Lake Mead National Recreation Area Sensitive Wildlife Species Monitoring and Analysis: Quarterly Progress Report, Period Ending December 31, 2006

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Executive Summary

- Research assistant hired for Relict Leopard Frog conservation project.
- High school minority intern hired to assist with research efforts.
- Nocturnal visual encounter surveys for Relict Leopard Frogs conducted at all established natural sites and at 6 of 7 translocation sites.
- Vegetation management conducted to decrease tamarisk cover along the stream at the Pupfish Refuge Spring – a Relict Leopard Frog translocation site.
- New draft guidelines and field count protocols developed for midwinter bald eagle count.
- Preliminary analysis and modeling of thrasher habitat selection conducted and sampling assessed.
- Call-broadcast surveys for thrasher species conducted at 43 points countywide, focusing on vegetation assemblages under-represented in the initial survey design.
- Monthly aquatic bird surveys conducted at 7 intensive monitored sites on Lakes Mead and Mohave, and 9 additional surveys conducted at exploratory sites – 30 surveys total.
- 651 bighorn sheep point locations were processed.

Program Activities

The task agreement was awarded to the University of Nevada, Las Vegas (UNLV) on October 1, 2006. Research, monitoring, and management activities are conducted primarily by UNLV Public Lands Institute (PLI) employees. During the quarter ending December 31, 2006, the following activities have occurred toward meeting deliverables in the statement of work; the deliverable statements below (italicized) have been abbreviated from those in the task agreement.

Hiring

Following a national search, Dana Drake was hired in October 2006 as a research assistant on conservation efforts for Relict Leopard Frogs. Dana has previous work experience as an ecologist focusing on amphibian research and monitoring. She holds a B.A. in Human Ecology from the College of the Atlantic and received her M.S. in Biological Science from Drexel
University. She has numerous peer-reviewed scientific publications, and her recent publications focus on tadpole morphology.

Starting in late December 2006, PLI hired a high school student intern, Dane Gerace, to assist primarily with research and conservation efforts on Relict Leopard Frogs (Dane will also assist on vegetation projects under a separate task agreement). Dane is of Native American descent, and we intend to provide him with experience to assist his goal of attending college with a major in natural resources conservation.

We also anticipate the hiring of a UNLV undergraduate student before the end of this quarter to assist with wildlife research and monitoring efforts, particularly with relict leopard frog conservation and research.

**Project 1. Relict Leopard Frog Monitoring, Management and Research**

*Monitoring surveys of all natural sites will be conducted at least twice per year.*

During this quarter, nocturnal visual encounter surveys (VES) were conducted at all natural relict leopard frog sites and one previously inaccessible site (7 sites total). The main findings of concern from these surveys resulted from a major storm in mid-October 2006 that caused massive debris flows at most sites within Black Canyon. Bighorn Sheep Spring (the major source for translocations) suffered extensive habitat damage, with much of the vegetation stripped from the channel and many of the pools where frogs were previously observed filled in with gravel. No tadpoles were seen and adult frog numbers were greatly reduced compared to previous surveys (approximately one-third).

Other sites within the canyon also had much of the vegetation stripped from the main channels, including Salt Cedar Spring and the main drainage within the same canyon, which had not previously been surveyed because of dense vegetation (this main spring system has no official name but may be called Black Canyon Spring). Frogs were observed at all sites, and habitat conditions for frogs may have actually been improved at Salt Cedar Spring with the reduction of vegetation. A daytime survey was conducted to photograph conditions at the most affected spring sites within Black Canyon and to look for evidence of fall breeding. Young tadpoles were observed at both Bighorn Sheep and Salt Cedar Springs. Details from these surveys were provided in a report to the Relict Leopard Frog Conservation Team (RLFCT) and included in the minutes of that meeting.

*Monitoring surveys of all translocation sites will be conducted at least twice per year.*

During this quarter, nocturnal visual encounter surveys (VES) were conducted at all but one of the existing experimental site (6 sites total); the exception was Tassi Spring, which only recently received frogs (in August). The main finding from these surveys was the confirmation of no relict leopard frogs at Sugarloaf Spring. This site is within Black Canyon and experienced the mid-October flooding noted above. Although water was present during the fall survey, the site lacked standing water during Summer 2006 and no frogs were expected to be seen. The site has been removed from the list of active translocation sites.

Several additional diurnal site visits were conducted to Pupfish Refuge Spring in association with egg masses observed at this site. Data were collected on the egg masses and oviposition habitat. Two of the first egg masses observed were relocated from a roadside drainage ditch to sites in the main channel because of concerns that the original pool was too small to accommodate tadpoles.
from four egg masses observed in the ditch. The roadside ditch was later intentionally filled in with rubble, as a part of road maintenance. Some of the relocated tadpoles, however, were observed developing in the main channel where they had been moved.

Conduct a mark-recapture study of the frog population at Rogers Spring.

Initial efforts to acquire materials and organize this research were completed during this quarter, and one attempt was made to mark frogs at Rogers Spring. Significant efforts on this project, however, could not be initiated before cooling temperatures in November 2006 made further field surveys futile.

Coordinate exotic vegetation control activities by collaborators.

PLI personnel (2 individuals) coordinated and assisted a Nevada Conservation Corps team of 10 individuals on November 1, 2006, with the reduction of non-native tamarisk from the Pupfish Refuge Spring. This team successfully completed the objective of creating a path along the main stream to allow more thorough survey of the site and provide more open pools and water for relict leopard frogs.

PLI personnel followed up a request by the RLFCT to approach NPS Exotic Plant Management Team (EPMT) with a request to add several of the Black Canyon sites (at Bighorn Sheep, Salt Cedar Spring, and Black Canyon Spring) on the rotation list for tamarisk control. Efforts by EPMT will be initiated at these sites in January or February 2007. Since this will be during the early breeding season for relict leopard frogs, PLI staff will be present to monitor efforts to insure no negative impacts on frogs.

Coordinate semi-annual meetings of the RLFCT and insure the development of RLFCT annual work plans and annual reports.

A meeting of the RLFCT was conducted on November 27, 2006, at LAME Headquarters. NPS ATR Ross Haley presided, and Principal Investigator Dr. Jaeger and PLI Research Assistant Dana Drake) presented information/reports to the team, including a slide show of site photos from Bighorn Sheep Spring before and after the mid-October storm, demonstrating the major habitat modification. Eleven people were in attendance representing several federal and state entities (BLM, EPA, NDOW, NPS, SNWA, UNLV, and USFWS). The PLI research assistant maintained the minutes of the meeting, which were sent to the team email list on December 10, along with a detailed report on the fall surveys.

During the meeting, it was noted that the 2005 annual RLFCT report has not yet been finalized and sent out to team members. This document is currently receiving a final edit by the PLI personnel and will be submitted to team members by email. A request for information from RLFCT members to compile the 2006 annual report has been made, and email follow-ups and organization will be conducted by PLI staff.

Project 2. Bald Eagle Winter Monitoring and Evaluation

Provide a protocol and written manual.

This quarter, a draft guideline and field count protocols (essentially, standard operating procedures) was developed for the annual midwinter bald eagle count on Lakes Mead and Mohave. The protocol discusses the goals for conducting eagle counts within LAME and defines
the specific roles and responsibilities for the count coordinator, lead observers, boat operators, and data recorders. The document also provides specific instructions on data collection and mapping and provides examples of data sheets, standard route descriptions, standard route maps, and an improved eagle identification guide.

PLI personnel worked with NPS GIS data managers to adjust two of the standard routes to account for newly proposed standardized boat speeds. The GIS data managers assisted with the development of improved standard route maps, data recording maps, and data recording sheets. The PLI research assistant on this project updated the eagle identification guide, which is currently under NPS review. PLI personnel are in the process of developing a written manual for training lead observers and data recorders.

NPS GIS data managers have taken a lead in developing a data management plan and have coordinated their activities with PLI personnel on this project.

Coordinate and conduct annual midwinter counts on Lakes Mead and Mohave.

This quarter, most of the logistical planning for the annual midwinter bald eagle count was conducted; the count is scheduled for January 11, 2007. Lead observers, data recorders, boat operators, and other volunteers have assigned routes and boats. As part of an effort to improve the quality of data from the count, PLI personnel, with assistance from NPS GIS data managers, provided four days of training to lead observers and data recorders during December 2006. As part of these trainings, 17 lead observers and recorders were instructed in GPS use, data recording, mapping, and eagle identification in the field.

Project 3. Peregrine Falcon Monitoring and Evaluation

Conduct yearly monitoring activities.

A passive winter monitoring session was conducted at the Gauging Station site in Black Canyon in December 2006 to evaluate winter site fidelity and establish the onset of courtship activities by resident adults. Limited winter monitoring will continue in the next two months, in anticipation of the more structured monitoring during the breeding season beginning in March 2007; peregrine falcon monitoring generally occurs during spring and early summer.

Research Assistant Joe Barnes met with Christina Klinger (Wildlife Diversity Bureau, NDOW) on December 6, 2006, to coordinate the 2007 field season objectives and to share data and results from the 2006 field season.

Develop a conceptual model and predictive GIS-based habitat map.

The research assistant on this project continued a literature search and review of peregrine falcon natural history, behavior, breeding success, and habitat use. Nine days were devoted this quarter to research associated with habitat modeling and to coordinate with NPS GIS personnel working on a predictive GIS-based habitat map for peregrine falcons within LAME. This quarter, NPS GIS personnel Stacy Provencal and Mark Sappington developed a preliminary GIS-based habitat model for peregrine falcons within LAME. A coordination meeting is scheduled for the next quarter to evaluate the next steps in this model construction.
**Project 4. Assessment of Six Covered and Three Evaluation Bird Species**

*Conduct annual point count surveys as part of regional bird survey efforts.*

This quarter, PLI personnel have been entering field data into a database from point count surveys conducted last quarter at 18 locations throughout Clark County, including 9 sites within LAME. All data entry for these point counts will be completed by the end of this quarter. A quality assurance review of these data will be conducted next quarter, with the data subsequently sent to the Great Basin Bird Observatory (GBBO) to be incorporated into the statewide database.

*Conduct research to develop habitat assessments and predictive models for cryptic thrasher species.*

Using data from our current study of the thrasher species, and with assistance from NPS GIS specialists, PLI personnel have started developing preliminary habitat models for Le Conte’s and Crissal thrashers. PLI Research Assistant Dawn Fletcher is working on applying a newly released geospatial database that defines specific habitat associations and soil types across Clark County. Several meetings by PLI and NPS personnel with the lead researcher in the database development were held to provide training on the structure and use of the new database. PLI researchers hope to uncover specific habitat characteristics, including soils that can be used to predict thrasher occupancy.

*Provide description of conceptual models for the targeted thrasher species.*

PLI personnel have completed the conceptual models for the targeted thrasher species.

*Complete a randomized sampling design for countywide thrasher surveys.*

Working directly with NPS GIS specialist Joe Hutchenson, and through discussions with a UNLV biostatistician (Dr. Cheryl Vanier) and other UNLV faculty, a stratified random sampling design was created to focus field efforts on thrashers. The design focused sampling within vegetation assemblages in which thrashers were likely to be encountered based on previous knowledge and literature references. Most survey points (about 80%) were further stratified by restricting placement to within a 400 m buffer around selected roads. Major highways were not included in the roads selection due to concerns with safety and accessibility; however, most secondary roads and minor roads that were digitally available were used in the process. Approximately 20% of all survey points were randomly placed across all habitats within Clark County and were not stratified by distance to roads. The purpose of these random points was to validate the conceptual models and help assess any road effect on thrasher presence/absence. Because of limits in the scale and accuracy of the vegetation data layer, some habitat types were poorly represented in the previous sampling scheme. The application of the new soil types/habitat associations database has allowed us to better evaluate the adequacy of the previous sampling design, and subsequent efforts to add survey points in underrepresented vegetation assemblages were conducted this quarter.

*Conduct field efforts using call broadcast surveys for targeted thrashers.*

Call-broadcast surveys have been employed as the survey technique for elusive thrashers. PLI personnel have been performing call-broadcast surveys since February 2005 and under a standardized targeted approach beginning in early March that same year. At each survey point thrashers presence or non-detection are documented. In February 2006, PLI personnel began
performing 5- or 10-minute point count surveys at each thrasher point; this method is compatible with standard point counts being conducted statewide. To date there have been 442 thrasher surveys performed at stratified random locations, with 43 points surveyed countywide this winter (Table 1).

Table 1. Thrashers observed at point surveys conducted during the past quarter by habitat types.

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Number Visits</th>
<th>Le Conte’s Thrasher</th>
<th>Crissal Thrasher</th>
<th>Unidentified Thrasher</th>
<th>No Thrashers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saltbush</td>
<td>12</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Tamarisk</td>
<td>10</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Catclaw</td>
<td>16</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Creosote Bur Sage</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Totals</td>
<td>43</td>
<td>10</td>
<td>15</td>
<td>2</td>
<td>16</td>
</tr>
</tbody>
</table>

*Vegetation assessment protocols will be developed and surveys initiated*

A literature review of vegetation assessment techniques has been initiated this quarter.

**Project 5. Desert Tortoise Monitoring and Management**

No efforts were conducted by PLI staff to evaluate desert tortoise populations during this quarter, as these surveys are generally conducted during spring. NPS Resource Management is still awaiting direction from U.S. Fish and Wildlife Service on monitoring methodology.

*Conduct compliance monitoring.*

This section summarizes biological monitoring and mitigation activities (compliance monitoring) conducted by PLI staff for desert tortoise and desert tortoise habitats associated with various construction and right-of-way activities within LAME. Information presented herein is complied for October and November 2006 only; December 2006 information is not available at the time of this writing but will be included in the next quarterly report.

**Desert Tortoise and Habitat Mitigation Measures Monitored During Construction Projects**

A total of 14 days were spent in October 2006 by a PLI research assistant on the Northshore Road reconstruction project; no tortoises were observed. Two days were spent giving instruction on slope contouring on the Northshore Road project and two days were spent supervising topsoil removal on the same project. In November 2006, 11 days were spent overseeing tortoise monitoring activities on the Northshore Road project and the Nevada Power pole replacement project in Hemingway Valley; no tortoises were observed on either project. One day was spent supervising topsoil removal on the Northshore Road project.

**Desert Tortoise Training Provided to Contractors**

In October 2006, four tortoise education classes were given to 12 contractors associated with the Southern Nevada Water Authority intake pipe project, the Basic Power survey project along
Lakeshore Road, the GES drilling project at Willow Beach, and the Pabco water pump project at Government Wash. In November 2006, one tortoise education class was given to 6 workers on the Nevada Power project.

Project 6. Shorebird Monitoring on Lakes Mead and Mohave

Conduct monthly inventory and monitoring surveys.

Ongoing monthly surveys were conducted on seven intensive monitored sites on Lake Mead and Mohave throughout the past quarter. Thirty surveys were conducted in the past quarter (Table 2). These surveys included 8 conducted on exploratory sites on Lake Mohave and one conducted on Lake Mead in an effort to identify other areas potentially important to aquatic birds. All data collected during these surveys were entered into the LAME Aquatic Bird Count Database during this quarter and shared with the GBBO.

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

<table>
<thead>
<tr>
<th>Site</th>
<th>Mar. 04 – Sep. 06</th>
<th>Oct. 06 – Dec. 06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Mead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Las Vegas Bay</td>
<td>34</td>
<td>4</td>
</tr>
<tr>
<td>Muddy River</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Virgin River</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Grand Wash</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Bonelli Bay</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Misc. sites</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Lake Mohave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona Bay</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Nevada Bay</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Willow Beach</td>
<td>26</td>
<td>3</td>
</tr>
<tr>
<td>Misc. sites</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>223</td>
<td>30</td>
</tr>
</tbody>
</table>

Project 7. Desert Bighorn Sheep Habitat Use Monitoring in Relation to Highway Development.

GPS location data from collars on sheep will be downloaded weekly and converted into a format recognized by ArcGIS.

This quarter, approximately 10 weeks of data consisting of 651 point locations were processed on 14 collared sheep. Although typically 12 weeks of data are received in a quarter, two of the weeks of data sent by Argos were in a format unreadable by the data converter. Data received were uploaded into 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 or to filter out bad fixes. Data were checked to identify sheep deaths or collar malfunctions. This quarter, as in past quarters, PLI staff provided data to the U.S. Geological Survey (Chris Lowry) for analysis.
Field retrieval of collars will be attempted on all dead animals

There were no sheep mortalities this quarter.

Other Efforts

A PLI research assistant conducted three days of neotropical bird banding with the U.S. Bureau of Reclamation (USBR) on the Lower Colorado River (LCR) in the first week of November 2006. This work was part of the LCR Multiple Species Conservation Plan and was especially helpful as a training experience for any future bird banding that may be conducted in LAME.

During the month of October 2006, a PLI research assistant assisted on five days of fish censusing conducted on Lake Mead. This work was part of an interagency cooperative effort with NPS, NDOW, and USBR.

At the request of NPS Wildlife and Interpretation personnel, a PLI research assistant evaluated a canyon in LAME for raptor and owl presence. Afterwards, consultation was provided as to the suitability and advisability of this site for continued public access and future interpretive hikes by NPS Interpretation Division.

Local coordination for the 2007 meeting of the California/Nevada Amphibian Population Task Force (formally with the Declining Amphibian Population Task Force) was provided by Principal Investigator Dr. Jef Jaeger. This meeting will be held at UNLV on January 18-20, 2007, with approximately 80-100 regional biologists and resource managers expected to attend. Field trips to relict leopard frog sites within Black Canyon have been scheduled as part of this meeting and are being jointly coordinated by NPS, PLI, and NDOW personnel.

Agency Meetings Attended

The following information comprises formal local meetings attended by PLI personnel during the quarter. These meeting do not include the multiple and varied informal meetings conducted during this quarter with NPS personnel and other collaborators.

NPS Resource Management Staff Meeting, October 2, 2006. Attended by Joe Barnes, Dawn Fletcher, Dana Drake, and Dr. Jef Jaeger.


NPS Resource Management Staff Meeting, November 6, 2006. Attended by Joe Barnes, Dawn Fletcher, Dana Drake, and Dr. Jaeger.

Partners in Flight Meeting, November 15, 2006. Attended by Joe Barnes and Dawn Fletcher.

Relict Leopard Frog Conservation Team, November 27, 2006. Attended by Dana Drake and Dr. Jaeger.

Resource Management Staff Meeting, December 11, 2006. Attended by Joe Barnes, Dawn Fletcher, Dana Drake, and Dr. Jef Jaeger.
Training/Professional Development

Joe Barnes completed 2 hours of Microsoft Excel and 8 hours of Microsoft Access training during October 2006. Mr. Barnes also successfully passed and received certification of completions for the online classes “Orientation to the Privacy Act” on October 4, 2006, and “Records Management Awareness” on October 8, 2006. These courses are required by all Department of Interior employees, contractors, and partners for the continued use of federal computers.

Principal Investigator Dr. Jef Jaeger and Research Assistant Dana Drake completed an 8-hour workshop on Microsoft Access Database Design on December 14-15, 2006.

Presentations and Public Outreach


Submitted by:

Margaret N. Rees, Project Administrator  
December 31, 2006