managed by the Bureau of Land Management (BLM). The BLM has developed special management goals, objectives, and actions to protect the objects of the SDNM.[74]

A recent assessment analyzed ecological values of the SDNM by mapping and comparing a random sample of equivalent size areas in the region.[75] This science-based analysis found the Monument ranked extremely high in reptile diversity at 93 percent and high in mammal diversity at 64 percent. Night sky darkness, a metric of relative remoteness, scored at 63 percent.

Indeed, the Monument is species-rich with at least 10 amphibian, 28 mammal, 36 reptile species, including six of 11 of Arizona's rattlesnake species; there are also approximately 500 species of vascular plants, including at least 20 species of cacti.[76] Thirty-two migratory birds that are designated as Birds of Conservation Concern by the U.S. Fish and Wildlife Service use the SDNM area, including four hummingbird species.[77]

The Designation of Sonoran Desert National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[78] The facts demonstrate that President Clinton designated the land necessary to protect the diversity of ecosystems found within the Monument.

The SDNM protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The Antiquities Act provides the President with the authority to protect and properly management landscapes and ecosystems for their scientific and other values.

Ecosystems

The President's Proclamation for the monument made clear that ecosystems were important objects needing protection. It states, for example,

> The most biologically diverse of the North American deserts, the monument consists of distinct mountain ranges separated by wide valleys, and includes large saguaro cactus forest communities that provide excellent habitat for a wide range of wildlife species.[79]

The monument's biological resources include a spectacular diversity of plant and animal species. The higher peaks include unique woodland assemblages, while the lower elevation lands offer one of the most structurally complex examples of palo verde/mixed cacti association in the Sonoran Desert. The dense stands of leguminous trees and cacti are dominated by saguaros, palo-verde trees, ironwood, prickly pear, and cholla. Important natural water holes, known as tinajas, exist throughout the monument.[80] The most striking aspect of the plant communities within the monument are the abundant saguaro cactus forests. The saguaro is a signature plant of the Sonoran Desert. Individual saguaro plants are indeed magnificent, but a forest of these plants, together with the wide variety of trees, shrubs, and herbaceous plants that make up the forest community, is an impressive site to behold. The saguaro cactus forests within the monument are a national treasure, rivaling those within the Saguaro National Park.[81]

The Monument's ecosystems, some rare and at risk, are essential to supporting the diversity of wildlife referenced above.

While this is cactus country, monsoonal rains offer rare and vital summer moisture that attracts wildlife. The SDNM contains three mountain ranges: the Maricopa Mountains, Sand Tank Mountains, and Table Top Mountains that drain into basin wash networks that provide important xeroriparian and seasonal wetland habitat for wildlife.[82] This physiography, in part, accounts for the flora and fauna diversity in the Monument. Elevation in the SDNM ranges from about 800 to 4,300 feet. The washes are cooler than the higher, drier surrounding desert and attract animals that need refuge from the heat, water for drinking, and shelter from the higher and denser vegetation. For example, desert tortoises seek the cooler wash areas to move through the monument. Little Rainbow Valley forms an alluvial plain important for desert tortoises and Sonoran green toads. The Vekol Valley's seasonal wetlands make up an essential breeding complex for a unique assemblage of 10 species of toads and frogs. The BLM designated 3,500 acres of the valley as the Vekol Valley Grasslands Area of Critical Environmental Concern, which is closed to vehicle use.

To protect ecological objects and ecological values, the Monument's 2012 Resource Management Plan (RMP) includes provisions to, for example, restore degraded vegetative communities, use only native seed for restoring vegetation, and prohibit plant collection.[83] Monument status provides authorization for the BLM to manage to minimize and eliminate threats to monument objects. Under the Proclamation, SDNM is withdrawn from mineral entry; it is closed to salable and leasable minerals. About 68 percent of monument lands are unavailable for livestock grazing under the RMP.

The cacti and scrub desert such as saguaro forest, creosote – bursage, and paloverde mixed cacti communities support wildlife species such as the desert tortoise, verdins and black-tailed gnatcatchers, Wilson's, MacGillivray's, and other warblers; and a diversity of mammals and other reptiles. Saguaro cacti make up an important part of the diet or several bats and also provide shelter and nesting cavities for woodpeckers, purple martins, kestrals, and small owls.

The SDNM's mountain ranges offer varied upland habitats.[84] For example, the remote mountains provide important habitat for the rosy boa that are threatened by collection in areas proximal to roads. The Maricopa Mountains have been the site of a long-term desert tortoise study[85] and are inhabited by several hundred desert bighorn sheep—one of the most robust populations in the southwest. Isolated and rare Tobosa grassland occurs in the Table Top Mountains. Areas, totaling 157,600 acres, in the Maricopa and Table Top mountains are closed to vehicle use.[86] The Sand Tank Mountains are known for its unique plant life.[87]

Several raptor species hunt in the open areas, such as around the Tobosa grasslands, and grass seeds provide a food sources for small mammals as well as birds, including the lark bunting. Other grasses include gramas, bush muhly, sand dropseed, and bristlegrass.

Even small amounts of rain can bring the desert's arid-adapted plant species to life with flowers and fruits. Mesquite bosques in valley bottoms collect moisture during the monsoon season and attract birds such as Brewer's sparrows, black-throated sparrows, and Harris' hawks. Tinajas are waterholes at canyon bottoms in such places as Bender Spring Canyon and the Vekol Valley. The Vekol Valley is known for its frog and toad populations including the Sinaloan narrowmouth toad, Sonoran greentoad, and lowland burrowing treefrog; the densest population in Arizona of the western narrowmouth frog occurs in the Vekol Valley. Intermittent, ephemeral Xeroriparian areas bring in birds such as Costa's hummingbirds, elf owls, Gila woodpeckers, ash-throated flycatchers, phainopeplas, mockingbirds, curve-billed thrashers, black-tailed gnatcatchers, and Vermillion flycatchers.[88]

Wildlife Habitat Connectivity

SDNM is a crucial link in a habitat connectivity zone that enables wildlife to move across five protected areas and military land that serves as a de facto protected area in the center of the Sonoran Desert. The other areas include: Cabeza Prieta National Wildlife Refuge and Organ Pipe Cactus

National Monument in Arizona; Reserva de la Biosfera El Pinacate y Gran Desierto de Altar in Sonora, Mexico; Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado in Sonora and Baja California, Mexico; and the Barry M. Goldwater Range in Arizona.[97] The Monument connects the Sierra Estrella Mountains on the east side and the Gila Bend Mountain Range to thewest. The wildlife linkage between these areas provide connected habitat for desert bighorn sheep, javelinas, mule deer, bobcats, Gila monsters, and desert tortoises.[98]

State and federal agencies: Arizona Game and Fish Department (AGFD), Arizona Department of Transportation, Federal Highways Administration, US Forest Service, BLM, US Fish and Wildlife Service (USFWS), are coordinating to identify wildlife linkages across the Sonoran Desert Landscape. For example, AGDF is investing heavily in efforts to reduce habitat fragmentation in the area and particularly in the region of the SDNM. AGFD provided a grant for a project conducted by Northern Arizona University (NAU) to identify wildlife corridors in the region.[99] A joint study between BLM and the Arizona Game and Fish found evidence that a mountain lion movement corridor runs through the monument.[100]

The following passage indicates why protecting large areas and restoring and retaining habitat connectivity is so important:

> In desert settings, bighorn populations persist as metapopulations (sets of small, interacting subpopulations) which depend on movement of individuals between mountain ranges for long-term viability. They tend to make linear movements between ranges, and may temporarily use small isolated areas of mountainous habitat as "stepping stones" within corridors. Thus protection of movement corridors across a wide valley such as Little Rainbow Valley may require protecting broad swaths of valley floor, including isolated outcrops such as Espanto Mountain. Protecting a functional corridor across this valley maybe critical to maintaining a viable bighorn population in the Sierra Estrella, which is otherwise isolated by spreading urbanization from greater Phoenix.[101]

The SDNM Resource Management Plan (RMP) contains the goal to "[m]anage wildlife movement corridors so they contain ample habitat to assist wildlife in moving from one area to another in a relatively safe manner" and management actions to help attain this by, for example, by removing fences and partnering with local landowners.[102]

Intactness

Sonoran Desert National Monument is located within the Sonoran Desert ecoregion, which was recently analyzed in a Rapid Ecoregional Assessment (REA) completed by the Conservation Biology Institute as part of the BLM's landscape approach to resource planning.[103] Two important landscape characteristics measured and mapped in the REA are landscape intactness and potential for climate change impact. As defined in the REA, "[i]ntactness is a measure of naturalness as well as an attribute that can be defensibly supported by existing geospatial datasets, mapped, and reasonably tracked through time. Because vegetative cover represents wildlife habitat, it serves as a surrogate to estimate the status of species that depend on that habitat, particularly since spatial data for the predisturbance distribution or abundances of various wildlife species are typically not available." Consequently, areas with high intactness scores are particularly important for wildlife habitat. The SDNM has a very high intactness score, with significant portions scoring "very high" and most of the remainder of the designation area scoring "high" or "moderately high."

Resiliency

The REA also modeled potential for climate change impact, an important measure of the projected importance of habitat over time as climate warming leads to changes in temperature, precipitation and vegetative type. The REA used a fuzzy logic model and identified as "high" potential for climate

impact any area that is modeled to undergo a change in vegetation type; the analysis also weighed other relevant factors, including modeled changes in temperature, precipitation and runoff. The REA found SDNM is dominated by "moderately low" potential for climate-related ecosystem change. The combination of high intactness and relatively low climate change impact demonstrate the importance of SDNM as wildlife habitat, now and in the future.

The Designation of Sonoran Desert National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats

Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a great diversity of wildlife, including rare and at-risk species. This includes species listed under the Endangered Species Act (ESA) (see Table below) and those identified as sensitive by the BLM. Below are proclamation statements that make this clear. The diverse plant communities present in the monument support a wide variety of wildlife, including the endangered Sonoran pronghorn, a robust population of desert bighorn sheep, especially in the Maricopa Mountains area, and other mammalian species such as mule deer, javelina, mountain lion, gray fox, and bobcat. Bat species within the monument include the endangered lesser long-nosed bat, the California leaf-nosed bat, and the cave myotis. Over 200 species of birds are found in the monument, including 59 species known to nest in the Vekol Valley area. Numerous species of raptors and owls inhabit the monument, including the elf owl and the western screech owl. The monument also supports a diverse array of reptiles and amphibians, including the Sonoran desert tortoise and the red-backed whiptail. The Bureau of Land Management has designated approximately 25,000 acres of land in the Maricopa Mountains area as critical habitat for the desert tortoise. The Vekol Valley and Sand Tank Mountain areas contain especially diverse and robust populations of amphibians. During summer rainfall events, thousands of Sonoran green toads in the Vekol Valley can be heard moving around and calling out.[104]

Altering the size or configuration of the monument would remove protections for many of these species. The Monument provides habitat values that are significant to the region, and the current configuration of the monument is necessary for the proper care and management of these habitat values.

At-risk Species

SDNM provides habitat values that are significant to the region, and the size and configuration of the monument are necessary for the proper care and management of these habitat values. The BLM will be developing a management plan that is protective of species Monument's objects first and foremost, many of which are rare, endemic, and imperiled species that are vulnerable to extinction and need the protections monument status can afford.

A few at-risk species are endemic or rare to the area, and their protection by the Monument is particularly important due to their restricted ranges and small populations. Some include the lowland burrowing treefrog the Sonoran green toad, which are BLM sensitive species and Arizona Species of Greatest Conservation Need[105] (SGCN). The range of the Abert's towhee occurs almost entirely in southern and western Arizona; the species is a SGCN. The red-backed whiptail lizard, a SGCN, exists only in small, isolated pockets in southwestern Arizona, and the SDNM's population likely makes a significant contribution to the species' genetic diversity.[106] Another SGCN, the Arizona mud turtle, is narrowly distributed in southern Arizona and northern Mexico.[107] There are rare plants the occur on the Monument such as the Kofa Mountain barberry, a BLM sensitive species, and milkweed vine, Arizona snakeweed, pineappleweed, pencil cholla, green flower nipple cactus, desert

night-blooming cereus, organ pipe, Arizona lupine, and sticky germander.[108]
Protecting large areas for the imperiled[109] desert tortoise is key to their survival. They make long distance movements (2.5 miles) from primary activity centers.[110] Sufficiently large protected areas and the restoration and enhancement of habitat connectivity can help address threats to the species such as habitat loss and fragmentation, disease, livestock grazing, off-highway vehicle use.
The desert bighorn sheep population is sufficiently robust to allow it to serve as a source population for translocations to other areas in the southwest.[111] The species is considered vulnerable in Arizona and critically imperiled in New Mexico.[112]

Species Listed under the Endangered Species Act

ESA-listed Species with Potential to Occur within Sonoran Desert National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
Lesser Long-nosed Bat	*Leptonycteris curasoae yerbabuenae*	Endangered
Sonoran Pronghorn	*Antilocapra americana sonoriens*	Endangered, except where listed as experimental population (Arizona, Mexico)
California Least Tern	*Sterna antillarum*	Endangered
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened
Yuma Clapper Rail	*Rallus longirostris yumanensis*	Endangered
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Threatened
Desert Pupfish	*Cyprinodon macularius*	Endangered
Roundtail Chub	*Gila robusta*	Proposed Threatened
Acuña Cactus*	*Echinomastus erectocentrus* var. *acunensis*	Endangered
Nichol's Turk's Head Cactus	*Echinocactus horizonthalonius* var. *nicholii*	Endangered

* Designated critical habitat for these species overlaps the monument area.

Acuña pineapple cactus has a restricted range in southcentral and southwestern Arizona and northern Sonora, Mexico. There are only six known occurrences in the U.S. Threats include collection (a declining threat), prolonged drought, urban development, livestock grazing that can spread invasive grasses, and mining—a potential, future threat in other locations.[113]
The endangered lesser long-nosed bat is an important cactus pollinator. The species depends on the dense saguaro forests in the SDNM.[114] The bat's diet includes cactus flower nectar and cactus fruits. Threats include the loss of cacti food sources to agriculture and also loss of roosting sites (caves and mines) and roost-site disturbance by humans.[115]
Sonoran pronghorns require large protected areas. They have large home ranges and make long seasonal movements.[116] The Sonoran pronghorn home range averages about 320 square miles and up to 1,100 square miles.[117] They once inhabited desert valleys throughout western Arizona. Reasons for their decline include over-hunting and livestock grazing.[118]

Wide-ranging Species

The SDNM supports a number of ungulates including the desert bighorn sheep, mule deer, and Sonoran pronghorn. Wide-ranging carnivores include mountain lions, bobcats, and coyotes. The Monument is also within the historic range of the jaguar and Mexican gray wolf. These species need large landscapes and connected habitat for their long-term survival.

VERMILION CLIFFS NATIONAL MONUMENT

President Clinton established the Vermilion Cliffs National Monument (VCNM or Monument) in 2000 with Presidential Proclamation 7374.[73] The Monument spans approximately 293,000 acres within Coconino County in northern Arizona. It is managed by the Bureau of Land Management (BLM). In 2008, the BLM developed a Resource Management Plan (RMP).[74] This management plan provides special desired conditions and management actions is intended to protect monument objects, special status wildlife, and other natural resources. The Monument also has a National Landscape Conservation System science plan.

A recent assessment analyzed ecological values of the VCNM by mapping and comparing a random sample of equivalent size areas in the region.[75] This science-based analysis found the Monument ranked high in ecological intactness at 92 percent, 80 percent at climate resilience, and 90 percent in ecological connectivity. Rarity-weighted species richness scored at 84 percent.

VCNM contains a wide range of unique biodiversity preserved by its remoteness and lack of travel corridors. The vegetation within the Monument ranges from cold desert flora to warm desert grasslands and is home to the threatened Welsh's milkweed. Although rain and water sources are limited, mammals, amphibians, and reptiles are abundant throughout. Over 20 raptor species have been seen in the Monument including the reintroduced endangered California condor. A variety of fish species also occur within the Paria River. The Monument is home to over 500 plant species.

The designation of Vermilion Cliffs National Monument Protects and Provides for the Proper Care and Management of Significant and Rare Landscape and Ecosystem Objects and Values

Courts have upheld that the Act provides the President with the discretion to protect ecosystems, ecosystem features and large landscapes. In *Tulare vs. Bush* the court found that inclusion of ecosystems within the Proclamation "did not contravene the terms of the statute by relying on nonqualifying features."[76] Indeed, the Monument Proclamation describes in great factual detail the diversity of qualifying ecosystem types and natural and scientific features found within the monument boundaries. The facts demonstrate that President Clinton designated the land necessary to protect the diversity of ecosystems found within the Monument.

The VCNM protects and provides for the proper care and management of exceptionally important and unique ecosystem and landscape conservation values. The area contained within the monument boundaries exhibits a high and increasingly rare level of ecological integrity compared to other western lands. The Antiquities Act provides the President with the authority to protect and properly management landscapes and ecosystems for their scientific and other values.

Ecosystems

Some of the VCNM's dominant ecosystems include pinyon-juniper, sagebrush, and desert grassland communities. And, though sparse and small in area, the Monument's riparian systems are among the most important for wildlife.

Riparian Areas

Riparian areas in the VCNM include the Paria River and a few springs, the largest of which are Badger, Soap, and Lowry springs. Along with Wrather Riparian Area, these are all considered "priority riparian areas" in the VCNM RMP. The Paria River provides aquatic habitat for at risk fishes such as the flannelmouth sucker, desert sucker, and speckled dace. Surrounding vegetation of cottonwood trees, willows, rushes and sedges, and other plants provide important sheltering and perching habitat for wildlife. Some other imperiled species associated with the Monument's riparian areas include the endangered southwestern willow flycatcher, Lucy's warbler, and common black

hawk.

Great Basin Sagebrush Shrubland
These ecosystems are dominated by sagebrush species. Other shrubs, such as ephedra, are typically prevalent as are various bunchgrass species. Examples of some of the wildlife that can be found in this ecosystem on the VCNM includes black-throated sparrows, Brewer's sparrows, burrowing owls, gray flycatchers, lark sparrows, loggerhead shrikes, long-billed curlews, sage sparrows, sage thrashers, and vesper sparrows. The VCNM management plan contains several provisions to maintain and restore sagebrush communities for wildlife, including the following desired condition that emphasizes the importance of large patches on continuous habitat, "[s]agebrush communities will include large, continuous blocks (>300 acres) of unfragmented sagebrush habitat, including mosaics of open to moderate shrub canopy cover (5 to 25%) and multiple age and height classes to benefit sage-dependent species."[77]

Great Basin Pinyon-Juniper Woodlands
Some of the wildlife that occurs in the Monument associated with pinyon-juniper woodlands includes American kestrel, Coopers hawk, juniper titmouse, mule deer, northern goshawk, pinyon jay, red-tailed hawk, and sharp-shinned hawk. The RMP recognizes the importance of managing for a mosaic of habitat patches, for example,
Healthy, diverse woodland communities will consist of a mosaic of trees, shrubs, grasses, and forbs. Mosaic patches can include stands of young and old pinyon-juniper, openings, wet meadows, seeps, and other interspersed shrub habitats. The communities will be composed of a variety of different height structures and age classes, with a thriving understory community of native grasses, forbs, and shrubs.[78]
Management actions aimed at benefiting Monument objects and wildlife include provisions to restore pinyon-juniper habitat.

Colorado Plateau Transition Ecological Zone
This ecosystem is characterized by sparse vegetation of shrubs, forbs, and bunchgrasses. A small sampling of native plant species includes blackbrush, fourwing saltbrush, and shadscale, and examples of fauna include desert bighorn sheep, House Rock Valley chisel-toothed kangaroo rat, and peregrine falcon. The RMP for the Monument includes the following desired conditions for this ecosystem, "Management of the Colorado Plateau Transition Ecological Zone plant communities will focus on removing invasive non-native plants, especially cheatgrass and red brome, and preventing habitat degradation."[79]

Great Basin Desert Grassland
Species such as Cassin's sparrows, Brewer's sparrow, and pronghorn are associated with this ecosystem. The ecosystem is dominated by perennial bunchgrasses such as blue grama, black grama, Indian ricegrass, galleta grass, and needle-and-thread grasses. Interspersed shrubs include such species as ephedra, four-wing saltbush, and winterfat. Other forbs, grasses, and shrubs are also part of the ecosystem. The RMP for the Monument includes the following desired conditions for this ecosystem, "[t]he Plains-Grassland Ecological Zone habitats will include a mosaic of grassland and shrub communities, varying age structure, sparse vegetation, scattered to larger expanses of separate grassland or shrub communities, or various mixes of these communities."[80]

Wildlife Habitat Connectivity
The VCNM RMP affirms the importance of minimizing habitat fragmentation and maintaining

connectivity to enable wildlife to move easily through the landscape; the RMP includes several desired conditions and actions that address connectivity.[89] For example the RMP includes the desired conditions "[h]abitat connectivity and wildlife movement between ecological zones will be maintained" and [f]ences will be wildlife passable…."[90]

The RMP includes the following management actions for special status raptors, "[h]abitats will be managed for large, contiguous blocks, rather than for small fragmented areas. Connectivity to currently isolated suitable sites will be enhanced."[91] Actions for special status birds that are riparian dependent, the southwestern willow flycatcher specifically, include, "[m]anagement will aim for large, contiguous blocks of habitat rather than for small fragmented areas. Connectivity to currently isolated suitable sites will be enhanced. The use of buffer zones between riparian habitats and adjacent upland areas will be encouraged."[92] The following is a management action to benefit yellowbilled cuckoos,

Large, contiguous blocks of habitat (>15 ha) will be managed in conjunction with removal of competing exotic species (i.e. salt cedar). The use of buffer zones between riparian habitats and adjacent development will be encouraged. Corridors between—islands of suitable habitat will be established to allow natural dispersal and recolonization of historic habitats.[93]

The Science Plan for the Monument aims to "[r]esearch into understanding wildlife connectivity and movement between VCNM and other landscapes."[94] Not only has the California condor lost asignificant portion of its habitat, but remaining habitat often has no connectivity to other patches of habitat suitable for foraging, nesting, and roosting.[95]

Intactness

VCNM lies within the Colorado Plateau ecoregion and was thus included in the Rapid Ecoregional Assessment (REA) completed by the Conservation Biology Institute as part of the BLM's landscape approach to planning.[96] One important landscape characteristics measured and mapped in the REA is landscape intactness. As defined in the REA, Intactness is a measure of naturalness as well as an attribute that can be defensibly supported by existing geospatial datasets, mapped, and reasonably tracked through time. Because vegetative cover represents wildlife habitat, it serves as a surrogate to estimate the status of species that depend on that habitat, particularly since spatial data for the pre-disturbance distribution or abundances of various wildlife species are typically not available. Therefore, areas with high intactness scores are particularly important for wildlife habitat. The Monument has one of the highest overall levels of intactness of the entire ecoregion, with most the area scoring "very high" and the rest of its area scoring "high" or "moderately high."

The Designation of Vermilion Cliffs National Monument Protects and Provides for the Proper Care and Management of Significant Rare and At-risk Fish, Wildlife, and Plants and Habitats

Wildlife habitat qualifies for protection as a scientific object under the Antiquities Act. The Monument provides essential habitat for a great diversity of wildlife, including rare and at-risk species. This includes species listed under the Endangered Species Act (ESA) (see Table below) and those identified as sensitive by the BLM. Below are proclamation statements that make this clear.

Despite sporadic rainfall and widely scattered ephemeral water sources, the monument supports a variety of wildlife species. At least twenty species of raptors have been documented in the monument, as well as a variety of reptiles and amphibians. California condors have been reintroduced into the monument in an effort to establish another wild population of this highly endangered species. Desert bighorn sheep, pronghorn antelope, mountain lion, and other mammals

roam the canyons and plateaus. The Paria River supports sensitive native fish, including the flannelmouth sucker and the speckled dace.[97]

Altering the size or configuration of the monument would remove protections for many of these species. The Monument provides habitat values that are significant to the region, and the current configuration of the monument is necessary for the proper care and management of these habitat values.

Additionally, the BLM did not designate Coyote Valley Area of Critical Environmental Concern (ACEC) in its final plan decision. The ACEC was intended to provide species protection for the Paradine pincushion cactus (known alternatively as the Kaibab pincushion cactus). The Proposed Plan and Final Environmental Impact Statement states, "[m]onument status provides protection for this cactus and the ACEC designation is not necessary."[98]

At-risk Species

The VCNM management plan recognizes that an array of wildlife and plant species that occur within or otherwise use the Monument are at-risk and require special management to become viable and to recover. The RMP includes provisions such as the protection of caves, which benefits bats species that roost in caves. Several at-risk bats are known or occur on the Monument or believed to occur there such as the spotted bat, Allen's big-eared bat, small-footed myotis, and fringed myotis—all BLM sensitive species. Restoration of terrestrial and riparian vegetation to benefit uncommon, rare, and special status species; and the removal of noxious weed control, riparian area restoration. Special status species include species listed under the Endangered Species Act (ESA), addressed in the section below, BLM sensitive species, migratory birds, and others. A few examples of BLM sensitive species are the speckled dace, western burrowing owl, Houserock Valley chisel-toothed kangaroo rat (an endemic species), chuckwalla, and northern sagebrush lizard. The U.S. Fish and Wildlife Service recognizes 32 migratory birds that use the Monument for stopover or seasonal habitat. Some of these include Bell's vireo, Bendire's thrasher, Calliope hummingbird, Grace's warbler, and olive-sided flycatcher.[99] The VCNM proclamation notes 20 raptors species that occur in the Monument, and the management plan considers raptors as special status species, for example, sharp-shinned hawk, Coopers hawk, American kestrel, and red-tailed hawk. Priority special status raptors include bald eagle, burrowing owl, California condor, common black hawk, ferruginous hawk, Mexican spotted owl, northern goshawk, and peregrine falcon.[100] Other at-risk and special status species include the yellow-breasted chat, common black hawk, Lucy's warbler, Brewer's sparrows, loggerhead shrike, long-billed curlew, mule deer, pronghorn, and desert bighorn sheep.

Species Listed under the Endangered Species Act

The threatened and endangered species listed in the following table are associated with the Monument.[101] The VCNM plan includes provisions to protect specific individual species and others that protect the habitat of listed species. We provide a few examples of these species and describe how management under the monument designation can help them recover.

ESA-listed Species with Potential to Occur within the Vermilion Cliffs National Monument

Common Name	**Scientific Name**	**Federal ESA Status**
Utah Prairie Dog	*Cynomys parvidens*	Threatened
California Condor	*Gymnogyps californianus*	EXPN
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Threatened
Northern Mexican Gartersnake	*Thamnophis eques megalops*	Threatened

Humpback Chub	*Gila cypha*	Endangered
Razorback Sucker*	*Xyrauchen texanus*	Endangered
Roundtail Chub	*Gila robusta*	Proposed Threatened
Brady Pincushion Cactus	*Pediocactus bradyi*	Endangered
Fickeisen Plains Cactus	*Pediocactus peeblesianus fickeiseniae*	Endangered
Jones Cycladenia	*Cycladenia humilis* var. *jonesii*	Threatened
Siler Pincushion Cactus	*Pediocactus (=Echinocactus,=Utahia) sileri*	Threatened
Welsh's Milkweed	*Asclepias welshii*	Threatened

* Designated critical habitat for these species overlaps the monument area.

California Condor

VCNM is essential for California recovery. The species, once extinct in Arizona, has been bolstered by reintroductions to the Vermilion Cliffs starting in 1996.[102] The Monument RMP includes a range of provisions to support reintroduction and protect the bird and its habitat.

Once abundant across North America, the California condor is now limited to small portions of the western United States. Several factors have threatened and continue to threaten their survival. These include the buildup of microtrash, habitat modification, pesticide ingestion, and lead poisoning. Particularly damaging is habitat loss and degradation which threatens the existence and quality of nesting sites, roosting sites, and foraging habitat. Human encroachment has led to behavioral disturbances and decreases in other species' populations resulting in starvation. In addition, infrastructure such as power lines and wind energy has resulted in high numbers of death. Areas free of infrastructure and human influence are key to their survival. The Vermilion Cliffs offer relatively undeveloped habitat for California condors.

Mexican Spotted Owl

The BLM has selected the threatened Mexican spotted owl as a priority species status species, and the RMP includes desired conditions to contribute to recovery and delisting, have not net loss in the quality or quantity of habitat, and maintain abundant roosting sites, for example.[103] The RMP includes management actions that specifically pertain to the species such as modifying livestock grazing practices to improve habitat for the owls and their prey and to minimize or eliminate take and also that mitigate impacts of fire suppression activities.[104] Other management actions that pertain to all special status raptors include to manage habitat to maintain and expand the population, follow a policy of "no net loss" of habitat, prioritize occupied habitat for the species over other uses, and monitor population trends and distribution in coordination with Arizona Game and Fish Department, among several other actions.[105]

Southwestern Willow Flycatcher, Yellow-billed Cuckoo, and Yuma Clapper Rail

The federally listed southwestern willow flycatcher, yellow-billed cuckoo, and, Yuma clapper rail are all riparian-dependent species. Each species prefers slightly different habitats with the rail seeking dense marshes with cattails, the flycatcher opting for willow-lined banks, and the cuckoo being attracted to cottonwood galleries. The VCNM RMP contains detailed management direction to protect these species and their riparian habitats.

The Monument offers protection for several listed plants that are endemic to the region or have very restricted ranges. The Welsh's milkweed only occurs in small portions of southern Utah and northern Arizona. Siler pincushion cactus populations are restricted to on two counties in Arizona, including Coconino and two counties in Utah. The brady pincushion cactus is endemic to northwestern Arizona. In Arizona, the Jones' Cycladenia is known to occur on only a few sites. The Fickeisen plain cactus also is known to only a few sites in Arizona.[106] The Holmgren milkvetch has a

very restricted range in northwestern Arizona and southwestern Utah.[107] The impacts of human threats to these species, such as off-road vehicle use and livestock grazing and trampling, are high to very high, but the monument protection enables management to address and limit such threats.

ESA Listed Plants

The RMP includes many provisions aimed at protecting threatened and endangered and other special status plant.[108] Management desired conditions for special status plants include recovery and no net loss in quantity or quality of habitat. Removing non-native invasive plants is a priority in the RMP. Collection of federally protected plants is not authorized. Recreational activities that degrade habitats of special status plan species' habitats are to be relocated; livestock grazing must be modified to minimized and eliminate disturbance and mortality; restoration activities are prohibited in special status plant habitat unless they are beneficial to the at-risk plant; surface disturbing activities must be limited or reduced. The Science Plan for Vermilion Cliffs National Monument addresses these concerns and states that it will "[c]ontinue inventory and monitoring of special status plant species."[109]

Wide-ranging Species

VCNM supports a number of ungulates including the desert bighorn sheep, mule deer, and pronghorn. Wide-ranging carnivores include mountain lions, bobcats, and coyotes. These species need large landscapes and connected habitat for their long-term survival.

Mule deer, pronghorn, and desert bighorn sheep, which are a vulnerable species in the state of Arizona, are all landscape species that rely connected habitat areas to make seasonal movements. Crucial mule deer winter range is provided on Buckskin Mountain and prioritized for protection within the management plan. Bighorn sheep habitat areas, including the Paria – Vermilion Cliffs habitat area, are prioritized within the management plan.

The Monument management plan emphasizes the role of predators, such as mountain lions, in maintaining the integrity of plant and animal communities. Large predators also require large, intact areas due to their territorial natures and extensive home ranges. Protection under monument designation enables a management system that can address and mitigate conflicts that can develop between human uses and predators. The VCNM management plan stresses human/wildlife coexistence and conflict avoidance and resolution.