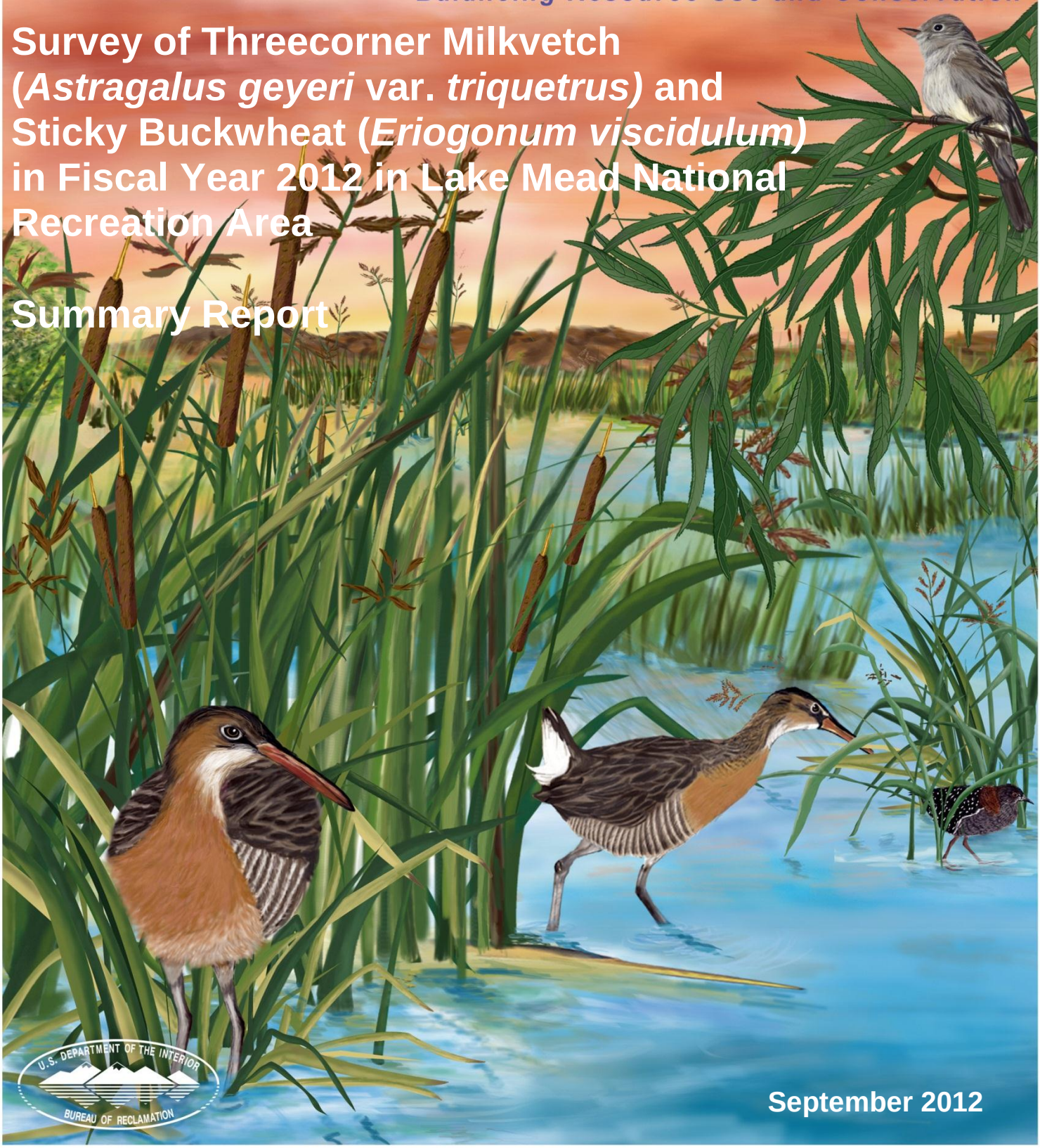
Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Survey of Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus*) and Sticky Buckwheat (*Eriogonum viscidulum*) in Fiscal Year 2012 in Lake Mead National Recreation Area

Summary Report



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September 2012

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Lower Colorado River Multi-Species Conservation Program

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Summary Report

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ACRONYMS AND ABBREVIATIONS

Lake Mead NRA	Lake Mead National Recreation Area
LCR	lower Colorado River
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
NPS	National Park Service

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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 (LCR). The LCR MSCP's purposes are to (1) protect the LCR 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 LCR (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 (NPS).

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 each of 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 threecorner milkvetch and sticky buckwheat.

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 2012.

METHODS

Threecorner Milkvetch

Informal surveys (walking through the areas known to support threecorner milkvetch) occurred at Sandy Cove and Ebony Cove (figure 1) for threecorner milkvetch. No formal monitoring was conducted in 2012.

Sticky Buckwheat

In March 2012, the area between submarine point (just south of Lime Cove) and Kline Hole (figure 1) was informally surveyed. A Global Positioning System tracklog was used to illustrate the path an employee walked and recorded sticky buckwheat populations approximately 5 meters on either side of the tracklog. Points and lines were used to document sticky buckwheat locations. Monitoring plots were not surveyed in 2012.

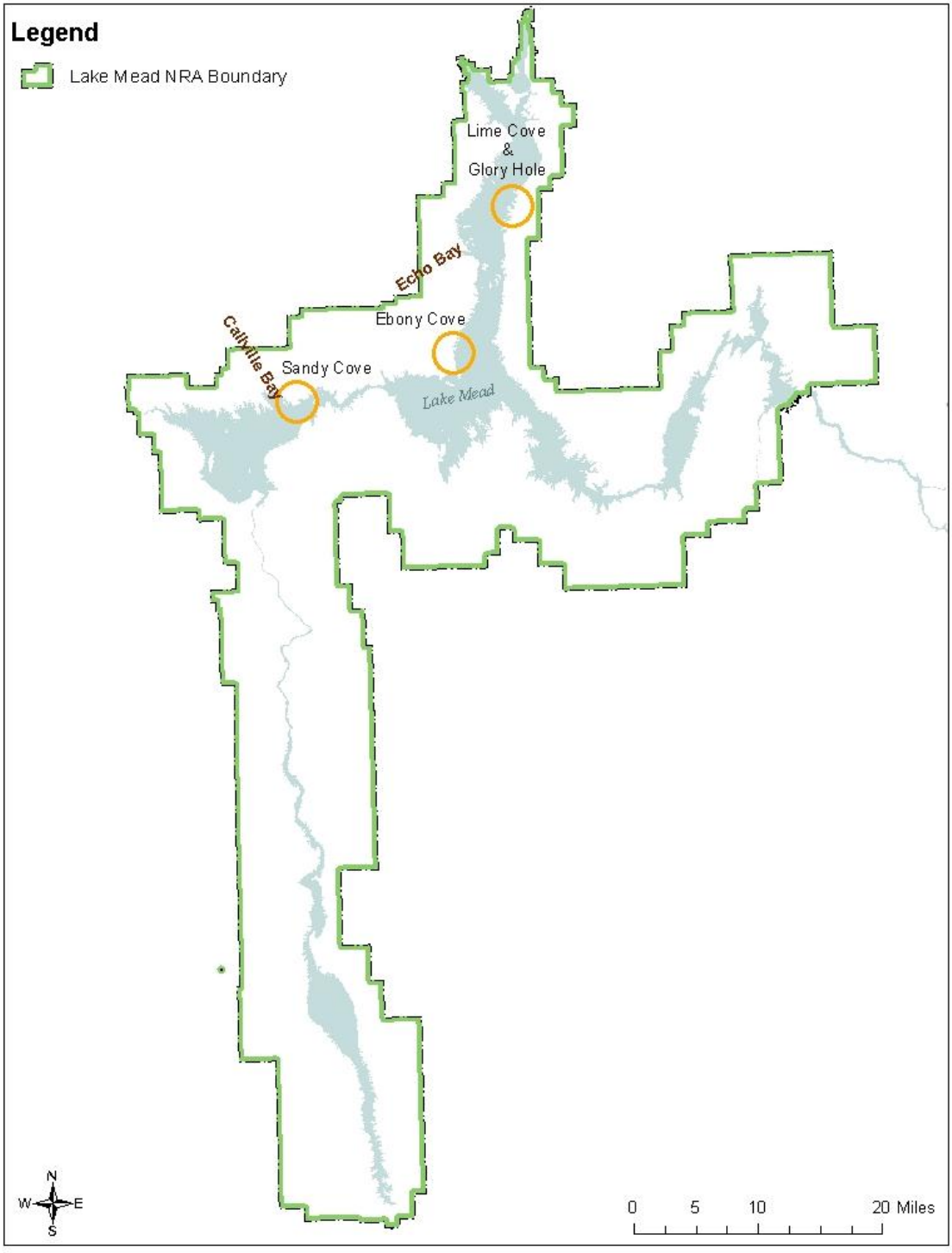

Figure 1.—Site locations for threecorner milkvetch and sticky buckwheat surveys and other conservation actions.

RESULTS

There were no threecorner milkvetch observed at Sandy Cove or Ebony Cove.

There were approximately 7,000 sticky buckwheat plants recorded within the survey area.

Ebony Cove and Sandy Cove showed 3.15 and 2.7 inches of precipitation between September 2011 and April 2012, respectively.

DISCUSSION

The environmental factors that affect threecorner milkvetch and sticky buckwheat recruitment and germination within each population are currently unknown. Winter annuals typically respond to increased seasonal rainfall by germinating at higher densities. Our observations in recent years support this, but more data from this long-term monitoring project are necessary to effectively interpret relationships between environmental factors such as rainfall and temperature and germination rates of these plants (Bangle 2010).

Sandy Cove threecorner milkvetch population numbers have demonstrated fluctuations in previous years, from 0 in 2002 to over 8,000 plants in 2005 (The Nature Conservancy 2007). Weather stations measuring temperature and precipitation were installed in February 2009 at Sandy Cove and in August 2009 at Ebony Cove. The average monthly temperatures and total precipitation are shown on figures 2 and 3.

If drought continues in the Lake Mead region, we may see a long-term decrease in threecorner milkvetch numbers. How long threecorner milkvetch seeds remain viable in the soil seed bank is unknown and should be explored (Bangle 2005, 2010). It may also be important to control weed populations, such as Arabian grass (*Schismus arabicus*), which may be stabilizing the sand dunes, as well as Sahara mustard (*Brassica tournefortii*) (Bangle 2005, 2010). The sites shown on figure 1 are given top priority for annual weed management actions by Lake Mead NRA staff.

It is recommended that a long-term monitoring program continue in order to develop a better understanding of what environmental stressors are affecting rare plant populations over time (Bangle 2010). Effective management decisions are difficult without knowledge of a population's status and trend and whether increasing, decreasing, or stable (Philippi, Collins, and Dixon 2001). Knowledge of environmental requirements and stressors may help predict future population survival under changing climate conditions (Niles et al. 1995; Bangle 2010).

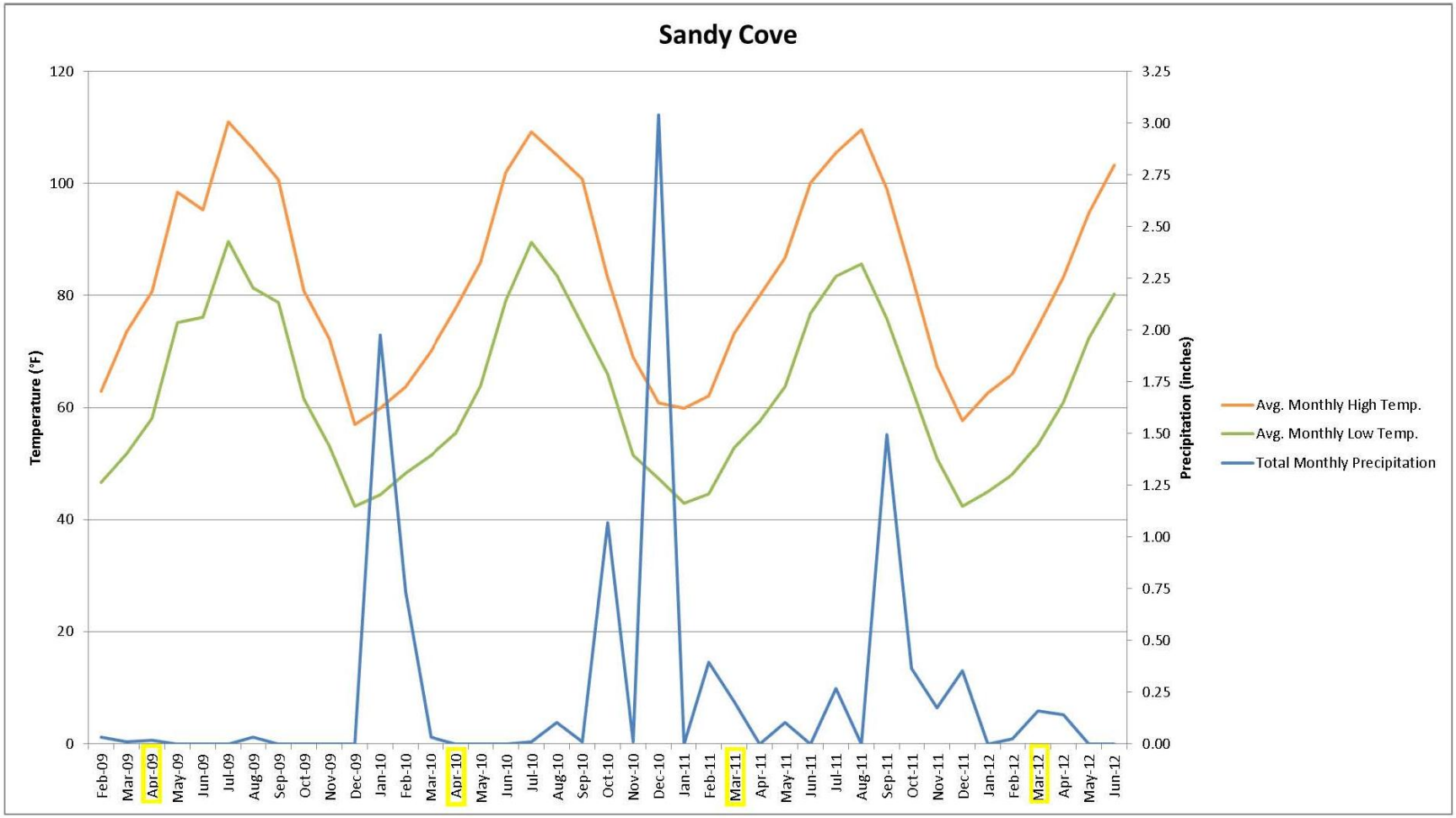

Figure 2.—Weather data at threecorner milkvetch site from August 2009 to June 2012.
The yellow boxes around dates designate the survey period for threecorner milkvetch.

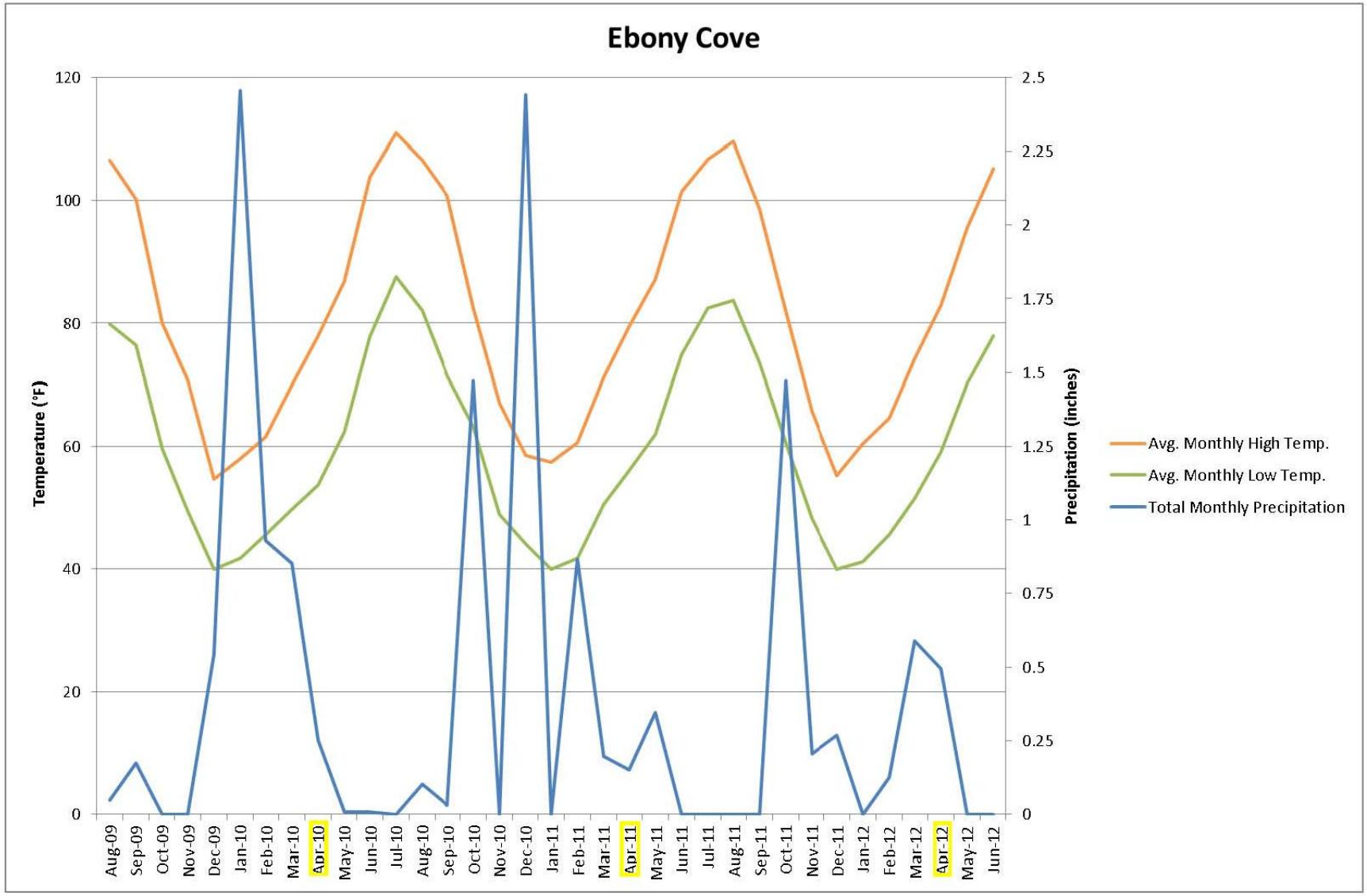

Figure 3.—Weather data at threecorner milkvetch site from August 2009 to June 2012.
The yellow boxes around dates designate the survey period for threecorner milkvetch.

The original survey method for sticky buckwheat included 50 x 100-meter macroplots sampled with 1 x 10-meter quadrats—one macroplot at Lime Cove and one at Glory Hole. The full methods are described in Bangle 2010. This method is very time intensive for the current level of staff at the NPS. We are coordinating with the liaison for LCR MSCP to develop a more efficient monitoring method for sticky buckwheat.

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