



MOJAVE NETWORK

Inventory Summary Report

INVENTORY OF BIRDS AT MANZANAR NATIONAL HISTORIC SITE

INTRODUCTION AND OBJECTIVES

Manzanar National Historic Site (MANZ), located in Owens Valley, California, was established in 1992 to provide protection and interpretation of resources associated with the relocation of Japanese-Americans to the site during World War II. Although natural vegetation patterns are slowly reasserting themselves over much of the camp, past agricultural and residential uses have created significant and long-lasting effects on the vegetation throughout the site. Little documentation of biological resources at MANZ exists, as natural resource management only recently became a park priority. The primary goal of this inventory was to provide baseline information on avian species at MANZ, including their relative abundance, residency status, and habitat associations.

METHODS

The primary census method used was point counting along transects. This method presented the best opportunity for standardizing bird species detection in the different vegetation communities, while providing MANZ with an effective tool for long-term monitoring of relative abundance.

Existing records - Literature searches for avian species accounts in the Owens Valley area were conducted. Searches were focused in the holdings of the University of California, Berkeley's Museum of Vertebrate Zoology. Audubon Society Christmas Bird Count data, as well as on-line data from the Eastern Sierra Audubon Society Chapter, were also searched.

Habitat stratification - MANZ was organized into four census regions. The largest was the desert scrub habitat which was divided into eastern and western sections. In the eastern portion, isolated patches of salt cedar were taller and more numerous. The western section featured a more dominant shrub community. The third census region was a large woodland grove occupying a north-south belt that extended nearly the length of MANZ, bisecting the desert scrub community. Trees found in the grove include cottonwoods, locusts, and willows, as well as significant numbers of orchard tree species and other exotics. The fourth census region was the riparian zone along Bairs Creek, which also supports substantial numbers of cottonwoods, willows, and locusts, as well as salt cedar.

Point count surveys - A point count transect was established in each habitat and 33 counting points were spaced at $\geq 200\text{m}$ intervals along those transects. Each transect was surveyed 13 times between 2002 and 2005. Surveys began with a one-minute quiet interval, followed by a five-minute counting period during which all birds seen or heard were recorded. A micro-cassette recorder was used to collect observational narrative. Any behaviors associated with breeding and any nests located were noted. Birds flying over transects were recorded as flyovers, to distinguish them from birds actually using the habitat.

Mist netting - Two mist netting sessions, using four 12m nets, were conducted at the Bairs Creek habitat to detect cryptic, non-vocal species during migration.

Nocturnal surveys - Eight survey sessions included nocturnal walk-through censuses along the auto tour route. Surveys used a combination of passive detection and frequent stops for tape play back of calls by potential species.

Area and nest searches - Area searches were done following point count surveys and nocturnal surveys to detect any additional species. During the breeding season, the focus shifted to nest searching which involved quiet observation in hope of seeing suspected breeders reveal their nest sites.



Sharp-shinned Hawk - Photo courtesy Jan Hart

RESULTS AND DISCUSSION

Existing records - No documented avian species accounts or collected specimens from the current location of MANZ were found. However observation data from sighting accounts by individual birders and official group counts is available from the Audubon Society's Eastern Sierra Chapter. These data were used to prepare a list of 34 potential species.

Species detection - 2,167 individuals of 99 species were detected during point count surveys. Flyovers accounted for another 13 species and area searches and nocturnal surveys detected an additional 20 species, bringing the overall counts to 2,639 individuals of 132 species. Seven species were captured during mist netting, but all were previously detected. No species were detected in superior numbers; the most common species overall, the White-crowned Sparrow, accounted for 4.2% of the total individuals counted.

Habitat associations - Of 119 species observed using a habitat, many were found in multiple habitats and 18 were seen in all habitats. The Desert Scrub provided habitat for 23 species and was used exclusively by 12. Bairs Creek and the Woodland Grove were used exclusively by 16 and 17 species, respectively. Overlap between bird species using the two habitats was expected due to similar dominant tree species, but the number of species exclusive to one habitat was surprising. 4 of 8 woodpecker species detected only used the woodland grove, while 4 of 10 warbler species only used Bairs Creek, even when it was dry. It is thought that differences in understory structure influence habitat choice of warblers, while differences in tree maturity influence woodpeckers.

Nocturnal surveys - Only 3 owl species were detected at MANZ - Great-horned Owl, Western Screech-Owl, and Barn Owl. During nocturnal surveys, 5 owl calls were played eliciting 6 call responses, always from a Great-horned Owl. If Great-horned Owls are in the area and calling, other owls will remain silent and consequently more than half the surveys had to be abbreviated.

Area and nest searches - 17 species not detected during point count censuses were found during area searches. Active nests of 11 species were located. Unoccupied nests that appeared to have been recently used and could be identified by nest material and construction, substrate location, and prior species detection in that habitat were found for 3 species. In the case of Spotted Towhee, eggshell fragments were also found. Breeding was confirmed for a total of 19 species.

Relative abundance - In terms of absolute numbers detected, the most abundant species was the White-crowned Sparrow. Among birds present during the breeding season, California Quail was the most abundant, followed closely by Sage Sparrow. Both species are year-round residents at MANZ, as were 20% of species detected. The most abundant winter residents were Horned Larks. Brewer's Sparrow and Audubon's Warbler were the most numerous migrants detected.

Species of concern - During this inventory, no threatened or special concern species were detected. The potential of MANZ to provide habitat for the Federally-listed Southwestern Willow Flycatcher was evaluated and MANZ was found to be not suitable for breeding by this species, though it remains a possible stop-over location during migration.



Photo courtesy - Jan Hart

RECOMMENDATIONS AND FUTURE WORK

Although it is a small area, MANZ contains diverse habitats, two of which possess attributes uncommon in this high desert landscape. Basic monitoring is needed at the Bairs Creek riparian zone, likely the park's most biologically diverse habitat, which is threatened by over-browsing and trampling by Tule Elk. The woodland grove provides the largest habitat for the greatest number of bird species at MANZ and is also greatly affected by visitor use-related activities. The old-growth trees provide nesting habitat for many of the species inventoried, and there appears to be little or no regeneration of major tree species. There has been some restoration work occurring in the orchards and it appears that these efforts are expanding in scope and success. As this rather unique, non-native resource gains stature, it would be desirable to track its potential influence on bird species.

Project Synopsis

Partner: Northern Arizona University

Principal Investigator: Jan Hart

Documented: 132 Avian Species

Project Duration: 2002 - 2007

Cost: \$20,000