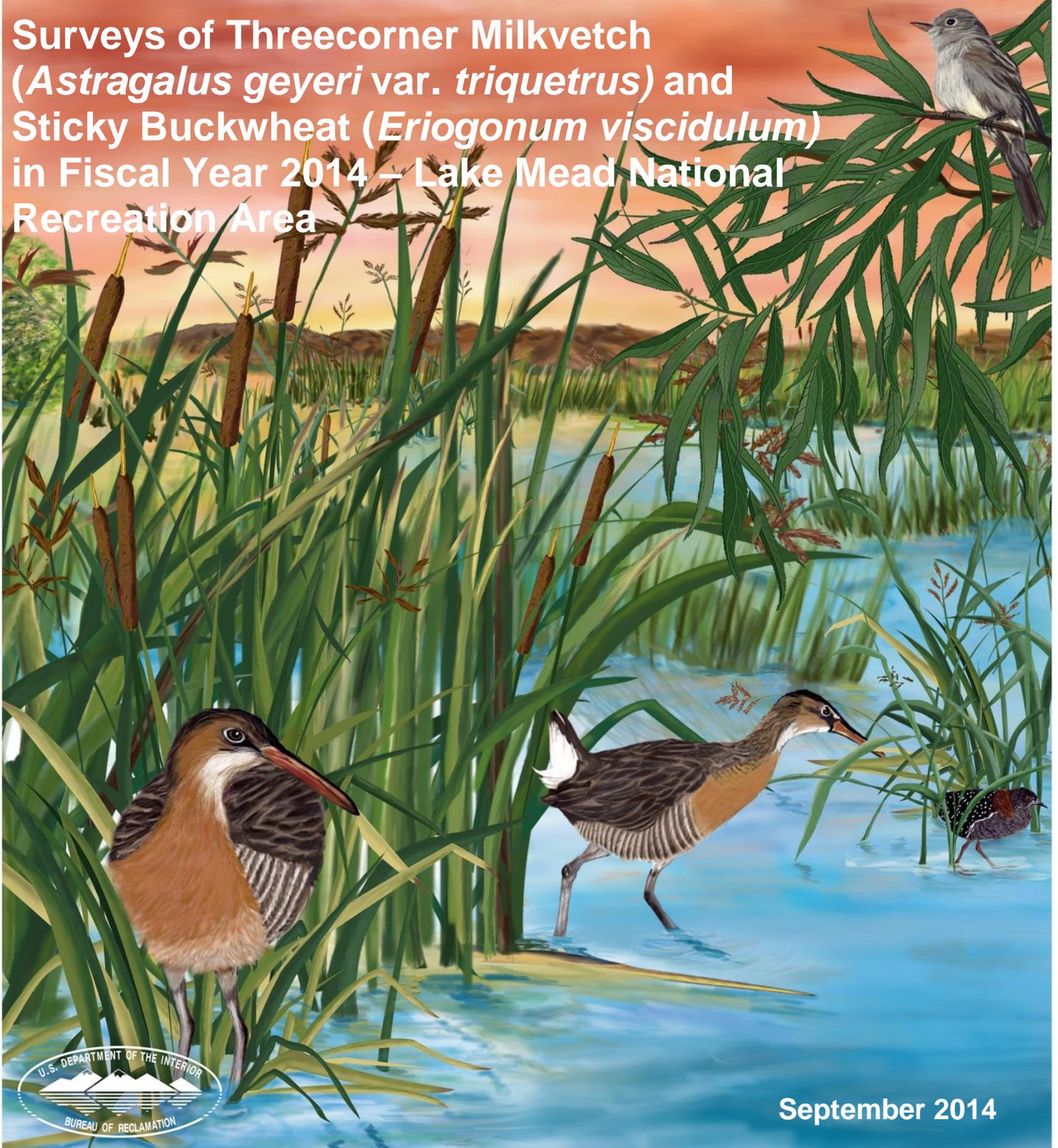


Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

Surveys of Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus*) and Sticky Buckwheat (*Eriogonum viscidulum*) in Fiscal Year 2014 – Lake Mead National Recreation Area



September 2014

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
Cibola Valley Irrigation and Drainage District
City of Bullhead City
City of Lake Havasu City
City of Mesa
City of Somerton
City of Yuma
Electrical District No. 3, Pinal County, Arizona
Golden Shores Water Conservation District
Mohave County Water Authority
Mohave Valley Irrigation and Drainage District
Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
Town of Fredonia
Town of Thatcher
Town of Wickenburg
Salt River Project Agricultural Improvement and Power District
Unit "B" Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District
Yuma County Water Users' Association
Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District

Other Interested Parties Participant Group

QuadState Local Governments Authority
Desert Wildlife Unlimited

California Participant Group

California Department of Fish and Wildlife
City of Needles
Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Palo Verde Irrigation District
San Diego County Water Authority
Southern California Edison Company
Southern California Public Power Authority
The Metropolitan Water District of Southern California

Nevada Participant Group

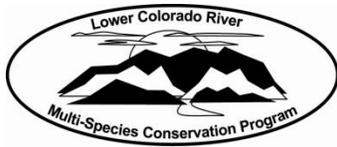
Colorado River Commission of Nevada
Nevada Department of Wildlife
Southern Nevada Water Authority
Colorado River Commission Power Users
Basic Water Company

Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes
Chemehuevi Indian Tribe

Conservation Participant Group

Ducks Unlimited
Lower Colorado River RC&D Area, Inc.
The Nature Conservancy



Lower Colorado River Multi-Species Conservation Program

Surveys of Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus*) and Sticky Buckwheat (*Eriogonum viscidulum*) in Fiscal Year 2014 – Lake Mead National Recreation Area

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ACRONYMS AND ABBREVIATIONS

GPS Global Positioning System

Lake Mead NRA Lake Mead National Recreation Area

LCR MSCP Lower Colorado River Multi-Species Conservation Program

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INTRODUCTION

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is a coordinated, comprehensive, long-term multi-agency effort to balance the use of Colorado River water resources with the conservation of native species and their habitats. The program was established to help work toward the recovery of species currently listed under the Endangered Species Act and to reduce the likelihood of additional species being listed along the lower Colorado River (Bureau of Reclamation 2004). Two rare plant species occur within the planning area of the LCR MSCP: threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) and sticky buckwheat (*Eriogonum viscidulum*). Both species occur within the Lake Mead National Recreation Area (Lake Mead NRA), which is administered by the National Park Service.

Conservation measure goals were created under the LCR MSCP to provide funding for threecorner milkvetch and sticky buckwheat conservation programs. A total of \$10,000 per year will be provided under the LCR MSCP until 2030, which will go toward an ongoing conservation program for the two rare plants or to another entity that has been approved by the U.S. Fish and Wildlife Service to implement conservation activities for these plant species.

Conservation opportunities at the Lake Mead NRA include:

1. Monitoring populations of rare plants to identify threats.
2. Conserving rare plant populations through reduction of threats at a site-specific level, which may include removal of exotic plants and efforts to exclude activities, such as off-highway vehicle use, that degrade habitat

This summary report was prepared to update the status, monitoring results, and conservation actions for these rare plant species at the Lake Mead NRA for fiscal year 2014.

METHODS

Threecorner Milkvetch Population Monitoring

Threecorner milkvetch populations at Sandy Cove are monitored every year. A polygon is used to delineate known and potential threecorner milkvetch habitat, and a permanent 30 x 30-meter grid system is then overlaid on the habitat polygon. Four categories of plant density per 30 x 30-meter plot were established: none (0), low (1–10), medium (11–100), and high (101+). Plant numbers within each square are counted, except for the high category (101+).

Surveys of Threecorner Milkvetch and Sticky Buckwheat in Fiscal Year 2014 – Lake Mead National Recreation Area

A subset of the high density plots are selected and counted again for precise numbers within those squares at the time of the survey. If there are five or fewer high density plots, then all are counted.

Sticky Buckwheat Population Monitoring

The highest density of sticky buckwheat at the Lake Mead NRA is located between Lime Cove and Glory Hole. Ten randomly placed 100-meter transects were placed in high-density sticky buckwheat locations (figure 1). The beginning of each transect was located at the high water level (full pool) and recorded with a Global Positioning System (GPS). They were permanently marked with rebar as well as photographed for future monitoring. The ends of each transect were oriented toward the current water level (figure 2), and were not marked due to fluctuating water levels, but located with GPS. The total number of sticky buckwheat plants was recorded within a 1-meter belt on the right side (side 1 of the data sheet) and the left side (side 2 of the data sheet) of the transect.



Figure 1.—Sticky buckwheat transect locations.

Lime Cove (LC) and Glory Hole (GH) are shown next to each transect number.

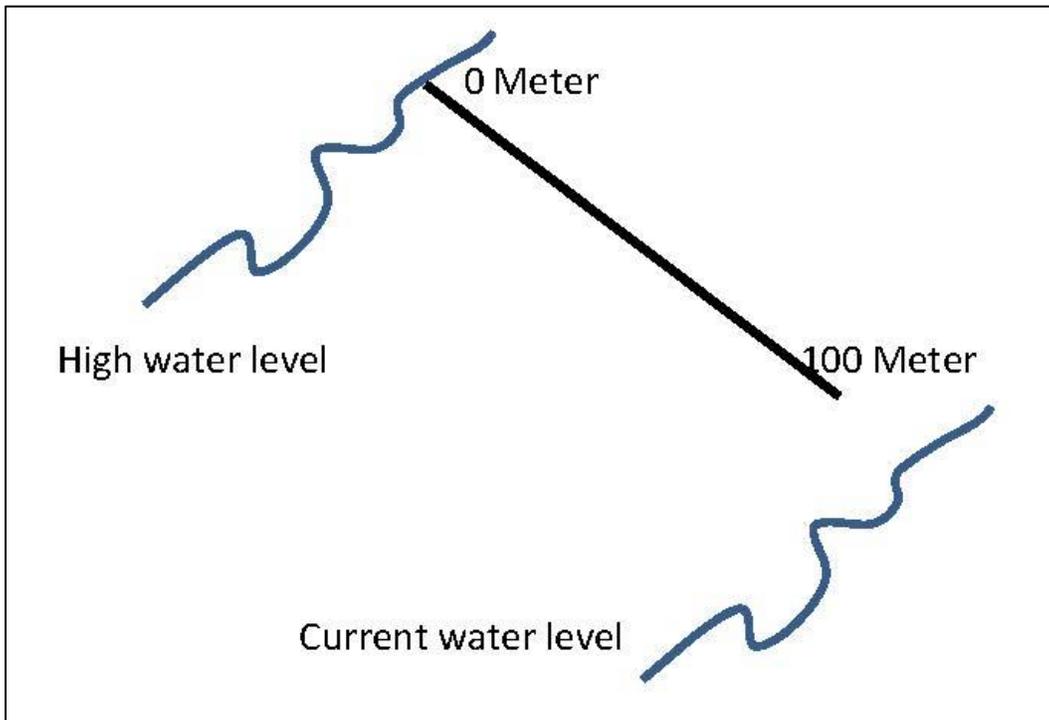


Figure 2.—Diagram for sticky buckwheat transect placement.

RESULTS

Threecorner Milkvetch Population Monitoring

Figure 3 shows the results for threecorner milkvetch grid monitoring. Four hundred and ninety-five plots (30 x 30 meters) were surveyed; 420 contained no plants, 67 contained 1–10, 8 contained 11–100, and 0 contained 101+ plants.

Sticky Buckwheat Population Monitoring

Sticky buckwheat monitoring did not occur at Lime Cove or Glory Hole due to a conflict with the trespass cattle in the area. The season for monitoring had passed before employees could enter the area safely. However, casual observations prior to March 27, 2014, indicated that there were relatively few plants present.

**Surveys of Threecorner Milkvetch and Sticky Buckwheat
in Fiscal Year 2014 – Lake Mead National Recreation Area**

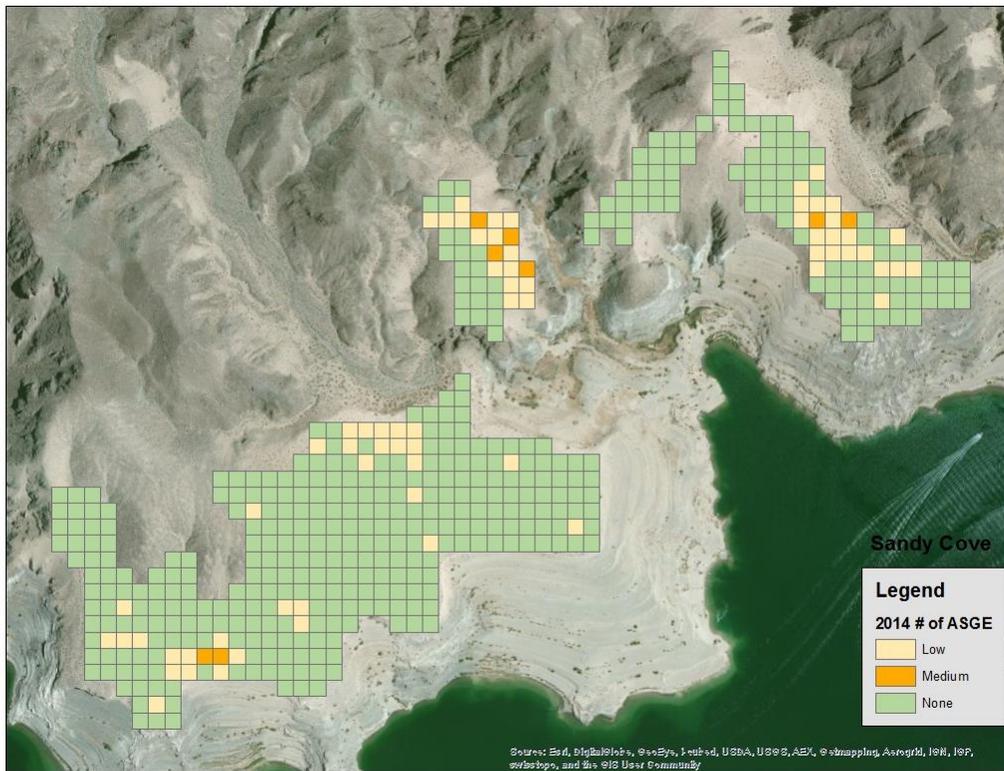


Figure 3.—Threecorner milkvetch monitoring grid at Sandy Cove.

DISCUSSION

Due to the lack of precipitation this season, there were few threecorner milkvetch observed. From January to June 2014, Sandy Cove, Ebony Cove, and Lime Cove received 0.38, 0.28, and 0.46 inch of precipitation, respectively. In previous years, when the total precipitation was greater, there were significantly more threecorner milkvetch counted. The population status of threecorner milkvetch and sticky buckwheat is difficult to determine because germination and development seem to be dependent on rainfall and temperature; therefore, population numbers vary widely from year to year.

There are few anthropogenic stressors on the Sandy Cove and Ebony Cove populations of threecorner milkvetch. These areas are remote and do not suffer from disturbance by off-road vehicles or trespass cattle and have been actively undergoing weed management for years. However, the Lime Cove and Glory Hole populations of sticky buckwheat may be impacted by increasing numbers of trespass cattle, and there is evidence that off-road vehicle use related to cattle operations in the area is increasing as well.

Surveys of Threecorner Milkvetch and Sticky Buckwheat in Fiscal Year 2014 – Lake Mead National Recreation Area

In fiscal year 2015, we will modify the methods of monitoring threecorner milkvetch. The medium density category will be subdivided into 4 more categories (11–25, 26–50, 51–75, and 76–100), and a field will be added to the data sheet to allow us to document the exact number of plants recorded in each surveyed grid square. This additional detail will enable us to better follow populations as they move around the dunes and increase our understanding of how these plants respond to stressors or microhabitats across the site.

OTHER MANAGEMENT ACTIONS

In fiscal year 2014, 63.9 infested acres were surveyed, and 5.1 acres of Sahara mustard (*Brassica tournefortii*) were removed from the dunes/sandy areas and surrounding beaches at Sandy Cove, Lime Cove, and Ebony Cove.

LITERATURE CITED

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