

Inventory of White Sands National Monument

National Park Service managers are confronted with increasingly complex and challenging issues that require a broad-based understanding of the status and trends of each park's natural resources as a basis for making decisions, working with other agencies, and communicating with the public to protect park natural systems and native species. The Inventory and Monitoring (I&M) Program is part of the National Park Service's effort to emphasize reliance on science to improve management decisions and safeguard our natural heritage. An essential component of this strategy is a comprehensive inventory of the natural resources found in national parks. Inventories are extensive point-in-time surveys designed to contribute to our knowledge of the condition of park resources and establish baseline information for subsequent monitoring activities. The I&M Program provides guidance, funding, and technical assistance to complete a set of 12 baseline natural resource inventories for parks, including the presence of plants, animals, and other resources such as water, air quality, and climate.

The Chihuahuan Desert I&M Network (CHDN) comprises seven national parks in New Mexico and Texas. Six of the seven CHDN parks are located in the Northern Chihuahuan Subregion of the Chihuahuan Desert Ecoregion. White Sands National Monument (NM) is located in the Tularosa Basin of the Chihuahuan Desert and is part of the largest white gypsum dune field in the world. Desert scrub and a large

PARK BRIEF



Dunes in White Sands National Monument.

playa are present on the western side of the park. This brief summarizes inventories at White Sands NM coordinated by the network. Reports from inventories supported by the CHDN are available on the CHDN website, <http://science.nature.nps.gov/im/units/chdn/index.cfm> and on the Learning Center of the American Southwest website, www.southwestlearning.org. A database of inventories coordinated at the national level in cooperation with CHDN—climate, geology, air quality, and soil—are available on the I&M Program's Inventory home page: <http://science.nature.nps.gov/im/tracking/InventorySearch.aspx>.

Birds



Lake Lucero with American avocet and black-necked stilt

The CHDN supported an inventory of birds in low-elevation riparian habitats in White Sands NM during the migration and breeding seasons between 2004 and 2006. A total of 86 species were detected at White Sands NM. Based on the monument's bird checklist, the researchers documented 41% of the bird species occurring in White Sands NM. The researchers observed nine species that were not included on the checklist, though several had been reported by other observers:

Eurasian collared-dove (*Streptopelia decaocto*), gray flycatcher (*Empidonax wrightii*), cordilleran flycatcher (*Empidonax occidentalis*), phainopepla (*Phainopepla nitens*), and chestnut-collared longspur (*Calcarius ornatus*). Four nonnative species were present at the monument's headquarters and visitor center: rock pigeon (*Columba livia*), Eurasian collared-dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), and house sparrow (*Passer domesticus*).

Reptiles and Amphibians



Painted desert glossy snake/
James Borgmeyer

In 2003 and 2004, the CHDN supported an inventory of reptiles and amphibians in White Sands NM. Researchers documented 28 species: six toad, 10 lizard, 11 snake, and one turtle species. No state or federally listed or nonnative reptile or amphibian species were found during this inventory. The data from this inventory could be used to detect changes within the reptile and amphibian communities that may occur as a result of climate change, urbanization near the park boundary,

drought, invasion by nonnative species, wildland fire, or other factors. Reptile and amphibian populations exhibit natural fluctuations in range extensions and contractions. The researchers provided suggestions and evaluations of potential monitoring strategies, such as monitoring species composition, species richness, species distribution, and relative abundance, for determining unexpected population changes.

Vegetation



White Sands National Monument/
NPS

The CHDN supported preparation of a preliminary herbarium and literature review of plants for White Sand NM in 2002 and is also supporting a vegetation mapping project of the park. The proj-

ect will include vegetation classification, sampling and analysis of fuels, and accuracy assessment of the map. The maps can be used by managers for planning and management activities.

Water



Camouflaged White Sands pup-
fish in water

The CHDN supported a 2009 study of surface water and surface and groundwater hydrology, water quality conditions and trends, and the condition of macroinvertebrate communities in White Sands NM. The shallow groundwater regime at White Sands NM lies above and is separated from a regional aquifer by a remnant of a Pleistocene lake bed. Precipitation in nearby mountains dissolves mineral gypsum as it is transported downslope by water and contributes to high salt content in the groundwater, which is generally not suitable for drinking. Surface water quality in the monument also has high salt content and is of poor quality for freshwater aquatic life; the diatom community sampled in the headwater segment of the Lost River located just south of the monument's boundary

was mainly salt tolerant species typically found in coastal estuaries. The effective evapotranspiration rate approaches 80 inches per year due to the hot, dry, and windy environment. The surface water resources in the White Sands NM area include Lucero, Garton, Foster, and other lakes, Lost River and other intermittent stream channels, Holloman Lake and other smaller reservoirs and ponds, and several springs. Garton Pond was a historically significant water resource used by the public, though water level have decreased since the 1980s and 1990s, which may be related to increases in withdrawals from the aquifer. In 2008 surface water at this pond appeared in isolated, stagnant pools and resembles a wetland.

For more information

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