Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Surveys of Threecorner Milkvetch and Sticky Buckwheat in Fiscal Year 2017 – Lake Mead National Recreation Area

Work conducted under LCR MSCP
Work Task C2

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

January 2018

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

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Lower Colorado River Multi-Species Conservation Program

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Prepared by:

Carrie Norman, National Park Service

Biologist, Carrie_Norman@nps.gov, 702-293-8734

Lower Colorado River
Multi-Species Conservation Program
Bureau of Reclamation
Lower Colorado Region
Boulder City, Nevada
http://www.lcrmscp.gov

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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 conserve and recover endangered species and to protect and maintain wildlife habitat on the lower Colorado River. The LCR MSCP's purposes are to (1) protect the lower Colorado River environment while ensuring the certainty of existing river water and power operations, (2) address the needs of threatened and endangered wildlife under the Endangered Species Act, and (3) prevent the listing of additional species on the lower Colorado River (LCR MSCP 2004). Two rare plant species occur within the covered areas designated in 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 a reduction of threats at a site-specific level. This may include the removal of exotic plants and efforts to exclude activities that degrade habitat, such as off-highway vehicles.

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 2017.

METHODS

Threecorner Milkvetch Population Monitoring

Threecorner milkvetch populations at Sandy Cove are monitored every year by mapping their spatial distribution. A polygon was used to delineate known and potential threecorner milkvetch habitat in ArcGIS, and then a permanent 30 x 30-meter grid system was overlaid on the habitat polygon. This grid system was implemented in 2013. The original number of plots monitored was higher in 2013 than in 2017. Plots were deleted from monitoring if they were determined

not to be threecorner milkvetch habitat or because of unsafe terrain (correct habitat but too steep to access safely for the employee and when surveying in steep terrain may also have resulted in damage to the plants). Each plot was assigned a density score. The threecorner milkvetch density categories are: none, 1–10, 11–25, 26–50, 51–75, 76–100, and 101+.

Additional populations or potential habitat areas were also surveyed. This was done by walking in the appropriate habitat, logging the route walked during the surveys with a tracklog on the GPS. Threecorner milkvetch were documented on the GPS when found.

Sticky Buckwheat Population Monitoring

The highest density of sticky buckwheat at the Lake Mead NRA is located between Lime Cove and Glory Hole. The presence and number of sticky buckwheat are documented on ten 100-meter random transects that were established in 2013 in high-density sticky buckwheat locations (see figure 2). The beginning of each transect was located at the high water level (full pool) and documented with GPS (figure 1). They were permanently marked with rebar as well as photographed for future monitoring. The ends of each transect were oriented downslope 100 meters, and were not marked due to fluctuating water levels, but located with the GPS. The total number of sticky buckwheat plants is recorded within a 1-meter belt on the right side (side 1 on the data sheet) and the left side (side 2 on the data sheet) of the transect, starting at 0 meters.

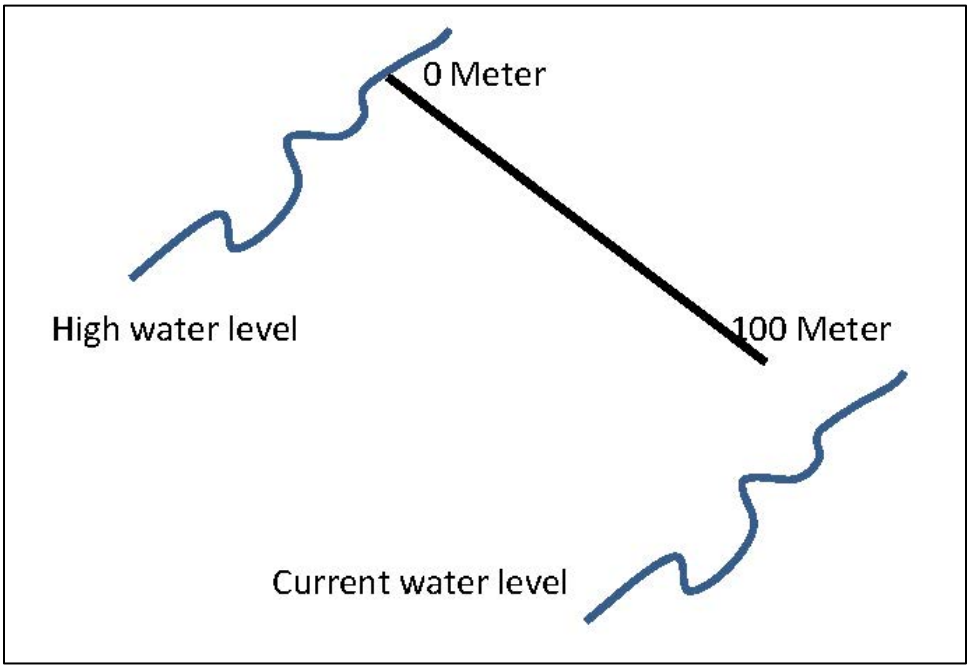

Figure 1.—Diagram for sticky buckwheat transect placement.

Figure 2.—Sticky buckwheat transect locations.
Lime Cove (LC) and Glory Hole (GH) are shown next to each transect number.

RESULTS

Threecorner Milkvetch Population Monitoring

Threecorner milkvetch surveys were conducted March 8, 9, 15, 20, and April 3, 5, 19, 2017, with results shown on figure 3. Four hundred seventy one plots (30 x 30 meters) were surveyed; 236 squares contained no plants, 138 contained 1–10, 41 contained 11–25, 30 contained 26–50, 13 contained 51–75, 5 contained 76–100, 8 contained 100+ plants. The total number of threecorner milkvetch counted was 4,475. There were 270 plants documented outside the plots.

Eight acres were surveyed at Middle Point, documenting 450 plants (figure 4). Seventeen acres were surveyed at Ebony Cove, documenting 366 plants (figure 5). Twenty acres at Lime Cove were surveyed, documenting two threecorner milkvetch plants (figure 6). These surveys were not conducted using the grid monitoring method, but by walking the habitat, logging the route walked during the survey with a tracklog on the GPS. Threecorner milkvetch locations were documented on the GPS when found. Each location on figures 4–6 represents either a single plant or a cluster of plants. The exact number is recorded on the GPS for each location.

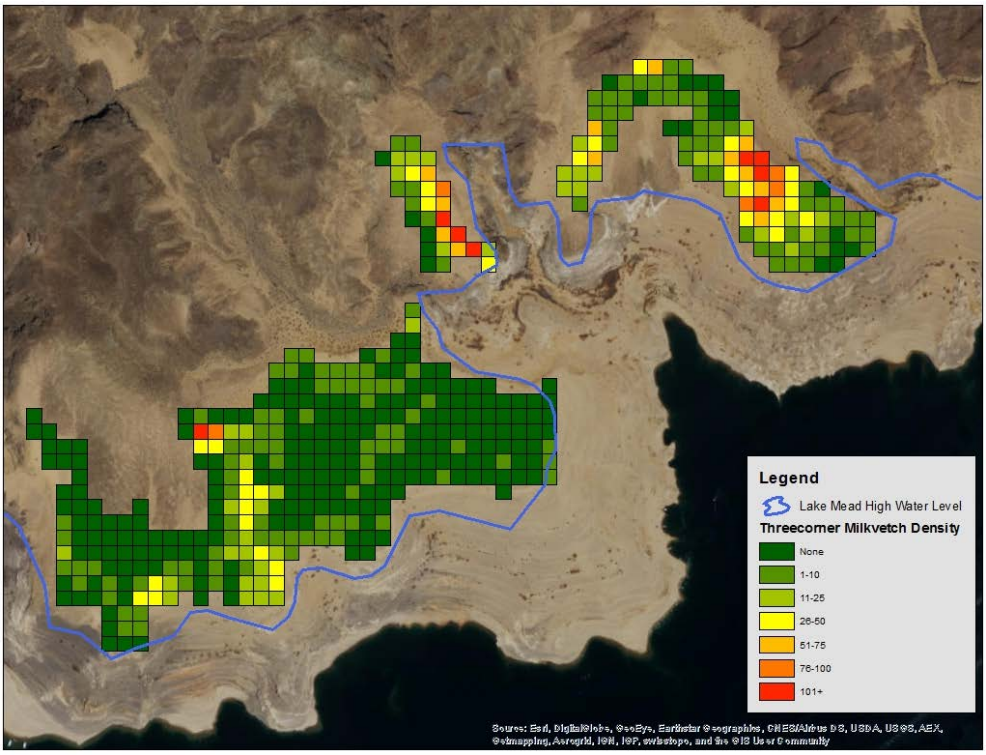

Figure 3.—Threecorner milkvetch monitoring grid at Sandy Cove in fiscal year 2017.

Figure 4.—Threecorner milkvetch survey at Middle Point.
Orange polygon represents the area surveyed in fiscal year 2017.

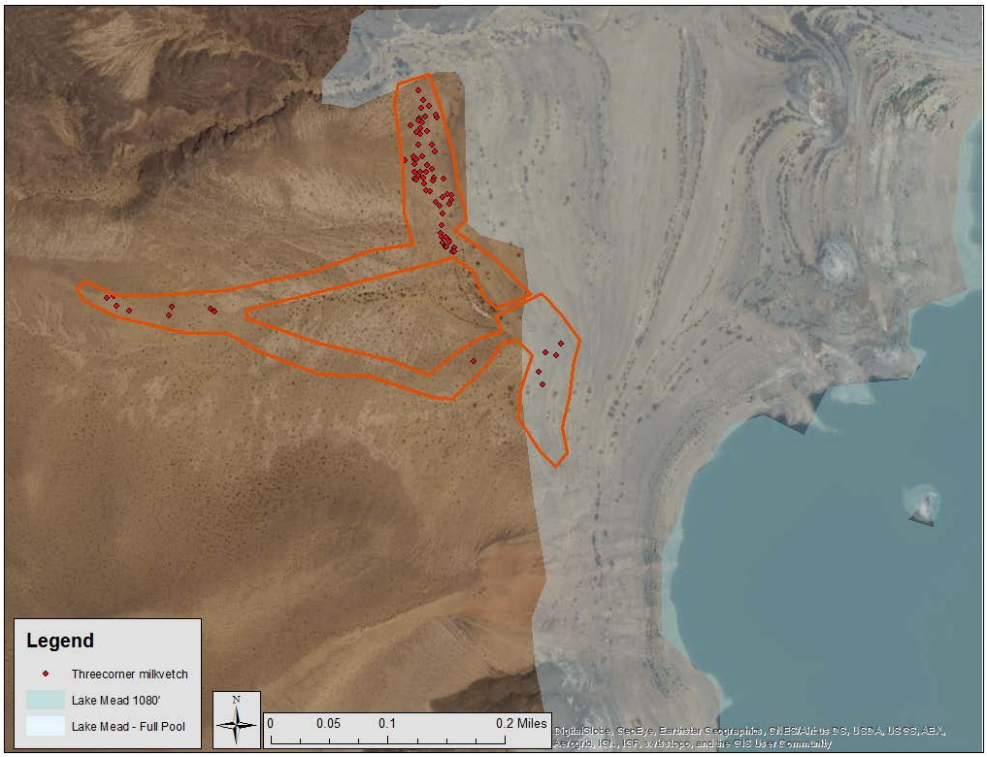

Figure 5.—Threecorner milkvetch survey at Ebony Cove.
Orange polygon represents the area surveyed in fiscal year 2017.

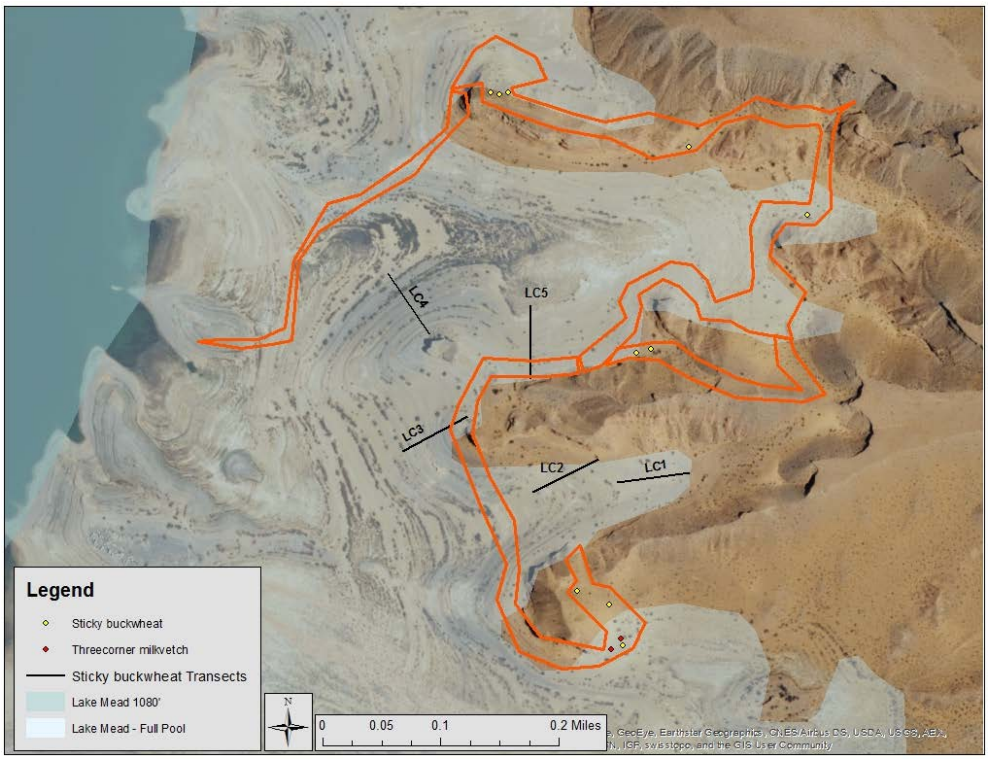

Figure 6.—Threecorner milkvetch and sticky buckwheat survey at Lime Cove.
Orange polygon represents the area surveyed in fiscal year 2017.

Sticky Buckwheat Population Monitoring

Sticky buckwheat transects were surveyed May 1–2, 2017, at Lime Cove and Glory Hole; 97 and 2 plants were documented, respectively. For comparison, a total of 539 plants were found at the Lime Cove transect and 95 plants at Glory Hole in 2013.

Twenty acres in the Lime Cove area were surveyed by walking the habitat, logging the route walked during the survey with a tracklog on the GPS. Sticky buckwheat plants were documented with the GPS when found, resulting in an additional 18 plants (see figure 6). Each location on figures 6 represents either a single plant or a cluster of plants. The exact number is recorded on the GPS for each location.

DISCUSSION

Threecorner Milkvetch

From December 2016 to May 2017, Sandy Cove and Lime Cove received 3.5 and 5.5 inches of precipitation, respectively. The survey sites received double the amount of precipitation than last year, which was associated with a 13.4-percent increase in the numbers of threecorner milkvetch. Long-term monitoring with the grid system at Sandy Cove will, over time, inform the management team at Lake Mead and the LCR MSCP on the status and trends of threecorner milkvetch.

Future pollination and germination research studies would be valuable to the National Park Service and other land managers that have populations of this rare plant. Without understanding the environmental cues for this species, true population increases or decreases will be difficult to determine.

Sticky Buckwheat

Sticky buckwheat numbers on transects at Lime Cove decreased since 2013 (539 plants) by 82%; however, this may not represent a true decrease in numbers in this population. Sticky buckwheat are annual plants that emerge in different places each year. The transects are located in two of the higher population areas; however, straight line transects do not always capture the true representation of a species that moves easily with wind and shifting sand. The transects will be abandoned because not enough data were captured that would allow the staff at the LCR MSCP and Lake Mead to understand the status and trends of sticky buckwheat. Survey methods in future years will be replaced with a more simplified survey method, which will include walking habitat areas with a GPS while documenting point or line locations of sticky buckwheat locations. A

tracklog would document the exact area walked and could be duplicated if need be. Sticky buckwheat would be counted within 1 meter on either side of the tracklog. It is expected that this method will capture the more widespread distribution of these plants instead of focusing solely on stationary transects 100 meters long.

OTHER MANAGEMENT ACTIONS

In fiscal year 2017, 2.95 acres of 59 acres surveyed were treated to remove Sahara mustard (*Brassica tournefortii*) from the dunes/sandy areas and surrounding beaches at Sandy Cove (figure 7). There were smaller and less Sahara mustard plants to treat this past season, and there was an increase in native sand verbena (*Abronia villosa* var. *villosa*) (figure 8). Lake Mead vegetation staff have observed an invasive grass, *Schismus* spp., expanding its infestation over the past 10 years. Lake Mead staff will be working on an internal way of controlling *Schismus* spp. (either mechanical or chemical methods) to determine if these methods are feasible to implement with current staffing levels. No exotic plant removal was done this season at Lime Cove, Ebony Cove, or Middle Point.

Figure 7.—Sahara mustard removal at Sandy Cove, totaling 2.95 acres.

Figure 8.—Photos taken at Sandy Cove in fiscal year 2017 showing lots of native sand verbena instead of Sahara mustard. Treating Sahara mustard over the past 17 years has proven to be very successful.

LITERATURE CITED

Lower Colorado River Multi-Species Conservation Program (LCR MSCP). 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan, Final. December 17 (J&S 00450.00). Sacramento, California.

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