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Lake Mead National Recreation Area Vegetation Monitoring and Management: Quarterly Progress Report, Period Ending July 1, 2009 to September 30, 2009

Margaret N. Rees

University of Nevada, Las Vegas, peg.rees@unlv.edu

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Executive Summary

The project final report is on schedule for submission on December 31, 2009. This report reflects specific progress made during the fourth quarter.

- Weed Sentry staff surveyed over 55 miles and 311 acres (most of which was conducted by foot) this quarter.
- Planning for future *Brassica tournefortii* research projects has been implemented through collaboration between PLI and NPS staff.
- Preliminary results from ongoing *Brassica tournefortii* projects indicate little effect of disturbance on abundance of the species, but, as expected, the species benefitted with increased water availability.
- Rare plant data monitoring and data entry for this season is complete.
- Pre-planning activities for the upcoming Northshore Road restoration plantings and evaluation were initiated.
- Gypsum restoration research is ongoing, data are being analyzed and compiled.

Program Activities

The task agreement was awarded to UNLV on October 1, 2006. This report covers the period July 1, 2009 to September 30, 2009. The following activities have been conducted toward meeting or exceeding deliverables in the statement of work.

Invasive Plant Monitoring and Treatment (Weed Sentry Program)

Research assistants in the Weed Sentry Program are tasked with mapping and treating incipient populations of exotic species on targeted federal lands throughout Clark County. Surveying activities for invasive species that took place from July 1, to September 30, 2009, are divided into sections by federal agency, and are summarized in Table 1. More than 55 miles and 311 acres were surveyed for exotic invasive species during this period.
Table 1. Summary of miles and acres surveyed, Weed Sentry Program, July 1, 2009- September 30, 2009, by federal agency.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Miles</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Park Service</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bureau of Land Management</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Forest Service</td>
<td>26.23</td>
<td>181.59</td>
</tr>
<tr>
<td>Fish and Wildlife Service</td>
<td>29.42</td>
<td>129.98</td>
</tr>
<tr>
<td>Total</td>
<td>55.65</td>
<td>311.57</td>
</tr>
</tbody>
</table>

A. Locations surveyed  
No surveys were conducted on National Park Service or Bureau of Land Management lands during this quarter. Surveys were conducted by foot on Forest Service land along Bristlecone and Lovell Trails, and within multiple forest thinning treatment areas (Lower Lee Canyon, Cold Creek and Mountain Springs). Due to a special request of the Forest Service, more than 25 photopoints were established within forest thinning treatment areas. Additionally, Alamo and Joe May Road were surveyed on Fish and Wildlife Service lands.

B. Small incipient population treatment

Table 2. Number of individual invasive plants removed, Weed Sentry Program, July 1, 2009 - September 31, 2009, Forest Service and Fish and Wildlife Service lands.

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Medicago sativa</em></td>
<td>1</td>
</tr>
<tr>
<td><em>Melilotis officinalis</em></td>
<td>75</td>
</tr>
<tr>
<td><em>Salsola tragus</em></td>
<td>18</td>
</tr>
<tr>
<td><em>Sonchus asper</em></td>
<td>14</td>
</tr>
<tr>
<td><em>Verbascum thapsus</em></td>
<td>1</td>
</tr>
</tbody>
</table>

Sahara Mustard Research

The experimental designs for hypotheses 1-6, data management plan, and the annual work plan were developed this quarter for 2005-NPS-532 hypotheses 1-6.

Data were analyzed from a two year study on the responses of Sahara mustard (*Brassica tournefortii*) to soil disturbance and water additions. Results indicate that adding water and disturbing the soil did not have an effect on Sahara mustard plant abundance. However, water additions stimulated plant growth and the number of siliques per plant suggesting a greater seed production. A manuscript reporting the results is in preparation.

Rare Plant Monitoring and Research

A. Monitoring

*Astragalus geyeri* var. *triquetra*   
Threecorner milkvetch monitoring did not occur during this quarter. However, data entry was completed this quarter.
Eriogonum viscidulum
Sticky buckwheat monitoring did not occur during this quarter. However, data entry was completed this quarter.

Arctomecon californica
Las Vegas bearpoppy monitoring did not occur during this quarter. However, data entry was completed this quarter.

Anulocaulis leiosolenus var. leiosolenus
Ringstem monitoring did occur during this quarter and was completed. Work continues monitoring the vegetative and reproductive phenology trends within three populations of sticky ringstem along Northshore Road in Lake Mead NRA.

Other
Weather stations were downloaded from eight rare plant locations. Surveying for sunray (Enceliopsis argophylla) populations occurred this quarter and will continue into next quarter.

B. Herbarium and Native Plants
This quarter, plant identifications occurred consistently. Plants were keyed as necessary for all vegetation programs including Exotic Plant Management Team, Weed Sentry, Nursery, and Botany plus wildlife division. Dianne Bangle continued training a part time NPS employee (Michelle Pardinas) concentrating on developing herbarium skills, data entry, and database management.

New rain and temp/Rh gauges have been installed at Valley of Fire area for the Sahara mustard seed burial project (MSHCP 532-hypothesis 6).

C. Staff changes
Dianne Bangle has left the botanist position to take an ecologist position with the Bureau of Reclamation. NPS exotic plant manager Carrie Norman will oversee D. Bangle’s duties.

Technical Assistance/Synergistic Work

A. Springs Rana onca Habitat Restoration Project (Jef Jaeger, PI)
A manuscript is in progress for the Rana onca habitat restoration work.

B. Northshore Road Realignment Restoration Projects
In early June, landscape contouring and topsoil reapplication began along the Northshore Road construction sites. The Federal Highway Administration and the National Park Service are monitoring the topsoil reapplication. Contouring and topsoil reapplication is almost complete at all three construction sites and paving has started at the Northshore Road/Overton Beach Road intersection.

Topsoil and landscape surveying along the old and new road corridors was conducted in September to determine area location and sizes of treatment plots. Establishing the treatment project layout is tentatively scheduled for November 2009. Replanting salvaged plants as
treatments has been planned. Perennial plant survey data are currently being analyzed and interpreted for planting treatments. Salvaged soil crusts are currently in storage and are being monitored. Temperature probes are monitoring soil and air temperatures within the storage unit. All soil samples from reference control plots were delivered to the UNLV soils lab in September.

C. Road 108 gypsum habitat restoration research

In 2002, AR108 was closed for restoration. Portions of the road were ripped or left untouched. In April 2009, for retrospective condition analysis, permanent monitoring plots were established to compare the recovery within these treatments with undisturbed sites close to the road. Currently, this data is being analyzed and interpreted to compare and contrast treatments with undisturbed areas.

D. Clark County Desert Burn Succession

Data collection was completed, entered and analyzed this semester. Data analysis will be finalized once soil data is returned from the lab.

E. Community Invasibility (Distance from Roads)

The manuscript on exotic annual plant dynamics along a distance from roads gradient was resubmitted with revisions (see below for title).

Papers Published/Submitted

- “Factors affecting exotic annual plant cover and richness along roadsides in the eastern Mojave Desert, USA” by Donovan J. Craig, Jill E. Craig, Scott R. Abella, and Cheryl H. Vanier was resubmitted with revisions to the Journal of Arid Environments.

Presentations


Agency Meetings/Training Attended/Professional Development

- C. Engel and A. Suazo attended the 94th Ecological Society of America annual meeting in Albuquerque, NM, August 2 – August 7, 2009.

Submitted by:

Margaret N. Rees, Principal Investigator  
10/01/09  
Date