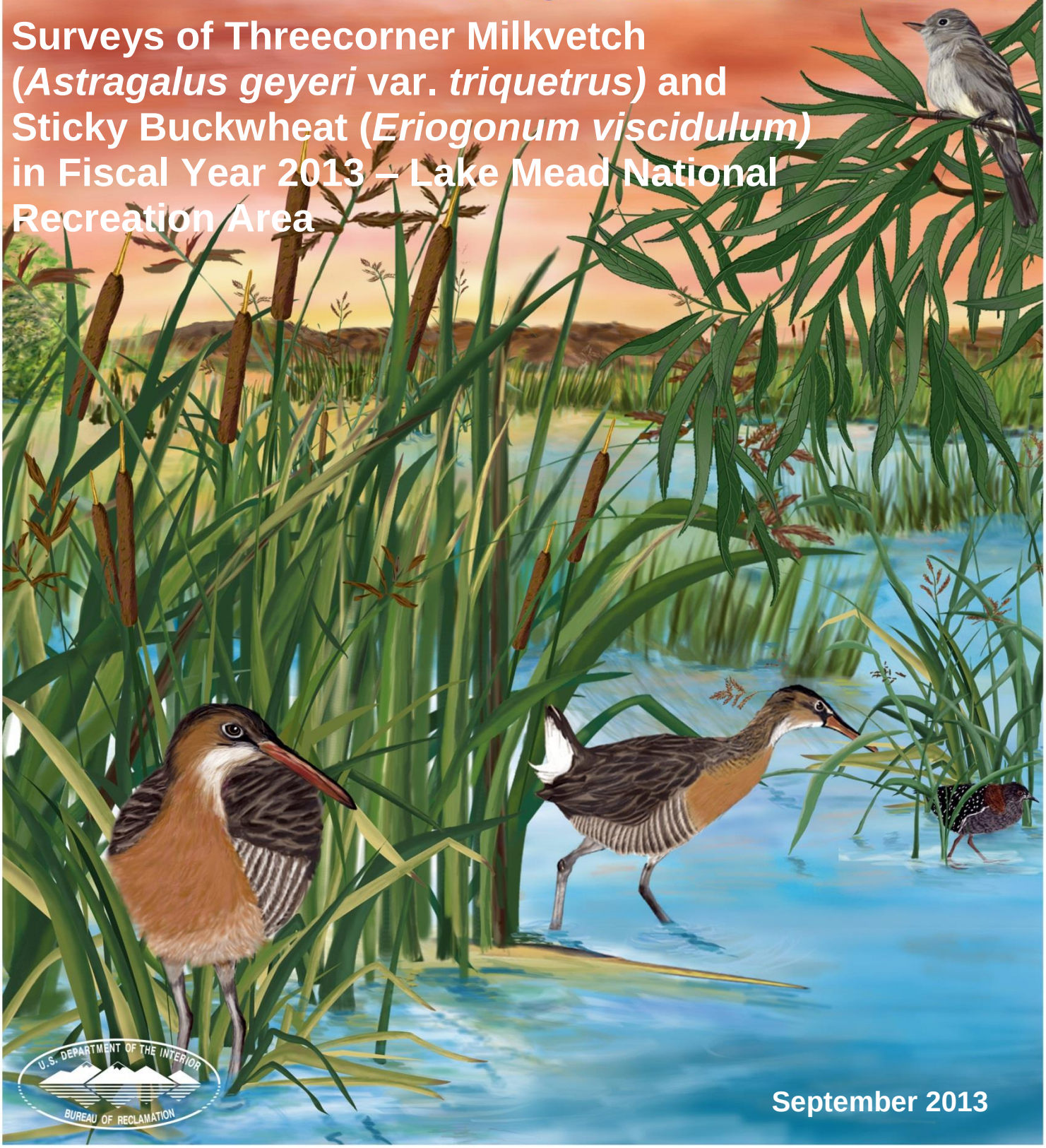
Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Surveys of Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus*) and Sticky Buckwheat (*Eriogonum viscidulum*) in Fiscal Year 2013 – Lake Mead National Recreation Area



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September 2013

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Lower Colorado River Multi-Species Conservation Program

Surveys of Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus)* and Sticky Buckwheat (*Eriogonum viscidulum)* in Fiscal Year 2013 – 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 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 (Bureau of Reclamation 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 Lake Mead National Recreation Area (Lake Mead NRA), which is administered by the National Park Service.

Conservation measure goals of the LCR MSCP are to provide funding for threecorner milkvetch and sticky buckwheat conservation programs. The LCR MSCP will provide a total of $10,000 per year for the two rare plants until 2030 to an ongoing conservation program or other entity approved by the U.S. Fish and Wildlife Service to implement conservation activities for these plant species.

This summary report was prepared to update the status, monitoring results, and conservation actions for these rare plant species at Lake Mead NRA for fiscal year 2013.

METHODS

Threecorner Milkvetch

A new method was developed for monitoring threecorner milkvetch populations this year using ArcGIS 10.0. A polygon was used to delineate known and potential threecorner milkvetch habitat, and a permanent 30 x 30-meter square grid system was 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 estimated, and then a subset of the high-density plots are selected and counted again for precise numbers within those squares during the same time of the survey.

Sticky Buckwheat

A modified monitoring method was developed in 2013 for sticky buckwheat. The highest density of sticky buckwheat at 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 on 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.

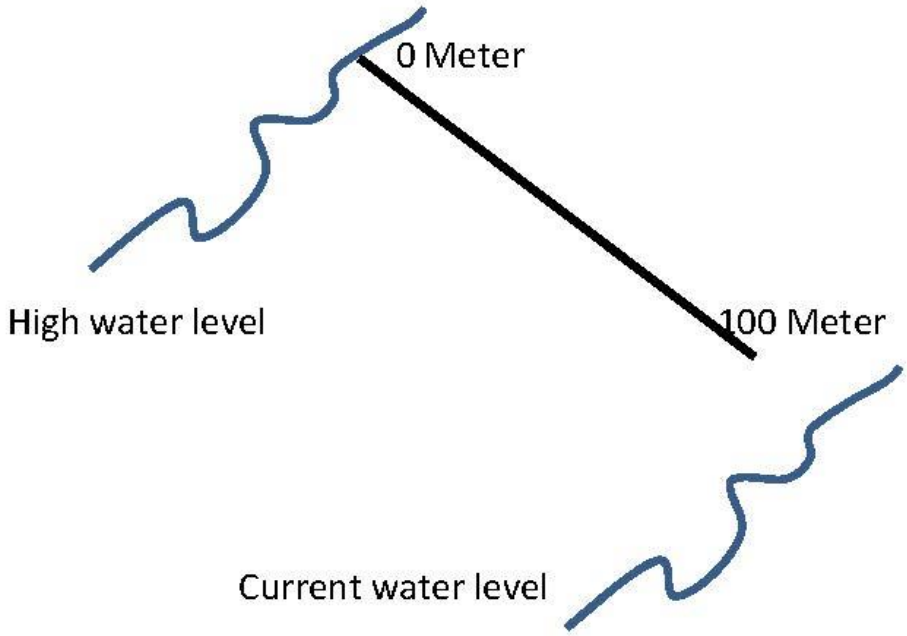

Figure 2.—Diagram for sticky buckwheat transect placement.

RESULTS

Threecorner Milkvetch

Figure 3 shows the results for threecorner milkvetch grid monitoring. Three hundred and forty-five plots (30 x 30 meter) were surveyed; 227 contained no plants, 95 contained 1–10, 22 contained 11–100, and 1 contained 101+ plants. Because only one high-density plot was recorded this season, the second part of the protocol, in which all high-density squares are recounted for precise numbers, was not implemented this season. Based on the survey results, the total Sandy Cove population is estimated to be between 437 and 3,251 individuals.

Other areas were surveyed for threecorner milkvetch within Lake Mead NRA (figures 4 and 5). At Middle Point, 98 threecorner milkvetch and 43 sticky buckwheat were recorded. There were no threecorner milkvetch or sticky buckwheat found in 2013 surveys at Ebony Cove, so only the tracklog is shown. Sandy Cove was the only site where the intense monitoring grid was implemented.

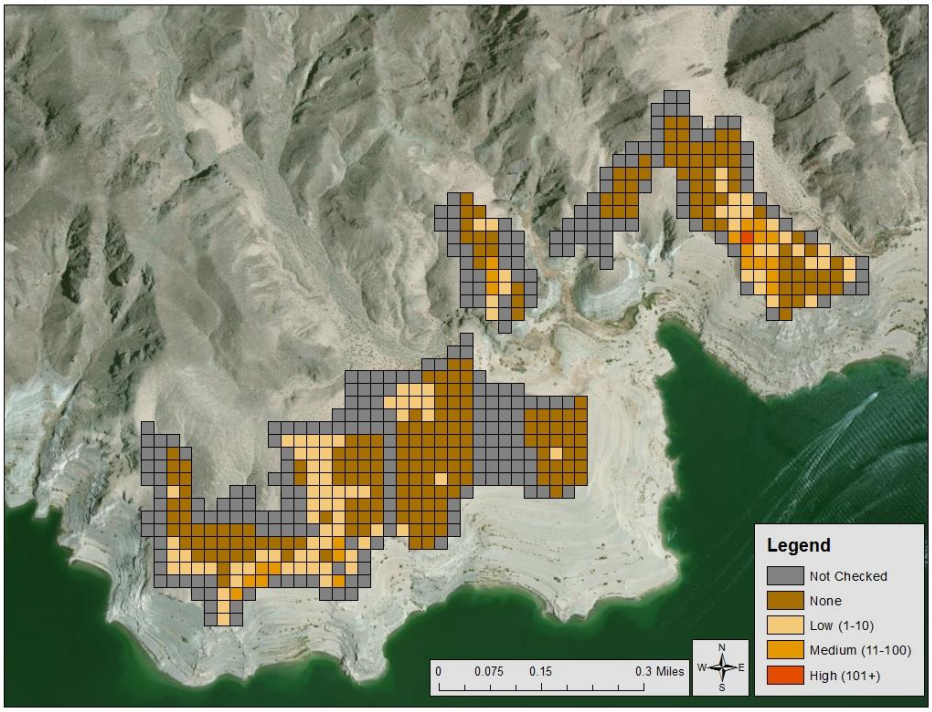

Figure 3.—Threecorner milkvetch monitoring grid at Sandy Cove.

Figure 4.—Survey for threecorner milkvetch and sticky buckwheat locations recorded at Middle Point.

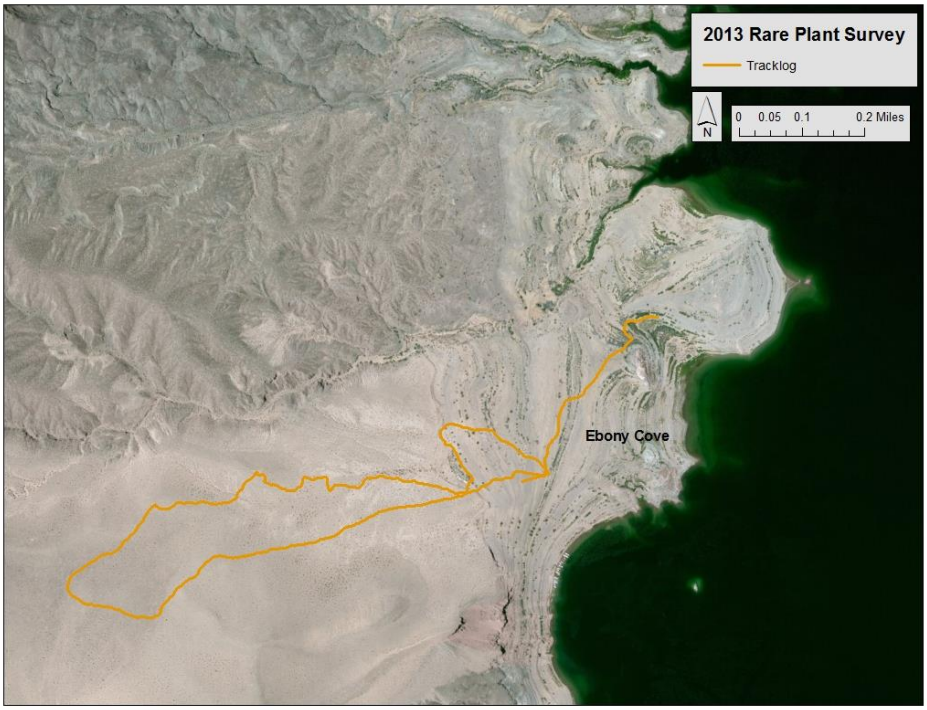

Figure 5.—Survey for threecorner milkvetch and sticky buckwheat at Ebony Cove.

Sticky Buckwheat

The monitoring method implemented this year documented a total of 634 sticky buckwheat plants; Lime Cove had 539 plants, and Glory Hole had 95 plants (see tables 1 and 2 for results).

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	0	1	2	5	0	0	0	0	0	0
10 – 20 m	0	0	15	17	0	0	0	0	1	0
20 – 30 m	31	3	13	7	0	0	0	0	0	0
30 – 40 m	8	3	21	16	0	0	0	0	0	0
40 – 50 m	5	5	4	0	3	0	0	0	0	0
50 – 60 m	9	5	5	2	3	4	0	0	0	0
60 – 70 m	6	12	6	9	0	1	1	0	6	0
70 – 80 m	11	10	0	0	0	0	45	17	0	0
80 – 90 m	15	16	0	0	4	3	33	31	0	0
90 – 100 m	43	61	0	0	14	5	2	0	0	0
Totals	128	116	66	56	24	13	81	48	7	0

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	Side 1	Side 2	Side 1	Side 2	Side 1	Side 2	Side 1	Side 2
0 – 10 m	0	2	2	0	0	0	0	0	1	0
10 – 20 m	1	0	0	0	0	1	0	0	7	10
20 – 30 m	2	3	0	0	0	0	0	0	5	3
30 – 40 m	0	0	0	0	0	0	0	0	1	1
40 – 50 m	0	0	0	0	0	0	0	0	0	0
50 – 60 m	1	2	0	0	0	0	0	0	0	0
60 – 70 m	0	1	2	0	0	0	0	0	0	0
70 – 80 m	0	0	0	0	0	0	0	0	3	5
80 – 90 m	0	1	6	11	0	0	0	0	0	0
90 – 100 m	0	0	9	15	0	0	0	0	0	0
Totals	4	9	19	26	0	1	0	0	17	19

DISCUSSION

Threecorner Milkvetch

Although the new method for monitoring threecorner milkvetch resulted in a wide range of estimates, it will help show where the plants are emerging during high or low rainfall years and eliminate potential inaccuracies associated with using fixed transects to monitor mobile populations.

Lessons from this year's trial will be used to modify next year's protocol. Some plots were not checked due to dangerous conditions or unsuitable habitat and will be eliminated in future years of monitoring. The medium-density category was a range of 11–100 plants. Next season and future monitoring of the medium-density category will be broken into 2 categories: medium (11–50 plants) and medium high (51–100 plants). The high-density category will remain the same (101+), but a subset (still to be determined) will be taken from the high-density plots, and a total count of the plants will be documented.

Sticky Buckwheat

A modified survey method was also implemented for sticky buckwheat populations. Unlike threecorner milkvetch, which mostly occurs on dune tops, this plant occurs mostly on sandy slopes at the shoreline populations of Lake Mead NRA. Beginning at the high water level, we will be able to monitor the number of plants along a gradient at the time of survey.

In fiscal year 2014, we would like to implement transects beginning from the high water level and ending 100 meters above the high water mark. These additional transects should capture sticky buckwheat populations that may persist if the water level at Lake Mead NRA rises to historical high water levels again.

OTHER MANAGEMENT ACTIONS

In fiscal year 2013, 5.45 treated acres of Sahara mustard (*Brassica tournefortii*) were removed from the dunes and surrounding beaches at Sandy Cove and Ebony 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, CA.