



AMISTAD

PARK BRIEF

Inventory of Amistad National Recreation Area

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 park areas in New Mexico and Texas. Six of the seven CHDN parks are located in the Northern Chihuahuan Subregion of the Chihuahuan Desert Ecoregion. Amistad National Recreation Area is situated primarily within the Tamaulipan Thornscrub (Mexquital) Ecoregion of southern Texas and northeastern Mexico. This brief summarizes inventories at Amistad National Recreation Area,



Lake Amistad viewed from Viewpoint Road.

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>.

Mammals



Pocketed free-tailed bat/NPS

In 2003 and 2004, the CHDN supported an inventory of mammals in Amistad to support science-informed management decisions, identify areas in need of further research, and assess changes in Amistad mammal species occurrence since previous studies were conducted in the 1960s and 1970s. Researchers conducting the inventory observed mammals from 50 species, including 7 nonnative species. An additional 17 species may occur in Amistad based on literature and museum records. Seven new native species were documented in the Amistad—the northern pygmy mouse (*Baiomys taylori*), cactus mouse (*Peromyscus eremicus*), rock pocket mouse (*Chaetodipus intermedius*), evening bat (*Nycticeius humeralis*), big free-tailed bat (*Nyctinomops macrotis*), pocketed free-tailed bat (*N. femorosaccus*), and black bear (*Ursus americanus*) are native species that were undocumented by the previous studies. Only three appear to be expanding their range (northern pygmy mouse, evening bat, and pocket free-tailed bat). The presence of nonnative species is attributed to human activities. Four native species appear to be extirpated. This information will be of value in determining the effectiveness of current management practices.



Reptiles and Amphibians



Rio Grande leopard frog/
J. Borgmeyer

In 2003 and 2004, the CHDN supported an inventory of reptiles and amphibians in Amistad. Researchers documented 45 species: nine frog and toad, 15 lizard, 17 snake, and four turtle species, including four state-listed threatened species. 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



Claret cup cactus/NPS

Amistad is located in a transition zone between three major plant communities: the Chihuahuan Desert, woodlands of the Edwards Plateau, and Tamaulipan Shrubland. The CHDN supported preparation of a herbarium and literature review of plants for Amistad and an inventory of vascular plants in 2002 and 2003. The vascular plants of Amistad are highly diverse, even though much of the area is highly disturbed from human activities (e.g., dam, reservoir, nonnative species); 596 vascular plants were observed during the survey and

100 additional species were confirmed from specimens previously collected from Amistad. Of these plants, 40 were not previously documented in Amistad and 43 were nonnative species. Most of the vascular plants in Amistad (80%) occur park-wide at very low frequencies; 63% are considered rare in Amistad, 17% are considered infrequent, and 20% are considered common to abundant. The CHDN is also supporting a vegetation mapping project in Amistad.

Water



Box Canyon boat ramp/NPS

Surface water quality, aquatic invertebrates, surface water dynamics, persistence of seeps and springs, and reservoir elevation are used to demonstrate the quality of water in Amistad. Because the reservoir receives significant levels of monitoring by other agencies and programs within the National Park Service, the CHDN reports on trends of appropriate data sets rather than conducting its own sampling. 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 Amistad. The study concluded that variations in groundwater levels near Amistad since the early 1970s have been buffered by water levels in the reservoir. Metals appear to be accumulating in the bottom sediments of Amistad Reservoir and concentrations of arsenic, chromium, and nickel in the upper layers of sediment cores more recently exceeded biological threshold effect levels. Several recent studies have reported bioaccumulation of mercury in fish tissue samples collected from sites in Amistad Reservoir.

For more information

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