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Lake Mead National Recreation Area Sensitive Wildlife Species Monitoring and Analysis: Quarterly Progress Report, Period Ending December 31, 2005

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Executive Summary

- Topsoil replacement monitored at Willow Beach Wastewater Rehabilitation Project
- Desert tortoise surveys and monitoring conducted for Northshore Road reconstruction projects, and desert tortoise training provided to 9 construction contractors.
- Field work associated with the project to remove desert tortoise radio transmitters from animals on Mormon Mesa completed.
- Weekly data processing for Desert Bighorn Sheep monitoring associated with the Hoover Dam Bypass Project continued.
- Fall field surveys for relict leopard frogs completed (11 sites surveyed); last of this year’s head-started animals released; RLFCT meeting held.
- Work started on a digital database (GIS) of Peregrine falcon observations.
- Monthly shorebird surveys conducted (22 site surveys total); Access database of shorebird survey data was developed.
- Upcoming southwestern willow flycatcher surveys were planned and coordinated with other agencies.
- Point counts for several sensitive songbird species conducted (37 sites total); coordination and consultations to refine field methods for songbird study conducted.
- Upcoming bald eagle survey/census organized.

Program Activities

The task agreement was awarded to UNLV on October 1, 2005. During the past quarter, the following activities have occurred toward meeting deliverables in the statement of work.
Desert Tortoise Mitigation and Monitoring

This section summarizes biological monitoring and mitigation activities (compliance monitoring) conducted by UNLV employees for desert tortoise and desert tortoise habitats associated with various construction and right-of-way activities within LMNRA during the fall quarter (through December 16, 2005). The active construction projects during this period included the Willow Beach Wastewater Rehabilitation Project and projects associated with Northshore Road reconstruction. Other activities that required some monitoring during this quarter included a Nevada Power transformer project, Las Vegas Beach and Boulder Beach Mission 66 vegetation removals, and several right-of-way inspections.

Areas Surveyed for Desert Tortoise Related to Construction Projects – Surveys for desert tortoise at the Willow Beach Wastewater Rehabilitation Project were completed prior to this quarter and no new surveys were required. During this quarter, approximately 200 acres of land were surveyed for desert tortoises prior to boring activities associated with the Overton Beach and Echo Bay access roads. These projects were related to the upcoming reconstruction of the Northshore Road.

Desert Tortoise and Habitat Mitigation Measures Monitored During Construction Projects – No live tortoises were observed on any project during this quarter. Topsoil replacement occurred in disturbed areas on the Willow Beach Wastewater Rehabilitation Project. This process was monitored to ensure that the proper grades and contours were constructed and that the topsoil was replaced to the proper depth. Watering techniques were employed to create a crust on the surface to prevent dust and erosion.

Desert Tortoise Training Provided to Contractors – Desert tortoise training was provided to 9 contractors working in Lake Mead National Recreation Area during this quarter. Six of the contractors were part of the road projects at Overton Beach and Echo Bay, and the other three were new employees on the Willow Beach project.

Desert Tortoise Habitat

Over the past two years, UNLV employees have conducted a project to remove radio transmitters from desert tortoises remaining from a previous study that took place on Mormon Mesa in 1998. Transmitters on 9 tortoises failed before researchers had an opportunity to remove them. The National Park Service (NPS) submitted a proposal to the Clark County MSHCP to survey tortoise plots in 2004; however, NPS was asked to modify this proposal to incorporate removal of these transmitters (project number 2003-NPS-229-P-2004-07). In order to locate the lost transmitters, and in an effort to learn more about the tortoises at this site, NPS performed a systematic search of the study area.

GPS technology was used to locate tortoise burrows from locations described in the report of the radio telemetry study on Mormon Mesa. A total of 87 known tortoise burrows were visited. All burrows were physically described using standard protocols (generally to access active use). Encountered live tortoises (n = 10) were also processed
using standard protocols and marked with an external identification number (a floy tag - small, numbered vinyl laminated discs epoxied directly to the shell). Three of the 9 missing transmitters were found (2 were on carcasses). Field aspects for this project were completed this quarter and data compiled. More than 6 staff-days were spent this fall on Mormon Mesa attempting to retrieve the remaining 6 transmitters.

Desert Bighorn Sheep

The Federal Highways Administration has funded a 5-year project to monitor desert bighorn sheep in the vicinity of the Hoover Dam Bypass project and to assess whether and how sheep movements are being affected by construction activities. GPS collars are currently deployed on 20 individual sheep. A running accumulation of sheep locations has been downloaded weekly via satellite for analysis in a GIS to plot distributions and discern movement patterns in relation to natural and anthropogenic factors. UNLV employees have been providing assistance in the form of data stewardship, monitoring, and field support.

GPS data were converted on regular basis into a format recognized by ArcGIS. This quarter, approximately 12 weeks of data were processed. Data received were uploaded into the program Argos Data Converter T03 (Telonics, Inc.) and then exported to an Excel spreadsheet and converted into a useable format for ArcGIS. In ArcGIS, data were quality assured to remove extraneous information (for example, if data were transmitted multiple times) or to filter out bad fixes. Data were then checked to identify sheep deaths or collar malfunctions. Four staff-days were spent this quarter attempting to retrieve sheep collars from dead animals and to locate collars with faulty satellite signals.

GIS supports for visual interpretation (i.e., map requests) have been handled by another UNLV employee currently providing support to the NPS and an independent contractor associated with this project, but this employee is not employed under this task agreement.

Ungulate Monitoring and Management

This quarter, several UNLV employees provided ground-support activities associated with a capture operation conducted by the Nevada Department of Wildlife to move sheep from the River Mountains into the Virgin Mountains.

Relict Leopard Frog Monitoring, Management and Research

Monitoring and management activities for relict leopard frogs are specified within the Relict Leopard Frog Conservation Assessment and Strategy, with oversight by a Relict Leopard Frog Conservation Team (RLFCT) chaired by the NPS. A UNLV research assistant has primary responsibility for implementing monitoring and management actions for relict leopard frogs within the LMNRA, as stipulated by the plan and an associated Clark County MSHCP funded project (no. 2003-NPS-179-P-2004-07).
Fall population surveys were conducted between October 14 and November 9, 2005. These visual encounter surveys were conducted at night at a total of 11 sites, including all known natural populations. In addition, 30 froglets were released from the head-start facility this quarter to augment one of the new populations (the total number of releases from this facility for 2005 was 236 frogs and 963 tadpoles). The head-start facility was maintained, and laboratory and field equipment was ordered in preparation for egg collection and tadpole rearing beginning January 2006. Summary information from the surveys and other activities was reported to the RLFCT and provided to the NPS for submission in the quarterly reports to the Clark County MSHCP. As part of the MSHCP project deliverables, detailed habitat maps of Blue Point and Rogers Springs associated with the visual encounter surveys for relict leopard frogs are being developed. Field-hand versions of these maps, with GPS references, were completed, but the plan is to associate these field notes with aerial photographic representations. The purpose of these maps is to document survey observations and for use to guide future survey and management efforts.

The research assistant on this project functions as the secretary for the RLFCT. A meeting was held in December 2005 to discuss the completion of the Conservation Agreement and Strategy, annual reports, updates, and the 2006 Work Plan. Follow-up actions from the meeting are currently underway, including the soliciting and editing of information for the 2005 yearly RFLCT report. Work has begun on the final report for this project, which is due to Clark County MSHCP by January 30, 2006.

**Peregrine Falcon Monitoring**

Peregrine falcon surveys are conducted from April through early July when the birds are reestablishing territories and during their breeding cycle. The purpose of most of these surveys is to assess occupancy of known nesting sites and territories along the shorelines of Lakes Mead and Mohave. Additional areas of shoreline and some mountainous areas are also surveyed to identify new, undocumented territories. The objectives of the monitoring effort are to attain an approximate population estimate for this species within the LMNRA and to assess reproductive success.

During this year’s surveys, 9 sites were visited along the shoreline of Lake Mojave, including 3 new areas, and 10 sites were visited along Lake Mead, including 4 new areas. Additional observations were confirmed in the River Mountain (1 site) and at the Virgin River (1 site). Data from these surveys were provided to the NPS for inclusion in quarterly reports submitted to the Clark County MSHCP (project no. 2003-NPS-229-P-2004-07) and shared with the Nevada Department of Wildlife. Incidental sightings of peregrines continue to be recorded throughout the park as they occur and will contribute to the development of a predictive habitat map.

Collaborative work with the GIS division at Lake Mead NRA was begun this quarter in order to compile all previous historical data in a spatial context with complete metadata. This digital database will be provided by the NPS to the Clark County MSHCP upon completion. A final report of monitoring activities over the last two years is being
prepared and will be delivered to the NPS for submission to the Clark County MSHCP by January 30, 2006.

Bird Monitoring

**Shorebird Monitoring** – Currently, there are no clear external reporting processes established for the shorebird monitoring and data are being complied by NPS for use when considering future shoreline development plans within Lake Mead NRA and for long-term analysis. The objectives for this monitoring are to learn about aquatic bird population trends, distribution of resident birds, and the timing of migrant birds throughout the park. To assist with regional assessments of aquatic bird species, survey activities have been coordinated and data shared with the Great Basin Bird Observatory (for their state-wide Aquatic Bird Count) and the Nevada Chapter of Partners in Flight.

Aquatic bird surveys have been conducted monthly and focused at designated areas throughout Lake Mead NRA where there is substantial aquatic bird presence. Monitoring has focused on 4 sites on Lake Mead and 3 sites on Lake Mohave, but as time has allowed and as bird activities were better understood, other sites were also surveyed (see Table 1). This quarter a total of 22 surveys were conducted. Surveys involve traveling the shoreline by boat and counting and identifying all aquatic birds and raptors encountered within the designated area. Additional data on the maturity stage, behavior, and habitat use of individuals was also collected along with environmental conditions and the lake level during the survey. An Access database was developed in November 2005 to improve data storage and retrieval for this project.

**Table 1. Survey sites and numbers of surveys conducted for shorebirds within LMNRA since March 2004.**

<table>
<thead>
<tr>
<th>Site</th>
<th>Number of Surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Previous (3/04 - 9/05)</td>
</tr>
<tr>
<td>Lake Mead</td>
<td></td>
</tr>
<tr>
<td>Las Vegas Bay</td>
<td>20</td>
</tr>
<tr>
<td>Muddy River</td>
<td>17</td>
</tr>
<tr>
<td>Virgin River</td>
<td>17</td>
</tr>
<tr>
<td>Grand Wash</td>
<td>6</td>
</tr>
<tr>
<td>Bonelli Bay</td>
<td>7</td>
</tr>
<tr>
<td>Misc. sites</td>
<td>4</td>
</tr>
<tr>
<td>Lake Mohave</td>
<td></td>
</tr>
<tr>
<td>Arizona Bay</td>
<td>17</td>
</tr>
<tr>
<td>Nevada Bay</td>
<td>17</td>
</tr>
<tr>
<td>Willow Beach</td>
<td>15</td>
</tr>
<tr>
<td>Misc. sites</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>122</td>
</tr>
</tbody>
</table>

**Southwestern Willow Flycatcher Surveys** – The Nevada Coordinated Bird Monitoring Plan was designed to help managers decide which of 286 bird species that regularly occur
in Nevada warrant management action due to declines, to identify causes of such declines, and to help managers plan and evaluate land use practices, conservation, and restoration. The Clark County MSHCP identifies eight species of birds as covered under the plan, one of which is the southwestern willow flycatcher.

Surveys for the southwestern willow flycatcher are conducted from May 15 through July 10 in accordance with U.S. Fish and Wildlife protocol. Each site is visited three times during the breeding cycle, during which time the surveyors use a call-response survey technique. Sites are selected for surveying by the presence of potential southwestern willow flycatcher habitat. Surveys historically have concentrated on the Cottonwood Basin area of Lake Mohave, the Overton Arm near the confluence of Virgin and Muddy Rivers in Lake Mead, and the delta area of the Colorado River near Pearce Ferry.

This year’s survey efforts have been completed and the data compiled and provided to the NPS for inclusion in quarterly reports to the current funding source (Clark County MSHCP; 2003-NPS-229-P-2004-07) and sent to the Arizona Game and Fish Department (the regional leading agency for this species). Currently, a final report is being prepared and will be delivered to the NPS for submission to the MSHCP before January 30, 2006. In addition, during this quarter planning for the 2006 field season was conducted, which involved interagency collaboration to identify potential study sites.

**Bald Eagle Monitoring** – For the past 14 years, the NPS has participated in an annual bald eagle survey. The survey is part of a national effort to assess the status of this species. Data collected at Lake Mead NRA are submitted to Arizona Game and Fish Department (the lead agency on the regional effort). This monitoring effort has been proposed for funding under the Clark County MSHCP (2005-NPS-540-P).

This quarter, UNLV employees organized the upcoming bald eagle survey, scheduled for January 5, 2006 (this is a deliverable on the MSHCP proposal). Approximately 40 observers, “volunteers” from resource management (including both NPS and UNLV employees) and the ranger divisions, will take part in the survey. These observers will be divided into 8 boat crews (including one skilled bird observer per crew) to cover survey routes spanning all of Lakes Mead and Mojave. In order to minimize over-count, all survey routes will be covered on the same day.

**Songbird Monitoring** - For the past two years Lake Mead NRA has been involved with several inventory and monitoring efforts for songbirds. These included assisting on a statewide effort to obtaining estimates of the population sizes and distributions for all Nevada bird species organized by the Great Basin Bird Observatory (GBBO). To obtain statewide coverage, point count surveys needed to be performed across the state, and several agencies, including the NPS, are assisting the GBBO.

These songbird efforts were part of the Clark County MSHCP funded project (2003-NPS-229-P-2004-07). This year, UNLV employees performed 12 point count surveys, and established 2 intensive area sites which were visited 10 times each during the breading season. In addition to the songbird monitoring, preliminary efforts were begun on a study
to evaluate the status and habitat affinities of 3 species of thrasher in habitats across Clark County. In order to build and refine a conceptual models for these species, 160 points surveys were conducted across various habitats. At each point, observations of all bird species present were recorded, and call-response surveys were conducted for the 3 thrasher species. In addition, vegetation was also assessed to define habitat type. Preliminary data from this effort was presented in poster-form at the BIOS symposium, UNLV Department of Biological Science, on November 5, 2005.

**Historical and Current Assessment of Six Covered and Three Evaluation Songbird Species** – This project is currently a Clark County MSHCP proposal (2005-NPS-542-P). As part of this proposal, UNLV employees will conduct targeted inventory and historic analysis of 9 covered/evaluation species in Clark County, including the 3 thrasher species discussed above. The objective is to compare historical population distribution and abundance with present-day patterns. This proposed research is complementary to the Great Basin Bird Observatory’s (GBBO) proposal to develop habitat models and monitoring techniques for the same 9 species. Efforts have been made to integrated survey activities and results into a concerted, multi-agency effort to address the problem of rare birds in this region.

The NPS has moved forward on the proposed project, with UNLV taking the project lead. During this past quarter, literature and museum searches were performed to collect information on historical species accounts and specimen location records. The research assistants conducting the project met with UNLV faculty to discuss methods and statistical designs and to incorporate recommendations from the Clark Counties Adaptive Management Science Team. A GIS division specialist at Lake Mead NRA was consulted to identify stratified-random survey points throughout Clark County. In addition, Elizabeth Ammon from GBBO was contacted several times to coordinate across projects. Three of the target species – Le Conte’s Thrasher, Bendire’s Thrasher, and the Gray Vireo – are difficult to detect using the standard point count survey method (the common approached used by GBBO’s volunteers). For this reason, UNLV employees have performed surveys that specifically target these species (e.g., broad-cast methods) while still providing usable data to GBBO and others for integration into regional and national efforts. As part of the development of conceptual models for the three thrasher species, 37 points across the county were surveyed this quarter (through December 16), including areas where these species have historically been documented to occur.

Submitted by:

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Margaret N. Rees, Project Administrator

Date

December 31, 2005