

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 2015 – Lake Mead National
Recreation Area



September 2015

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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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City of Lake Havasu City
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Mohave Water Conservation District
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Conservation Participant Group

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



Lower Colorado River Multi-Species Conservation Program

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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. This may include 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 of these rare plant species at the Lake Mead NRA for fiscal year 2015.

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 then a permanent 30 x 30-meter grid system is overlaid on the habitat polygon. The density categories are: None, 1–10, 11–25, 26–50, 51–75, 76–100, and 101+.

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) unit. 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), but were not marked due to fluctuating water levels, and located with a GPS unit. The total number of sticky buckwheat plants was 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.



Figure 1.—Sticky buckwheat transect locations. Lime Cove (LC) and Glory Hole (GH) are shown next to each transect number.

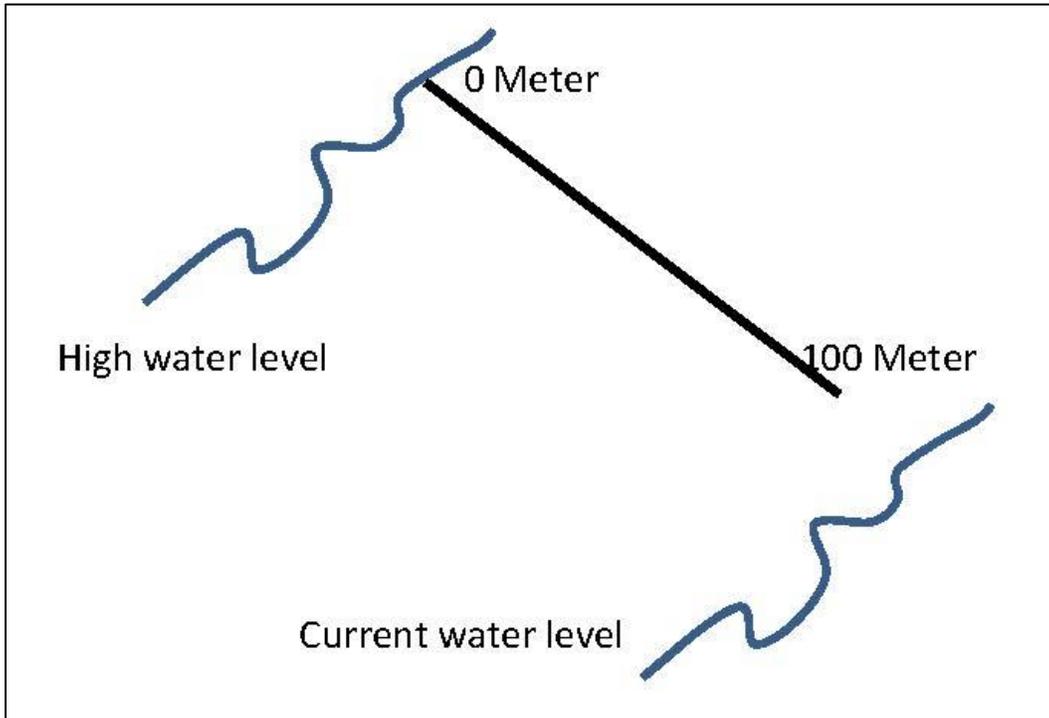


Figure 2.—Diagram for sticky buckwheat transect placement.

RESULTS

Threecorner Milkvetch Population Monitoring

Figure 3 shows the results of threecorner milkvetch grid monitoring. Five hundred and six plots (30 x 30 meter) were surveyed: 215 contain no plants, 130 contained 1–10, 51 contained 11–25, 36 contained 26–50, 21 contained 51–75, 15 contained 76–100, and 38 contained 100+ plants. The total number of threecorner milkvetch counted was 19,961.

Sticky Buckwheat Population Monitoring

A total of 117 sticky buckwheat plants were documented this year: Lime Cove had 100 plants, and Glory Hole had 17 plants (see tables 1 and 2, respectively, for the results). In 2013, there were a total of 634 sticky buckwheat plants documented: Lime Cove had 539 plants, and Glory Hole had 95 plants.

**Surveys of Threecorner Milkvetch and Sticky Buckwheat
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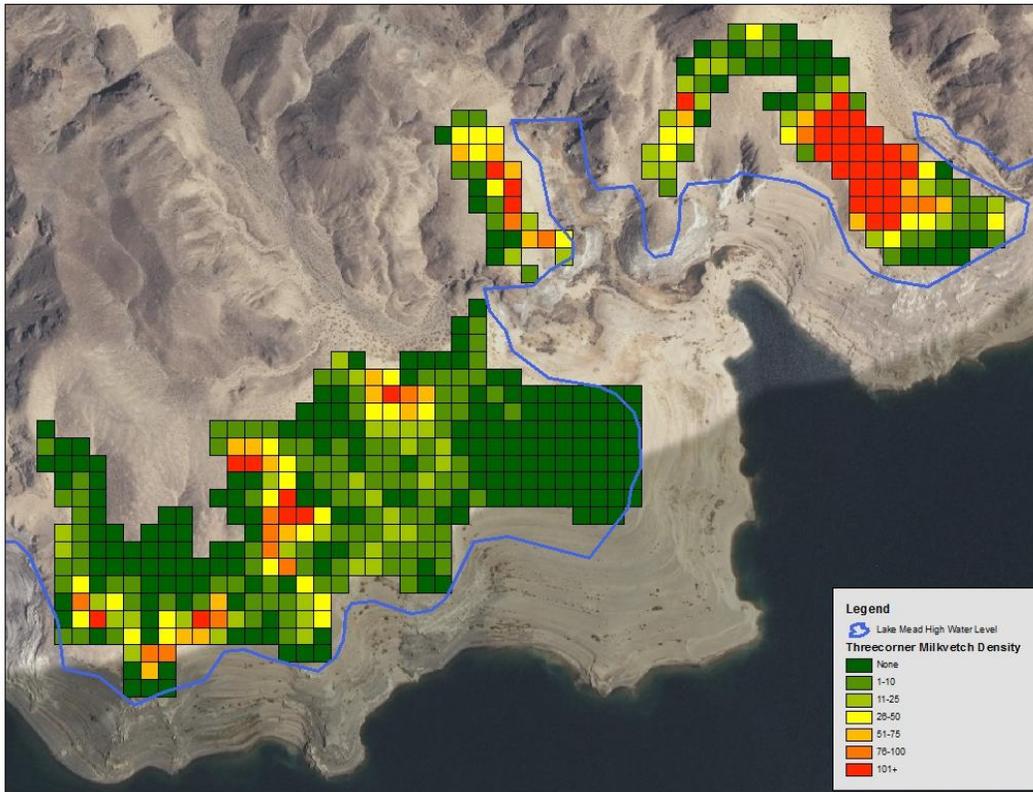


Figure 3.—Threecorner milkvetch monitoring grid at Sandy Cove.

Table 1.—Documented numbers of sticky buckwheat at Lime Cove transects

| | Transect 1 | | Transect 2 | | Transect 3 | | Transect 4 | | Transect 5 | |
|---------------|------------|-----------|------------|-----------|------------|----------|------------|----------|------------|----------|
| | Side 1 | Side 2 | Side 1 | Side 2 | Side 1 | Side 2 | Side 1 | Side 2 | Side 1 | Side 2 |
| 0 – 10 m | 2 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 – 20 m | 1 | 1 | 4 | 14 | 0 | 0 | 0 | 1 | 0 | 0 |
| 20 – 30 m | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 – 40 m | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 – 50 m | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 – 60 m | 2 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60 – 70 m | 1 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 – 80 m | 4 | 4 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 |
| 80 – 90 m | 5 | 2 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 |
| 90 – 100 m | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 18 | 22 | 26 | 15 | 0 | 0 | 10 | 9 | 0 | 0 |

**Surveys of Threecorner Milkvetch and Sticky Buckwheat
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Table 2.—Documented numbers of sticky buckwheat at Glory Hole transects

| | Transect 1 | | Transect 2 | | Transect 3 | | Transect 4 | | Transect 5 | |
|---------------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
| | Side 1 | Side 2 |
| 0 – 10 m | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 10 – 20 m | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 20 – 30 m | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 – 40 m | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 – 50 m | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 50 – 60 m | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60 – 70 m | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 – 80 m | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 80 – 90 m | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90 – 100 m | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 6 | 3 | 4 | 0 | 2 | 1 | 1 | 0 | 0 | 0 |

DISCUSSION

Threecorner Milkvetch

From December 2013 to May 2014, Sandy Cove received 0.45 inch of precipitation. From December 2014 to May 2015, precipitation for the same area was 1.3 inches. With this threefold increase in precipitation, the numbers of threecorner milkvetch plants recorded increased over tenfold, from a *maximum* of 1,470 plants in 2014 to almost 20,000 plants in 2015. Since there were relatively few plants producing seeds the previous year, this suggests that threecorner milkvetch seeds could remain viable in the soil for an extended period of time, waiting until conditions are optimal. This also suggests that short-term monitoring may be used to identify a truly declining population if a very favorable wet year results in the production of relatively few plants. However, long-term monitoring efforts are necessary to capture the status and trends of threecorner milkvetch populations at Sandy Cove.

Sticky Buckwheat

Precipitation in Lime Cove from December 2013 to May 2014 was 0.60 inch, increasing during December 2014 to May 2015 to 1.5 inches. This increase in precipitation, however, did not result in an increase in sticky buckwheat numbers documented in the transects, showing an 81-percent decline since 2013.

Surveys of Threecorner Milkvetch and Sticky Buckwheat in Fiscal Year 2015 – Lake Mead National Recreation Area

(Transects were not monitored in 2014 due to concerns over employee safety.) Yet, this may not be a true decline because sticky buckwheat is an annual plant that emerges in a different place each year. The 10 transects are located in 2 of the higher population areas; however, straight line transects may not always capture the true status of the species. Casual walking around the sites did show many sticky buckwheat populations that were not captured in the transect data. Monitoring will continue next year on these same 10 transects, but monitoring efforts could expand to encompass a more simplified survey method depending on available park staff, and it may include walking the area with a GPS unit to document point or line locations of sticky buckwheat plants. A tracklog would document the exact area walked and could be duplicated if required. Sticky buckwheat plants would be counted 1 meter on either side of the transect, which could show a more accurate distribution of the species, instead of focusing solely on 10 transects 100 meters long.

OTHER MANAGEMENT ACTIONS

In fiscal year 2015, 3 acres of Sahara mustard (*Brassica tournefortii*) were removed from the dunes/sandy areas and surrounding beaches at Sandy Cove and Lime Cove.

LITERATURE CITED

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