

**CLARK COUNTY, NEVADA  
DESERT CONSERVATION PROGRAM**



**2003-2005  
BIENNIUM REPORT**

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## **EXECUTIVE SUMMARY**

As required in Section 2.12.2.7 of the Clark County Multiple Species Habitat Conservation Plan (MSHCP), this document represents a composite final biennium progress report for the period 2003-2005. The biennium began on July 1, 2003 and ended on June 30, 2005. It therefore addresses work completed by agencies and contractors, accounts for land disturbance activities, revenues generated, expenses incurred, and desert tortoise activities conducted during the subject time period.

During the 2003-2005 biennium, three basic categories of work were funded, including MSHCP development and implementation projects, research projects and desert tortoise protection projects. Federal, state, and local agencies, along with nonprofit organizations and private contractors received Section 10, Section 7, and Southern Nevada Public Lands Management Act (SNPLMA) funding for conservation projects aimed at addressing priorities outlined in the MSHCP.

### **Section 7 Projects and Expenditures**

For the subject biennium, a total of five agencies and contractors, including Clark County, were awarded Section 7 funds for projects totaling \$2,911,502 (includes \$1 million for a Clark County Fencing Program). Under the direction of the agencies and contractors enlisted, a total of eight projects were funded, all eight were initiated, and all were either completed or expect to be completed by the end of their respective contract term.

### **Section 10 Projects and Expenditures**

During the 2003-2005 biennium, a total of 13 agencies and contractors, including Clark County, were awarded Section 10 funds for projects. Under the direction of the agencies and contractors enlisted, a total of 22 projects were funded, all have been initiated, 10 have been completed, and the remaining 12 are in progress and expect to be completed by the end of their respective contract terms.

Clark County's Adjusted Required Expenditures for the 2003-2005 biennium was \$4,468,203. After subtracting two non-credit expenditures, Clark County receives credit for spending \$5,301,630, in Section 10 funds for administering and implementing the Desert Conservation Program.

### **SNPLMA Projects and Expenditures**

A total of 12 agencies, including Clark County, were awarded SNPLMA funds for projects totaling \$12,808,463. Under the direction of the agencies and contractors enlisted, a total of 45 projects were funded. In addition, six projects or programs were funded through Clark County. Of the total 45 projects, two were canceled, three have been completed, one was not initiated and the remaining 39 are in progress and expect to be completed by the end of their respective contract terms. It is important to note SNPLMA funding does not function under the biennium time frame.

### **Land Disturbance and Revenues Generated**

In cooperation with the cities of Henderson, North Las Vegas, Las Vegas, Boulder City, Mesquite, and the Nevada Department of Transportation, Clark County tracks land disturbance through permitting processes within each entity's jurisdiction. In summary, 20,098.84 acres were disturbed from July 1, 2003 through June 30, 2005.

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## **INTRODUCTION**

As required in Section 2.12.2.7 of the MSHCP, this document represents a composite final biennium progress report for the period 2003-2005. The biennium began on July 1, 2003 and ended on June 30, 2005. It therefore addresses work completed by agencies and contractors, accounts for land disturbance activities, revenues generated, expenses incurred, and desert tortoise activities conducted during the subject time period.

The biennium report documents accomplishments on projects recommended by the Implementation and Monitoring Committee (IMC) (see Appendix I) and funded by the Clark County Desert Conservation Program. The report also includes a Land Disturbance and Financial Summary and a Tortoise Report (see Appendix III). Each funding category has a dedicated section beginning with a summary introducing the funding category and outlining the projects. Following the summary is a brief synopsis of each project including the name of the agency or contractor, project description, project status, partners, contact, funding awarded and spent, completion date or status, and products produced.

### **Project Reporting Process**

Agencies and contractors receiving funding for the 2003-2005 biennium were required to submit quarterly reports and one final project report. These reports are collected on the MSHCP Implementation Database at <http://www.brrc.unr.edu/mshcp/index.htm> . Clark County is also required to keep monthly Disturbance and Fee Reports per Section 2.12.2.2 of the MSHCP.

The final draft of this biennium report is presented to the Clark County Board of Commissioners and formally submitted to the U.S. Fish and Wildlife Service.

### **Uses for this Report**

This report will be used to comply with requirements of the MSHCP as indicated in Section 2.12.1 Progress Report Implementation Plan and Budget and to reaffirm Clark County's commitment as a steward of the plan and the Desert Conservation Program. In addition, the report will be used to clearly benchmark accomplishments, recommendations, and fiscal activities. Finally, it will aid in planning future program activities and budgets during the maturation of the MSHCP and it will act as another standard by which the County measures its progress.

To obtain further information about the Clark County Desert Conservation Program, please write to Clark County Department of Air Quality and Environmental Management, 500 S. Grand Central Parkway, Las Vegas, NV 89155, call at (702) 455-5942, or visit the website at [www.accessclarkcounty.com](http://www.accessclarkcounty.com).

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## **SECTION 7 PROJECTS**

The following section contains key information for each Section 7 project conducted during the 2003-2005 biennium. For the subject biennium a total of five agencies and contractors, including Clark County, were awarded Section 7 funds for projects totaling \$2,911,502. Under the direction of the agencies and contractors enlisted, a total of eight projects were funded, all eight were initiated, and all were either completed or expect to be completed by the end of their respective contract term.

The following tables show a brief summary of the agencies and contractors awarded funds, the project titles, the amount of funding awarded, and the status. The majority of the following project summaries and status reports are self-reported by the lead agency.

## Section 7 Projects Per Contractor

### Bureau of Land Management

Project	Section 7 Funding Awarded	Project Status
Upland Restoration in Critical Desert Tortoise Habitat	\$353,300	Completed

### Clark County

Project	Section 7 Funding Awarded	Project Status
Clark County Fencing Program (with Partners in Conservation and Others)	\$1,000,000	In Progress

### National Park Service

Project	Section 7 Funding Awarded	Project Status
Burro Removals at Lake Mead National Recreation Area	\$34,500	In Progress

### Southern Nevada Environmental Inc.

Project	Section 7 Funding Awarded	Project Status
Desert Tortoise Conservation Center	\$80,202	In Progress/Extended

### University of Nevada Reno - Biological Resources Research Center

Project	Section 7 Funding Awarded	Project Status
Increasing Effectiveness and Economy in Density Monitoring of Desert Tortoise	\$312,000	In Progress
Desert Tortoise Epidemiology	\$657,500	In Progress
Development of Range-wide Desert Tortoise Monitoring Training Program	\$161,000	In Progress
Techniques for Monitoring Desert Tortoise Juvenile Recruitment	\$313,000	In Progress

For additional Section 7 expenditures, see page 144

## LEAD AGENCY

Bureau of Land Management

### Featured Project

Upland Restoration in Critical Desert Tortoise Habitat

### Project Description

The project supported three contractors to conduct restoration activities within the four desert tortoise Areas of Critical Environmental Concern (ACEC). The need for restoration action is to partially off-set the pervasive loss of tortoise habitat from county-wide urbanization and the proliferation in recreational use. Restoration techniques employed in this funded project included: removal of trash and large debris, expunging illegal roads, seeding and/or planting native perennials, and preparing sites for seed entrapment and seedling recruitment.



Unauthorized Off-Highway Vehicle (OHV) trail

### Project Status

The Bureau of Land Management (BLM) completed restoration on 90 disturbed sites in critical tortoise habitat and monitored restoration sites to determine effectiveness of restoration treatments. Approximately 75 percent of the 2003-2005 restoration sites have been effectively reclaimed and are in the process of recovery. More than 28.5 acres of desert tortoise habitat received restoration treatments. The cost of restored tortoise habitat is \$17,665 per acre. Given restoration estimates, the project was on target for cost effectiveness. All re-disturbed restoration sites required additional restoration work in order to recover and should be a high priority before there is further degradation. All reopened restoration sites should be reprioritized with other documented disturbances to determine their restoration status. Sizeable efforts should be made to reduce the cost per acre of future restoration projects.



OHV trail after restoration efforts

### Partners

Southern Nevada Restoration Team, BLM, National Park Service (NPS), U. S. Fish and Wildlife Service, U.S. Fish and Wildlife Service-Refuge (USFWSR) and Partners in Conservation (PIC)

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator for the Multiple Species Habitat Conservation Plan for the BLM field office, 4701 N. Torrey Pines Dr., Las Vegas, NV, 89130, (702) 515-5156

### Funding Awarded

\$353,300.00

### Funding Spent / Reimbursed

\$353,300.00

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## **Completion Date or Status**

Completed

## **Products Produced from Project**

Quarterly reports

Effectiveness monitoring strategy

List of restorations sites for each year

Geographic Information System (GIS) maps of Monitoring and Restoration

Monitoring Reports

GIS coverage

Final Report



## Lead Agency

Clark County with Consultants

## Featured Project

Clark County Fencing Program

## Project Description

Construction, installation, inventory and maintenance of barriers to reduce tortoise mortality along roadways as defined in Section 2.8.3.6 of the Multiple Species Habitat Conservation Plan (MSHCP) and Condition N of the Clark County incidental take permit.

## Project Status

Approximately 250 miles of tortoise barrier fencing along roadways in Clark County have been installed since 1994. Cooperation with the U. S. Fish and Wildlife Service (USFWS), the Nevada Department of Transportation (NDOT), the Bureau of Land Management (BLM), Partners in Conservation (PIC), and the Nevada Division of Forestry (NDF) have made possible the extensive fencing to protect tortoises and other wildlife.

## Partners

United States Fish and Wildlife Service, Nevada Department of Transportation, Nevada Division of Forestry, Bureau of Land Management, Partners in Conservation, HDR Engineering.

## Funding Awarded

\$1,000,000.00

## Funding Spent / Reimbursed

\$514,218.90.00

## Completion Date or Status

Ongoing

## Products Produced from Project

- Completed fencing
- Fencing priority tracking list
- Specifications
- GIS Maps of Fencing Locations



Standard 4-strand barbed wire fencing. Tortoise proof retro-fencing material is attached to this fencing.



Tortoise-proof, retro-fitted fencing.

## LEAD AGENCY

National Park Service

### Featured Project

Burro Removal Lake Mead National Recreation Area

### Project Description

The Desert Tortoise Recovery (DTR) plan recommends wild horses and burros be removed from lands being managed for recovery of desert tortoise populations. Burros, in particular, survive very well in the Mojave Desert ecosystem, but they are not native, and consequently are not adequately controlled by native predators. Without human intervention, populations increase to the point where habitat for native species, like the tortoise, can become damaged.

The Burro Management Plan (BMP) at Lake Mead National Recreation Area (NRA), finalized in 1995, identified approximately 517,021 acres in seven different areas within the NRA occupied by burros. It outlined a plan to reduce burro numbers throughout the NRA, and plans to reduce the number of areas being used by burros from seven to three. Acreage being used by burros is planned to be reduced to 137,822 acres and numbers of burros were to be reduced from the estimated 1,600, at the time the plan was being written, to approximately 300.



Burros captured from Lake Mead NRA have been given veterinary treatment and placed in the Bureau of Land Management (BLM) adoption program. Live removal and adoption is not the most cost-effective means for burro control, but it is the most humane and politically acceptable alternative available. On neighboring BLM lands, these animals are protected under the Wild Horse and Burro Act, so management actions must be coordinated with BLM with sensitivity toward public opinion and perceptions of the program. Costs per animal removed have also escalated in recent years because as numbers of animals are reduced, search times during helicopter round-ups and captures have increased proportionately. This was a predictable and expected outcome of reducing population densities, and should not be seen as a program failure. On the contrary, in the absence of good survey data, which could provide reliable population estimates within known confidence limits, rising search times and capture costs are one of the best indicators we have the program is achieving desired goals (i.e. reduced numbers of burros). Improving range conditions are the next best indicator, but these can be deceiving and difficult to detect during drought conditions and changes are slow to occur even under good conditions in the Mojave Desert.

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## Project Status

The plan was finalized in 1995, since then 1,637 burros have been captured and removed from Lake Mead NRA. This amounts to an average of 164 burros per year over the 10 year span. Prior to enactment of the plan, 1,546 burros were removed from the park between 1979 and 1995. This translates to a rate of approximately 97 burros per year, but this rate of removal was inadequate to keep up with recruitment rates. Consequently, prior to implementation of the plan, range conditions in many areas of the park suffered from overgrazing by burros. Range conditions in the Mojave Desert are slow to recover after such impacts have been inflicted, but conditions are improving. During the reporting period (2003 and 2004) 119 burros were removed from the park.



## Partners

Bureau of Land Management

## Project Contact

Ross Haley, Supervisory Resource Management Specialist, National Park Service, Lake Mead NRA, Boulder City NV, (702) 293-8950

## Funding Awarded

\$34,500.00

## Funding Spent / Reimbursed

\$20,937.50

## Completion Date or Status

In progress

## Products Produced from Project

Quarterly Reports

Final Report

During the 2003 to 2004 period, 119 burros were captured, treated and transported out of the Lake Mead NRA for adoption.

## LEAD AGENCY

Southern Nevada Environmental, Inc.

### Featured Project

Desert Tortoise Conservation Center

### Project Description

Southern Nevada Environmental, Inc. (SNEI) has managed and maintained the Desert Tortoise Conservation Center (DTCC) since July 1997. Management responsibilities have included, maintenance of holding pens, maintenance of the DTCC administrative building, maintenance of the landscape, maintenance of research pens, maintenance of the irrigation system, well system care and feeding of Bureau of Land Management (BLM) tortoises as well as tortoises not currently in a research program. Additional responsibilities include coordinating various research projects and assisting research activities.



### Project Status

Currently, the DTCC has taken the additional responsibility of approximately 425 Smithsonian Institute (SI) animals. The SI desert tortoise research program is seeking additional funding to continue research at the DTCC. Responsibilities include care and maintenance for approximately 260 BLM animals. In addition, SNEI is currently caring for 40 adults and 125 juvenile tortoises for Dr. Dave Rostal, Associate Professor, Georgia Southern University, Statesboro, Georgia, in collaboration with a project he is working on through the university. SNEI coordinates various research activities occurring at the DTCC. For example, a cannie tracking project was initiated during spring 2004. It involved coordinating entities such as the University of Redlands, Redlands, California, as well as the Desert Research Institute, Las Vegas.



### Partners

None

### Project Contact

Chuck LaBar; President of SNEI, (702) 248-5370 and Michelle McDermott; Facility Manager, (702) 525-5957

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**Funding Awarded**

\$80,202.00

**Funding Spent / Reimbursed**

\$80,000.00

**Completion Date or Status**

In progress extended through December 31, 2005.

**Products Produced from Project**

Quarterly reports were provided to the Implementation and Monitoring Committee

Operational Reports were submitted monthly to Clark County as well as a budget comparison report.

Final Report

## LEAD AGENCY

Biological Resource Research Center, University of Nevada Reno

### Featured Project

Increasing Effectiveness and Economy in Density Monitoring of the Desert Tortoise

### Project Description

The Clark County Short-Term Desert Tortoise Habitat Conservation Plan (CCSTDTHCP), the Desert Conservation Plan (DCP) and the Multiple Species Habitat Conservation Plan (MSHCP) all identify monitoring desert tortoise populations as an essential element of desert tortoise conservation. The Desert Tortoise Recovery Plan (DTRP) recommended monitoring desert tortoise populations as an essential part of any sound conservation or management plan. This project has collaborated with the U.S. Fish and Wildlife Service (USFWS), the U. S. Geological Survey (USGS) and colleagues at St. Andrews University, Fife, Scotland in conducting tortoise monitoring in Southern Nevada, improving current monitoring techniques and in evaluating and developing new and better monitoring options. Recent implementation of range-wide monitoring has illustrated the need for increasing efficacy and economy in monitoring techniques. The USFWS, the U.S. Fish and Wildlife Service Desert Tortoise Monitoring and Implementation Committee (DTMIC), the Management Oversight Group (MOG), and the Management Oversight Group Technical Advisory Committee (MOG-TAC) have requested further studies to increase the efficacy and efficiency of current density monitoring techniques.



Training for Tortoise Monitoring

The evaluation of current monitoring techniques has been undertaken and a new approach to monitoring tortoise population density has been developed. This new technique was presented to the Desert Tortoise MOG-TAC in fall 2001. It was proposed that a new approach to monitoring procedures data evaluation may lead to improvements in the accuracy of density estimates and a significant decrease in cost. Simulations of this technique have shown great promise. The MOG-TAC approved field evaluations of the new approach and testing to begin the new procedure was proposed.

The objective of the proposal was to make range-wide desert tortoise more precise and efficient. Increased efficiency and precision benefit conservation of tortoises, allowing for adaptation of management actions.

The research benefits the Clark County MSHCP, federal land management agencies, and the USFWS DTRP.

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## Project Status

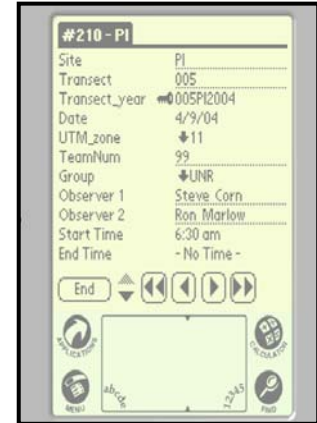
In 2004, the USFWS formed the DTMIC to replace the previous MOG-TAC. The DTMIC was charged with providing technical advice to the USFWS for range-wide desert tortoise monitoring. The committee is composed of all the senior scientists and partners on the project and representatives from California. This committee established the parameters for range-wide monitoring including the distribution of survey points, protocols, methods for quality assurance and quality control, and analysis of data. In 2004, the project tested the use of Personal Digital Assistants (PDAs) for automating data collection. In 2005, the project tested the efficacy of monitoring habitat and threat parameters. These innovations have significantly increased the value of the desert tortoise density monitoring program.

## Partners

Roy Averil-Murray, United States Fish and Wildlife Service,  
Steve Corn, United States Geological Survey, Phil Medica, United States Geological Survey, Ken Nussear, United States Geological Survey

## Project Contact

Ron Marlow, Associate Research Professor, UNR-BRRC, Reno, NV, (702) 364-1036, (702) 493-0754 and C. Richard Tracy, Associate Research Professor UNR-BRRC, Reno, NV, (775) 784-4565



Automated data collection to PDA

## Funding Awarded

\$ 312,000.00

## Funding Spent / Reimbursed

\$218,400.00

## Completion Date or Status

Ongoing

## Products Produced from Project

Quarterly Report

Final Report

The results of this project will be published in the U. S. Fish and Wildlife Service review of range-wide tortoise monitoring in late 2005.

### LEAD AGENCY

Biological Resource Research Center, University of Nevada Reno

#### Featured Project

Desert Tortoise Epidemiology: relationships among Upper Respiratory Tract Diseases in Tortoises (URTD), Enzyme-Linked Immunosorbent Assay (ELISA) test, Status and Disease Symptoms

#### Project Description

The emergency listing of the desert tortoise (*Gopherus agassizii*) was the result of several factors threatening their population. These reasons included loss of habitat due to development, disruption of habitat by off-highway vehicle's (OHV)'s and the threat of disease. URTD was considered an imminent threat to the survival of the desert tortoise. More than 10 years later there still is little understanding of how URTD effects populations of desert tortoises (Lederle et al, 1997). There are reports in the professional literature of massive die offs, as well as the presence of *Mycoplasma agassizii* in desert tortoise populations (Jacobson et al, 1991).

Unfortunately, a causal relationship between the two has not been demonstrated. Indeed, natural populations may fluctuate as a result of many factors other than disease, and, furthermore, conclusions where all populations have undergone declines have been called into question (Bury and Corn, 1995). The plan is to address the gap in knowledge by examining the effects of URTD in small-scale experimental populations.



Tortoise field blood sampling collection

One of the most frustrating aspects of URTD is the difficulty in identifying individuals with the disease, but not the symptoms. The current management plan is to euthanize all animals showing an antibody response, or symptoms of the disease. It has been shown that exposing desert tortoises to *Mycoplasma agassizii* will elicit an immune response detectable with an ELISA test (Brown et al, 1994). The long-term effect on an individual has not been documented. Although there is a significant relationship between ELISA positive status and having the disease, the exact effect of positive animals on a population has never been examined (Jacobson et al, 1995, Lederle et al, 1993). Previous research has failed to culture *M. agassizii* from ELISA animals on a consistent basis. In Jacobson's 1995 study, 50 percent of the individuals did not have an ELISA status agreeing with the culture status (Jacobson et al, 1995). In a separate study, *M. agassizii* was cultured from 68 percent of individuals given a nasal flush containing the *mycoplasma* (Schumacher et al, 1994). The reasons for these failures are multiple. First is the difficulty in culturing *M. agassizii*. Therefore, the ability to detect the presence of the disease by culture is poor. The relationship between symptomatic animals and the presence of the disease has been questioned due to fears of latent or the subclinical phase of the illness (Jacobson, 1995). An immune response can help in determining if an individual has been exposed to the disease, but it does not differentiate between currently infected individuals, animals exposed to a non-pathogenic *mycoplasma*, or individuals which have recovered from the disease (Grenfell B.T. pg 78, Schumacher et al, 1997). The removal of recovered individuals from the breeding population could be the least conservative management action. If there is a possibility for individuals to recover from the disease, these individuals might have an advantage of resistance or a stronger immune system. Potentially the individuals could ensure the long-term survival of the desert tortoise.



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## Project Status

Several aspects of the study are continuing. First is the full factorial design experiment to assess the transmissibility of a positive ELISA. This is a critical experiment to help adapt the management of translocated tortoises insofar as tortoises today are euthanized if they test ELISA positive, even if this is not the best avenue to take. The field portion of the project is now complete. Next is the need to examine blood for immune response. Currently, a new ELISA test is being developed, which will cost much less than current tests at the University of Florida. The new ELISA test will be validated in September 2005. The blood samples from the pen study will be analyzed during the winter of 2005. The next ELISAs will be developed to assess how the disease progresses in tortoises, which is also necessary when adapting tortoise management. The blood taken from all monitored tortoises will be analyzed after the new ELISA is validated.

## Partners

Ken Hunter, University of Nevada Reno

## Project Contact

Ron Marlow, Associate Research Professor, UNR-BRRC, Reno, NV, (702) 364-1036, (702) 493-0754 and C. Richard Tracy, Associate Research Professor UNR-BRRC, Reno, NV, (775) 784-4565

## Funding Awarded

\$657,500.00

## Funding Spent

\$268,493.00

## Completion Date or Status

Ongoing

## Products Produced from Project

It is hoped to have a new ELISA test validated by September 2005. This will be a great product for Clark County, as it will save the county about \$40,000 per year for blood testing and be free to the county as long as the project is ongoing. Thereafter, Clark County will pay only about a tenth of the cost it did to the University of Florida as a maximum. Several peer-reviewed publications are planned.

Quarterly Report

Data

Manuscript

Final Report

# LEAD AGENCY

Biological Resource Research Center, University of Nevada Reno

## Featured Project

Development of a Range-wide Desert Tortoise Monitoring Training Program

## Project Description

The Clark County Multiple Species Habitat Conservation Plan (MSHCP) identifies monitoring desert tortoise populations as an essential element of desert tortoise conservation. The Desert Tortoise Recovery Plan (DTRP) has recommended monitoring desert tortoise populations as an essential part of any sound conservation or management plan. This project has collaborated with the U.S. Fish and Wildlife Service (USFWS), the U.S. Geological Survey (USGS) and colleagues at St. Andrews University, Fife, Scotland, in conducting tortoise monitoring in Southern Nevada, improving monitoring techniques and in evaluating and developing new and better monitoring techniques.



To date, the program has developed efficient and comprehensive training procedures. The DTRP has trained more than 150 interns and more than 100 consultant contractors working on USFWS approved contracts to follow tortoise monitoring procedures. At the request of the USFWS, the tortoise monitoring protocols were demonstrated for agency biologists, managers, other researchers and consultants. This training has included one week long seminars and field exercises in Las Vegas and at Jean, Nevada on the DTRP field training facility. DTRP will continue to provide reasonable training opportunities, workshops, seminars and exercises for tortoise monitoring field workers throughout the desert tortoise range.

DTRP training procedures include classroom and field exercises. The field exercises are conducted under realistic conditions using tortoise models. In addition to live tortoises, part of other research projects, are used to refine the field worker's search image. The use of these specific training procedures allows for evaluation of the effectiveness of each observer team with regard to compliance with USFWS protocols.

This project was developed at the request of the USFWS to assist in training for range-wide desert tortoise monitoring. The training described in the proposal conforms to the USFWS desert tortoise monitoring protocols. The training will benefit the Clark County MSHCP and the USFWS Desert Tortoise Recovery Program.

## Project Status

Senior researchers implemented advice through the Desert Tortoise Monitoring and Implementation Committee (DTMIC) with respect to training for coordinated monitoring across the range of the desert tortoise, as well as for discussing and implementing modifications to monitoring protocols. The significant changes made to the curriculum were:

- Eliminating multiple passes during individual transects
- Extending the length of the transects

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Enhancing the assessment of health status by collecting blood samples  
Spatially randomizing transect locations  
Experimental monitoring of threats  
Collection of blood samples

The training workshops in this biennia have been held at the USGS offices in Henderson, the Desert Tortoise Conservation Center south of Arden, and at the training lines near Jean, Nevada. Approximately 60 field workers, supervisors and technicians are trained each season in desert tortoise monitoring techniques according to the direction of the U.S. Fish and Wildlife Service Desert Tortoise Coordinator. Trainees are given introductory lectures by Steve Corn, Phil Medica, Ryan Cody, and Ron Marlow. Trainees are trained in tortoise blood-collecting procedures by Bridgette Haggerty and Fran Sandmeier. The results of desert tortoise monitoring (range-wide) are used to evaluate the effectiveness of this training effort and changes incorporated for next year's workshop.

## Partners

Roy Averil-Murray, United States Fish and Wildlife Service, Steve Corn, United States Geological Survey, Phil Medica, United States Geological Survey, Bridgette Hagerty, UNR, Fran Sandmeier, UNR

## Project Contact

Ron Marlow, Associate Research Professor, UNR-BRRC, Reno, NV, (702) 364-1036, (702) 493-0754 and C. Richard Tracy, Associate Research Professor UNR-BRRC, Reno, NV, (775) 784-4565

## Funding Awarded

\$161,000.00

## Funding Spent / Reimbursed

\$113,700.00

## Completion Date or Status

Ongoing

## Products Produced from Project

Techniques described in training were incorporated into the: "Handbook For Monitoring Desert Tortoise Populations Using The Line Distance Sampling Technique 2005"

Quarterly Report

Final Report

## LEAD AGENCY

Biological Resource Research Center, University of Nevada Reno

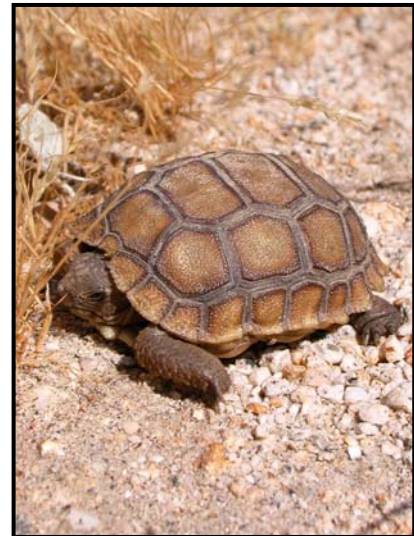
### Featured Project

Techniques for Monitoring Desert Tortoise Juvenile Recruitment

### Project Description

In 2001, the U.S. Geological Survey (USGS) and the University of Nevada Reno (UNR), Biological Resources Research Center (BRRC) studied recruitment of desert tortoises with emphasis on reproduction of female desert tortoises (*Gopherus agassizii*) at three sites in Clark County, Nevada. This is a continuation of research initiated in 1997. The objective of the reproduction phase of the recruitment study was to gain information on the reproductive ecology of the desert tortoise by documenting the number of clutches and the numbers of eggs per clutch female tortoises produce during a reproductive season. Another part of the project required documenting vegetation and rainfall conditions and how these related to tortoise reproduction within sites, among sites, and throughout years.

The next phase of the recruitment study was to investigate the missing juvenile age classes of tortoises. Very little information is available for the survival of eggs in the nest and for young tortoises emerging from the nest, although some investigation has been done on these life stages (notably work done on captive juveniles at the Ft. Irwin Study Site, Ft. Irwin, California, and an unpublished master's thesis by Curtis Bjurlin at Utah State University). Nonetheless, very little is known about the fate of juvenile tortoises from age three, until they become sexually mature, encompassing a span of nearly 12 years. These age classes of tortoises are apparently subject to the highest levels of predation, most subject to environmental stresses and most difficult to study. Developing good management options for desert tortoise recovery requires a better understanding of the biology of tortoise recruitment from the oviposition of eggs into nests by female tortoises through entry into the reproductively active population. To study this critical research, study techniques and strategies for monitoring the process have been developed.



Neonatal Tortoise



Juvenile Tortoise

### Project Status

This project has been put on hold awaiting development of key technologies for studying movements of young tortoises.

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**Partners**

Ken Nussear, U.S. Geological Survey

**Project Contact**

Ron Marlow, Associate Research Professor, UNR-BRRC, Reno, NV, (702) 364-1036, (702) 493-0754 and C. Richard Tracy, Associate Research Professor UNR-BRRC, Reno, NV, (775) 784-4565

**Funding Awarded**

\$313,000.00

**Funding Spent / Reimbursed**

\$0.00

**Completion Date or Status**

Not initiated

**Products Produced from Project**

N/A

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## **SECTION 10 PROJECTS**

The following section contains key information for each Section 10 project conducted during the 2003-2005 biennium. For the subject biennium a total of 13 agencies and contractors, including Clark County, were awarded Section 10 funds for projects totaling \$4,841,380. Under the direction of the agencies and contractors enlisted, a total of 22 projects were funded, all have been initiated, 10 have been completed, and the remaining 12 are in progress and expect to be completed by the end of their respective contract terms.

The Public Information and Education (PIE) subcommittee of the Implementation and Monitoring Committee (IMC) was awarded \$384,000 in Section 10 funds. Through various projects and outreach efforts, PIE expended a total of \$377,652 in the 2003-2005 biennium.

The following table shows a brief summary of the agencies and contractors awarded funds, the project titles, the amount of funding awarded, and the status. The majority of the following project summaries and status reports are self-reported by the lead agency.

## Section 10 Projects Per Contractor

### Bureau of Land Management

Project	Section 10 Funding Awarded	Project Status
Law Enforcement	\$672,000	Completed
Restoration of Fragmented Upland Habitats on Federal Lands	\$235,400	Completed

### Karen Budd-Falen

Project	Section 10 Funding Awarded	Project Status
Representation at Rural Town Boards	\$94,000	Completed

### Clark County

Project	Section 10 Funding Awarded	Project Status
Public Information and Education - Core Program	\$384,000	In Progress
Desert Tortoise Translocation Environmental Assessment (with Forensic Analytical)	\$88,590	Completed
Meadow Valley Wash Ecological Assessment (with Lincoln County)	\$100,000	Completed
Administration at the Desert Conservation Program	\$546,966	In Progress

### Moapa Band of Paiutes

Project	Section 10 Funding Awarded	Project Status
Control of Russian Knapweed	\$40,000	In Progress

### Muddy River Regional Environmental Impact Alleviation Committee

Project	Section 10 Funding Awarded	Project Status
Muddy River Riparian Protection and Restoration	\$227,240	Completed

### Nevada Division of Forestry

Project	Section 10 Funding Awarded	Project Status
Native Flora Propagation and Protection	\$129,464	Completed
Forester II Position	\$45,000	Completed

### National Park Service

Project	Section 10 Funding Awarded	Project Status
Control of Sahara Mustard in Rare Plant Habitat	\$59,000	Completed
Spring Fed Wetlands and Riparian Restoration	\$325,600	In Progress
Law Enforcement at Lake Mead National Recreation Area	\$271,990	In Progress
Plant Material Production for Interagency Restoration Program	\$51,750	In Progress

### Oliver, Robert

Project	Section 10 Funding Awarded	Project Status
Law Enforcement for the Boulder City Conservation Easement	\$145,000	In Progress/Extended

### Selzer, Paul

Project	Section 10 Funding Awarded	Project Status
Consulting Services	\$250,000	In Progress

**Siguenza, Ruth**

Project	Section 10 Funding Awarded	Project Status
Consulting Services	\$60,645	In Progress/Extended

**Southern Nevada Environmental Inc. (SNEI)**

Project	Section 10 Funding Awarded	Project Status
Desert Tortoise Transfer and Holding Facility & Desert Tortoise Translocation Program	\$475,265	In Progress/Extended

**Southern Nevada Water Authority**

Project	Section 10 Funding Awarded	Project Status
Habitat Enhancement in the LV Wash	\$73,500	In Progress

**U.S. Forest Service**

Project	Section 10 Funding Awarded	Project Status
Resource Protection and Law Enforcement	\$517,010	Completed
Seed Collection of Rare and Native Species	\$48,960	In Progress/Extended

For additional Section 10 expenditures, see page 146



## LEAD AGENCY

Bureau of Land Management

### Featured Project

Law Enforcement

### Project Description

The project supported four full-time Bureau of Land Management (BLM) law enforcement rangers to patrol four desert tortoise Areas of Critical Environmental Concern (ACEC) and other high value habitats consistent with Multiple Species Habitat Conservation Plan (MSHCP) goals.

### Project Status

For the majority of the biennium, four full-time law enforcement rangers were maintained on staff. For nine months, one position remained open. During that time, approximately 25 percent of the area was covered by existing non-MSHCP ranger staff. A summary of all law enforcement (LE) reports indicated: more than 9,603 public contacts were made between the public and rangers; 443 citations were issued; 225 abandoned or stolen cars were recovered; scores of dumpsites were identified and removed; and numerous signs were installed as needed. The number of citations, considered low by the BLM, was attributed to a lack of designated roads and trails in a majority of the areas.



Vandalism to a kiosk in the Rainbow Gardens ACEC



Recovered stolen vehicle

### Partners

National Park Service, U.S. Forest Service, and U.S. Fish and Wildlife Desert Refuge Complex

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the MSHCP for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV, 89130, (702) 515-5156

### Funding Awarded

\$672,000.00

### Funding Spent / Reimbursed

\$614,110.00

### Completion Date or Status

Completed

### Products Produced from Project

Quarterly reports  
Draft and final patrol plan  
Monitoring sites map  
Effectiveness monitoring strategy  
Final report

## LEAD AGENCY

Bureau of Land Management

### Featured Project

Restoration of Fragmented Upland Habitats on Federal Lands

### Project Description

The Multiple Species Habitat Conservation Plan (MSHCP)/Bureau of Land Management (BLM) restoration crew continued restoration and monitoring activities in fragmented upland habitat outside desert tortoise Areas of Critical Environmental Concern (ACECs). In particular, the funded project focused on mesquite/acacia communities as well as gypsum badlands supporting Las Vegas Bearpoppy and sticky ringstem.



Incursions in Las Vegas Bearpoppy habitat

### Project Status

Thirty restoration sites and more than 300 mesquite plantings, in effect, improved more than 48 acres of mesquite/acacia woodlands. More than 75-80 percent of these restoration sites have, to date, been successful in decreasing the reoccurrence of disturbances caused by recreational activities. Sixty restoration sites, in effect, improved over 30 acres of gypsum badlands in the Rainbow Gardens ACEC. Only 8 percent of the restoration sites in Rainbow Gardens ACEC have been successful in decreasing the reoccurrence of off-road vehicular (OHV) disturbance. The poor social success is attributed to the fact Rainbow Gardens is an urban-interface environment with multiple complexities. Adaptive management recommendations for the area include using Southern Nevada Public Lands Management Act (SNPLMA) Conservation Initiative Funding (Rounds 4 and 5) to implement fewer, larger-scale, restoration projects that cannot be easily destroyed by recreational OHV use; using SNPLMA Capital Improvement Funding (Round 6) to install fencing around the ACEC, demarcating acceptable OHV routes; and securing funding to increase law enforcement patrols in the area — particularly at restoration sites.



The same location following restoration efforts

### Partners

Southern Nevada Restoration Team, BLM, National Park Service, U.S. Fish and Wildlife Service

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 Torrey Pines Dr., Las Vegas, NV 89130, (702) 515-5156

### Funding Awarded

\$235,400.00

### Funding Spent / Reimbursed

\$235,400.00

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## **Completion Date or Status**

Completed

## **Documents/Products**

Quarterly reports

Effectiveness monitoring strategy

List of restoration sites (2003/2004 and 2004/2005)

Geographic Information System (GIS) Maps

GIS Coverage, Final report

## **LEAD AGENCY**

Karen Budd-Falen, Budd-Falen Law Offices, LLC

### **Featured Project**

Representation of Rural Town Boards within Clark County

### **Project Description**

Since 1998, Karen Budd-Falen from the Law Offices of Budd-Falen, LLC, has represented the rural town boards of Clark County on the Implementation and Monitoring Committee (IMC) as it carried through the Clark County Multiple Species Habitat Conservation Plan (MSHCP). Originally, representation was requested because Clark County recognized the rural citizens living adjacent to federal lands where the majority of the covered species conservation efforts would take place, would be particularly impacted by any restrictions in federal land use. Karen Budd-Falen's representation included attending Clark County IMC and working group meetings, as necessary, to voice opinions supporting the continued use of federal lands by the county's rural citizens; reviewing documents impacting these citizens and preparing written and oral comments on those documents before the IMC. In addition, Budd-Falen advises rural town advisory boards of actions taken by the IMC and attends rural town board meetings throughout the county as necessary and when requested.

### **Project Status**

Project completed

### **Partners**

None

### **Project Contact**

Karen Budd-Falen, Budd-Falen Law Offices, LLC, 300 East 18<sup>th</sup> Street, P.O. Box 346, Cheyenne, WY 82003-0346, (307) 632-5105

### **Funding Awarded**

\$94,000.00

### **Funding Spent / Reimbursed**

\$48,363.70

### **Completion Date or Status**

Project completed

### **Products Produced from Project**

N/A

## LEAD AGENCY

Clark County

### Featured Project

Clark County Public Information and Education  
– Core Program

### Project Description

The Public Information and Education program (CC-PIE) is a core project for the Clark County Desert Conservation Program (CCDCP). The program includes: a number to report desert violations, printing of outreach materials, providing a presence at community outreach events, purchase of promotional give-away items, and administration of the Mojave Max Emergence Contest.

### Project Status

The core programs are on-going. All projects for this biennium were administered and completed except the mass media campaign. This budget was placed in contingency pending the recommendations of a professional program assessment.

### Partners

Public Information and Education Subcommittee.

### Project Contact

Christina Gibson, Management Analyst II,  
Clark County, (702) 455-2860

### Funding Awarded

\$384,000.00

### Completion Date or Status

Ongoing

### Products Produced from Project

[www.mojavemax.com](http://www.mojavemax.com) website upgrades

On-line version of Species Account Manual assorted products including zipper pulls, bottle buddies, and screwdrivers.



Children learn about the Mojave Desert, species living in the desert and the Mojave Max Emergence Contest as part of the Public Information and Education core program.



The Public Information and Education Subcommittee meets monthly to discuss projects.

### Funding Spent / Reimbursed

\$377,651.73

## LEAD AGENCY

Clark County contracted with Forensic Analytical

### Featured Project

Desert Tortoise Translocation Environmental Assessment

### Project Description

A new Environmental Assessment (EA) for translocation of desert tortoises for the Desert Conservation Program (DCP) was needed, as the EA in place was due to expire in 2006 as the U. S. Fish and Wildlife Service and the Bureau of Land Management encouraged Clark County to develop a new EA evaluating all of the options for translocating desert tortoises in its purview.

The desert tortoise working group began documenting the issues and facts involved in the translocation of desert tortoises in the county, including impact, use, habitat suitability, land ownership, and feasibility. Staff completed a Request for Proposal (RFP). Sid Slone of Aztec Environmental, Inc., Las Vegas was selected as the project lead and Forensic Analytical Specialties, Inc., Hayward, CA, was selected to complete the Environmental Assessment.



Desert Photo of potential tortoise habitat

### Project Status

Project complete

### Partners

U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, National Park Service, Forensic Analytical Specialties, Inc., Aztec Environmental, Inc.



### Project Contact

Christina Gibson, Clark County Management Analyst II, Las Vegas, NV, (702) 455-2860  
Sid Sloane, Biologist, Aztec Environmental, Inc., Las Vegas, NV, (702) 655-9905  
Fred Vinciguerra, Forensic Analytical Specialties, Inc, Hayward, CA, (510) 266-8137

### Funding Awarded

\$88,590.00

### Funding Spent / Reimbursed

\$88,590.00

### Completion Date or Status

Completed Record of Decision August 3, 2005

### Products Produced from Project

Final draft environmental assessment for desert tortoise translocation, April 19, 2005  
Findings of no significant impact and decision record, August 3, 2005

## **LEAD AGENCY**

Clark with Lincoln County

### **Featured Project**

Meadow Valley Wash Ecological Assessment

### **Project Description**

An ecological assessment of riparian conditions in the Clark and Lincoln County portions of the Meadow Valley Wash was conducted. The study included the portion from the Township 3 South and Township 4 South dividing line, approximately one mile north of the City of Caliente, to the confluence point of Meadow Valley Wash and the Muddy River. The ecological assessment documents existing ecological conditions, including but not limited to, areas of existing suitable and potential habitat for the Southwestern Willow Flycatcher.

### **Project Status**

This project was completed.

### **Partners**

Biowest Inc. (Consultant)

### **Project Contact**

Doug Carriger, County Manager, Lincoln County, PO Box 685, Pioche, NV 89043,  
(775) 962-5671

### **Funding Awarded**

\$100,000.00

### **Funding Spent / Reimbursed**

\$100,000.00

### **Completion Date or Status**

March 2005

### **Products Produced from Project**

Project Work Plan and Assessment Methodology  
Final Report for the Meadow Valley Wash Oral History (May 2004)  
Meadow Valley Wash Baseline Ecological Assessment  
3-Band Digital Rectified Images Clover Creek  
3-Band Digital Rectified Images Meadow Valley Wash  
Classified Vegetation Images Meadow Valley Wash and Clover Creek  
Woody Riparian Vegetation Comparison 1976 and 2003  
Comprehensive GIS Database

# LEAD AGENCY

Clark County

## Featured Project

Administration of the Clark County Desert Conservation Program

## Project Description

Administration and support for the Desert Conservation Program is funded through both Section 10 and Southern Nevada Public Lands Management Act (SNPLMA) funds. Clark County provided seven (7) full time staff positions to administer and support the Desert Conservation Program. Staff includes a Program Administrator, Senior Management Analyst, – Adaptive Management Coordinator, Management Analyst II, GIS Analyst, Administrative Secretary, and an Office Specialist. The Adaptive Management Coordinator and GIS Analyst were both funded fully out of SNPLMA funds, while other staff were funded from both funding sources.

Major staff responsibilities include chairing and conducting monthly meetings of the Implementation and Monitoring Committee (IMC), chairing and providing administrative report for up to twelve working groups, providing public outreach and fulfilling media requests, managing a biennial project proposal review and recommendation process, preparing and overseeing a programmatic biennial budget for Section 10, Section 7, and SNPLMA expenditures exceeding \$20 million for the biennium, and performing contract management on up to 90 projects. In addition, staff is responsible for managing Section 10 and Section 7 mitigation fees, managing an adaptive management program, and complying with the terms and conditions of the incidental take permit.

## Project Status

During the subject biennium, the following major programmatic items were accomplished: (1) Initiated professional facilitation of IMC meetings, conducted and chaired the monthly IMC meetings; (2) Initiated process improvements to the implementation plan and budget process including a rigorous and task-oriented schedule, a more defined and thorough call for proposals, and a more transparent proposal review and recommendation process; (3) Completed the 2005-2007 implementation plan and budget process on time; (4) Improved the implementation database to allow the public to track proposal edits and view all proposal-related correspondence; (5) Completed a real time expenditure program to track Section 10, Section 7 and SNPLMA funds and individual project expenses; (6) Developed contract management files to track all contract documents and amendments, contract and project correspondence, deliverables, meeting notes, purchase order and invoice information; (7) Initiated a strategic plan for coordinated weed management within Clark County; (8) Conducted a Rare Plant and Monitoring Workshop to improve inventory and monitoring projects; (9) Completed an objective assessment of Public Information and Education projects that rated previous efforts as successful and cost effective; (10) Completed a strategic plan for Public Information and Education Program; (11) Continued to evaluate and improve upon invoice review and approval procedures; (12) Enhanced project reporting requirements to improve accountability; (13) Negotiated the purchase of the Jean Dry Lake BLM grazing allotment; (14) Received certificates on 12 surface waters; (15) Completed and implemented the adaptive management science plan and assembled the adaptive management science Team; (16) Initiated work on a geographic information system (GIS) database and drafted data management plan guidelines; and (17) Completed the most thorough Biennial Adaptive Management Report to date and on time.



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**Partners**

N/A

**Project Contact**

Marci Henson, Desert Conservation Program Administrator, 500 S. Grand Central Parkway,  
Las Vegas, NV 89155, (702) 455-3118

**Funding Awarded**

\$546,966.00 Section 10

\$250,000.00 SNPLMA

**Funding Spent / Reimbursed**

\$0.00

**Completion Date or Status**

Ongoing

**Products Produced from Project**

Quarterly financial reports

IMC meeting minutes

2003-2005 Biennium Report

## **LEAD AGENCY**

Moapa Band of Paiutes

### **Featured Project**

Control of Russian Knapweed

### **Project Description**

Funding was provided for the control of Russian Knapweed on approximately 40 acres of the Moapa River Indian Reservation, Clark County, Nevada.

### **Project Status**

The project was issued \$30,000 in 2004 for activities. The contract expired on December 1, 2004. Clark County has requested the final report.

### **Partners**

None

### **Project Contact**

Calvin Meyers, PO Box 340, Moapa, NV 89025, (709) 865-2077

### **Funding Awarded**

\$40,000.00

### **Funding Spent / Reimbursed**

\$30,000.00

### **Completion Date or Status**

Ongoing

### **Products Produced from Project**

Clark County is awaiting the final report to document completion of this project.

## LEAD AGENCY

Muddy River Regional Environmental Impact Alleviation Committee

### Featured Project

Muddy River Riparian Protection & Restoration:  
Elimination of noxious weeds  
Restoration of native plants

### Project Description

The Muddy River environs between Warm Springs and Lake Mead are potential locations for several critical animal species. There are five known threatened, endangered, or candidate wildlife species indigenous to the area. They include: the Moapa Dace, Virgin River Chub, White River Spring Fish, Moapa Riffle Beetle, and the Moapa Snail. Other threatened and endangered species such as the Yellow Billed Cuckoo and the Phainopepla birds also inhabit the area.



Salt Cedar Infestation

### Project Status

The Muddy River Regional Environmental Impact Alleviation Committee (MRREIAC) has been working on private lands since 1995. It has, to date, eliminated more than 140 acres of Tamarisk, areas of knapweed and has successfully done restoration along the Muddy River.



Restoration begun

The project has enjoyed tremendous success during the past year (2005). The rate of Tamarisk re-growth is favorably on the decline, with some areas showing no re-growth at all.

### Partners

Hidden Valley Dairy	Nevada Power
Charlie and Vera Hester	Lewis Family
U.S. Fish and Wildlife Service	Mary Premo
Nevada Division of Forestry	Perkins Family
Nevada Department of Wildlife	
The Nature Conservancy	
Clark County Multiple Species Habitat Conservation Plan	
U.S. Fish and Wildlife Services Refuge	



Restoration working

### Project Contact

Ann Schreiber, Director of MRREIAC, Moapa, NV,  
(702) 865-2040 – (702) 232-3742  
Nancy Hall, Co Director of MRREIAC, Moapa, NV,  
(702)346-3723 – (702) 277-3337

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**Funding Awarded**

\$227,240.00

**Funding Spent / Reimbursed**

\$181,491.23.00

**Completion Date or Status**

Tasks for the 2003-2005 Biennium Completed. Work is ongoing, coinciding with funding.

**Products Produced from Project**

Quarterly Reports

Maps

## LEAD AGENCY

Nevada Division of Forestry

### Featured Project (s)

Native Flora Propagation and Protection  
Forester II Position

### Project Description

The purpose of these projects was to research the status and threats to state-listed endangered plant species in Clark County, in cooperation with the county's Multiple Species Habitat Conservation Plan (MSHCP). A Forester II staff position was handled, along with necessary training, travel, equipment and supplies. Nevada Division of Forestry (NDF) provides a vehicle and office space. Through this position, NDF provides services pertaining to the protection and propagation of selected species of the native flora in Clark County. The position would examine existing protection and propagation for the selected species of native flora in the county, including state-listed critically endangered species. Private landowner sites would be inventoried for the presence of Las Vegas Bearpoppy and for seed collection. Assistance would be provided to The Nature Conservancy in the development of conservation management strategies (mitigation) plans for nine low-elevation rare plant species.

The position would include the enforcement of Nevada State Laws NRS 527.260 - 527.300 and 527.050 - 527.090 as they relate to the protection of listed critically endangered plants and other native flora in Clark County. In addition, the projects would coordinate, monitor and technically assist federal, state, local agencies and private landowners engaged in voluntary mitigation efforts associated with Clark County listed species.

### Project Status

The project originated in 2002 and ran until 2004, then extended through June, 2005. All but one of the milestones/deliverables has been achieved in the time allotted. The reports on each state-listed plant species will be submitted in the next biennium, in the format described for species status reports. It is anticipated after the completion of the conservation management strategy (CMS) for nine low-elevation rare plant species, enough information will be available to complete these reports. In addition, the CMS for nine plants will identify the requirements to legally establish a conservation area. This process has begun in conjunction with the Bureau of Land Management and City of North Las Vegas to establish the Upper Las Vegas Wash



*Arctomecon californica*, Las Vegas Bearpoppy



Flagging to delineate the Upper Las Vegas Wash  
Conservation Transfer Area

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Conservation Transfer Area. Several of the milestones and deliverables are ongoing duties of NDF, such as regulation of state-protected flora and collaboration with other agencies for the conservation of such flora. Mitigation and propagation trials are expected to continue into the next biennium. In addition, the issuance of master permits for the other state-listed plants in Clark County remains on the table for further discussion.

## **Partners**

Clark County, The Nature Conservancy, Bureau of Land Management, U.S. Fish and Wildlife Service, Nellis Air Force Base, Las Vegas Springs Preserve, City of North Las Vegas, Nevada Natural Heritage Program

## **Project Contact**

John Jones, Southern Regional Forester and Margie Klein, Forester II, Nevada Division of Forestry, 4747 W. Vegas Drive, Las Vegas, NV, 89108, (702) 486-5123 x 233

## **Funding Awarded**

\$174,464.00

(\$129,464 Native Flora and Propagation)  
(\$45,000.00 Fosters II)

## **Funding Spent / Reimbursed**

\$128,985.22

## **Completion Date or Status**

June 30, 2005

## **Products Produced from Project**

Las Vegas Bearpoppy Master Permit (with review and management)

Survey (conducted, inventoried, and recorded) - Las Vegas Bearpoppy on Private Landowner Sites (and submission of GIS data)

Conducted, inventoried, and recorded seed collection of Las Vegas Bearpoppy on Private Landowner Sites

Herbarium collection: state-listed critically endangered plants

Photographic documentation of state-listed critically endangered plants

Tracking list of NDF-issued endangered species permits; compliance checks for mitigation

Tracking list of cactus and yucca regulation by NDF

In-agency processes for issuance of endangered species conditional permits and master permits

Conservation Agreement (with the City of North Las Vegas) for Management of Special Resources on BLM Parcels Nominated for Disposal (NDF as signatory)

Draft Conservation agreement for Upper Las Vegas Wash Conservation Transfer Area

Draft Data-sharing agreement with Bureau of Land Management

Low-Elevation Rare Plant Working Group agendas/minutes/reports

Presentations for in-agency training, and for hikers' group, on endangered plants

## LEAD AGENCY

National Park Service, Lake Mead National Recreation Area

### Featured Project

Control of Sahara mustard, *Brassica tournefortii*, In Rare Plant Habitats

### Project Description

The goal of this project was to initiate and expand control efforts for *Brassica tournefortii* (Sahara mustard) invasions on high priority rare plant habitats within Clark County. The objective was to provide emergency conservation actions to protect sand-loving rare plants. The index of success was the removal or destruction of a significant portion of Sahara mustard plants from rare plant, sandy habitats over a two-year period.



Sahara mustard infestation.

### Project Status

The two-year emergency control effort for Sahara mustard has been completed (Contract reference: CBE NO.5529-04). This document represents the final report for work performed by the National Park Service, Lake Mead National Recreation Area, with funding primarily received from the Clark County Multiple Species Habitat Conservation Plan (MSHCCP) during the 2004 and 2005 seasons.



Removal effort for Sahara mustard.

### Partners

Josh Hoines and Dianne Bangle Research Assistants, National Park Service Monitoring Programs, Public Lands Institute, University of Nevada, Las Vegas

### Project Contact

Jef Jaeger, Interim Project Coordinator, National Park Service Monitoring Programs, Public Lands Institute, University of Nevada, 4505 Maryland Parkway, 89154, Las Vegas, NV, (702) 895-2463 jef.jaeger@unlv.edu

### Funding Awarded

\$59,000.00

### Funding Spent / Reimbursed

\$59,000.00

### Completion Date or Status

The project was completed August 15, 2005.

### Products Produced from Project

This project constituted conservation actions for emergency control of *Brassica tournefortii* (Sahara mustard) within high priority rare plant habitats in Clark County. Throughout the project's two-year term, 3,313,076 Sahara mustard plants were removed or destroyed within, or adjacent to, targeted sandy habitats.

### LEAD AGENCY

National Park Service

### Featured Project

Spring-fed Wetlands and Riparian Restoration

### Project Description

Weeds were primarily controlled from springs and riparian areas throughout Clark County. The projects were prioritized and guided by the Southern Nevada Restoration Team (SNRT). The National Park Service Exotic Plant Management Team (NPSEPMT) based at Lake Mead National Recreation Area (NRA) continued to coordinate and implement the projects. Spring sites were maintained tamarisk-free from previous removal areas. Fountain grass populations were detected and treated along the shores of Lake Mohave to prevent it from spreading to springs and riparian corridors throughout the county. The project dollars were matched with other funding sources and leveraged to increase efficiency and scope of project. Effectiveness monitoring and scientific research were integrated into the project to address specific needs. A combination of weed-led and site-led weed control strategies were utilized in this project. Revegetation with native plant species were conducted at select sites.



Tamarisk Control in Echo Wash

### Project Status

Projects were conducted at more than 50 sites. Tamarisk has been eradicated at approximately 25 springs including Red Rock Canyon, Gold Butte, Muddy Mountains, Newberry Mountains and Spring Mountains. Tamarisk control continues to be successful and requires minimal site maintenance to keep tamarisk from re-establishing. Site monitoring has also documented an increase in desirable native species recovery after weed control. Ongoing weed control activities continue on other species with isolated populations such as tall white top, Russian knapweed, dandelion and camelthorn. Larger scale weed control projects combined with effectiveness monitoring have begun on the Virgin River. One of the largest accomplishments was the near eradication of fountain grass on Lake Mohave. Success has been achieved at reducing existing weed populations, eradicating weeds from isolated areas and stopping the further spread of some weed species. However, there is more work to be done, as weeds are persistent. There are several springs still in need of tamarisk removal and the program can transition to attacking new weed infestations discovered by surveys conducted by the weed sentry program. Gross Infested Acres of Weeds Treated: 4,646 (18 Species), 600 trees planted.



Revegetation at Corn Creek Spring

### Partners

Partnerships and collaboration is the strongest asset of the project. The Section 10 funding for the project allowed an existing National Park Service regional Exotic Plant Management Team



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to conduct weed control projects on an interagency and watershed approach. It was common to plan and implement weed projects across agency boundaries. This is often the recommended approach to managing invasive species in regional and national planning documents, but rarely ever implemented on the ground or achieved to the level as it has here, in Clark County. The approach is much more effective than each land management agency going in their own direction, hiring crews and building separate infrastructure. The Southern Nevada Restoration Team (SNRT includes all the federal land management agencies and USGS) continues to be an exceptionally functional group facilitating the projects and partnerships. The MSHCP funding for this project was leveraged and combined with other funding sources to increase effectiveness of the project.

## **Partners**

National Park Service, Biological Resource Management Division, Exotic Plant Management Team, Natural Resource Preservation Funds, Ft. Collins, Colorado, Bureau of Land Management, Healthy Forest Initiative/Hazard Fuel Funds, Bureau of Reclamation, Lower Colorado River Region, Boulder City, Southern Nevada Water Authority, Las Vegas, NV, City of Henderson, Nevada (Project Green, Pittman Wash), Department of Interior, Cooperative Conservation Initiative, Ash Meadows National Wildlife Refuge, Burned Area Rehab Funds

## **Project Contact**

Curt Deuser, Liaison, Lake Mead Exotic Plant Management Team, National Park Service, 601 Nevada Way, Boulder City, NV 89005 (702) 293-8979, email: [curt\\_deuser@nps.gov](mailto:curt_deuser@nps.gov)

## **Funding Awarded**

\$325,600.00

## **Funding Spent / Reimbursed**

\$315,600.00

## **Completion Date or Status**

Project completed.

## **Products Produced from Project**

APCAM (Alien Plant Control and Monitoring) Electronic Database documenting all project accomplishments (based on North American Weed Management Association (NAWMA) Standards): 50 projects, tamarisk eradicated at 25 springs, 4,646 gross infested acres treated, 600 trees planted.

Scientific Literature: Camelthorn Control Study by Dr. Mark Renz, Tamarisk Control Vegetation Response Study by Rebecca Harms, Northern AZ University.

TechLine Article: "Experience Generates Successful Methods" Exotic Plant Management Teams Lead Control Efforts on Tamarisk, Summer 2003, pages 6, 7 and 11.

Project reports: Fountain Grass Control Report, Tall Whitetop Control Reports.

NV Weed Management Association Conference Presentation, October 2004. George Wright Society Presentation, March 2005. Presentation to Dept Of Interior Staff, Washington D.C., March 2005.

## LEAD AGENCY

National Park Service, Lake Mead

### Featured Project

Law Enforcement

### Project Description

Specially designated Lake Mead Rangers perform law enforcement and resource protection within their Clark County jurisdiction. Patrols focus on areas of significant tortoise habitat, Desert Wildlife Management Areas and lands designated as Intensively Managed Areas (IMA's). The purpose of the patrol efforts is to educate the public, detect illegal activities, and investigate crimes on public lands. Additionally, rangers took proactive steps to curb and deter further resource damage through signing, barrier construction and focused, multi-ranger patrols.

### Project Status

One permanent, full-time law enforcement ranger position and two seasonal law enforcement ranger positions worked a total of 2,379 hours, or 297 patrol days within the Lake Mead National Recreation Area IMA's. The total was accomplished despite retention and hiring issues encountered. Rangers made 476 resource cases during the project period and provided information to thousands of backcountry users. Also, rangers were responsible for several significant resource damage cases resulting in fines and court imposed restitution.

### Partners

Bureau of Land Management and Nevada Department of Wildlife

### Project Contact

John Tesar, Program Specialist, National Park Service, Lake Mead National Recreation Area (702) 293-8944

### Funding Awarded

\$271,990.00



Rangers work with resource crew to prevent off-road activity.



Tortoise removed from violator possession in park.



Backcountry use at Placer Cove.

### Funding Spent / Reimbursed

\$49,750.00

### Completion Date or Status

The project will continue in the 2005-2007 biennium

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## **Products Produced from Project**

A palm pilot field reporting system is currently in development and should be in use sometime during the fall or winter.

## LEAD AGENCY

National Park Service

### Featured Project

Plant Material Production for Interagency Restoration Program

### Project Description

Restoration of desert tortoise habitat and other special status species require the use of native plants not available from local nurseries. The National Park Service (NPS) presently has a three-acre nursery with three commercial-quality greenhouses and irrigated grow-out areas. This nursery can be staffed to provide native plants to the U.S. Forest Service, U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), National Park Service (NPS), and other agencies using their own native seed stock, and allowing them to restore impacted habitats using genetically-native material. The NPS is developing methods for germinating, growing, and out-planting many native Mojave Desert species, which differ substantially from commercially grown species. The Lake Mead National Recreational Area staff has been involved in propagating, planting, and maintaining native plants in numerous, successful restoration projects throughout Southern Nevada for 10 years.

The project will provide a base level of service to keep critical horticultural skills available at all times.



Nevada Conservation Corp member tending to grape vine *Vitis arizonica*.

### Project Status

Lake Mead Native Plant Nursery staff has produced written propagation methods reports on six native plant species. In addition, they have provided native plant material propagation or propagule collection and storage services to the following entities: BLM, USFWS, NPS, Las Vegas Wash, Big Springs Preserve, and Spring Mountain Ranch.



Environmental Careers Organization member examining Cottonwood seedlings.

### Partners

Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, Clark County, State of Nevada

### Project Contact

Alice C. Newton, Supervisory Resource Management Specialist, Lake Mead National Park Service, 601 Nevada Way, Boulder City, NV 89005, (702) 293-8977, email: [alice\\_corrine\\_newton@nps.gov](mailto:alice_corrine_newton@nps.gov)

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**Funding Awarded**

\$51,750.00

**Funding Spent / Reimbursed**

\$45,750.00

**Completion Date or Status**

This project is complete as of June 30, 2005.

**Products Produced from Project**

Propagation reports for the following species:

Penstemon bicolor roseus,

Enceliopsis argophylla

Larrea tridentate

Pluchea sericea

Fraxinus velutina

Over 2880 native plants were provided to park partners for restoration projects.

## **LEAD AGENCY**

Robert Oliver

### **Featured Project**

Law Enforcement for the Boulder City Conservation Easement

### **Project Description**

This project provides for the enforcement of a natural resources protection provision to property located on sensitive lands owned by the City of Boulder City, which is leased to the Clark County Desert Conservation Program.

### **Project Status**

Law enforcement activities have taking place consistently throughout the life of the contract. These activities include patrolling approximately 40 hours per week, court appearances as necessary, drafting patrol plans, and submitting weekly patrol reports and quarterly summary reports.

### **Partners**

N/A

### **Project Contact**

Robert Oliver, Henderson, NV 89015, (702) 565-0740

### **Funding Awarded**

\$145,000.00

### **Funding Spent / Reimbursed**

\$130,505.00

### **Completion Date or Status**

In Progress. Contract ends October 2005.

### **Products Produced from Project**

Weekly patrol reports

Quarterly summary reports

Patrol plan

## **LEAD AGENCY**

Selzer, Ealy, Hemphill & Blasdell, LLC, July 2003 through August 2004  
Paul T. Selzer, Esq., Attorney at Law, September 2004 through June 2005

### **Featured Project**

Consulting services

### **Project Description**

Advise and consult with the administrator regarding the federal Endangered Species Act (ESA) and the Permit; advise and consult with the administrator regarding proposed amendments to the ESA and the effects of federal cases dealing with the ESA; prepare for and attend meetings of the Implementation and Monitoring Committee (IMC) and Adaptive Management Program (AMP) Working Group; respond to questions and inquiries from members of the IMC; advise and consult with administrator regarding the Southern Nevada Public Lands Management Act (SNPLMA); review proposed budgets and advise administrator regarding budget proposals and potential effects of budget proposals on the Permit; review and advise administrator regarding law enforcement issues; advise regarding and propose strategies dealing with the Permit, the IMC and the ESA; review and prepare advice regarding "no Unmitigated Net Loss" requirements of federal law; prepare briefings and reports requested by the administrator; begin preparation of a history of the Desert Conservation Plan.

### **Project Status**

Consultant has provided consulting services to the County since the inception of its endangered species program in 1989. The project is on-going.

### **Project Contact**

Paul T. Selzer, Esq, Attorney at Law, 1037 S. Palm Canyon Drive, Palm Springs, CA 92264; (760) 327-4085, fax: (760) 327-4085, email: ptslaw@aol.com

### **Funding Awarded**

\$250,000.00

### **Funding Spent / Reimbursed**

\$175,736.78

### **Completion Date or Status**

The Project is on-going

### **Products Produced from Project**

Briefing papers and memos

## Lead Agency

Ruth Siguenza, LLC, Certified Professional Facilitator (CPF)

## Featured Project

Consulting services:

Facilitation for Implementation and Monitoring Committee meetings

## Project Description

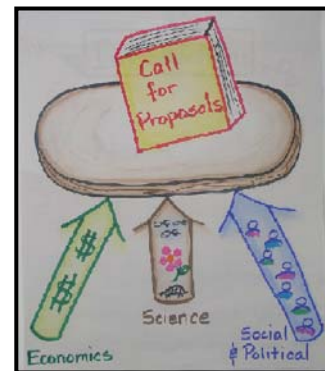
Ruth Siguenza is the facilitator of a 30-person committee advising Clark County on the implementation and monitoring of a 78-species habitat conservation plan under the Endangered Species Act. Work includes issue identification, interagency coordination, process design (including biennial budget development process), meeting design, graphic facilitation and support, and conflict resolution.



Ruth E.N. Siguenza,  
CPF

## Project Status

Implementation and Monitoring Committee meetings have been professionally facilitated since February 2004. For each meeting, there is a published meeting agenda with goals for each agenda item. In addition, there are more detailed meeting designs for each meeting outlining methods, approach, process, and suggested timing for each agenda item. Meeting designs may also include coordination across meetings for issues and activities requiring multiple meetings to address. Meeting preparation includes clarifying goals for the meeting as a whole and for each agenda item. It also includes coordination with the appropriate county staff, contractor, committee member, and other interested parties to assure expectations are clear prior to the meetings.



Biennial Budget Development Process: The three legs of the MSHCP implementation stool

## Partners

Ruth P. Urban, CPF (February-June 2004)

## Project Contact

Ruth E.N. Siguenza, Certified Professional Facilitator, 914 – 164<sup>th</sup> Street SE, #1702, Mill Creek, WA 98012-6366, (425) 385-2700, email Ruth@RuthSiguenza.net

## Funding Awarded

\$60,645.00

## Funding Spent / Reimbursed

\$31,399.19

## Completion Date or Status

Ongoing. Current contract runs through February 2006 with optional one-year extension.

## Products Produced from Project

A detailed meeting design is produced for each Implementation and Monitoring Committee meeting. Meetings consistently adjourn on time and often finish early. Since February 2004, meeting goals have become clearer; meetings have become better focused on the work to be



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accomplished; committee recommendations have become better documented; participants have become more respectful and civil; and attendance has consistently been good (i.e., have not lost a quorum late in the day).

## LEAD AGENCY

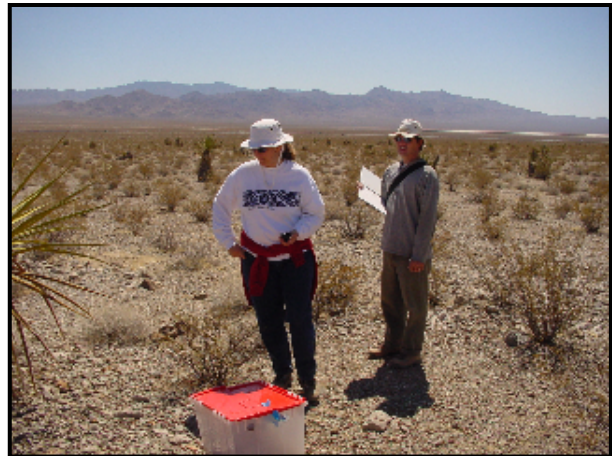
Southern Nevada Environmental, Inc.

### Featured Project

Desert Tortoise Transfer and Holding Facility (DTTHF)

### Project Description

Southern Nevada Environmental, Inc. (SNEI) has operated and managed the DTTHF since 1993. The responsibilities include operating the desert tortoise hotline and county-wide pickup service entailing a comprehensive call log and database. The service operates 365 days per year from 6 a.m. to 6 p.m. In addition, the holding facility is responsible for a disease screening program, data collection and tagging, maintaining a database of all incoming animals, care and feeding as well as pen maintenance.



SNEI continually prepares and releases qualified tortoises to the Large Scale Translocation Site (LSTS), where more than 4,500 tortoises have been released since 1997. To qualify for translocation, a tortoise must produce a negative ELISA test, or enzyme-linked immunosorbent assay test result, indicating it is likely the tortoise has not been exposed to an upper respiratory tract disease (URTD).

### Project Status

Incoming tortoises during the 2003-2005 biennium totaled 2,715. The majority of the tortoises entering the DTTHF were of unknown origin collected by the pick-up service. Owners of escaped pets collected by the hotline service are able to reclaim their pets, and, during the 2003-2005 bienniums, 38 animals were returned to their owners. In addition, the tortoise group requested 20 animals for the adoption program. During the 2003-2005 bienniums, 1,590 desert tortoises were released at the LSTS. Prior to each release, SNEI gathers qualified tortoises from the DTTHF. The tortoises are visually inspected, measured and weighed, tagged and notched prior to release. SNEI is responsible for transporting the tortoises to the release site where all tortoises are given an opportunity to drink water prior to the release. A Global Positioning System (GPS) is used to record each animal's release location.



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## Partners

N/A

## Project Contact

Chuck LaBar, President of SNEI, Southern Nevada Environmental, Inc., Las Vegas, NV, (702) 248-5370 and Michelle McDermott; Facility Manager, Southern Nevada Environmental, Inc., Las Vegas, NV, (702) 525-5957

## Funding Awarded

\$475,265.00

## Funding Spent / Reimbursed

\$423,416.50

## Completion Date or Status

June 30, 2005

## Products Produced from Project

Quarterly reports were provided to the Implementation and Monitoring Committee. Reports were submitted monthly as well as a budget comparison to Clark County.

## Lead Agency

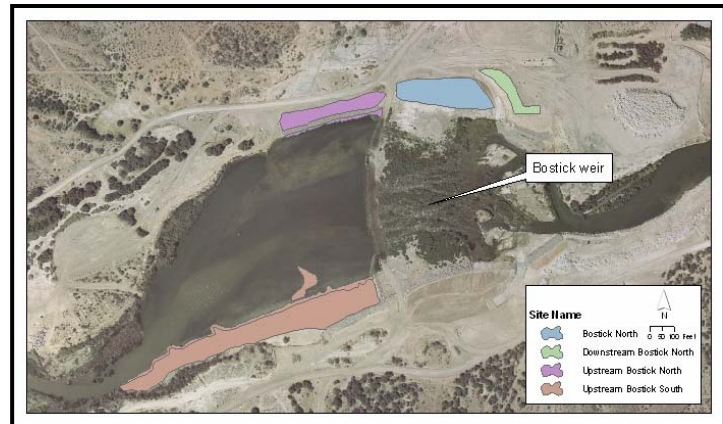
Southern Nevada Water Authority

## Featured Project

Habitat Enhancement in the Las Vegas Wash

## Project Description

The primary purpose of this project involved hosting a community-wide planting event to restore a seven-acre site of emergent and riparian vegetation at the Las Vegas Wash (Wash). This project will help reduce stream bank erosion by armoring the channel with vegetation, increasing wildlife habitat, and increasing public awareness of the valuable resource. Generating public support for the ongoing restoration efforts in the Wash is a critical component of the project. Volunteers were recruited from a variety of community groups, including boy and girl scouts, environmental organizations, and senior clubs to assist with the planting efforts.



Re-vegetation site locations adjacent to the Bostick weir

## Project Status

Approximately 100 volunteers helped revegetate the banks of the Wash on October 25, 2003. Monitoring data indicates the vegetation at the different Bostick weir planting sites is performing well. The upstream Bostick South site has the greatest diversity of species and vegetation cover for all the sites monitored. The Bostick South site is much closer to the edge of the Wash than the other planting areas, which likely contributes to its higher diversity. Many of the species detected at this site are obligate wetland species. Species diversity in more riparian areas were primarily limited to the originally planted species including, creosote, fourwing saltbush, screwbean mesquite, honey mesquite, wolfberry, desert willow, Fremont cottonwood, willows, and catclaw acacia.

Cover values for riparian sites indicate honey mesquite and creosote are performing well. Both of these species are common to upper terraces of southwestern riparian floodplains and are thriving in these areas along the Wash. Long-term growth of these species, particularly honey mesquite, will provide quality habitat for many wildlife species.



Upstream Bostick South site before planting



Upstream Bostick South site after planting

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## Partners

Las Vegas Wash Coordination Committee  
Mabel Hoggard Magnet School

## Project Contact

Keiba K. Crear, Senior Biologist, Southern Nevada Water Authority, Las Vegas, NV,  
(702) 822-3388

## Funding Awarded

\$73,500.00

## Funding Spent / Reimbursed

\$0.00

## Completion Date or Status

September 2005

## Products Produced from Project

The Las Vegas Wash Coordination Committee (LVWCC) hosts semi-annual *Green-Up* events where volunteers are able to plant vegetation at areas along the Wash. Approximately 100 volunteers participated in the October 25, 2003 *Green-Up* event. In addition, fifth grade students from Mabel Hoggard Elementary School helped celebrate the LVWCC's fifth anniversary by planting a large honey mesquite (pictured above). A televised broadcast was also featured on the Southern Nevada Water Authority's *Water Ways* program.

## LEAD AGENCY

U.S. Forest Service

### Featured Project (s)

**Part A:** Resource Protection and Law Enforcement

**Part B:** Resource Protection and Law Enforcement

### Project Description

**Part A:** This project provides the Spring Mountains National Recreational Area (NRA) with the means to meet the Multiple Species Habitat Conservation Program (MSHCP) management and conservation actions. Specifically, to ensure consistent law enforcement and ranger presence on the east side of the NRA, west side of the NRA, and in the wilderness area for a minimum of four days per week per area (including weekends and holidays) during the period of April 15 - October 15, and a minimum of three days per week (including weekends and holidays) during the period of October 15 – April 15. Enforcement will emphasize protection of the species of concern and their habitats. Increased wilderness ranger presence in high elevation forests and alpine areas will provide a means to distribute information on species conservation needs, ecological resource sensitivity, and low impact recreation use practices.



In addition, law enforcement and ranger presence will adhere to goals, objectives, standards and guidelines detailed in the plan amendment which promotes management of the species of concern and other ecological resources. This project made it possible to meet the required conservation and management actions directed by the MSHCP. Law Enforcement was aware of and enforced the species threats of concern which were detailed on the project.



**Part B:** The primary purpose of this project is to provide a proactive approach to management of the Westside of the Spring Mountains National Recreation Area (NRA). Several alternatives have been developed and are currently being implemented in this area to manage the increasing use in the Westside canyons while providing resource protection. Providing consistent patrols, monitoring use, and documenting activities on the west side are some of the many management alternatives currently being implemented. Funding provided through this proposal was used to fully support two full-time employees and one part-time employee. This report will focus on the accomplishments of the Resource Protection Officers (Recreation Technicians).



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## Project Status

**Part A:** The Spring Mountains NRA provided a fulltime law enforcement officer on the west side of the Spring Mountains NRA. This is an on-going project helping protect the unique plant and animal species while providing public education on the correct way to enjoy the NRA without damaging the area's unique characteristics. Law enforcement met all deliverables, which may be viewed on the MSHCP data web site [www.brrc.unr.edu](http://www.brrc.unr.edu) under project number 2003-USDA\_USFS-234-P-1964-03.

During the two-year period, the Law Enforcement Officer (LEO) made 8,283 public contacts. Of those contacts, 252 persons received a warning notice for non-compliance of rules and regulations. The LEO also issued 162 violation notices for non-compliance and documented 1,587 incident reports.

Contacts comprised of day users, including hikers, sightseers, target shooters, hunters, off-highway vehicle (OHV) operators and campers. Main areas of contacts on the west side were Lovell/Trout General Forest Area (GFA) and Dispersed West Canyon GFA.

Warning Notices (main violations) consisted of off-road travel with no resource damage, spark arrester violations, possession of litter, and vehicle violations. Violation Notices (main violations) consisted of damaging natural resources, driving off-road and causing damage, littering, illegal collection of resources, campfire violations, possession/discharge of fireworks, no spark arrester, unsafe shooting, careless operation of a vehicle and vehicle violations.

Warning and violation notices were issued in all GFAs with the majority in Lovell, Trout, and Dispersed West Canyon GFAs.

**Part B:** Consistent patrols have occurred over the past biennium in the following General Forest Areas (GFA): Mt. Stirling, Potosi, Lovell/Trout and Dispersed West Canyons. Information regarding activity and use levels for GFAs and concentrated use areas (CUA) was provided in the patrol plan submitted October 2003. Approximately, 7,771 visitor contacts were made regarding compliance with fuel wood cutting, off-highway vehicle (OHV) use, hunting and fire restrictions and regulations. General information was provided to campers, hikers, bikers, equestrians and sportsmen. More than 200 road signs were installed to help visitors identify the Spring Mountains NRA as the management agency responsible for the area and as a first step toward implementing the Motorized Trails Decision. Two kiosks have also been constructed and installed. General information related to acceptable uses, proper outdoor ethic, interpretative messages, location maps and regulatory information is currently on display. A plan for managing use in CUAs is in the process of being developed. Initial GPS data is being collected and will be used in the formulation of the overall management plan. The increased presence, quick response to repair damaged or vandalized property along with the increase in signs and barriers have aided in gaining compliance from users of the Westside. During the past biennium, 27 violation notices were issued, 49 warning notices were issued and 462 incident reports were issued.



Installed road sign

The Resource Protection Officers, funded by this project, also play a crucial role in the overall development and management of the Westside and the Spring Mountains NRA. They serve as the eyes and ears on the NRA. They have provided valuable information about use patterns and

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aid tremendously in providing information and guiding future developments. They are on the ground daily. They are also the people the public recognize and approach to report illegal activity and to pass on recommendations concerning how to better meet the needs of the user.

## Partners

**Part A:** Although no specific partner support was received from Bureau of Land Management (BLM) rangers on several issues, Southern Nevada Public Lands Management Act (SNPLMA) has increased opportunities for U.S. Forest Service, BLM, National Park Service and U.S. Fish and Wildlife officers to enforce each others laws, rules and regulations.

**Part B:** N/A

## Project Contacts

**Part A:** Jon Knudson (law enforcement) Pahrump Office, Robbie McAboy (Recreation), and Susan Barrow MSHCP (coordinator) USFS 4701 N. Torrey Pines, Las Vegas, NV 89130 (702) 839-5551

**Part B:** Robbie McAboy-Spring Mountains NRA (Las Vegas Office), Jon Knudson-Spring Mountains NRA (Pahrump Office) USFS 4701 N. Torrey Pines, Las Vegas, NV 89130 (702) 515-5400

## Funding Awarded

\$517,010.00

## Funding Spent / Reimbursed

\$433,776.19

## Completion Date or Status

**Part A:** Completed on July 1, 2005 also continuation of law enforcement with project number 2005-USFS\_SMNRA-504-P

**Part B:** On-going

## Products Produced from Project

**Part A:** Products produced were Incident Reports, Warning Notices and Violation Notices. All mentioned products contain global positioning system (GPS) data which is stored in the Regional Office in Ogden, Utah. The eight quarterly reports are located at the MSHCP database at [www.brrc.unr.edu](http://www.brrc.unr.edu) under project number 2003-USDA\_USFS-234-P-1964-03.

**Part B:** N/A



## LEAD AGENCY

U.S. Forest Service

### Featured Project

Seed Collection of Rare and Native Species of the Spring Mountains National Recreation Area

### Project Description

The purpose of the program is to develop a native seed bank for use in restoration projects. In addition, the project calls for the collection of seeds from rare plant species for use in germination studies to provide background for future propagation efforts.

### Project Status

Twenty-eight species of native seed were collected during 2004 and the first half of 2005 from approximately 15,000 acres on the Spring Mountains National Recreation Area (NRA). Seed was also collected from nine species of rare plants for use in germination protocol development.

Seed collection for the second half of 2005 is currently on-going, with the field season expected to end in mid to late October. Data analysis for the germination studies will follow completion of data collection, and a final report on the findings from this project is expected by February 28, 2006.

### Partners

Red Butte Gardens, University of Utah, Salt Lake City

### Project Contact

Heather Hundt, Natural Resource Officer, Spring Mountains National Recreation Area, Las Vegas, NV, (702) 515-5400

### Funding Awarded

\$48,960.00

### Funding Spent / Reimbursed

\$34,375.15

### Completion Date or Status

This project is ongoing and completion is expected by February 28, 2006.

### Products Produced from Project

Quarterly Reports

2004 Progress Report from Red Butte Gardens



Biological Technician Ana Jamboric collects seed from the sensitive Clokey Thistle for use in germination protocol development.



Brittany Gonzales, Biological Technician for the Spring Mountains NRA collects native seeds.

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## **SNPLMA PROJECTS**

The following section contains key information for each Southern Nevada Public Lands Management Act (SNPLMA) project conducted during the 2003-2005 biennium. For the subject biennium a total of 12 agencies and contractors were awarded SNPLMA funds for projects totaling \$12,808,463. Under the direction of the agencies and contractors enlisted, a total of 45 projects were funded, including six projects or programs funded through Clark County. Of the total 45 projects, two were canceled, three have been completed, one was not initiated and the remaining 39 are in progress and expect to be completed by the end of their respective contract terms. It is important to note SNPLMA funding does not function under the biennium time frame.

The following table shows a brief summary of the agencies and contractors awarded funds, the project titles, the amount of funding awarded, and their status. The majority of the following project summaries and status reports are self-reported by the lead agency.

## SNPLMA Projects Per Contractor

### Clark County

Project	Section PLMA Funding Awarded	Project Status
MSHCP Adaptive Management Program Coordination, Science Advice and Effectiveness (with UNR BRRC, SWCA, USGS, & Others)	\$1,593,015	In Progress
Public Information & Education - Mojave Education Project	\$260,000	Not yet initiated
Public Information & Education - Strategic Planning and Program Assessment	\$106,000	Completed
Cooperative Weed Management Program Development (contracted with Nevada Department of Agriculture)	\$126,500	In Progress
Desert Wildlife Management Areas Conservation Management Strategies (contracted with The Shipley Group)	\$210,000	In Progress
Desert National Wildlife Refuge/Developed Community Interface Inventory & Assessment	\$100,000	Canceled

### Bureau of Land Management

Project	Section PLMA Funding Awarded	Project Status
Ecological Inventory for the Spring Mountains Ecosystem	\$885,170	In Progress
Development of Designated Roads Network in North East Desert Tortoise Desert Wildlife Management Areas	\$148,000	In Progress
Virgin River Conservation Management Strategy	\$213,150	In Progress
Geographic Information Systems Support	\$390,600	In Progress
Evaluating Impacts of Cattle Grazing on Vegetation	\$160,200	In Progress
Integrated Mesquite-Acacia Conservation Management Strategy Plan	\$128,100	In Progress

### Outside Las Vegas Foundation

Project	Section PLMA Funding Awarded	Project Status
Virgin River Conservation Partnership	\$81,000	In Progress

### National Park Service

Project	Section PLMA Funding Awarded	Project Status
Relict Leopard Frog Monitoring and Management	\$182,850	In Progress
Lake Mead National Recreation Area Data Collection and Analysis	\$221,950	In Progress
Lake Mead National Recreation Area Monitoring of Ground Disturbance; Illegal Tracks and Traces	\$50,600	In Progress
Lake Mead National Recreation Area Vegetation Monitoring Program	\$611,270	In Progress
Factors Affecting Rarity of the Las Vegas Bearpoppy (with University of Nevada Las Vegas)	\$60,000	In Progress
Songbird Monitoring/Guiding Habitat Restoration LMNRA	\$118,000	Canceled
Virgin River Conservation Strategy (with Bureau of Land Management)	\$87,000	In Progress
Wildlife Inventory Monitoring and Management	\$239,108	In Progress

**Partners in Conservation (PIC)**

Project	Section PLMA Funding Awarded	Project Status
GPS Roads and Mapping	\$297,000	In Progress

**Southern Nevada Water Authority**

Project	Section PLMA Funding Awarded	Project Status
Investigation of Bat Species Diversity and Distribution LV Wash	\$35,797	In Progress
Investigation of Amphibian Diversity and Distribution along the LV Wash	\$27,810	In Progress

**The Nature Conservancy**

Project	Section PLMA Funding Awarded	Project Status
Integrated Science Assessment for the Upper Muddy River	\$239,622	Completed
Muddy River Interim Management Plan Development and Partner Coordination	\$177,147	In Progress
Low Elevation Rare Plant Conservation Management Strategy	\$113,100	In Progress

**University of Nevada Las Vegas**

Project	Section PLMA Funding Awarded	Project Status
Floristic Survey of the Black Mountains	\$26,750	In Progress
Lake Mead National Recreation Area Evaluation of Impact of Vegetation Enroachment on Relict Leopard Frog Populations (with National Park Service)	\$145,526	In Progress
The effects of Athel (Tamarix aphylla) on riparian habitats at the Lake Mead National Recreation Area (with National Park Service)	\$60,000	In Progress
Temperature Acclimation and Oxygen Consumption Rana Onca Larvae (with National Park Service)	\$83,450	In Progress
Lake Mead National Recreation Area Evaluation of Non-Vascular Plants of Concern in Clark County (with National Park Service)	\$30,340	In Progress

**University of Nevada Reno - Biological Resources Research Center**

Project	Section PLMA Funding Awarded	Project Status
Baseline Density Monitoring: Southern NV Desert Wildlife Management Area Populations of Desert Tortoise	\$1,377,000	In Progress
Translocation Long-Term Monitoring, Desert Tortoise Density Evaluation and Establishment of New LSTSs	\$161,400	In Progress
Red Rocks to the Summit	\$447,600	In Progress
Ecosystem Indicators	\$582,100	In Progress

**USDA - ADC**

Project	Section PLMA Funding Awarded	Project Status
Assist in Development of Wildlife Damage Management for Threat/end Species from Predation or Parasitism in Clark County	\$91,418	In Progress

**USDA - ARS**

<b>Project</b>	<b>Section PLMA Funding Awarded</b>	<b>Project Status</b>
Pollinator Ecology	\$208,611	In Progress

**U.S. Forest Service**

<b>Project</b>	<b>Section PLMA Funding Awarded</b>	<b>Project Status</b>
Spring Mountain National Recreation Area Landscape Assessment	\$2,388,386	In Progress
Inventory and Monitoring of Rare Plant Species Spring Mountain National Recreation Area	\$90,513	In Progress
Bat Inventories within the Spring Mountains	\$44,000	In Progress
Peregrine Falcon Nesting Survey of the Spring Mountains	\$9,000	Completed
Northern Goshawk Survey of the Spring Mountains	\$40,080	In Progress
Butterfly Monitoring in the Spring Mountains	\$11,000	In Progress
All Bird Monitoring Program in Clark County	\$88,300	In Progress

## LEAD AGENCY

Clark County Desert Conservation Program

### Featured Project

Clark County Multiple Species Habitat Conservation Plan (MSHCP), Adaptive Management Coordination, Science Advice and Effectiveness Monitoring Strategy Development

### Project Description

The Clark County MSHCP proposed work program has grown significantly in terms of planning and project work for multiple species mitigation. Despite efforts made prior to and during the 2003-2005 biennial budget development process, of the more than 120 proposals received, numerous projects of similar nature stood independent, without documented coordination. The Adaptive Management Program (AMP) March 15 Report (UNR-BRRC 2002), while identifying the need for coordination of inventory, monitoring, and mitigation projects, did not propose a mechanism ensuring coordination would occur. In response to the need, the Clark County Adaptive Management Science Plan (final August 2003) further defined the AMP to include three key staffing areas: AMP Coordinator (AMPC), Adaptive Management Science Team and Science Advisor. The overall project was initiated to implement the Adaptive Management Science Plan and to facilitate development of a broad-scale adaptive management and effectiveness monitoring program with a stronger incorporation of scientific advice.



Workshop and Practical Forum on Monitoring and Adaptive Management April 14-15, 2004

The AMPC consists of two Desert Conservation Program (DCP) staff positions: AMPC, and Geologic Information System (GIS) Database Manager. The AMPC is directed to coordinate the MSHCP and serve as facilitator between project proponents, land management agencies, science advisors, and the U. S. Fish and Wildlife Service (USFWS), so only the most coordinated projects are proposed at each biennium budget assembly. The GIS Database Manager will develop and maintain a central repository of spatial and non-spatial data produced by and informative to the AMPC, and conducts analyses of these data.

The Adaptive Management Science Team (AMST) is involved in all aspects of the AMP, in particular, development of the Biennial Adaptive Management Report and review of proposals. The AMST membership includes representatives from the USFWS Ecological Services Science Advisor, the AMPC, U.S. Geological Survey Biological Resources Division, U.S. Forest Service Rocky Mountain Research Station, and an independent scientist selected with input from the Implementation and Monitoring committee.



Rare Species Monitoring Workshop March 14-15, 2005

The Science Advisor subcontractor initiated February 17, 2004, creates and maintains a diversified team of scientists with a broad scope of expertise. The science team interacts with nearly all levels of the MSHCP, including program and project development, monitoring strategy development, and program effectiveness monitoring and evaluation.

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## Project Status

Implementation of the Adaptive Management Science Plan is ongoing, and milestones include convening the Adaptive Management Science Team, subcontracting the role of Science Advisor and hiring the Adaptive Management Program Coordinator staff within the DCP. A Science Advisor office was established in Clark County to meet the demands of UNR's-BRRC on issues of science advice within the many workshops, working groups and individual meetings.

## Partners

University of Nevada Reno, Biological Resources Research Center, U.S. Forest Service, Rocky Mountain Research Station, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, Ecological Services, SWCA, Inc.

## Project Contact

Susan B. Wainscott, Adaptive Management Coordinator, Clark County Desert Conservation Program, Las Vegas, NV, (702) 455-3859

## Funding Awarded

\$1,593,015.00

## Funding Spent / Reimbursed

\$0.00

## Completion Date or Status

This project is ongoing.

## Products Produced from Project

Adaptive Management Science Plan 2003.

Biennial Adaptive Management Report (BAMR) 2004.

April 14-15, 2004 Workshop and Practical Forum on Monitoring and Adaptive Management.

March 14-15, 2005 Rare Species Monitoring Workshop.

Procedures for technical review of 2005-2007 biennium proposals.

AMST review of 65 of the 95 proposals submitted for the 2005-2007 biennium.

AMST proposal review worksheets and a final report to the IMC.

Draft outline and proposals for analyses and essays for 2006 BAMR.

Preliminary lists of all spatial data produced to date by MSHCP projects.

Draft maps and peer review questionnaire for preliminary species risk analysis.

Output from preliminary species risk analysis as requested by DCP.

The Implementation database was upgraded to provide a more detailed online proposal submittal interface and a pre-proposal workshop was held to provide instructions on use of the online interface.

Secure, on-line, searchable literature database for Rare Plant Conservation Management Strategy development.

Prototype MSHCP GIS Database was produced and presented to MSHCP participants and contractors.

Presentations to IMC on various topics.

## LEAD AGENCY

Clark County

### Featured Project

Mojave Education Project

### Project Description

The purpose of the project is to develop educational lesson plans, curriculum, teaching guides, and teacher training programs. Product development will focus on incorporating the science of the Mojave Desert, the desert tortoise, and other native species with educational subjects and concepts prioritized for the Clark County School District in areas such as math, science, art and English subject.

### Project Status

The project was not begun during the 2003 – 2005 biennium. It was delayed until the professional program assessment for the Public Information and Education Program was completed. Contracts for the work are in process. All elements of the total project are expected to be complete by September 30, 2006.

### Partners

Clark County School District, Bureau of Land Management, Red Rock Canyon Interpretive Association

### Project Contact

Christina Gibson, Management Analyst II,  
Clark County, (702) 455-2860

### Funding Awarded

\$260,000.00

### Funding Spent / Reimbursed

\$0.00

### Completion Date or Status

Not completed.

### Products Produced from Project

None



Mojave Max emerging from his burrow at the Red Rock Canyon National Conservation Area Visitors Center on February 14, 2005.



A child digging through a sample of desert soil. Hands-on experiences will be a critical component of this project.



## LEAD AGENCY

Clark County

### Featured Project

Public Information and Education Strategic Planning and Program Assessment

### Project Description

This project is a professional assessment of the past Public Information and Education (PIE) efforts using research, survey, and focus groups. This project reviewed goals and objectives of the Public Information and Education Program, reviewed target markets, and outreach efforts. The project also directed recommendations made for future Public Information and Education projects, including expenditures based on this evaluation.

### Partners

Public Information and Education Working Group  
Strategic Solutions

### Project Contact

Christina Gibson, Management Analyst II, Clark County, NV, (702) 455-2860  
Terri Murphy, President, Strategic Solutions, Las Vegas, NV, (702) 889-2840

### Funding Awarded

\$106,000.00

### Funding Spent / Reimbursed

\$105,757.00

### Completion Date or Status

Completed.

### Products Produced from Project

Clark County Desert Conservation Program Public Information and Education (PIE) – Program Assessment, August 2004.

Clark County Fair Survey Results, PowerPoint Presentation, May 2004.

PIE Strategic Plan



Above: The Mojave Max image. (L) The Mojave Max mascot, the winner of the Mojave Max Emergence Contest and Commissioner Chip Maxfield (R). The Mojave Max program and associated images were core programs determined to be extremely successful and recommended to be continued by the professional assessment.

## LEAD AGENCY

Clark County contracted with Nevada Department of Agriculture

### Featured Project

Cooperative Weed Management Program Development

### Project Description

The project entails the development of a coordinated weed management program for the Clark County Desert Conservation Program (DCP), including the development of a Coordinated Weed Management Area (CWMA), grouping data collection and data management aspects of weed management projects funded by the DCP, developing a Strategic Weed Management Plan (SWMP), participating in the development of communication and information tools, and coordinating and technically assisting voluntary and required mitigation efforts associated with Clark County listed species.

### Project Status

A Weeds Coordinator was hired in the spring 2005, through the Nevada Department of Agriculture. A Weeds Management Plan (WMP) is being drafted, and is expected to be finished by November 30, 2005.

### Partners

Bureau of Land Management, Conservation District of Southern Nevada, Las Vegas Wash Coordinating Committee, Muddy River Regional Environmental Impact Alleviation Committee, National Park Service, Nevada Department of Agriculture, Nevada Division of Forestry, U.S. Fish & Wildlife Service, U.S. Forest Service, U.S. Department of Agriculture Natural Resources Conservation Service, U.S. Geologic Survey, University of Nevada Biological Resources Research Center, University of Nevada Cooperative Extension

### Project Contact

Richard Modee, Agriculturalist II, Department of Agriculture, 2300 McLeod, Las Vegas, NV 89104, (702) 486-4690

### Funding Awarded

\$126,500.00

### Funding Spent / Reimbursed

\$24,000.00

### Completion Date or Status

Project is expected to be completed June 30, 2006.

### Products Produced from Project

Goals, objectives and strategies for implementing the DCP Weeds Management Plan.  
Strategies for implementing conservation actions under various on-the-ground conditions.  
Conservation actions screening and recommended selection criteria.

## LEAD AGENCY

Clark County, contracting with The Shipley Group

### Featured Project

Desert Wildlife Management Areas Conservation Management Strategies

### Project Description

The project entails the development of Conservation Management Strategies (CMS) for the Piute Eldorado, Coyote Springs, Mormon Mesa, and Gold Butte Desert Wildlife Management Areas (DWMAs) in support of Clark County's Desert Conservation Program (DCP) and in support of a condition for the county's Section 10(a)(1)(B) incidental take permit issued by the U.S. Fish and Wildlife Service. The CMS will help the county prioritize conservation projects and establish a budget for their implementation.



Bajada of Mormon Mesa DWMA with Mormon Mountains in the background.

### Project Status

Initial public involvement has been completed and a public scoping report summarizing the results of public meetings submitted. Three issues of the quarterly Desert Wash newsletter have been posted on the project website along with detailed background information articles. Existing literature pertaining to DWMA has been reviewed and a draft list of knowledge gaps for each DWMA submitted to Clark County. Draft CMS for each DWMA is being prepared for submission to Clark County in September 2005.



Desert wash habitat in Coyote Springs DWMA.

### Partners

Clark County Desert Conservation Program

### Project Contact

Paul Rusanowski, Ph.D., Principle Investigator and Anthony Krzysik, Ph.D., Co-Principle Investigator, The Shipley Group, Woods Cross, UT 84010, (801) 298-7800

### Funding Awarded

\$210,000.00

### Funding Spent / Reimbursed

\$187,243.00

### Completion Date or Status

Ongoing, with anticipated completion May 31, 2006.

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## **Products Produced from Project**

Project Website: <http://www.shipleygroup.com/clark/index.html>

Public Involvement Plan (November 2004)

Three Public Scoping Meetings (October 2004 in Las Vegas, Searchlight, and Moapa)

Public Scoping Report (January 2005)

Desert Wash Project Newsletter (October 2004; February 2005; June 2005)

Full-length articles associated with Desert Wash Newsletter:

*Conservation of Desert Wildlife Management Areas (DWMAs) in Clark County Nevada*

*Characterization of Coyote Springs and Mormon Mesa Desert Wildlife Management Areas (DWMAs) and the Coyote Springs Investments Development Area (CSI)*

Summary Project Presentation to the IMC (April 2005)

Draft Lists of Knowledge Gaps for 4 DWMAs (August 2005)

## LEAD AGENCY

Bureau of Land Management

### Featured Project

Ecological Inventory for the Spring Mountains Ecosystem

### Project Description

The purpose of the project is to obtain comparable, accurate, and representative baseline ecological data of known quality to support present and future local and regional resource management planning and decision-making by multiple land use management agencies. The U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) have similar methodologies for evaluating ecological condition. Both methodologies integrate soil, vegetation, slope, aspect, and elevation features to determine the potential natural vegetation of a site. Discussions are underway to merge the methodologies into one. Such a process would derive uniform information, enabling both agencies to compare trends across administrative boundaries.



Ecological Site Index (ESI) Study Site

### Project Status

Natural Resources Conservation Service (NRCS) has completed the soil surveys on BLM land. NRCS is in the final year of a three-year project performing an Order 3 soil survey on national forest lands. The survey includes on-the-ground mapping, reconnaissance, and identifying sites for truck mounted backhoe work. NRCS has conducted approximately 200 soil descriptions on 250,000 acres to date. They anticipate finishing mapping in the fall 2005. A contract was awarded and the new contractor for vegetation data collection began work May 31, 2005. After initial training, approximately 19 new BLM sites and 54 USFS sites have been completed, for a total of 69 BLM and 109 USFS completed to date. The USFS sites are in conjunction with the completed NRCS soil sites. Progress continues to be made on synthesis of results. Some data has been entered into the project database, but most is still on paper forms, with entry ongoing. All data from previously sampled sites continues to be checked for accuracy. Progress continues on development of the USFS corporate database and the National Resources Information System (NRIS). Vegetation data collected will soon be entered into this database. Existing soil data is currently being migrated into NRIS-TERRA from the NRCS corporate database.



ESI Study Site

### Partners

U.S. Forest Service

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV 89130 (702) 515-5156.

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**Funding Awarded**

\$885,170.00

**Funding Spent / Reimbursed**

\$768,106.25

**Completion Date or Status**

Completed

**Products Produced from Project**

Quarterly reports

Soils data

Veg data

Soils maps

## LEAD AGENCY

Bureau of Land Management

### Featured Project

Development of a Designated Roads Network in the Northeast Desert Tortoise Desert Wildlife Management Areas

### Project Description

The Bureau of Land Management (BLM) will hire a roads coordinator to oversee road designations for the Northeastern Recovery Unit of the federally listed desert tortoise in three Areas of Critical Environmental Concern (ACECs). Roads will be designated as either open and then properly signed; or as closed and then restored. The primary need for road designation in ACECs is to offset the loss of tortoise habitat in Southern Nevada from urbanization, proliferation of new roads/trails and other disturbances on public lands within the desert tortoise's occupied range. This project is a top priority identified in the Desert Tortoise Recovery Plan and Las Vegas Resource Management Plan.



Off road tracks near Coyote Springs ACEC

### Project Status

The BLM has maintained a roads coordinator under contract throughout the biennium. The road inventory has identified 1,162.71 miles of roads and trails in the following ACECs: Gold Butte Part A 391.89 miles; Gold Butte Part B 223.99 miles; Gold Butte Part C 85.84 miles; Coyote Springs 208.26 miles; and Mormon Mesa 252.73 miles. The coordinator has conducted 27 training sessions, 34 public meetings/events including town board meetings, rural fairs, and presentations for interest groups, and regularly attended Roads Working Groups meetings. The database of roads is currently being intensively edited and field checked for data accuracy. The database should be completed and ready for the next phase of this project in the ninth quarter.



Four way intersection in Gold Butte ACEC

### Partners

Multiple Species Habitat Conservation Plan (MSHCP) Roads Working Group, University of Nevada-Reno, Interested publics, the Native American community, and rural town boards.

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV. 89130 (702) 515-5156.

### Funding Awarded

\$148,000.00

### Funding Spent / Reimbursed

\$90,750.00

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## **Completion Date or Status**

Ongoing

## **Products Produced from Project**

Quarterly reports

Final criteria for roads

Database of roads

Report, field trip documentation/scoping report



## LEAD AGENCY

Bureau of Land Management

### Featured Project

Virgin River Conservation Management Strategy Plan

### Project Description

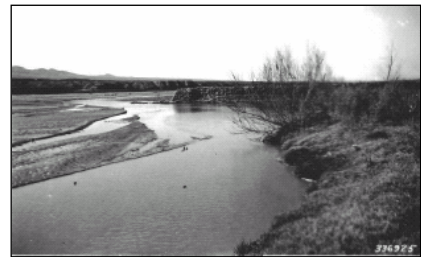
This project will expand a recommended conservation management strategy (CMS) for the Virgin River and a coordinated Virgin River Conservation Management Plan (VRCMP). It will coordinate with the various planning efforts ongoing in the Virgin River area, including the Virgin River Habitat Conservation Plan (HCP). The scope of the project, while developing the VRCMP, would require a significant coordination effort to bring together diverse groups which have already been meeting on Virgin River issues to synthesize management objectives, conservation strategies and planning efforts.



Virgin River prior to the 2005 flood

### Project Status

The Bureau of Land Management (BLM) regularly participates in the Virgin River Conservation Partnership and provides agency input into the development of the Virgin River HCP and Virgin River CMS. This includes participation in the composition of a draft scope of work for the CMS, plus funding and developing of an agreement to support a part-time facilitator/coordinator for the Virgin River Partnership. BLM met with the contractor preparing the Virgin River HCP to identify significant issues within the Virgin River corridor. It also provided existing reports and information to be entered into an electronic database of available information sources. BLM, the City of Mesquite, and the U.S. Fish and Wildlife Service met to discuss issues of mutual concern impacting various programs at the BLM, as well as the development of the Mesquite HCP. These points of contact between the BLM and the City of Mesquite were established to better communicate future projects and development issues as well as items currently on the table. BLM's treatment of exotic species along the Virgin River can become impacted by applications for parks, trails, and recreational facilities adjacent to the Virgin River. BLM also coordinated preparation of a draft scope of work document by ENTRIX, a Houston-based environmental consulting company, for integrating CMS tasks with their ongoing Virgin River HCP project.



Virgin River circa 1935

### Partners

National Park Service, Southern Nevada Water Authority, Virgin Valley Water Authority, Virgin River Working Group, Bureau of Reclamation, Nevada Division of Wildlife, Virgin River Recovery Implementation Team, Clark County, State of Arizona, Arizona BLM Strip Office, assorted non-governmental organizations (NGOs).

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## **Project Contact**

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV 89130  
(702) 515-5156.

## **Funding Awarded**

\$213,150.00

## **Funding Spent / Reimbursed**

\$133,218.75

## **Completion Date or Status**

In progress

## **Products Produced from Project**

Quarterly reports

## LEAD AGENCY

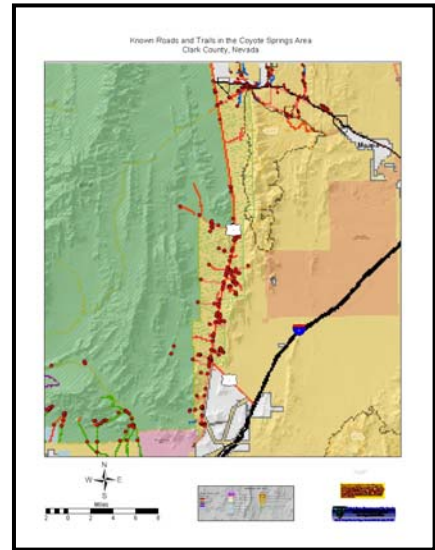
Bureau of Land Management

### Featured Project

Geographic Information Systems Support

### Project Description

The Bureau of Land Management (BLM) contracted a Geographic Information System (GIS) technician and GIS analyst to use GIS to document disturbance, track restoration, survey rare species/habitat, analyze the impact of human use on sensitive resources, make maps, and accomplish other resource work. Moreover, the contractors support a number of additional GIS themes, such as roads, sensitive habitats, and sensitive species not yet available for data sharing due to lack of coverage editing, lack of metadata (so the data is of unknown quality at the present), inconsistent data collection for the same theme, and lack of data standards.



Map of Known Roads and Trails in the Coyote Springs Area

### Project Status

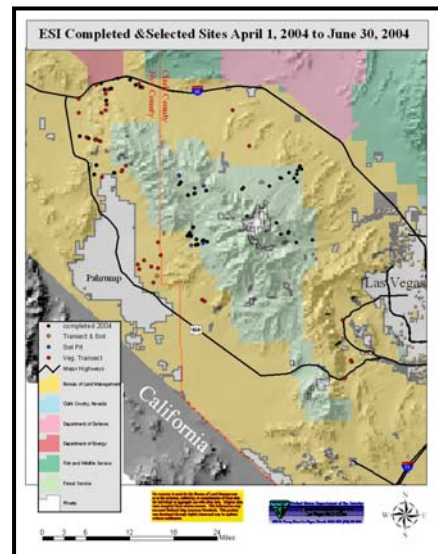
The GIS contractors support all Multiple Species Habitat Conservation Plan (MSHCP)-related projects, assist Partners in Conservation in mapping roads, and continue to provide support for documenting disturbances in critical desert tortoise habitats.

### Partners

Clark County, Implementation and Monitoring Committee (IMC), University of Nevada-Reno (UNR), Clark County Roads Group, Federal Land Management Agencies, and Partners in Conservation

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV 89130 (702) 515-5156.



Map of ESI Completed and Selected Sites for 2004

### Funding Awarded

\$390,600.00

### Funding Spent / Reimbursed

\$342,875.00

### Completion Date or Status

Ongoing

### Products Produced from Project

Quarterly reports  
GIS Maps

## LEAD AGENCY

Bureau of Land Management

### Featured Project

Evaluating the Impact of Cattle Grazing on Vegetation and Vegetative Recovery Following Removal of Cattle Grazing

### Project Description

The purpose of the proposal is to resample vegetation trend plots in all areas within critical desert tortoise habitat where grazing has been removed. Data collected during trend analysis includes frequency and cover, and can be used to determine species diversity. In addition, to better quantify the impact of grazing on vegetation, data collected during a research project cooperatively sponsored by the Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS) to investigate the effects of cattle grazing on desert tortoise habitat will be compiled, analyzed, and summarized.



Field crew collecting data at Joshua Park Reservoir, Piute Valley

### Project Status

Environmental Career Opportunity (ECO) interns completed trend data collection on May 4, 2005. The data has been entered into a database and includes all frequency and cover data, trend photos, and grazing history for the entire range of trend studies within critical desert tortoise habitat dating back to 1982. A total of 167 plants of all growth forms are earmarked for planting or have been present in the Piute-Eldorado Valley, Gold Butte, Coyote Springs and/or Mormon Mesa ACEC. A list of plants by species has been compiled. U.S. Geological Survey-Biological Resources Discipline (USGS-BRD) provided guidance for data summaries and analysis methods. All data has been gathered for the Post-Grazing Vegetation Recovery Report, input into a database system and initially reviewed. cursory data analysis has occurred for all sites including the historic data and the current year. Final data analysis is pending further guidance from USGS-BRD. A Geographic Information System (GIS) based interactive map was created to facilitate visual comparison between photo points over time. A format for the report and table of contents has been generated. A contract for a study investigating grazing impacts on tortoise habitat has been established. Data analysis and preparation of the scientific report is underway.



Crescent Peak trend plot

### Partners

None

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV 89130 (702) 515-5156.

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**Funding Awarded**

\$160,200.00

**Funding Spent / Reimbursed**

\$133,250.00

**Completion Date or Status**

Ongoing

**Products Produced from Project**

Quarterly reports, GIS coverage

## LEAD AGENCY

Bureau of Land Management

### Featured Project

Integrated Mesquite-Acacia Conservation Management Strategy Plan

### Project Description

Develop an integrated management plan for mesquite/acacia woodlands, which includes Bureau of Land Management (BLM), National Park Service (NPS), and U.S. Fish and Wildlife Service (USFWS) -Refuge lands. Information on mesquite-acacia distribution will be incorporated. Objectives: 1) Develop criteria for evaluating acacia habitat; 2) Identify acacia habitat using aerial photography and, if available, satellite imagery, including Gap Analysis Program (GAP) data; 3) Ground truth acacia habitat on BLM and NPS lands, via Global Positioning Systems (GPS), using criteria developed for evaluation; and 4) Expand BLM's Mesquite Management Plan to include mesquite and acacia habitat distribution on both BLM, NPS, and USFWS-Desert Refuge lands.



Mesquite Trees

### Project Status

Environmental Career Opportunity (ECO) interns were contracted and completed development of criteria for acacia surveys and worked with BLM, NPS, and USFWS-Refuges to produce a map of potential acacia woodlands within Clark County. The potential areas were ground-verified and a draft composite map of mesquite-acacia habitat was produced. Cali Crampton, a post doctoral associate in biology, University of Nevada, Reno, was contracted to develop an integrated mesquite-acacia conservation strategy plan for all key mesquite-acacia areas on federal lands. The plan will describe and prioritize the actions necessary to maintain and improve mesquite-acacia habitat, research needs, and monitoring within the context of adaptive management.



Acacia Habitat

### Partners

National Park Service, Fish and Wildlife Desert Refuge Complex

### Project Contact

Gayle Marrs-Smith, Botanist and Coordinator of the Multiple Species Habitat Conservation Plan for the BLM, Las Vegas field office, 4701 N. Torrey Pines Dr., Las Vegas, NV 89130 (702) 515-5156.

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**Funding Awarded**

\$128,100.00

**Funding Spent / Reimbursed**

\$90,600.00

**Completion Date or Status**

Ongoing

**Products Produced from Project**

Quarterly reports

GIS coverage, Implementation and Monitoring Committee briefing on August 24, 2005.

Draft CMS

## LEAD AGENCY

Outside Las Vegas Foundation

### Featured Project

Virgin River Conservation Partnership

### Project Description

The Virgin River Conservation Partnership (VRCP) is a collaboration of governments, agencies and organizations working together to develop a comprehensive conservation and management strategy for the Virgin River ecosystem.

*Vision:*

The Virgin River Conservation Partnership will create a restored, protected Virgin River ecosystem through collaborative planning, management and community-based action.

*Mission:*

The Virgin River Conservation Partnership seeks to balance the conservation and restoration of the Virgin River ecosystem with economic development, while promoting ecological sustainability, economic viability, responsible use and stewardship, and long term community benefits.

### Project Status

The VRCP is a collaborative group of public agencies and entities formed to coordinate issues of conservation and restoration throughout the Virgin River ecosystem. Monthly meetings are held at various partner agencies throughout Clark County, with meetings in the Lower Virgin River Corridor (Mesquite area) a minimum of twice a year featuring field trips along the Virgin River.

Five of the partners, Clark County Habitat Conservation on behalf of Clark County, National Park Service and U.S. Fish & Wildlife Service, the City of Mesquite and the Southern Nevada Water Authority cooperatively fund a contracted position to coordinate and facilitate the meetings and activities of the VRCP.

The coordinator/facilitator maintains and distributes current partner contact information at the monthly meetings, as well as keeping members up to date on plans and programs scheduled for the Virgin River Corridor.

A public information resource guide is being written to share the VRCP vision with the public. The guide will be distributed through the various partner venues and included on the Virgin River Habitat Conservation and Recovery Plan website.



VRCP January 2005 Field Trip



Lower Virgin River January 2005

### Partners

Arizona Department of Environmental Quality, Arizona Department of Water Resources, Arizona Game and Fish, Bunkerville Town Advisory Board, Clark County Department of Air



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Quality and Environmental Management, Clark County Regional Flood Control District, Clark County Rural Town Services, ENTRIX, Inc. environmental consultants from Walnut Creek CA, City of Mesquite, Nevada; Colorado River Commission of Nevada, MRREIAC, Muddy River Regional Environmental Impact Alleviation Committee, National Park Service – Lake Mead National Recreational Area, National Park Service – Water Resources Division, Nevada Department of Conservation and Natural Resources, Nevada Department of Wildlife, Nevada Division of Environmental Protection, Old Spanish Trail Association, Outside Las Vegas Foundation, ROBCYN, LLC, a Nevada consulting company, Southern Nevada Interpretive Association, Southern Nevada Water Authority, The Conservation Fund, Trust for Public Land, University of Nevada, Las Vegas – Public Lands Institute, U.S. Army Corp of Engineers, Sacramento District, U.S. Bureau of Land Management – Arizona Strip Field Office, U.S. Bureau of Land Management – Las Vegas Field Office, U.S. Bureau of Reclamation – Lower Colorado Regional Field Office, USDA – Natural Resource Conservation Service, USDA – Wildlife Services, U.S. Fish and Wildlife Service, U.S. Geological Survey, Virgin Valley Water District

### **Project Contact**

Alan O'Neill, Executive Director, Outside Las Vegas Foundation, Las Vegas, NV, (702) 461-6162; Deborah Campbell, Virgin River Conservation Partnership Facilitator Coordinator, Deborah Campbell and Associates, Henderson, NV, (702) 845-4393

### **Funding Awarded**

\$81,000.00

### **Funding Spent / Reimbursed**

\$22,500.00

### **Completion Date or Status**

Consultant, Outside Las Vegas Foundation, is retained under the contract for the period of April 1, 2005 through March 31, 2007 with the option to renew for one, 2-year period. The Virgin River Partnership is an ongoing collaborative partnership.

### **Products Produced from Project**

Quarterly Report

The Virgin River Conservation Partnership primarily functions as an internal information sharing group. No products have been specifically produced by the Partnership to date. A public information resource guide is being developed and is expected to go to print by July 2006. Subsequently, the resource guide will be posted on the Virgin River Habitat Conservation & Recovery Plan website under development as of August 2005. <http://dev.fargeo.com/vrhcp/>

## LEAD AGENCY

National Park Service

### Featured Project

Relict Leopard Frog Monitoring and Management

### Project Description

The relict leopard frog is the first North American amphibian thought to have become extinct (Platz 1984). It was first rediscovered at Corral Springs on Lake Mead National Recreational Area (NRA) on August 7, 1991 (Ross Haley, unpublished field notes). Additional populations were discovered at seven more springs, six in Nevada on the NRA and one in Arizona near the town of Littlefield. Three of those populations, including Corral Springs and the Arizona population, have subsequently gone extinct. The remaining five populations are all located in relatively small springs; a generous global population estimate for the species in 2003 was approximately 1,100 individuals.



Relict leopard frog

Recent taxonomic studies have proven this is a valid taxon separate and distinct from other closely related species such as the lowland leopard frog (*Rana yavapaiensis*) and the Vegas Valley leopard frog (*Rana fisheri*) (Jennings et al. 1995, Jaeger et al. 2001).

A petition to list the species as endangered under the provisions of the Endangered Species Act was filed with the U.S. Fish and Wildlife Service on May 8, 2002 by the Center for Biodiversity and The Southern Utah Wilderness Alliance. Proactive management actions and intensive monitoring of the species are called for to address the need for federal listing and to conserve and recover this rare and unique animal. This project funded planning efforts and active management to create a rearing facility, collect and rear eggs and tadpoles from wild populations, and transplant frogs to new locations to establish new populations. It also provided for monitoring of existing and newly established populations.

### Project Status

Since the start of the project, relict leopard frogs have been transplanted into five new (experimental) sites within their historical range. At three of the new sites individuals are released as small froglets, and at the other two new sites individuals are released as tadpoles. A total of 952 frogs and 2,747 tadpoles have been released into the wild since 2003. Most released animals were reared in National Park Service (NPS) facilities.

The five experimental populations and five natural populations have been surveyed at night in the spring and fall to monitor relative abundance. All 10 sites are visited multiple times throughout the year during the day to note any changes in habitat, document numbers of egg masses and tadpoles seen, and collect water and air temperature data from data loggers at a few of the sites.



Biologists release relict leopard frog tadpoles into Grapevine Spring, Arizona.

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The NPS coordinated efforts to enhance the frog habitat at two of the experimental sites; at one site non-native tamarisk was removed, and at the other site fine sediment was removed to maintain shallow pools after they were filled in by heavy rains. The NPS has taken the lead in keeping the relict leopard frog Access database, and is in the process of creating an updated geographic information system (GIS) database of all natural and experimental frog populations.

## Partners

Nevada Department of Wildlife, Arizona Game and Fish Department, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, Environmental Protection Agency, Southern Nevada Water Authority, Detroit Zoo, University of Nevada at Las Vegas, and University of Nevada at Reno.

## Project Contact

Ross Haley, Supervisory Resource Management Specialist, National Park Service, Lake Mead National Recreation Area, Boulder City, NV, (702) 293-8950

## Funding Awarded

\$182,850.00

## Funding Spent / Reimbursed

\$120,850.00

## Completion Date or Status

Ongoing.

## Products Produced from Project

The National Park Service participated in and helped complete the Conservation Agreement and Rangewide Conservation Assessment and Strategy for the Relict Leopard Frog (*Rana onca*). The document is currently under review and awaiting signatures from several agencies. Annual reports for 2003 and 2004 are included as appendices in the agreement.

Ross Haley gave a presentation titled "Relict Leopard Frog Conservation and Planning" at the 2004 annual meeting of the Declining Amphibian Population Task Force (DAPTF) in Reno, Nevada.

## Literature Cited

- Jaeger, J.R., B.R. Riddle, R.D. Jennings, and D.F. Bradford. 2001. "Rediscovering *Rana onca*: Evidence for phylogenetically distinct leopard frogs from the border region of Nevada, Utah, and Arizona". *Copeia* 2001: 339-354.
- Jennings, R.D., B.R. Riddle, and D.F. Bradford. 1995. "Rediscovery of *Rana onca*, the relict leopard frog, in southern Nevada with comments on the systematic relationships of some southwestern leopard frogs (*Rana pipiens* complex) and the status of populations along the Virgin River." Report prepared for Arizona Game and Fish Dept., US Bureau of Land Management, Las Vegas Valley Water District, US National Park Service, and Southwest Parks and Monuments Association. 71 pp.
- Platz, J.E. 1984. "Status Report for *Rana onca*." Unpublished report submitted to Office of Endangered Species, US Fish and Wildlife Service, Albuquerque, New Mexico. 27 pp.

## LEAD AGENCY

National Park Service

### Featured Project

Lake Mead National Recreation Area Data Collection and Analysis

### Project Description

A key to accomplishing many of the Multiple Species Habitat Conservation Plan (MSHCP) objectives is development and maintenance of species and habitat databases and geographic information system (GIS) data. These data are needed to gauge effectiveness of conservation measures outlined in the MSHCP and to provide information to guide planning and development in Clark County. This project focused on improving U.S. National Park Service (NPS)-GIS base data and project data through mining of historic data and reports, converting historic information to electronic formats, updating current spatial data with the information, and documenting current project data being collected. A GIS technician and a GIS database programmer were hired through the University of Nevada, Las Vegas to accomplish these goals.



Data mining efforts at Lake Mead National Recreation Area

### Project Status

Milestones 1 (hire positions) and 6 (purchase new computer) were completed during the first two quarters. Milestones associated with major project objectives, including milestones 2, 3, 4, 7, 8, and 9 related to converting and updating GIS data are being worked on continually throughout the biennium. Other milestones related to coordination with Clark County and other agencies (milestones 5 and 10) are continuing to be accomplished through regular meetings with various committees and working groups. Descriptions of milestones can be found on the MHSCP Implementation database at <http://www.brrc.unr.edu/mshcp/index.htm>.



GIS database development efforts at Lake Mead National Recreation Area

### Partners

None

### Project Contact

Mark Sappington, GIS Specialist, National Park Service, 601 Nevada Way, Boulder City, NV 89005 (702) 293-8057

### Funding Awarded

\$221,950.00

### Funding Spent / Reimbursed

\$159,950.00

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## **Completion Date or Status**

Ongoing. The project continues work begun in the 2001-2003 biennium, and a new project, which continues this work, is proposed for the 2005-2007 biennium. Work on the project will be completed at the end of the biennium.

## **Products Produced from Project**

### **Quarterly Report**

During the biennium, strategies were developed for mining historic data and updating tabular and geospatial data with the historic information. Using this strategy, products are being produced for the project in packages related to specific species or focus areas. Packages include databases, scanned field data sheets and notes, scanned reports, spatial data in digital format, digital or scanned photographs, and Federal Geographic Data Committee (FGDC) compliant metadata. To date packages have been produced for several species, including bald and golden eagles, desert tortoise, and wild horses and burros. Work has also begun on several other species. Spatial data related to other focus areas, including springs and roads, have been updated and are continuing to be updated based on new field information.

Major databases related to weed mapping and arid land restoration have been developed and updated. A Weed Sentry geospatial relational database was developed with integrated support for electronic handheld data collectors. This database is being used by The Weed Sentry program, another MSHCP funded project, for data collection, analysis, and reporting. Data from the Lake Mead Arid Land Restoration Program, also funded in part by the MSHCP, was consolidated and input into a GIS database, which is updated on a daily basis and used for data analysis and reporting. A new database for tracking seed collections for the restoration nursery facility was also developed and implemented.

In addition, numerous maps have been produced in support of other MSHCP projects being carried out on NPS lands. Support staff hired for the project have also provided GIS and Global Positioning System (GPS) support, including troubleshooting and training, for these other MSHCP projects.

## LEAD AGENCY

National Park Service

### Featured Project

Lake Mead National Recreation Area Monitoring of Ground Disturbance; Illegal Tracks and Traces

### Project Description

This project will help determine thresholds and triggers for management action concerning illegal off-road vehicle (ORV) travel. The park will be surveyed by ground and air, in an effort to discover and document any kind of off-road vehicle disturbance. Once noted, the disturbance is documented by a global positioning system (GPS), recorded into the park's geographic information system (GIS), and other databases. In addition, small traffic counters will be placed in 20 selected locations and monitored monthly to determine correlation, if any, between destination site carrying-capacity and illegal off-road vehicle use.



Nevada Conservation Corp member reinstalling traffic counter after data collection.

### Project Status

Data collection for the project is on-going. All 20 roads with traffic counters have been and are being monitored monthly, except for a few months when several counters were washed out during spring flooding. These have been replaced, are functional, and are now being monitored monthly. Illegal track discovery and documentation continues throughout the park.



GPS documentation of illegal off-road vehicle damage in desert pavement.

### Partners

Nevada Conservation Corporation

### Project Contact

Alice C. Newton, Supervisory Resource Management Specialist, Lake Mead National Recreation Area, 601 Nevada Way, Boulder City, NV 89005 (Please email before calling) email: [alice\\_corrine\\_newton@nps.gov](mailto:alice_corrine_newton@nps.gov) (702) 293-8977

### Funding Awarded

\$50,600.00

### Funding Spent / Reimbursed

\$35,600.00

### Completion Date or Status

Data collection will be completed by December 31, 2005.

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## **Products Produced from Project**

The Lake Mead National Recreation Area disturbance GIS database will be updated with new disturbance and correlating traffic data.

Quarterly Report

## LEAD AGENCY

Lake Mead National Recreation Area, National Park Service

### Featured Project

Vegetation Monitoring Program: Rare Plants and Weed Management Programs

### Project Description

This project has three major components: (1) continued monitoring of four Multiple Species Habitat Conservation Plan (MSHCP) covered plant species listed as Critically Endangered by the State of Nevada; (2) rare plant inventory of concern to Clark County MSHCP; and (3) mapping of alien invasive plants throughout Clark County.



Sticky buckwheat

### Project Status

Weather stations were installed in 2004 at the Las Vegas Bearpoppy (*Arctomecon californica*) transect sites.

Variable amounts of rainfall were recovered at each site within the same months, enabling the correlation of data from those stations with flowering and regeneration patterns. The record high rainfall season (2004-2005) appears to have contributed to the exceptional number of bearpoppy seedlings, and individuals of *Astragalus geyeri* var. *triquetrus* and *Eriogonum viscidulum* found during the 2005 surveys. Sandy Cove supported approximately 8,000 *A. geyeri* var. *triquetrus* plants. The total number of *E. viscidulum* from the surveyed areas was approximately 11,150. The totals for all three rare plants were significantly greater than the 2003-2004 seasons. Surveying and mapping of *Anulocaulis leiosolenus*, *Astragalus preussii* var. *laxiflorus*, and *Pediomelum castoreum* are ongoing. This year, 2005, has been productive for these species as well. *Eriogonum corymbosum* var. *nilesii* was not found within the Lake Mead National Recreation Area (NRA) in 2004, but surveys will continue throughout the fall of 2005.



Removal of Sahara mustard

Weed sentry crews, during the 2004 field season, surveyed a total of 20,768 acres of federal lands (National Park Service, Bureau of Land Management, Desert Wildlife Refuge, and Spring Mountain National Recreation Area). The 2005 weed sentry surveys were initiated the second week of December because of record rainfall combined with mild temperatures, resulting in early germination of annual plants. A total of 21,717 acres were surveyed to date in 2005. The Spring Mountain NRA was not on the original list of federal lands to be surveyed, but was added later because of the many species of concern endemic to the area. The weed sentry program documented new exotic plant invasions and has initiated control of numerous incipient populations. The 2005 field season is in the process of completion, after which the findings will be analyzed and a report generated. A target deadline for the report is fall 2005.



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## Partners

Dianne Bangle and Josh Hoines, Research Assistants, National Park Service Monitoring Programs, Public Lands Institute, University of Nevada, Las Vegas

Agency partners with Bureau of Land Management, U.S. Forest Service, and the U.S. Fish and Wildlife Service

## Project Contact

Jef Jaeger, Interim Project Coordinator, National Park Service Monitoring Programs, Public Lands Institute, University of Nevada, Las Vegas, NV, (702) 895-2463

## Funding Awarded

\$611,270.00

## Funding Spent / Reimbursed

\$388,270.00

## Completion Date or Status

Ongoing. Target for completion by December 31, 2005.

## Products Produced from Project

Required, quarterly written reports of deliverables have been provided to Clark County.

An oral presentation, with associated maps and printed materials, was given by Josh Hoines to the Clark County technical working group for weeds. September 2004.

A total of 11 reports were created by the weed sentry program for federal agencies documenting weed infestations in specific areas during 2004 surveys. These were provided to partner agencies in October 2004. A list is provided below.

Report to BLM on Surveys of Gold Butte.

Report to BLM on Surveys of Jean Dry Lake.

Report to BLM on Surveys of Piute Valley.

Report to BLM on Surveys of Bitter Spring Valley.

Report to BLM on Surveys of Frenchman Mountain.

Report to BLM on Surveys of the Nelson-Searchlight area.

Report to NPS on Surveys of the Virgin River.

Report to NPS on Surveys of Bitter Spring Valley.

Report to NPS on Surveys of the Nelson-Searchlight area.

Report to USFWS on Surveys of the Sheep Range.

Report to USFS on Surveys of the west side of the Spring Mountain NRA.

## LEAD AGENCY

National Park Service and University of Nevada, Las Vegas

### Featured Project

Factors Affecting Rarity of the Las Vegas Bearpoppy

### Project Description

The objective of this research project is to determine the seed fates of the Las Vegas Bearpoppy (*Arctomecon californica*), to identify future metapopulation dynamics, and further promote conservation efforts. The scope of the project follows seed fates through seed production, seed dispersal, and granivory to incorporation within the soil seed bank. In addition, seed viability testing will occur throughout the project to substantiate seed fate data. The research data will be collected from areas traversing the natural range of the Bearpoppy over a two-year consecutive period. The following hypotheses will be addressed in this study: (1) Seed production corresponds to capsule size and number of rosettes. (2) Primary seed dispersal declines leptokurtically from the source. (3) Elaiosomes, protein-rich food patches on seeds, promote secondary seed dispersal by ants and rodents. (4) The Las Vegas Bearpoppy does not maintain a persistent seed bank either because seeds lose viability when buried or because seeds are consumed by granivores or seed eaters.



Bearpoppy in flower.

### Project Status

The research project is in its final phase. Two years of data have been collected on seed production and seed dispersal with granivory field trials concluding at the end of September 2005. The soil seed bank analysis will be completed by the end of August 2005. Completion of elaiosome analysis is projected for December 2005.

### Partners

Laura Megill, Graduate Assistant, Department of Biological Sciences, University of Nevada, Las Vegas (UNLV) Las Vegas, NV email-lauramegill@cox.net, (702) 510-5397



Field work on soil seed bank.

### Project Contact

Lawrence Walker, Professor, Department of Biological Sciences, UNLV email- walker@unlv.edu (702) 895-3196

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**Funding Awarded**

\$60,000.00

**Funding Spent / Reimbursed**

\$35,750.00

**Completion Date or Status**

A final report on the seed fates of the Las Vegas Bearpoppy will be presented June 2006.

**Products Produced from Project**

2004 Bios Symposium – Presentation

2005 Arizona-Nevada Academy of Science – Presentation

2005 Bureau of Land Management – Project request for Bearpoppy seed bank analysis

## LEAD AGENCY

National Park Service

### Featured Project

Wildlife Inventory Monitoring and Management

### Project Description

Lake Mead National Recreation Area (NRA) includes approximately 464,950 acres of land in Clark County. These lands lie in close proximity to over 181,000 acres of water in Lakes Mead and Mohave. Lands within the recreation area also include riparian areas along the Virgin and Muddy Rivers as well as along the Las Vegas Wash, and numerous springs and springbrooks. Areas further from these water sources serve as habitat to a variety of species adapted to life in the Mojave Desert.

Lake Mead NRA also receives more than 10 million visitors annually and lies in close proximity to the Las Vegas urban area, the fastest growing city of its size in the United States. Other surrounding communities, though smaller, are also growing at a rapid pace. Demands placed on the resources at Lake Mead by this growing population run the gamut from groundwater depletion to off-road vehicle use. Rare and sensitive species living on the recreation area must be monitored in order to detect problems which require management attention, and to determine the effectiveness of ongoing management activities.



Midwinter Bald Eagle Survey

### Project Status

Peregrine falcon, willow flycatcher, bald eagle and desert tortoise surveys were conducted during both years of the biennium, as described in the project proposal. Some highlights of the data collected during this period include the discovery of one new peregrine nesting territory in each of the two years, bringing the total of known nesting territories at Lake Mead NRA to 15. There were two relatively high counts of bald eagles with 60 observed in 2004 and 67 in 2005. The discovery of two occupied willow flycatcher territories on Lake Mohave well into July indicated the probability of successful nesting. And, three of the remaining nine desert tortoise transmitters left over from translocation studies conducted by University of Nevada, Reno on the Mormon Mesa were recovered.



Adult female peregrine falcon

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## Partners

University of Nevada, Las Vegas, Bureau of Reclamation, Nevada Division of Wildlife, Arizona Game and Fish, U. S. Fish and Wildlife Service, Bureau of Land Management, University of Nevada, Reno, Clark County, San Bernardino County Museum, Institute for Bird Populations

## Project Contact

Ross Haley, National Park Service, Lake Mead National Recreational Area, Boulder City, NV  
(702) 293-8950

## Funding Awarded

\$239,108.00

## Funding Spent / Reimbursed

\$144,359.50

## Completion Date or Status

December 31, 2005

## Products Produced from Project

A presentation on the status of the peregrine falcon was delivered to The Rare Species Monitoring Workshop on March 14, 2005. Data are entered into Lake Mead NRA geographic information system (GIS) and is stored in Excel and Access databases.

Quarterly Report

## LEAD AGENCY

Partners in Conservation

### Featured Project

Global Positioning System (GPS) Roads Project: Roads and Mapping

### Project Description

The Bureau of Land Management (BLM) requires designated route systems in each of their Areas of Critical Environmental Concern (ACECs); additionally the Clark County Multiple Species Habitat Conservation Program (CCMSHCP) requires route designation systems and road management strategies in order to satisfy conservation actions identified as necessary for the Section 10 permit. Road management strategies and route designation systems conserve plant and animal species while ensuring access to public land in rural Clark County. Before either of those two objectives can be implemented, an accurate and complete baseline inventory must be established. Partners in Conservation (PIC), BLM, and volunteers from rural organizations work together GPSing routes, campsites, trash, cattle-guards, parking areas, intersections, signs, illegal hill climbs, etc., as well as digitally photographing key points and scenic sites. More than 1,500 volunteer hours have been donated to collect GPS data on more than 1,200 miles of roads in the three ACECs in northeast Clark County, approximately 1,400 intersections, and 800 other feature points.



Volunteers collect GIS data in Gold Butte Areas of Critical Concern.

PIC worked with the BLM to develop a data dictionary for the project as well as protocols for volunteers to follow while doing fieldwork. PIC and the BLM trained and worked with the volunteers to ensure quality, consistent geographic information system (GIS) data collection. PIC reviewed, downloaded, differentially corrected, and forwarded all GIS data to the BLM as well as associated copies of all daily field notes and other relevant documents and files.

### Project Status

The project started January 1, 2004; therefore, as of June 30, 2005, 75 percent of the project has been completed. The following are to-date numbers and reflect what has been accomplished in the first six quarters of the contract period. The partners have been involved in 88 presentations/reports/updates/displays informing the public about the project and explaining what has been done and what remains to be completed. These various displays were given, for example to rural organizations, public relations events, town board and city council meetings, and miscellaneous workshops and/or conferences. The three ACEC's in northeast Clark County and other adjacent areas are 100 percent mapped with Trimble Geo3c GIS equipment and all the data has been transmitted to the BLM and Clark County. Data verification, review, and ground



Road GPSed in Mormon Mesa Areas of Critical Concern.

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truthing is 99 percent complete. Roads Working Group (Roads WG) meetings have been held to assist the BLM in the public process phase of the project; PIC is chairing the Roads WG meetings and assisting BLM with any appropriate duties during the public process phase. Six cleanups, one each quarter, at Whitney Pockets have been completed; with cleanups scheduled after heavy-use holiday weekends. The project has six more months in the contract period.

### **Partners**

Clark County MSHCP, Clark County, BLM, American Legion Post 75, Moapa Valley Veterans of Foreign Wars, Mesquite Virgin Valley Sunrise Rotary Club, Mesquite ATV Club.

### **Project Contact**

Elise McAllister, Administrator, Partners in Conservation; Moapa, NV (702) 864-2579

### **Funding Awarded**

\$297,000.00

### **Funding Spent / Reimbursed**

\$181,875.00

### **Completion Date or Status**

The project is ongoing.

### **Products Produced from Project**

GIS data files

Daily Field Notes

Training Packet for Volunteers

Digital Photographs

Quarterly Report

## LEAD AGENCY

Southern Nevada Water Authority

### Featured Project

Investigation of Bat Species Diversity and Distribution along the Las Vegas Wash

### Project Description

The purpose of this study is to provide a baseline of knowledge on temporal changes in inventory and differential habitat use within Las Vegas Wash (Wash). Because the baseline is being developed during the initial phase of an extensive riparian restoration program in the Wash, the effects of the program on resident and transient bat populations can be documented. This is a progress report of the initial phase of baseline collection from January 2004 to May 2005.

### Project Status

A total of 16 species of bats have been recorded to date including *Macrotus californicus*, *Myotis californicus*, *Myotis ciliolabrum*, *Myotis thysanodes*, *Myotis yumanensis*, *Lasiurus blossevillii*, *Lasiurus cinereus*, *Lasiurus xanthinus*, *Pipistrellus hesperus*, *Eptesicus fuscus*, *Corynorhinus townsendii*, *Idionycteris phyllotis*, *Antrozous pallidus*, *Tadarida brasiliensis*, *Nyctinomops macrotis*, *Eumops perotis californicus*. Eight of the species are listed as Federal Species of Concern, three of them are state-listed sensitive and four are state-listed protected. Three species are listed on the Clark County Multiple Species Habitat Conservation Plan (MSHCP) evaluation list and five are on the MSHCP watch list. Six species have previously never been recorded in the Las Vegas Valley, including *Myotis ciliolabrum*, *M. thysanodes*, *M. yumanensis*, *Lasiurus blossevillii*, and *Idionycteris phyllotis*.

### Partners

Las Vegas Wash Coordination Committee, United States Bureau of Reclamation, O'Farrell Biological Consulting, Southern Nevada Water Authority

### Project Contact

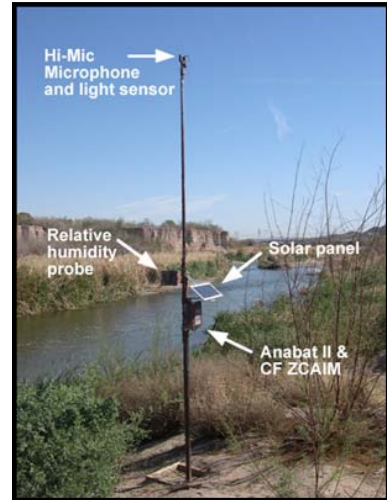
Seth A. Shanahan, Environmental Biologist, Southern Nevada Water Authority, Las Vegas, NV (702) 822-3314

### Funding Awarded

\$35,797.00

### Funding Spent / Reimbursed

\$0.00



Acoustic monitoring station along Las Vegas Wash



Yuma myotis



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## Completion Date or Status

Recent advances in bat call identification capabilities will allow an increase in the data acquisition period. The completion date is estimated as December 2006.

## Products Produced from Project

Information from the study was presented in a televised broadcast of the Southern Nevada Water Authority's "*Water Ways*" program in July 2004. This program was broadcasted for the entire month of July on Clark County Community Channel 4. In addition to televised media, the bat study was highlighted in the monthly *Water Wise* printed publication for the Southern Nevada Water Authority. The *Water Wise* publication was distributed in the summer of 2004 to approximately 600,000 residents of Southern Nevada. A thorough description of the bat study and pertinent results has also been posted on the Las Vegas Wash Coordination Committee website ([http://lvwash.org/being\\_done/progress/bat.html](http://lvwash.org/being_done/progress/bat.html)).

Popular media coverage of the program is important to garner interest and support for the study. That said, information from the study was presented at the annual conference for The Wildlife Society (Western Section) in Rohnert Park, CA on Feb. 26-28, 2004. Additionally, results of the study will be presented to an assembly of bat biologists in October 2005 at the annual meeting of the North American Symposium on Bat Research (NASBR) in Sacramento, CA. Seth Shanahan, an environmental biologist from the Southern Nevada Water Authority will present the project to the NASBR group.

## LEAD AGENCY

Southern Nevada Water Authority

### Featured Projects

Investigation of Amphibian Species Diversity and Distribution along the Las Vegas Wash

#### Project Description

The amphibian study was initiated in April 2004. Visual encounter surveys are used to determine the presence of amphibians in the Las Vegas Wash (Wash). Visual encounter surveys are frequently used in the region to survey for amphibian populations. Surveys consist of visual and audio searches of aquatic habitats close to shorelines and terrestrial habitat within several meters of water. These surveys are conducted at night when adult anurans are more easily detected.

#### Project Status

Surveys will be conducted approximately two-three nights of each month for a two-year period. This will allow for detection of early breeding anurans, such as the pacific treefrog, and other species not breeding until the summer monsoons, such as spadefoot toads. To date, visual encounter surveys have detected the presence of two anurans in the Wash: the bullfrog and the Woodhouse's toad. The Woodhouse's toad is listed on the Clark County Multiple Species Habitat Conservation Plan (MSHCP) watch list.

#### Partners

Las Vegas Wash Coordination Committee  
United States Bureau of Reclamation  
Southern Nevada Water Authority

#### Project Contact

Seth A. Shanahan, Environmental Biologist, Southern Nevada Water Authority, Las Vegas, NV  
(702) 822-3314

#### Funding Awarded

\$27,810.00

#### Funding Spent / Reimbursed

\$0.00

#### Completion Date or Status

December 2005



Woodhouse's toad



Preparing for a night of surveying

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## Products Produced from Project

The study was highlighted in the monthly *Water Wise* printed publication for the Southern Nevada Water Authority. The *Water Wise* publication was distributed in the summer of 2004 to approximately 600,000 residents of Southern Nevada. Thorough descriptions of the amphibian study and pertinent results have also been posted on the Las Vegas Wash Coordination Committee website ([http://lvwash.org/being\\_done/progress/amphibians.html](http://lvwash.org/being_done/progress/amphibians.html)). Popular media coverage of the program is important to garner interest and support for the study. Results from the study are also being published in the journal for the Southwestern Association of Naturalists (Bradford, D.F., Jaeger, J.R., and S.A. Shanahan)

*Distributional Changes and Population Status of Amphibians in the Eastern Mojave Desert*, information from this study was also presented at the annual conference for The Wildlife Society (Western Section) in Rohnert Park, CA on Feb. 26-28, 2004.

## LEAD AGENCY

The Nature Conservancy

### Featured Project

Integrated Science Assessment for the Upper Muddy River, Clark County, Nevada

### Project Description

The Muddy River is one of the Mojave Desert's most important areas of biodiversity, providing habitat for many species of concern, including four fish, eight invertebrate, and 76 breeding bird species, as well as a unique array of Mojave Desert aquatic and riparian habitats. Of particular concern is the endangered Moapa dace (*Moapa coriacea*), which only inhabits the warm spring-fed headwaters of the river system.

The Nature Conservancy (TNC) was contracted by Clark County to develop a comprehensive upper Muddy River watershed assessment to address restoration and land management issues on the Moapa Valley National Wildlife Refuge and elsewhere in the upper Muddy River floodplain. The watershed assessment has two components—a geomorphic assessment and an integrated science plan.

The *geomorphic assessment* included a review of the existing hydrologic, geologic, geomorphic, and groundwater data as they relate to conservation goals on the upper Muddy River.

The *integrated science plan*: (a) integrated existing scientific data and initial direction from the Multiple Species Habitat Conservation Plan (MSHCP) adaptive management process as it relates to key conservation targets; (b) developed restoration goals for species and communities; and (c) defined long-term management practices for the Moapa Valley National Wildlife Refuge and other agency parcels on the upper Muddy River.



Restored Pederson Spring on the Moapa Valley National Wildlife Refuge. Photo: Louis Provencher, 2003

From these two project components, TNC prepared a final watershed assessment report in coordination with agency partners.

A public informational meeting to describe the findings of the upper Muddy River geomorphic assessment and the science workshops was held on September 9, 2004 in Moapa, Nevada. Attendees heard presentations from Louis Provencher of TNC and Rob Andress of Otis Bay Riverine Consultants, Inc., and were given questionnaires to document their opinions and concerns. Responses reflected a positive attitude toward the preservation of the rural character of the upper Muddy River floodplain. It is clear that concerns about flooding and water quantity and quality will dominate future restoration discussions.

### Project Status

Project is completed. Final report titled Provencher, L., S. Wainscott, and R. Andress. 2005. *Integrated Science Assessment for The Upper Muddy River, Clark County, Nevada.*

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Final report to the Clark County Multiple Species Habitat Conservation Plan, The Nature Conservancy, Reno, Nevada was submitted to Clark County during May 2005.

## Partners

Otis Bay Riverine Consultants, Inc., Muddy River Regional Environmental Impact Alleviation Committee (MRREIAC), U.S. Fish and Wildlife Service, Moapa Band of Paiutes

## Project Contact

Louis Provencher, The Nature Conservancy, One E. First Street, Suite 1007, Reno, NV 89501, (775) 322-4990 x20, [lprovencher@tnc.org](mailto:lprovencher@tnc.org).

## Funding Awarded

\$247,108.00

## Funding Spent / Reimbursed

\$225,566.21

## Completion Date or Status

June 30, 2005

## Products Produced from Project

Muddy River Integrated Science Plan Workshop. July 17-18, 2002. Technical meeting to develop fact sheets for Clark County covered and listed species, and rank conservation strategies/research priorities for the upper Muddy River. Bureau of Land Management, 4701 N. Torrey Pines, Las Vegas, NV.

Provencher, L. and R. Andress, 2004. *Integrated Science Assessment for the Upper Muddy River, Clark County, Nevada, Annual Report to the Clark County MSHCP, Nevada*. The Nature Conservancy, Reno, Nevada.

Otis Bay Riverine Consultants, Inc. 2004. *An ecological survey of the Upper Muddy River, Clark County, NV: Final Report*. Prepared by Stevens Ecological Consulting, LLC, P.O. Box 1315, Flagstaff, AZ 86002.

The Nature Conservancy, Sept. 9, 2004. *Introduction to the upper Muddy River Integrated Science Plan for the upper Muddy River Informational meeting: Upper Muddy River Stakeholder Meeting* ppt. Moapa, Nevada.

Otis Bay Riverine Consultants, Inc. Sept. 9, 2004. Geomorphic assessment and restoration options presented at the upper Muddy River Informational meeting: *Otis\_Bay\_Presentation.ppt*. Moapa, Nevada.

Moapa Valley Progress, Sept. 15, 2004. Moapa residents hear restoration plan for Muddy River p. 11-12.

Provencher, L., S. Wainscott, and R. Andress, 2005, *Integrated Science Assessment for the Upper Muddy River, Clark County, Nevada. Final Report to the Clark County Multiple Species Habitat Conservation Plan*, The Nature Conservancy, Reno, Nevada.

The Nature Conservancy 2005. Conservation Project Management tool for the upper Muddy River segments and rollup; 2003TNC1A\_UMR\_Seg1.xls, 2003TNC1A\_UMR\_Seg2.xls, 2003TNC1A\_UMR\_Seg3.xls, 2003TNC1A\_UMR\_Seg4.xls, 2003TNC1A\_UMR\_Seg5.xls, 2003TNC1A\_UMR\_Seg6.xls, 2003TNC1A\_UMR\_Seg7.xls, 2003TNC1A\_UMR\_Seg8.xls, 2003TNC1A\_UMR\_Seg9.xls, 2003TNC1A\_UMR\_AllSegments.xls.

## LEAD AGENCY

The Nature Conservancy

### Featured Project

Muddy River Interim Management Plan Development and Partner Coordination

### Project Description

The Nature Conservancy (TNC) and partners continued work begun during the 2003-2005 biennium to implement conservation activities on the Muddy River in support of the Clark County Desert Conservation Program (CCDCP). Nevada's Muddy River has the highest concentration of at-risk riparian and aquatic species in Clark County. The upper 15 miles of the Muddy River watershed is primarily in private and tribal ownership. Recent and ongoing acquisitions are allowing for the transfer of a small but strategic number of formerly private acres into public ownership. With these acquisitions comes the need to provide for property management and the opportunity to enhance or restore habitat values. The goal of the project is to continue acquisition efforts in coordination with public and private conservation partners while planning for cooperative management and restoration of key riparian acquisitions

### Project Status

In the last two years, working with willing sellers, nearly 125 acres, including nearly a half mile of riparian corridor, were afforded permanent protection through acquisition. In late 2003, the S. Perkins Ranch was acquired by TNC, and nominated for acquisition under the Southern Nevada Public Land Management Act (SNPLMA). The Henrie property was acquired by TNC in 2004 and also nominated for acquisition through the SNPLMA. TNC has been in contact with a number of other property owners along the Muddy River to explore property protection options. TNC continues to participate in discussions with the coalition of parties interested in the Muddy River to identify acquisition and management priorities, including the Muddy River Working Group, Muddy River Recovery Implementation Team, and the stakeholders identified in the communications plan.



View of Muddy River, looking North across S. Perkins property

In total, TNC is now providing property management for three properties, totaling 140 acres, with approximately two miles of riparian corridor. Property management activities in this biennium have included sale and removal of nursery stock from the Alamo property, building management, and irrigation equipment maintenance. TNC also worked toward the resolution of boundary line disputes with neighboring properties.

The final draft, Preliminary Management Plan for the Upper Muddy River, was completed in March 2005. The PMP provides short-term management direction for upper Muddy River parcels acquired under the Desert Conservation Program (DCP), in anticipation of longer term management in public ownership consistent with the Bureau of Land Management (BLM) Las Vegas Resource Management Plan (RMP), the Clark County MSHCP, the Recovery Plan

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for the Rare Aquatic Species of the Muddy River Ecosystem, and the Desert National Wildlife Refuge Complex's Comprehensive Conservation Plan document currently under development. The PMP integrates biological, geological, cultural, and recreation management actions.

The Communications Plan for Muddy River activities was completed in March 2004. This plan describes objectives and a process for facilitating and enhancing communications among the various public and private partners involved in conservation activities on the upper Muddy River.

## Partners

Clark County DCP and its Muddy River Working Group, BLM, U.S. Fish and Wildlife Service, U. S. Geological Survey, Nevada Division of Wildlife, Muddy River Regional Environmental Impact Alleviation Committee, Partners in Conservation, and The Conservation Fund.

## Project Contact

Janet Bair, Director of Construction Programs TNC  
Reno Field office, Reno, NV, (775) 322-4990



View east of the S. Perkins property pond

## Funding Awarded

\$ 177,147.00

## Funding Spent / Reimbursed

\$86,532.02

## Completion Date or Status

Landowner contact and opportunity assessment is ongoing. The project will be carried on into the next biennium, pending available funding.

## Products Produced from Project

Real estate closing packages for S. Perkins and Henrie properties along the upper Muddy River in Clark County

SNPLMA Round 6 Nomination for the Henrie property

Preliminary Management Plan for the Upper Muddy River Aquatic and Floodplain Habitats in Clark County, Nevada, March 2005

Communications Plan for Muddy River Activities, March 2004

## LEAD AGENCY

The Nature Conservancy

### Featured Project

Low Elevation Rare Plant Conservation Management Strategy

### Project Description

To fulfill a Clark County Multiple Species Habitat Conservation Plan (MSHCP) requirement, The Nature Conservancy (TNC) is developing a conservation management strategy (CMS) for nine covered, low elevation plant species. The nine plants were selected by the rare plant working group and include: sticky ringstem, Las Vegas Bearpoppy, white bearpoppy, threecorner milkvetch, alkali mariposa lily, Pahrump Valley Wild Buckwheat, sticky wild buckwheat, white-margined beardtongue, and parish phacelia (*Anulocaulis leiosolenus*, *Arctomecon californica*, *A. merriamii*, *Astragalus geyeri* var. *triquetrus*, *Calochortus striatus*, *Eriogonum bifurcatum*, *Eriogonum viscidulum*, *Penstemon albomarginatus*, and *Phacelia parishii*). For each taxon, or category, the following is accomplished: collect and analyze background status and threats information (stresses and sources of stress); develop conservation measures necessary to adequately protect and conserve populations and habitats; and outline implementation requirements for the strategy, adaptive management needs, and measures of conservation success. The rare plant CMS is documented in a TNC-developed conservation planning tool and then, in a final CMS report.



Las Vegas Bearpoppy has more complete background status information than any of the other eight plant taxa.

### Project Status

TNC has collected and analyzed background status information from cooperators and other agencies, individuals, and available literature for all nine taxa or groups. Project related literature and data references for all information sources have been entered into a bibliographic database for use by cooperators. Draft population and habitat conceptual models and partially completed geographic information systems (GIS) analyses of threats, potential habitat, and management situations are in various stages of completion. TNC assisted Dr. Susan Meyer by collecting additional demographic data for the Las Vegas Bearpoppy in the spring 2005. Dr. Meyer's population viability analysis will be complete at the end of 2005, which will better inform the CMS.



Dr. Susan Meyer at the North LV Air Terminal's Las Vegas Bearpoppy site where she is studying seed longevity and 2005 seedling survival rates.



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TNC's Excel-based conservation planning tool is being populated with known key ecological attributes, viabilities, and threats information. A draft of background information and an analysis of the CMS report are in the later stages of composition for the cooperators' review. The documents will provide the groundwork for discussions and development of conservation objectives and strategic actions this fall.

## **Partners**

Bureau of Land Management, Las Vegas District, National Park Service, Lake Mead National Recreation Area, Nevada Division of Forestry, Biological Resources Research Center, University of Nevada, Reno

## **Project Contact**

Jan Nachlinger, Director of Conservation Planning, The Nature Conservancy, Reno, NV  
(775) 322-4990, ext.18

## **Funding Awarded**

\$113,100.00

## **Funding Spent / Reimbursed**

\$35,815.00

## **Completion Date or Status**

The original project completion was scheduled for the end of September 2005; however, a project extension request has been submitted, with final approval pending.

## **Products Produced from Project**

Quarterly Report

Rare plant CMS bibliographic database (Endnote v8)

Draft rare plant conservation management 5S tools for each of the nine plant taxa (Excel 2002)

Project presentation to City of North Las Vegas February, 2005 (PowerPoint 2002)

Rough draft background section and new data analysis for the rare plant CMS report (Word 2002, Access 2002)

## **LEAD AGENCY**

University of Nevada Las Vegas

### **Featured Project**

Floristic Survey of the Black Mountains

### **Project Description**

This project consists of a floristic survey of the Black Mountains in Clark County, Nevada. The intent is to increase knowledge of location and abundance of rare plants and threats to those species. It is expected this survey will aid in the preparation of a Low Elevation Rare Plants Conservation Plan.

### **Project Status**

Surveys have been conducted in the Callville Wash and Echo Wash, in the northern section of the Black Mountains. Each survey included a collection list, voucher specimens, and a sighting list of plants observed in the study area but not collected.

### **Partners**

N/A

### **Project Contact**

Fred Landau, Research Associate, Department of Biological Sciences, University of Nevada Las Vegas, Las Vegas, NV, (702) 895-3011

### **Funding Awarded**

\$26,570.00

### **Funding Spent / Reimbursed**

\$0.00

### **Completion Date or Status**

Surveys are expected to continue until June 2006. A final report is due December 2006.

### **Products Produced from Project**

Quarterly Report

Initial observed plant list

Initial collected plant list

## LEAD AGENCY

University of Nevada, Las Vegas and the National Park Service, Lake Mead National Recreation Area

### Featured Project

Evaluation of the Impact of Vegetation Encroachment on Relict Leopard Frog Populations

### Project Description

Visual observations suggest the preferred habitat for relict leopard frogs (*Rana onca*) are shallow streams without dense vegetation. However, the perspective remains unverified. If vegetation encroachment is a threat to populations, then mitigation efforts will be required. The featured research tests this hypothesis: a preferred habitat for *R. onca* would be a spring or stream without dense vegetation and mostly open shoreline. The main objective of the project was to determine microhabitat preferences of *R. onca* in reference to vegetation type and structure at springs in the Overton Arm region of Lake Mead.



Dense vegetation at Blue Point Spring.

### Project Status

The project is on-going and on schedule. Habitat variables (e.g., various measures of plant cover and stream characteristics) at the site have been measured and frogs radio-tracked for several seasons. Several models of microhabitat selection have been developed using different statistical approaches. In general, frogs avoid dense vegetation, select wider stream width and vegetation outside the dominant emergent vegetation types (e.g., *Eleocharis*, *Scirpus*). These data and analyses confirm the hypothesis that *R. onca* avoids dense emergent vegetation and supports the contention that emergent vegetation, particularly dense stands of *Eleocharis* and *Scirpus*, are a threat to local populations.



Sean Harris conducting radio telemetry of relict leopard frogs at Blue Point Spring.

### Partners

Brett Riddle, Department of Biological Sciences, UNLV and Ross Haley, Lake Mead National Recreation Area

### Project Contact

Jef Jaeger, Research Assistant, Department of Biological Sciences, University of Nevada, Las Vegas, NV 89154-4004 (702) 895-2463

### Funding Awarded

\$145,526.00

### Funding Spent / Reimbursed

\$104,258.00

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## **Completion Date or Status**

The final project report is due on February 1, 2006 and is currently on schedule.

## **Products Produced from Project**

A regional presentation was given on the project: S.M. Harris, J.R. Jaeger, D.F. Bradford, B.R. Riddle. "Evaluating vegetation encroachment on relict leopard frogs: a precursor to habitat management." Presentation given at the BIOS Symposium, Oct. 23, 2004, Department of Biological Sciences, University of Nevada, Las Vegas.

Verbal reports on the project have been given by Jef Jaeger at all Relict Leopard Frog Conservation Team meetings during 2004 and 2005.

Written reports of deliverables have been provided to the Clark County via the required quarterly reports.

Jef Jaeger participated in the writing and editing of the draft *Relict Leopard Frog Conservation Assessment and Strategy*.

## LEAD AGENCY

University of Nevada, Las Vegas and the National Park Service

### Featured Project

The affects of Athel (*Tamarix aphylla*) *m* *Ziparian* on Riparian Habitats at Lake Mead National Recreation Area

### Project Description

The objectives of the research is to determine the competitive interactions of *Tamarix aphylla* (athel tree) and its impact on soil chemistry to gain a better understanding of the possible threat the alien species poses on riparian ecosystems in the southwest United States. To do this, growth competition experiments will be performed pitting *T. aphylla* against the invasive *Tamarix ramosissima*, (salt cedar), and the native *Salix gooddingii* (Goodding's willow), all three of which occur at Lake Mead. These experiments will be performed in the field at the drawdown zone of Lake Mead and in a controlled nursery experiment. Impact on soil chemistry will be investigated by collecting soils and accompanying vegetation measurements under the same three species of plants and comparing soil salinity, nitrogen, pH, particle size and organic matter. The hypotheses are: *T. aphylla* will be less affected by the presence of either of the competitors because of its high growth rates and tree life form. In addition, *T. aphylla*'s impact on soil chemistry will be significantly different from the other species in the study because of its larger size and evergreen habit.



*Tamarix aphylla*, approximately five meters tall

### Project Status

A significant portion of the work for the project has been completed. The nursery growth competition experiment concluded August 2005 and analysis of the data is underway. The field growth competition experiment began in May 2005 and may be finished as early as October 2005, depending on growth. Soils and vegetation measurements have been collected from two of three potential sites, with soil analysis set to begin in September 2005. Depending on progress of the field growth competition experiment, a final report will be completed between May and December 2006.



Nursery experiment at one month.

### Partners

Willard E. Hayes II, Graduate Assistant, Department of Biological Sciences, University of Nevada, Las Vegas, (UNLV) Las Vegas, NV

### Project Contact

Lawrence Walker Ph.D., Professor, Department of Biological Sciences, University of Nevada, Las Vegas, (UNLV) Las Vegas, NV walker@unlv.nevada.edu (702) 328-6035

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**Funding Awarded**

\$60,000.00

**Funding Spent**

\$35,750.00

**Completion Date or Status**

Depending on conditions of the field growth competition experiment, a final report will be completed between May and December 2006.

**Products Produced from Project**

Quarterly Report

UNLV BIOS Symposium October 2004 – presentation

Nevada Conservation Corps 2004-2005 – three presentations to volunteers on the athel tree crew at Lake Mead National Recreation Area.

## LEAD AGENCY

University of Nevada Las Vegas

### Featured Project

Temperature Acclimation and Oxygen Consumption of *Rana onca* larvae.

### Project Description

The relict leopard frog, *Rana onca*, has been extirpated from most of its range and populations within the last several years leaving fewer than 1,000 adult frogs remaining. Water sources for all sites where frogs occurred were geothermally influenced, with relatively constant water temperatures between 16° and 55° C. The Lake Mead National Recreation Area (NRA) and the National Park Service (NPS) embarked on a program to increase the number of frogs and number of frog populations; but, identification of suitable habitat is confounded by the varied thermal environments in which the frogs currently occur. It is not known whether frogs from very warm springs can be moved safely to springs with much cooler water, or whether frogs raised under the current captive rearing protocol can be introduced successfully into new habitats with very different water temperatures. It is also not known, if frogs from the various populations are genetically different enough that their preferred thermal regimes may significantly compromise efforts to introducing the Relict Leopard Frog's to new or historical sites. The proposed study will measure oxygen consumption, temperature preference, and burst swimming speed of *Rana onca larvae* in different thermal environments in order to make an acute determination of temperature tolerance. The results of the study will help develop management procedures for transferring frogs raised in captivity. The growth rates at different rearing temperatures may also provide information to better define the most effective rearing protocols and preferred temperature regimes. The information should provide guidance for description, discovery and creation of a habitat. The spring sites examined for potential as *Rana onca* experimental introduction sites were consistent with the best habitat descriptions available.



One of 21 springs, seeps and water developments on Gold Butte examined for potential as a *Rana onca* habitat. The spring had insufficient water.



The spring and riparian area on Gold Butte were selected by the Relict Leopard Frog Conservation Team as suitable habitat for establishment of a new *Rana onca* population.

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## Project Status

### Temperature acclimation and captive rearing experiments:

In 2004 and 2005, tadpoles obtained from the NPS were split into 5 groups, with approximately 50 tadpoles in each group, and reared at five different temperatures. Animals were obtained much earlier in development in 2005 than in 2004. Tadpoles brought to acclimation temperature earlier in development (2005 group) metamorphosed at a significantly greater mass than those acclimated later in development (2004 group) for both 25 °C and 30 °C. Acclimation start time affected time to metamorphosis differently at 25 °C than at 30 °C. At 25 °C earlier acclimation start time (2005) resulted in earlier metamorphosis. At 30 °C earlier acclimation start time resulted in a later metamorphosis. A 25 °C rearing temperature produced the largest metamorphosis in the shortest time with the lowest mortality in both years. Acclimation effects on metabolic rate were dependent on the developmental stage. The effects of acclimation temperature on temperature preference and burst speed are still under investigation.

### Examination of Springs as potential frog habitat:

Twenty-one Gold Butte springs/water developments with water rights owned by Clark County were examined for potential as frog habitats during the summer months, the lowest period of water availability during the year. Most of the sites were either dry or had very small water developments (photograph 1 above), and therefore not suitable as frog habitat. A few sites had sufficient water to warrant further examination and, of those, one was selected for the *Rana onca* introduction (photograph 2, above).

## Partners

National Park Service, Lake Mead National Recreation Area, Bureau of Land Management, Relict Leopard Frog Conservation Team

## Project Contact

Karin Hoff, Associate Research Professor, University of Nevada, Reno, Reno, NV,  
(702) 263-1036

## Funding Awarded

\$83,450.00

## Funding Spent / Reimbursed

\$54,451.37

## Completion Date or Status

Project will be completed by the end of the contract period.

## Products Produced from Project

Quarterly Reports

Three peer-reviewed publications are planned.



## LEAD AGENCY

University of Nevada Las Vegas with National Park Service

### Featured Project

An Evaluation of the Non-vascular Plants of Concern in Clark County

### Project Description

The goal of the project is to evaluate the distribution and health of 11 bryophyte species of concern listed by Clark County in the Multiple Species Habitat Conservation Plan (MSHCP). The list includes 10 species of moss and one species of liverwort. Several of these species are rare globally, while most are infrequent or rare locally. The project includes field work to locate existing populations, assaying population health, and lab work to correctly identify each species.



The moss *Anacolia menziesii*.

### Project Status

As of June 30, 2005, nine of the 11 species have been fully or partially assessed within Clark County. New localities have been recovered for five species. Despite field searches of the habitat, original localities could not be recovered for the remaining four species. However, in the process of the investigation, several regionally rare species were recovered and noted in quarterly reports. Most field efforts were focused in the Spring Mountains, in areas of known high diversity, with particular emphasis on Red Rock National Conservation Area and the Deer Creek watershed. An online database of all existing collections in the University of Nevada, Las Vegas (UNLV) herbarium has been designed and initiated with the assistance of John Brinda, graduate assistant with the UNLV biology department.



The liverwort *Targionia* sp. nov.

### Partners

John Brinda, graduate assistant, Department of Biology, University of Nevada, Las Vegas, Las Vegas, NV

### Project Contact

Lloyd Stark, Associate Professor, Department of Biological Sciences, University of Nevada, Las Vegas, NV 89154-4004, (702) 895-3119, email LRS@UNLV.nevada.edu

### Funding Awarded

\$30,340.00

### Funding Spent / Reimbursed

\$16,462.50

### Completion Date or Status

Funding period is from Jan. 20, 2004 through Jan. 20, 2006, with final report due June 30, 2006.

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## Products Produced from Project

Quarterly Reports. June 2004, September 2004, December 2004, March 2005, June 2005. These reports were posted to the Clark County Multiple Species Habitat Conservation Plan Database website, <http://www.brrc.unr.edu/mshcp/>

In the course of the project one peer-reviewed article was published and another is in manuscript, five quarterly reports were posted online, an oral progress report was delivered to the annual Rare Plant Meeting of the Nevada Native Plant Society, and one key genus was reviewed for publication. The project products are as follows:

Publication. Shevock, J. R., J. R. Spence, and L. R. Stark. 2005. *Contributions toward a bryoflora of Nevada: bryophytes new for the Silver State*. Madrono 52: 66-71.

Oral Progress Report. April 2005, *Bryophyte Species of Concern in Southern Nevada*, 20 minute presentation to the Nevada Native Plant Society, Rare Plant Meeting, UNLV campus.

Generic Review. November 2004, *Technical Review of The Genus Trichostomum* by Richard Zander, for publication in the Bryophyte Flora North America series of volumes. Reviews were critical for the evaluation of the taxonomy of the Clark County listed species *Trichostomum sweetii*.

## LEAD AGENCY

University of Nevada Reno (UNR), Biological Resource Research Center (BRR)

### Featured Project

Baseline Density Monitoring: Southern Nevada Desert Wildlife Management Area — Populations of the Desert Tortoise

### Project Description

The Clark County Short-Term Desert Tortoise Habitat Conservation Plan, the Desert Conservation Plan and the Multiple-Species Habitat Conservation Plan all identify monitoring desert tortoise populations as an essential element of desert tortoise conservation. The Desert Tortoise Recovery Plan has recommended monitoring desert tortoise populations as an essential part of any sound conservation or management plan. The center has collaborated with the U. S. Fish and Wildlife Service (USFWS), the United States Geological Survey and colleagues at St. Andrews University about conducting tortoise monitoring in Southern Nevada, improving monitoring techniques, and in evaluating and developing new monitoring techniques.

#### Data Management and Evaluation

The USFWS requested we monitor range-wide compliance with protocols and evaluate data as it is collected. This requires receiving data electronically and hard copies as soon as possible. The protocols currently being followed are sensitive to certain types of observer error. This type of error can, in some cases, be detected by ongoing evaluation of data collection and corrected. The data sets sent by other field workers will then be evaluated and a report of the results forwarded to the USFWS.



Desert tortoise monitoring.

At the request of the USFWS, the center has undertaken the evaluation of current monitoring techniques, and in doing so, has developed a new approach to monitoring the tortoise population density. This new technique was presented to the Technical Advisory Committee of the Desert Tortoise Management Oversight Group (MOG-TAC) in the fall 2001. The proposal was a revolutionary approach to monitoring procedures and a new approach to data evaluation, which could lead to improvements in the accuracy of density estimates and a significant decrease in cost. Simulations of this technique have shown great promise. The MOG-TAC approved field evaluations of the new method.

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While the project was developed at the request of the USFWS, training described in the proposal conforms to the agency's desert tortoise monitoring protocols and the training will benefit the Clark County Multiple Species Habitat Conservation Plan (MSHCP) and the USFWS Desert Tortoise Recovery Program.

## **Project Status**

In 2004, the USFWS formed the Desert Tortoise Monitoring and Implementation Committee (DTMIC) to replace the previous Management Oversight Group Technical Advisory Committee (MOGTAC). The DTMIC was charged with providing technical advice to the USFWS for range-wide desert tortoise monitoring. The new committee was comprised of all the senior scientists and partners from the former project and representatives from California. The committee established the parameters for range-wide monitoring including the distribution of survey points, protocols to be followed, the methods for quality assurance, quality control, and analysis of data. In 2004, more than 220 desert tortoise density transects were conducted throughout the tortoise habitat in Southern Nevada and adjacent areas. In 2005, more than 330 transects were conducted. The data was submitted to the USFWS for analysis and determination of range-wide population trend.

## **Partners**

Roy Averil-Murray, United States Fish and Wildlife Service, Steve Corn, United States Geological Survey, Phil Medica, United States Geological Survey, Ken Nussear, United States Geological Survey

## **Project Contact**

Ron Marlow, Assistant Research Professor, University of Nevada, Las Vegas (702) 493-0754; C. Richard Tracy, Director of the Biological Resource Research Center and Research Professor, University of Nevada, Reno, (775)784-4565.

## **Funding Awarded**

\$1,377,000.00

## **Funding Spent / Reimbursed**

\$567,000.00

## **Completion Date or Status**

The project is ongoing and continued through the 2005-2007 bienniums.

## **Products Produced from Project**

Quarterly Reports

Tracy, C. R., R. Averill-Murray, W.I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, P. Medica. *2004 Desert Tortoise Recovery Plan Assessment*.

## LEAD AGENCY

University of Nevada Reno (UNR), Biological Resource Research Center (BRR)

### Featured Project

Translocation, Long-term Monitoring, Desert Tortoise Density Evaluation, and Establishment of New Large Scale Translocation Study Sites (LSTS)

### Project Description

In February of 1996, Clark County contracted with United States Geological Survey (USGS) and University of Nevada, Reno (UNR) to develop and implement an experimental desert tortoise translocation program. The five-to-six-year program was to examine the feasibility of large-scale desert tortoise translocation into different habitats and to identify the release conditions maximizing success and the long-term efficacy of translocation. The first programmatic group of tortoises was released on April 23, 1997. The translocation program has proceeded much more quickly, efficiently, and effectively than was anticipated. The 1,200 tortoises being held at the Desert Tortoise Conservation Center (DTCC) were translocated during the first year of the program, and by November 1, 1998 more than 1,500 tortoises had been translocated into the large-scale translocation study site adjacent to Interstate 15, south of Jean, Nevada.



Technicians monitoring tortoise health in density pens.

The Clark County Short-Term Habitat Conservation Plan (HCP), the extension of the Desert Conservation Plan, the Multiple Species Habitat Conservation Plan (MSHCP), and the Desert Tortoise (Mojave population) Recovery Plan all identify an efficacy study and long-term monitoring of translocation as necessary. Clark County directed and funded a translocation study that demonstrated efficacy. The study ended early in 1999. Since the initial study, more than 4,000 tortoises that would otherwise have been euthanized or maintained in captivity at great expense have been given a chance to live wild in the Large-Scale Translocation Study Site.

The U.S. Fish and Wildlife Service (USFWS) asked Clark County to identify other potential translocation sites in case the current Large-Scale Translocation Study site (LSTS) becomes full. In addition, the USFWS has requested that if Clark County is to continue translocation of tortoises into the LSTS, it should monitor densities in the site and establish a study at the DTCC predicting those densities where crowding in the LSTS might become a management concern.

In 2000, a study began of the impact of crowding on desert tortoises at the DTCC. The intent of the study was to identify densities at which crowding might negatively impact tortoises. The study was done so the number of tortoises being translocated into the LSTS would not reach levels where a negative impact (if any) might occur. To date, the study has shown, after an initial period (2-4 weeks) of accommodation, tortoises placed in pens with high densities adjust to higher levels with few indications of negative impact. Under drought conditions all tortoises, regardless of pen

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density lose body mass. Under lush conditions all tortoises, regardless of pen density, gain body mass. Thus, the initial conclusions are density-dependent effects of crowding are likely to be rare.

## **Project Status**

The status of translocated tortoises in the LSTS site is monitored annually as part of range-wide baseline monitoring. In 2004 and 2005, more than 30 transects were conducted. Results are currently being analyzed as part of the USFWS range-wide desert tortoise monitoring program.

This project assisted in the development of an environmental assessment for translocation. The study identified several potential locations for translocation of tortoises displaced by development in Clark County.

The center proposes to continue monitoring tortoise densities in the LSTS, monitor the survival, movement, ELISA status, and other indicators of health of the translocation experimental populations at Lake Mead, Bird Springs Valley, and the LSTS. Meetings are planned with the USFWS to review the density study results and develop an efficacious and economical density monitoring trigger (a biological parameter that predicts a maximum possible tortoise density in the LSTS). Future plans include assisting in the development of the necessary National Environmental Policy Act (NEPA) documents for permitting a new translocation site when pending legislation allows for its identification.

## **Partners**

Roy Averil-Murray, United States Fish and Wildlife Service, Steve Corn, United States Geological Survey, Phil Medica, United States Geological Survey, Ken Nussear, United States Geological Survey

## **Project Contact**

Ron Marlow, Assistant Professor of Research, University of Nevada, Las Vegas (702) 493-3075  
C. Richard Tracy, Director of the Biological Resource Research Center and Research Professor, University of Nevada, Reno (775) 784-4565.

## **Funding Awarded**

\$ 161,400.00

## **Funding Spent**

\$101,250.00

## **Completion Date or Status**

Ongoing.

## **Products Produced from Project**

Quarterly Reports

Data collected by this project were used in the production of the following report:

Tracy, C. R., R. Averill-Murray, W.I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, P. Medica." *2004 Desert Tortoise Recovery Plan Assessment.*"

Additional reports are planned for peer-reviewed publications...

## LEAD AGENCY

University of Nevada Reno, Biological Resource Research Center

### Featured Project

Red Rocks to the Summit (RRTTS)

### Project Description

The U.S. Forest Service (USFS) and Bureau of Land Management (BLM) have requested assistance from the Biological Resource Research Center at the University of Nevada in Reno in documenting and responding to the impact of wild horses and burros, invasive exotic plants, human recreation, and increasing fire frequency on ecosystems in the Red Rocks National Conservation Area and Spring Mountains Conservation Area. These areas comprise a mountain complex of ecological communities unrivaled in North America. With an endemic mammal species, ten endemic butterfly subspecies, more than two dozen unique plants, and assemblages of birds found nowhere else in the world. These conservation areas encompasses Clark County's greatest concentration of species of concern. Unfortunately, the area's proximity to rapidly expanding Las Vegas and associated intense land use may put a number of species at risk of extinction and whole ecological communities on the brink of collapse.

The presence of people using mountain bikes and all-terrain vehicles (ATVs), plus indigenous mammals such as elk and horses, are impacting both Red Rock and the Spring Mountains. The sources of the impacted interact with one another and necessitate management in concert for a desired outcome. For example, the impact from horses depends on the short-term history of precipitation which dictates how far horses can range from their water sources. Over the long-term, it is clear horses can suffer from density-dependent mortality/morbidity due to populations exceeding carrying capacities of the range. Under these circumstances, the agencies contract for emergency gathers; during which, they reduce the herds to more sustainable levels by the natural ecosystems. The presence of people on mountain bikes creates disturbances, causing the horse herds to constrain their activities. Elk and horses can compete for food and water resources, so reduced populations in one species will generally have an effect on the other. These interactions make it necessary to understand the system of one entity interacting with another in order to compose a management plan minimizing the impact of one element on the other in the ecosystems.

### Project Status

Using data gathered by Bruce Pavlik and Todd Esque, associates from Mills College and Oakland, California College, and the United States Geological Survey (USGS), the question was—do native and non-native groups of spring-associated plants have predictable relationships with elevation, springbrook length, various land uses, and disturbances? Also tested were alternative environmental criteria associated with the degree of predictability of local species presence and absence. Consistent with work in other systems, species richness and cover of native plants tended to decrease as intensity of disturbance increased; whereas, at least somewhat surprisingly, species richness (but not cover) of non-native plants tended to peak with intermediate disturbance. Results suggest the invasion of most non-native plants around springs in the Spring Mountains are relatively recent and rapid restoration and management actions may help protect ecological processes and viability of native plant communities. The ability to predict order in individual species is likely to be destroyed from or colonize springs was limited, perhaps reflecting considerable environmental heterogeneity among springs.

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In collaboration with USGS, intensive plant diversity data collection efforts, including acquisition of data on species richness, abundances, and canopy cover, is nearly complete at 30 springs for which data on butterflies and aquatic invertebrates was collected in 2003 and 2004. The same team has developed a sampling strategy to address upland plant community diversity and condition, which, considered in light of current findings, may prove to be a predictor of spring species richness in the focal study taxa.

A third intensive aquatic invertebrate sampling sequence at 36 springs on BLM and USFS lands in the Spring Mountains was recently completed. Samples have been transferred to Desert Research Institute in Reno and experts are now identifying and counting all three temporally sequenced 2004 aquatic samples.

The results should not be interpreted to mean major environmental gradients and disturbance intensity has no effect on distributional patterns of aquatic invertebrates in the Spring Mountains. The ability of these variables to serve as predictors of species richness and composition may be relatively low. It is also possible that taxa, which is particularly vulnerable to changes in the structure and species composition of wetlands, may already have disappeared.

Although the plant species present in relatively impoverished sites where statistically proper subsets of the species were present in relatively species-rich locations, there was considerable noise in the overall nested pattern. As an ecological pattern, this is somewhat unusual, and suggests that stochastic processes and environmental heterogeneity (which is considerable among springs in the Spring Mountains) play an important role in assemblage structure of both native and non-native plants.

## Partners

University of Nevada, Reno, Desert Research Institute, United States Geological Survey, Nevada Natural History Museum and Historical Society, Mills College, and Stanford University.

## Project Contact

Dennis Murphy, Research Professor, Biological Resource Research Center, University of Nevada, Reno, (775) 784-1303; and Don Sada, (775) 673-6759

## Funding Awarded

\$447,600.00

## Funding Spent / Reimbursed

\$332,502.84

## Completion Date or Status

This is a continuing project, funded through early 2006.

## Products Produced from Project

Sada, D.W., E. Fleishman, and D.D. Murphy, 2004. *Response of Spring-dependent Aquatic Assemblages to Environmental and Land-use Gradients in a Mojave Desert Mountain Range. Diversity and Distributions*. Published.

Fleishman, E., D.D. Murphy and D.W. Sada, 2005. *Effects of Environmental Heterogeneity and Disturbance on the Native and Non-native Flora of Desert Springs. Biological Invasions*. Published.

Fleishman, E., D.D. Murphy, and G.T. Austin, in press. *Biodiversity Patterns of Spring-associated Butterflies in a Mojave Desert Mountain Range*. *Journal of the Lepidopterist's Society*.

Three additional papers in production.



## LEAD AGENCY

University of Nevada Reno, Biological Resource Research Center

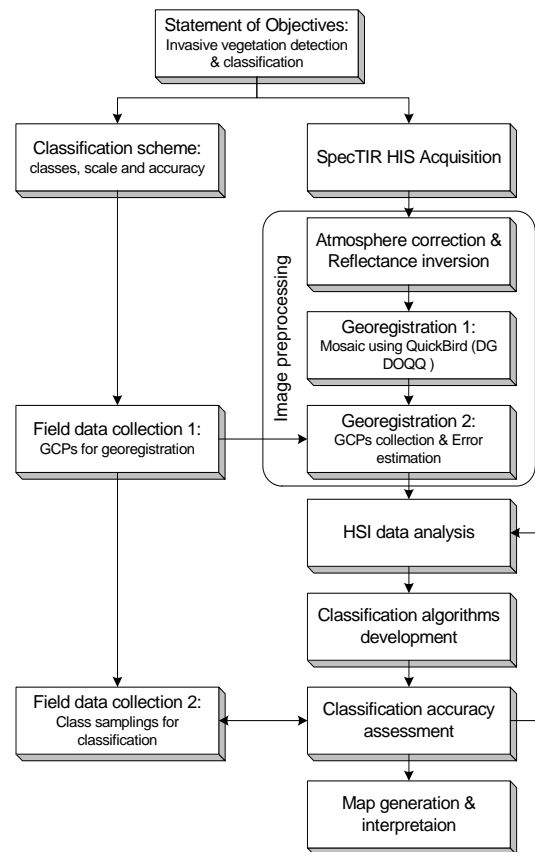
### Featured Project

Ecosystem Indicators

### Project Description

The Multiple Species Habitat Conservation Plan (MSHCP) needs to determine the extent to which decisions on management represent the best direction for covered species. The Biological Resource Research Center (BRRRC) was assigned the task of finding indicator species appropriate to assess the health of the managed systems. It was discovered that the small vertebrate population characteristics varied with respect to human disturbance in the bajadas of the Mojave Desert of Southern Nevada. Human disturbances were quantified with respect to roads and off-road vehicle use. Roads and off-road use had a negative impact on species richness and diversity. *Cnemidophorus tigris*, the western whiptail, abundance was positively related to roads, but *Cnemidophorus* abundance was negatively associated with species richness. *Dipodomys merriami*, the kangaroo rat, presence was negatively affected by off-road use, and where abundant, there was high species richness. Roads negatively influenced the presence of *Ammospermophilus leucurus*, the white-tailed antelope squirrel, and off-road use negatively affected the presence of *Chaetodipus penicillatus*, desert pocket mouse. *D. merriami* and *C. tigris* are candidates for surrogate status based on their ability to predict species richness across all sites. These results indicate the presence of adequate indicator species. However, to use them to assess ecosystem health could be prohibitively expensive. Nevertheless, the information gleaned from the study has been extremely valuable. With the data in place, the natural history of disturbance can be understood. In particular, how bajada systems respond to differences in, and changes to, disturbance. Thus, by developing a means to assess disturbance now, the future will bring the ability to predict the responses of biota to those changes. These predictions need verification, but this will be much less expensive than using the biota itself to assess responses of the ecosystem to change.

The project takes the next step in looking for the means to monitor ecosystem health, namely, examining whether remote sensing can be used to measure disturbance and changes to habitat.



Project flow chart.

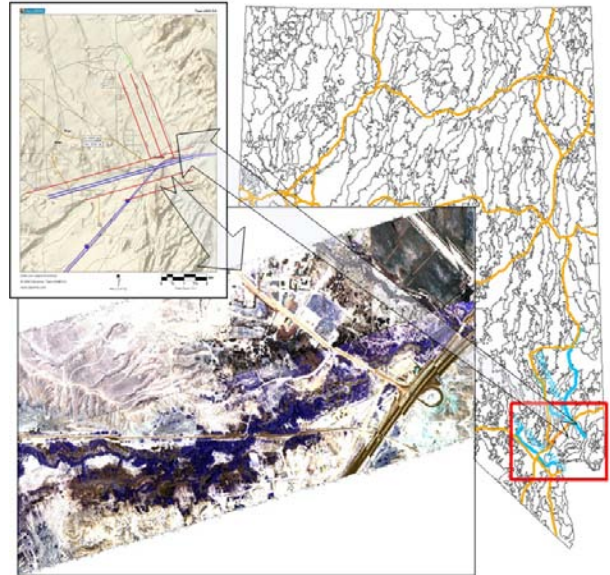
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## Project Status

**Remote Sensing** - Remote sensing imagery was acquired in early May from SpectIR, Inc. Target native species included Honey Mesquite, Desert Willow, Catclaw Acacia, and Mistletoe. Target non-native species included Tall White Top, Salt Cedar, Russian Knapweed and Sahara Mustard. A post-doctoral fellow, Dr. Xin Miao (UC Berkeley 2005) was hired to assist on the project.

**Roads** - David Gundlach has initiated a MS thesis project under the direction of Dr. Jill S. Heaton to investigate the density and distribution of roads across differing land cover, slope, and soil types to determine the change in road density and distribution between 1998 and 2004 in the Gold Butte Desert Wildlife Management Area. The information will be used to assist the BLM in its route designation process. Draft 1998 roads data are still being compiled.



Project study area and uncorrected imagery.

## Partners

Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service

## Project Contact

Jill Heaton, Assistant Professor, (775) 784-8056; C. Richard Tracy, Director of Biological Resource Research Center and Research Professor, UNR, (775) 784-4565; and Ron Marlow, Assistant Research Professor, University of Nevada Reno, Reno NV, (702) 493-0754

## Funding Awarded

\$582,100.00

## Funding Spent / Reimbursed

\$370,375.00

## Completion Date or Status

Ongoing

## Products Produced from Project

Quarterly Reports

This is a research project. Upon the completion of the research, manuscripts will be submitted to appropriate peer-reviewed journals.

## LEAD AGENCY

U.S. Department of Agriculture-Animal, Plant, Health, Inspection Section-Wildlife Service  
Nevada Animal Damage Control Program

### Featured Project

Assist in Development of Wildlife Damage Management for Threatened Endangered Species from Predation or Parasitism

**Part A:** Feral cat control for the protection of the Palmer's chipmunk  
Provide assistance in the development and application of Wildlife Damage Management, a program for the protection of identified, threatened, and/or endangered species from predators in Clark County.



Feral cat in Palmer's Habitat

**Part B:** Raven control for the protection of the desert tortoise.

### Project Description

**Part A:** One of NADCP's projects detects feral cat activity within Palmer's chipmunk habitat and initiates direct control activities. Cage traps humanely capture the cats. After the cats are deemed feral, they are euthanized and processed for disease monitoring at the trap site. Disease monitoring efforts apply to both target and non-target species.



Desert tortoise (*Gopherus agassizii*) carapace after raven predation.

**Part B:** NADCP continually monitors sites in Clark County where ravens are subsidized by human enhancements such as landfills and dairies. In areas where ravens are found to be concentrated and excessive, raven reduction actions are initiated.

### Project Status

**Part A:** A total of 31 feral cats have been captured and removed from the Mt. Charleston area. Two feral cats tested were found positive for Pneumonic plague and positive plague titers were found in 20 biological samples collected from three non-target species. Effectiveness monitoring, involving gut content analysis, has been included in the project. NADCP maintains close contact with many entities, both public and private, due to the dynamic nature of the control project.



Artificially subsidized raven population

**Part B:** To date, 16 raven control projects have been conducted. Following each control project, NADCP observed a reduction in raven numbers at subsidized feeding areas adjacent to critical desert tortoise habitat.

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NADCP collected biological and tissue samples from 103 ravens for disease monitoring and genetic marker identification. Effectiveness monitoring is being altered to include gut content analysis and possible DNA marker coding.

### **Partners**

The NADCP is a cooperative program primarily consisting of the U.S. Department of Agriculture Animal (USDA) and Plant Health, Inspection Service's Wildlife Services (WS), and the Nevada Department of Agriculture, Division of Resource Protection, Predatory Animal and Rodent Committee (PARC).

### **Project Contact**

Mark Jensen, Nevada State Director: USDA-Wildlife Services-NADCP

### **Funding Awarded**

\$91,418.00

### **Funding Spent / Reimbursed**

\$56,636.25

### **Completion Date or Status**

The project will reach completion on January 1, 2006.

### **Products Produced from Project**

Eight quarterly reports

Two full year reports

One 2003-2005 Biennium report

## LEAD AGENCY

U.S. Department of Agriculture-Agricultural Research Service, Bee Biology and Systematics Laboratory

### Featured Project

Pollinator Ecology

### Project Description

Studies on bees, the principal pollinators of flowering plants in the Mojave Desert, are being conducted during the 2004 and 2005 flowering seasons to contribute toward three goals: (1) to determine the distribution and biological attributes of the 26 bees on the Multiple Species Habitat Conservation Plan (MSHCP) list in order to develop predictive habitat models; (2) to assess the status of essential pollinator services on *prosopis* (mesquite); and (3) to identify the bee pollinators of MSHCP listed plants. Samples of pollinators are collected using net collections and passive pan traps. Samples are taken throughout the county from March until October on a biweekly basis whenever bloom is present. Biweekly timed samples on individual mesquite trees were made at multiple sites. An all day sampling of mesquite trees was made to determine diurnal (daytime) patterns of visitation.

### Project Status

Results presented here are preliminary because the second field season is still in progress. Processing of 2005 samples and data analysis will be conducted after the season ends in October. The final report will be presented in March 2006. Preliminary results include:

**MSHCP Listed Bees.** Studies of bees on the MSHCP list are challenging due to the transient nature of adult activity. All listed species are solitary nesters with highly seasonal, short adult lives. Most collect pollen solely from one genus of plants; many also have specialized requirements for nesting substrate. Species specializing on annuals are especially unpredictable and are absent in some years at localities where they are known to exist. Our ability to define the biological determinants of these bees is at the mercy of the vagaries of weather. Drought conditions in 2004 precluded assessments of most MSHCP species. The exceptional rainfall of 2005 is expected to yield better results when samples have been identified. Results must await identifications after the field season ends in October. With over 600 species of bees present in Clark County, many of them superficially similar, field identifications are impossible. Notable results from 2004 include the first records in Clark County of the flat-faced cactus bee (*Lithurge listrota*), a rare endemic of the eastern Mojave Desert and one of the watch list species. The Mojave poppy bee (*Perdita meconis*), which is a specialist on bear poppy (*Arctomecon*) and prickly poppy (*Argemone*), remains extremely limited in distribution and patchy in occurrence. Additional sampling on *Arctomecon merriami* in 2004 did not yield specimens of this rare species.

**Mesquite Pollinators.** Mesquite, which is dependent on pollinators for reproductive success, is visited by a wide array of bees. Thirty-seven species have been recorded visiting mesquite; 17 are entirely dependent on mesquite for nest provisions. Mesquite specialists differed greatly in their abundance and in the number of locations where they were present. The specialist fauna was dominated by three species of *Perdita* (*P. punctosignata sulphurea*, *P. luciae decora*, and *P. triangulifera*). They accounted for 64 percent of the total individuals. Four specialists were rare both in abundance and in the number of sites where they were encountered: *Perdita pallidipes*, *Perdita prosopidis*, *Perdita punctosignata flava*, *Perdita sonorensis*, and *Colletes*

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*aff. perileucus*. Others were more widely distributed but never common. Mesquite patches varied significantly in richness and abundance. Individual trees within a patch also varied greatly in their attractiveness to pollinators. For example, one of the six trees in an all day study at Corn Creek Springs accounted for 86 percent of the recorded visitors from all six trees.

**Pollinators of MSHCP Plants.** During this biennium we have sampled bee pollinators at 14 plant species on the MSHCP lists. Most are poorly visited. Pollinators may limit reproductive success, as has been shown in an extensive study of more than 30 rare plants in the Intermountain Region conducted by the U. S. Department of Agriculture –Agricultural Research Service (USDA-ARS) Bee Biology & Systematics Laboratory. Intensive studies of pollination and reproductive biology would be needed to confirm this hypothesis. Such studies would be valuable, but are beyond the scope of the project.

## Partners

Southern Nevada Rare Plant Group, MSHCP Low Elevation Plant Group

## Project Contact

Terry Griswold, Research Entomologist, USDA-ARS Bee Biology and Systematics Laboratory, Logan, UT (435) 797-2526

## Funding Awarded

\$208,611.00

## Funding Spent / Reimbursed

\$83,564.81

## Completion Date or Status

Final report: is due March 2006

## Products Produced from Project

Griswold, T. 2004. *Patterns of Bee Biodiversity in North America*, In the symposium “New insights into bee phylogeny” Annual meeting of the Entomological Society of America, Salt Lake City, Utah, Nov. 2004

Griswold, T. 2004, 2005. *Biodiversity and Biogeography of Bees in North America*. Presentations at the Bee Course, AMNH Southwest Research Station, Portal, Arizona.

Journal articles expected at the completion of this project include descriptions of new species and biogeography of bees in the eastern Mojave Desert.

## LEAD AGENCY

U.S. Forest Service, Spring Mountains National Recreation Area

### Featured Project

Landscape Assessment

### Project Description

The landscape assessment is a process designed to contemplate the needs of human and biological elements on the Spring Mountains National Recreational Area (NRA). The first step has been acquiring and compiling known biological and physical data including inventories, monitoring, and research. This work is compiling a valuable management database for the Spring Mountains NRA.

In addition to the biological component, the analysis will consider the needs and uses of people on the NRA. To acquire information from the people on the NRA, a social survey is in process collecting information from people including their perspectives about recreation, contemplative values, outdoor experiences, future needs, and overall desires about use of the space.



Lee Canyon ski area in fall colors

There are extensive demands for recreational development and public uses of the Spring Mountains NRA. The Las Vegas valley population has grown to over 1.7 million and continues to increase. Additionally, the once rural small communities, bordering the mountain range, are also experiencing extensive growth.

The landscape analyses will compare the social and biological information. This comparison will identify trends, patterns, and problems. The final result of the analyses will prioritized recommendations from which management can select options. These options should be opportunities to balance the growing human use with environmental needs so a healthy landscape can be available for future generations.

### Project Status

Most of the biological reports are complete and all will be finished in 2005. The social survey is underway with field work ending December 31, 2005 and the analysis of the results through the first quarter of 2006. Another component to the social survey is in process, which is compiling information from existing surveys relating to use of federal lands in Southern Nevada.



*Salvia dorrii v. clokeyi* commonly known as Clokey Mountain Sage

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The compilation and analyses of the biological, physical, and social data will continue through 2006. Final products should be available for the public in early 2007. After the final recommendations documents are completed, management will select and refine proposed actions to implement on the forest lands. A public involvement phase will take place during the environmental analyses.

### **Partners**

This project is finding success due to close working relationships with U.S. Fish and Wildlife Service, Clark County Desert Conservation Program, and consultants

### **Project Contact**

Susan Barrow, Spring Mountains National Recreation Area, 4701 North Torrey Pines Drive, Las Vegas, NV 89130, (702) 839-5551

### **Funding Awarded**

\$2,388,386.00

### **Funding Spent / Reimbursed**

\$532,391.80

### **Completion Date or Status**

Ongoing

### **Products Produced from Project**

Quarterly Reports

The completed products will include:

Spring Mountains NRA Landscape Analysis

Spring Mountains NRA Management Recommendations



## LEAD AGENCY

U.S. Forest Service, Spring Mountains National Recreation Area

### Featured Project

Inventory and Monitoring of Rare Plant Species on the Spring Mountains National Recreation Area

### Project Description

The purpose of monitoring rough angelica, Clokey's eggvetch, and high elevation plant communities is to continually assess the status of the taxa to detect biologically significant changes in population density and age structure over time. In addition, the conditions of the plant communities are also monitored. These projects detect biologically significant changes in plant community structure and composition over time and the monitoring is a tool to guide management decisions having a potential to affect rare plant communities.

Besides the monitoring, inventories for rare plants occurred throughout the Spring Mountains National Recreation Area (NRA), focusing on the west side of the Spring Mountains Range. Information on the locations of rare plants will be used to minimize effects of future projects on rare plants.

### Project Status

Data collection is currently on-going, with the field season expected to end in mid to late August 2005. Data analysis will follow completion of data collection and a final report on the findings from the monitoring program is expected by February 28, 2006.

### Partners

Dr. Donald Farrar, Department of Botany, Iowa State University, Ames, Iowa

### Project Contact

Heather Hundt, Natural Resource Officer, Spring Mountains National Recreation Area, Las Vegas, NV, (702) 515-5400

### Funding Awarded

\$90,513

### Funding Spent / Reimbursed

\$37,812.69



A Charleston draba found on one of the high elevation monitoring transects.



A Charleston grounddaisy found during plant inventories in Lee Canyon.

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## **Completion Date or Status**

Ongoing

## **Products Produced from Project**

Quarterly Report

2004 Annual Report

## LEAD AGENCY

U.S. Forest Service, Spring Mountains National Recreation Area

### Featured Project

Bat Inventories within the Spring Mountains National Recreation Area

### Project Description

The purpose of this project was to conduct inventories to determine diversity and habitat use of bats within the Spring Mountains National Recreation Area (NRA). The objective was to gain insight on habitat use by bat species of concern and implications of forest management on these species.

### Project Status

In partnership with bat experts, 33 short-term and three long-term bats echolocation sites were deployed during 2004 and 2005. These inventories provide a tool to determine the distribution of up to 13 rare or sensitive species of bats, which would provide guidance in project planning to minimize impacts to bats.

Data collection is currently on-going, with the field season expected to end in mid to late August 2005. Data analysis will follow completion of data collection and a final report on the findings from the monitoring program is expected by February 28, 2006.

### Partners

Dr. Michael O'Farrell, Private Consultant,  
Las Vegas, NV

### Project Contact

Heather Hundt, Natural Resource Officer, Spring Mountains National Recreation Area,  
Las Vegas, NV, (702) 515-5400

### Funding Awarded

\$44,000.00

### Funding Spent

\$8,872.90

### Completion Date or Status

Ongoing

### Products Produced from Project

Quarterly Reports  
2004 Progress Report



A Townsend's big-eared bat roosts in one of the many caves found within the Spring Mountains.



Biological Technician Darrick Weissenfluh installs echolocation recording equipment at Willow Creek in order to determine if sensitive bat species are utilizing the area.

## LEAD AGENCY

U.S. Forest Service, Spring Mountains National Recreation Area

### Featured Project

Peregrine Falcon Nesting Survey of the Spring Mountains

### Project Description

The purpose of this project was to detect and describe peregrine falcon nest sites within the Spring Mountains National Recreation Area (NRA). In addition, the project calls for data collection which will allow for better management of forest activities surrounding cliff nesting sites.

### Project Status

During the summer of 2003, reconnaissance of cliffs and rock faces were conducted to determine the appropriate habitat to conduct surveys. Fifteen cliff complexes were visited and mapped. Appropriate survey sites were delineated and casual observations of bird species using the cliff habitat were recorded. Surveys for peregrine falcons, in 2004, were initiated on May 25 and continued through July 7, 2004. During this time, 14 cliff complexes were inventoried to determine occupancy and nesting. No peregrine were found on the Spring Mountains NRA in 2004. However in 2003, a pair of peregrine falcons with two chicks were observed within the Red Rock Canyon National Conservation Area near the Spring Mountains NRA boundary. Other birds noted, which were nesting within the surveyed cliff habitat, included common raven, golden eagle, red-tailed hawk, white-throated swifts, and swallows.



Cathedral Rock was one of the many cliff sites on the Spring Mountains National Recreation Area, which were surveyed for peregrine falcons.



### Partners

Great Basin Institute, University of Nevada, Reno

### Project Contact

Heather Hundt, Natural Resource Officer, Spring Mountains National Recreation Area, Las Vegas, NV, (702) 515-5400

### Funding Awarded

\$9,000.00

### Funding Spent / Reimbursed

\$9,000.00

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## **Completion Date or Status**

This project was completed on April 2, 2005 and a final report was submitted to the Multiple Species Habitat Conservation Plan (MSHCP).

## **Products Produced from Project**

Quarterly Reports

Final Project Report

## LEAD AGENCY

U.S. Forest Service, Spring Mountains National Recreation Area

### Featured Project

Northern Goshawks Survey within the Spring Mountains

### Project Description

The purpose of this project was to detect and map northern goshawk nest sites within the Spring Mountains National Recreation Area (NRA). The project will also provide data allowing better management of forest activities within the goshawk's breeding territories.

### Project Status

Over 4,500 acres of potentially suitable goshawk habitat have been surveyed during 2004 and 2005. During this time 11 individuals in five active territories have been located.

Data collection is nearly complete, upon which analysis will begin. A final report on the findings from this inventory program is expected by February 28, 2006.

### Partners

Great Basin Institute, University of Nevada Reno,  
Dr. Michael Morrison, Texas A&M University, College  
Station, TX

### Project Contact

Heather Hundt, Natural Resource Officer, Spring Mountains National Recreation Area,  
Las Vegas, NV, (702) 515-5400

### Funding Awarded

\$40,080.00

### Funding Spent / Reimbursed

\$20,022.85

### Completion Date or Status

Ongoing

### Products Produced from Project

Quarterly Reports  
2004 Annual Report



Biological Technician Max Kaufman, observes a northern goshawk nest within the Spring Mountains NRA.



A group of biological technicians hike to listening stations during dawn acoustic surveys for northern goshawks.

## LEAD AGENCY

U.S. Forest Service, Spring Mountains National Recreation Area

### Featured Project

Butterfly Monitoring in the Spring Mountains

### Project Description

This project documents seasonal shifts in the distribution of adult *Speyeria carolae* (Carol's Fritillary) in response to variation in resource availability, including nectar, minerals, and larval host plants.

Findings from this project will be used as a tool to guide management decisions having a potential to affect rare and endemic butterflies. In addition, information is gathered regarding habitat requirements of this species.



A Carole's silverspot butterfly feeds on a Clokey thistle.

### Project Status

Sixty-four monitoring sites were established in Kyle and Lee Canyons. Surveys in 2004 began on July 8, 2004, and concluded on August 21, 2004. Additional data collection sites were established in 2005 and surveys are currently on-going. Data analysis will follow completion of surveys and a final report on the findings from the monitoring program is expected by February 28, 2006.



The Charleston violet is a larval host plant of the Carole's silverspot butterfly.

### Partners

Dr. Dennis Murphy, University of Nevada, Reno  
Bruce Boyd, Nevada State Museum and Historical Society, Las Vegas, NV

### Project Contact

Heather Hundt, Natural Resource Officer, Spring Mountains National Recreation Area, Las Vegas, NV, (702) 515-5400

### Funding Awarded

\$11,000.00

### Funding Spent

\$7,182.28

### Completion Date or Status

Ongoing

### Products Produced from Project

Quarterly Reports  
2003 Annual Report  
2004 Annual Report

## Lead Agency

U.S. Forest Service, Spring Mountains National Recreation Area

## Featured Project

All Bird Monitoring Program in Clark County, Nevada

## Project Description

The long-term objective of the All Bird Monitoring Program (ABMP) is to provide a scientifically sound database for evaluating status and trends in bird populations for each of Clark County's major habitats. The program will provide data for analyses at different spatial scales, including state-wide assessments, habitat-wide assessments, as well as comparisons of specific project sites with similar sites in the rest of the state.



A GBBO volunteer conducts bird surveys.

## Project Status

For the ABMP in Clark County, 106 point counts transects, or sample areas, have been established. In 2004 and 2005, most of these were visited, with the exception of those inaccessible. In addition, as many as five to seven transects were newly established to increase coverage for Multiple Species Habitat Conservation Plan (MSHCP) covered species in areas to which the Great Basin Bird Observatory (GBBO) previously had no access, which was primarily along the Virgin River and its tributaries. Also, two intensive area searches were completed by ABMP partners from the National Park Service, which allowed GBBO to develop correction factors for two point count data from at least two habitat types.

GBBO held several workshops in 2004 and 2005 to train new volunteers and seasonal staff in the point count protocol and area search methods. Also, GBBO completed protocols for area searches and habitat assessment surveys for point count transects.

Currently, GBBO is closing out the field season and is getting ready to enter field data collected in Clark County. Later in the year, GBBO plans on working on a pinyon-juniper habitat model for several pinyon-juniper obligate bird species, using habitat data collected in Clark County and beyond. Details on data collection and preliminary results from the field season will be available in the third quarter report.

## Partners

U. S. Forest Service, Humboldt-Toiyabe National Forest, Nevada Department of Wildlife, Bureau of Land Management, U. S. Fish and Wildlife Service, National Park Service, Lake Mead National Recreation Area, U.S. Bureau of Reclamation, Southern Nevada Water Authority, University of Nevada, Las Vegas, University of Nevada, Reno, Nevada Natural Heritage Program, Nevada Partners in Flight, U.S. Air Force/ Nellis Air Force Range



A young flammulated owl encountered during a bird survey.



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## **Project Contact**

Elisabeth Ammon, PhD, Science Director, Great Basin Bird Observatory, 1755 E. Plumb Lane, Ste. 256A, Reno, NV 89502 (775) 323-4226 email: ammon@gbbo.org

## **Funding Awarded**

\$88,300.00

## **Funding Spent / Reimbursed**

\$47,493.26

## **Completion Date or Status**

Ongoing

## **Products Produced from Project**

Quarterly Reports

2004 Annual Report

All Bird Monitoring Point Count Survey Protocol

Area Search Protocol

Upland Habitat Assessment Protocol

Project Information Link on Great Basin Observatory Website ([www.gbbo.org](http://www.gbbo.org))

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## **LAND DISTURBANCE AND FINANCIAL SUMMARY**

### **Land Disturbance**

In cooperation with the cities of Henderson, North Las Vegas, Las Vegas, Boulder City, Mesquite, and the Nevada Department of Transportation (NDOT), Clark County tracks land disturbance through permitting processes within each entity's jurisdiction. In summary, 20,098.84 acres were disturbed from July 1, 2003 through June 30, 2005. See the Land Disturbance Report on page 138.

### **Fees and Sources of Funds**

Clark County has been designated as the administrator of the Desert Conservation Program (DCP) and of the funds received from various sources on behalf of the DCP, the cities located within Clark County, and the Nevada Department of Transportation.

The conservation activities described and reported within this document were funded through three funding sources. Funds are generated from mitigation fees paid to Clark County for disturbance of non-federal lands, referred to as Section 10 funds. Funds are also generated from remuneration fees required by federal agencies. These fees are paid to Clark County for disturbance of desert tortoise habitat located on federal lands, referred to as Section 7 funds. Funds paid to Clark County at the direction of the U.S. Secretary of Interior and pursuant to the provisions of the Southern Nevada Public Lands Management Act of 1998 are generated from the sale of lands within Clark County, managed by the Bureau of Land Management (BLM) and are referred to as Southern Nevada Public Lands Management Act (SNPLMA) funds.

In summary, during the 2003-2005 biennium, Clark County generated \$49,552,250.65 from the collection of mitigation fees and accrued interest on Section 10 funds. The county collected \$3,352,782.73 in mitigation fees for Section 7 funds and was awarded \$14,410,215.00 in SNPLMA funds.

### **Expenditure of Funds**

Section 10 funds are used for administration of the DCP and for implementation projects based upon the recommendations of the Implementation and Monitoring Committee (IMC) and approval from the Clark County Board of Commissioners and the U.S. Fish and Wildlife Service (USFWS). Section 7 funds are used specifically for desert tortoise projects at the sole direction of the USFWS. SNPLMA funds are used for administration of the DCP and for MSHCP development projects recommended by the IMC, the BCC and the USFWS. All SNPLMA fund disbursements are first approved by the SNPLMA Executive Committee and the U.S. Secretary of Interior.

In summary, Clark County expended a total of \$5,525,731.00 in Section 10 funds administering and implementing the DCP in the subject biennium. Of the total, \$3,419,168.00 was spent on professional service contracts with partner agencies, contractors to implement conservation actions in Clark County, \$934,869.09 on land acquisition, and \$1,171,693.91 on administration of the program.

Clark County expended \$2,230,767.00 in Section 7 funds. Of the total, \$1,867,631.00 was spent on professional service contracts for the protection of the desert tortoise as directed by the USFWS, \$0.00 was spend on refunds, and \$363,136.00 was spent on investment expenses.

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Clark County expended \$6,324,614.00 on SNPLMA projects. Of that total, \$6,120,341.00 was spent on professional services contracts with partner agencies and contractors to implement conservation actions in Clark County and \$204,273.00 was spent on administration of the DCP.

### **Required Section 10 Expenditures**

Clark County's Adjusted Required Expenditures for the 2003-2005 biennium was \$4,468,203.00. Clark County does not receive conservation credit for professional contracts with attorney Paul Selzer or Karen Budd-Falen. Subtracting the non-credit expenditures, Clark County spent \$2,224,146.00 in Section 10 funds to administer and implement the DCP in 2003-2004 and \$3,301,585.00 in 2004-2005.

The total Section 10 expenditures for which Clark County receives conservation credit in 2003-2005 was \$5,525,731.00.

The following tables contain the details of the revenue generated and expenditures made during the 2003-2005 biennium.

CLARK COUNTY DESERT CONSERVATION PROGRAM

LAND DISTURBANCE REPORT  
FISCAL YEARS 2003 - 2005

REPORTS SUBMITTED BY:	Henderson	North LV	Boulder City	Mesquite	Las Vegas	CC Dev Svs	CC CivilEng	NDOT	REFUNDS	TOTALS
July 2003	134.56	221.68	3.14	231.37	197.08	358.46	66.30	0.00		1,212.59
August	66.55	79.39	0.24	0.00	201.68	335.25	38.38	1.60		723.09
September	52.59	131.98	0.00	8.72	88.66	468.35	16.39	0.00		766.69
October	202.26	96.35	0.51	0.00	154.44	227.47	48.50	0.00		729.53
November	66.98	249.69	0.00	38.00	52.70	313.46	16.53	0.00	-1.22	736.14
December	57.53	43.33	5.33	27.24	244.16	361.54	9.52	0.00	-11.07	737.58
January 2004	43.80	99.34	0.00	22.18	218.43	471.34	17.24	0.00		872.33
February	57.04	111.54	0.32	10.57	66.98	363.93	38.30	0.00		648.68
March	232.45	165.20	1.09	13.38	134.17	188.16	156.18	0.00		890.63
April	138.73	210.24	0.18	208.60	174.47	245.41	31.38	0.00		1,009.01
May	41.09	66.60	0.19	10.00	136.92	341.50	19.59	0.00		615.89
June 2004	76.84	44.27	0.33	136.19	180.60	402.97	8.63	0.00		849.83
<b>Subtotal:</b>	<b>1,170.42</b>	<b>1,519.61</b>	<b>11.33</b>	<b>706.25</b>	<b>1,850.29</b>	<b>4,077.84</b>	<b>466.94</b>	<b>1.60</b>	<b>-12.29</b>	<b>9,791.99</b>
<b>Projected - 2003-2004 (actual [9,801.99 ac.] is 126.9% of annual projection [7,724 ac.])</b>										

July 2004	59	225.35	0.94	0.5	54.96	585.66	12.5	0		938.91
August	137.38	191.09	3.51	13.94	302.6	260.76	22.26	0		931.54
September	324.92	324.66	0.19	47	24.85	319.78	78.24	0		1119.64
October	221.41	207.62	0.43	6.9	92.93	188.28	11.032	0		728.602
November	120.04	318.461	2.63	21.21	189.14	368.26	9.74	0		1029.481
December	401.846	74.84	0	27.74	45.84	340.94	6.9241	0		898.1301
January 2005	189.95	77.14	3.09	12.9	79.18	361.71	19.444	0		743.414
February	260.85	91.68	0.1	0	166.5	243.4	30.77	0		793.3
March***	136.55	116.35	0	0	125.95	406.54	55.21	3.8		844.40
April	102.82	47.17	3.23	8	68.98	347.03	30.71	0		607.94
May	41.09	357.85	0.95	10	136.92	255.26	19.589	0		821.659
June 2005	76.84	44.27	0.33	136.19	180.6	402.97	8.632	0		849.832
<b>Subtotal:</b>	<b>2,072.70</b>	<b>2,076.48</b>	<b>15.40</b>	<b>284.38</b>	<b>1,468.45</b>	<b>4,080.59</b>	<b>305.05</b>	<b>3.80</b>	<b>0.00</b>	<b>10,306.85</b>

<b>Projected - 2004-2005 (actual [ ] is xxx.x% of annual projection [7,046.00])</b>										
TOTAL 03-04	1,170.42	1,519.61	11.33	706.25	1,850.29	4,077.84	466.94	1.60	-12.29	9,791.99
TOTAL 04-05	2,072.70	2,076.48	15.40	284.38	1,468.45	4,080.59	305.05	3.80	0.00	10,306.85
TOTAL BIEN	3,243.11	3,596.09	26.73	990.63	3,318.74	8,158.43	771.99	5.40	-12.29	20,098.84
CARRY FWD	3,140.01	3,608.29	64.72	310.84	3,466.48	7,789.14	591.67	20.77	-29.46	18,962.46
<b>GRAND TOTAL</b>	<b>6,383.12</b>	<b>7,204.38</b>	<b>91.45</b>	<b>1,301.47</b>	<b>6,785.22</b>	<b>15,947.57</b>	<b>1,363.66</b>	<b>26.17</b>	<b>-41.75</b>	<b>39,061.30</b>

Number of acres allowed for disturbance under current multiple species permit 145,000.00  
 Number of acres allowed for government-exempt disturbance under current permit 15,000.00  
 Number of net acres available for disturbance 130,000.00  
 Number of acres reported for which fees have been paid under current permit 39,061.30  
 Number of disturbable acres remaining under current permit 90,938.70

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 7 REVENUES  
2003-2005 BIENNIUM**

Month	Amount
July, 2003	\$954.50
August, 2003	\$361,804.32
September, 2003	\$16,478.64
October, 2003	\$585,468.46
November, 2003	\$184,543.92
December, 2003	\$25,899.91
<b>Subtotal for 2003</b>	<b>\$1,175,149.75</b>
<b>Interest for 2003</b>	<b>\$411,009.16</b>
January, 2004	\$45,164.30
February, 2004	\$25,994.34
March, 2004	\$129,361.68
April, 2004	\$14,927.70
May, 2004	\$151,245.60
June, 2004	\$22,710.60
July, 2004	\$290,907.00
August, 2004	\$68,328.24
September, 2004	\$90,247.74
October, 2004	\$180,767.40
November, 2004	\$12,264.78
December, 2004	\$10,018.80
<b>Subtotal for 2004</b>	<b>\$1,041,938.18</b>
<b>Interest for 2004</b>	<b>\$288,544.71</b>
January, 2005	\$1,551.00
February, 2005	\$64,422.21
March, 2005	\$98,701.57
April, 2005	\$53,588.04
May, 2005	\$30,726.52
June, 2005	\$45,100.66
<b>Subtotal for 2005</b>	<b>\$294,090.00</b>
<b>Interest for 2005</b>	<b>\$142,050.93</b>
<b>Total Revenues: 2003 - 2005</b>	<b>\$3,352,782.73</b>

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 10 REVENUES  
2003-2005 BIENNIUM**

Entity	Jul.-03	Oct.-03	Jan.-04	Apr.-04	Jul.-04	Oct.-04	Jan.-05	Apr.-05	Sub-Total	Total Bien.
	Sept.-03	Dec.-03	Mar.-04	Jun.-04	Sep.-04	Dec.-04	Mar.-05	Jun.-05	Fy.03/04	2003/2005
Henderson	\$139,536.65	\$179,723.50	\$216,088.95	\$141,161.10	\$286,720.25	\$394,408.30	\$205,264.63	\$255,603.20	\$1,357,638.75	\$1,818,506.58
North Las Vegas	\$238,177.50	\$214,153.50	\$206,851.50	\$176,665.50	\$407,605.00	\$330,509.05	\$156,843.50	\$277,816.00	\$1,573,962.05	\$2,008,621.55
Boulder City	\$1,859.00	\$2,212.00	\$735.50	\$385.50	\$2,577.00	\$1,683.50	\$1,754.50	\$2,299.00	\$9,452.50	\$13,506.00
Mesquite	\$129,637.18	\$25,304.50	\$19,736.80	\$195,134.50	\$31,587.20	\$19,033.50	\$0.00	\$23,775.12	\$420,433.68	\$444,208.80
Las Vegas	\$158,014.58	\$248,267.50	\$230,720.75	\$270,646.50	\$210,327.83	\$180,129.25	\$204,240.50	\$116,508.50	\$1,298,106.41	\$1,618,855.41
Clark County Dev. Serv.	\$639,100.00	\$496,358.50	\$567,275.15	\$544,450.50	\$641,454.00	\$493,815.25	\$556,578.00	\$674,206.50	\$3,382,453.40	\$4,613,237.90
Clark County Civil Engin.	\$66,589.60	\$40,803.40	\$114,424.90	\$32,780.55	\$62,150.00	\$15,809.26	\$52,483.20	\$30,903.40	\$332,557.71	\$415,944.31
N.D.O.T.	\$880.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$880.00	\$880.00
<b>Total Excluding Interest:</b>	\$1,373,794.51	\$1,206,822.90	\$1,355,833.55	\$1,361,224.15	\$1,642,421.28	\$1,435,388.11	\$1,177,164.33	\$1,381,111.72	\$8,375,484.50	\$19,309,245.05
Interest	\$812,365.00	\$497,251.00	\$425,247.00	\$424,090.00	\$593,536.00	\$235,337.00	\$239,329.00	\$227,606.00	\$16,750,969.00	\$30,243,005.60
<b>Total:</b>	\$2,186,159.51	\$1,704,073.90	\$1,781,080.55	\$1,785,314.15	\$2,235,957.28	\$1,670,725.11	\$1,416,493.33	\$1,608,717.72	\$25,126,453.50	\$49,552,250.65

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 7 EXPENDITURES  
2003-2005 BIENNIUM**

VENDOR	COMMODITY	CONTRACT AMT	BIENNIUM EXPENDITURES
<b>SECTION 7 REFUNDS</b>			\$ -
<b>INVESTMENT EXPENSES*</b>			
<b>BLM</b>	Upland Restoration of Desert Tortoise Habitat	\$ 353,300.00	\$ 363,136.00
<b>CARSONITE INTERNATIONAL</b>	Boulder City Conservation Easement Signage	\$ 6,750.49	\$ 353,300.00
<b>HDR ENGINEERING</b>	Fencing Inventory	\$ 24,900.00	\$ 6,654.80
<b>NDOT</b>	Tortoise Fencing along SR165	\$ 525,000.00	\$ 24,900.00
<b>NPS</b>	Burro Removal at Lake Mead National Recreation Area	\$ 34,500.00	\$ 363,063.70
<b>PIC</b>	Desert Tortoise Retrofit Fencing	\$ 99,750.00	\$ 20,937.50
<b>SNEI</b>	Desert Tortoise Conservation Center	\$ 80,202.00	\$ 99,750.00
<b>UNR BRRC</b>	Desert Tortoise Research/Epidemiology & other projects	\$ 1,443,500.00	\$ 80,000.00
<b>URS CORP.</b>	Data Collection Project	\$ 9,000.00	\$ 913,025.00
<b>YTD TOTALS:</b>		<b>\$ 2,576,902.49</b>	<b>\$ 2,230,767.00</b>

*\*This amount does not include fiscal year 2004 which was not available at the time of this report.*

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 7 FENCING EXPENDITURES  
2003-2005 BIENNIUM**

<b>CONTRACTOR</b>	<b>COMMODITY</b>	<b>AMOUNT</b>
Carsonite International	Signage	\$ 6,654.80
Clark County Print Shop	Maps	\$ 650.37
HDR Engineering	Fencing Consultation	\$ 38,100.00
NDOT	Fencing	\$ 363,063.73
Partners In Conservation	Public Outreach/Fencing	\$ 99,750.00
URS Corporation	Data Collection/ROW Fencing	\$ 6,000.00

<b>Total Amount Expended</b>	<b>\$ 514,218.90</b>
<b>Total Fencing Budget 2003-2005</b>	<b>\$ 1,000,000.00</b>
<b>Amount Remaining</b>	<b>\$ 485,781.10</b>

<b>Approximate Miles of Fencing Installed in 2003-2005</b>	
<b>NDOT</b>	<b>12 Miles</b>
<b>PIC</b>	<b>9 Miles</b>



CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 10 EXPENDITURES  
2003 - 2005 BIENNIUM

Account	Category	Subtotal		Totals:
		03/04	04/05	
5000	Salaries	\$ 234,882.59	\$ 234,958.83	\$ 469,841.42
6000	Benefits	\$ 92,989.53	\$ 95,368.31	\$ 188,357.84
7010	Office Supplies	\$ 4,247.19	\$ 4,737.58	\$ 8,984.77
7020	Groceries	\$ 5,707.50	\$ 4,960.00	\$ 10,667.50
7030	Operating Supplies	\$ 606.70	\$ -	\$ 606.70
7060	Small Equipment	\$ 1,649.94	\$ 150.00	\$ 1,799.94
7110	Auto	\$ 1,166.49	\$ 707.64	\$ 1,874.13
7120	Equipment/Facility Rental	\$ -	\$ 1,513.75	\$ 1,513.75
7140	Telephone	\$ 1,570.42	\$ 1,760.81	\$ 3,331.23
7160	Insurance	\$ 2,918.00	\$ 3,270.00	\$ 6,188.00
7210	PIE	\$ 205,189.02	\$ 172,462.71	\$ 377,651.73
7210	Professional Services	\$ 1,614,227.38	\$ 1,804,940.49	\$ 3,419,167.87
7240	Equipment Maintenance	\$ -	\$ 234.00	\$ 234.00
7250	Postage	\$ 933.07	\$ 232.57	\$ 1,165.64
7260-7270	Travel & Training	\$ 3,241.47	\$ 4,003.60	\$ 7,245.07
7280	Printing & Advertising	\$ 15,352.74	\$ 28,663.84	\$ 44,016.58
7310	Dues, Subscriptions	\$ 628.37	\$ 246.75	\$ 875.12
7330	Fees, Licenses & Permits	\$ -	\$ -	\$ -
7340	Refunds	\$ 6,088.50	\$ 401.50	\$ 6,490.00
8010	Land	\$ -	\$ 934,869.09	\$ 934,869.09
8030	**Fencing	\$ 32,747.22	\$ 8,103.15	\$ 40,850.37
<b>*Totals</b>		\$ 2,224,146.13	\$ 3,301,584.62	\$ 5,525,730.75

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 10 PROFESSIONAL SERVICES EXPENDITURES  
2003-2005 BIENNIUM**

VENDOR	COMMODITY	CONTRACT		BIENNIUM EXPENDITURES
		AMT		
ADAMS, PAUL	Desert Conservation Program Audit	\$	9,800.00	\$ 9,800.00
AZTEC ENVIRONMENTAL	Environmental Assessments	\$	24,000.00	\$ -
BUREAU OF LAND MANAGEMENT	Restoration Efforts at Fragmented Upland Habitats (368) Law Enforcement (360)	\$	907,400.00	\$ 235,400.00 \$ 614,110.00
BUSCHELMAN, MICHAEL	Water Rights	\$	30,500.00	\$ 6,914.95
FORENSIC ANALYTICAL	Translocation Environmental Assessment	\$	88,590.00	\$ 88,590.00
HDR ENGINEERING	Fencing Consulting	\$	18,395.02	\$ 13,200.00
HJW GEOSPATIAL	Aerial Imagery	\$	24,000.00	\$ 23,876.00
JONES & STOKES	Law Enforcement Needs Assessment	\$	15,000.00	\$ 14,393.31
KAREN BUDD-FALEN*	Consulting Services	\$	94,000.00	\$ 48,363.70
LINGCOLN COUNTY	Ecological Assessment	\$	100,000.00	\$ 100,000.00
MOAPA BAND OF PIUTES	Control of Russian Knapweed	\$	40,000.00	\$ 30,000.00
MRREIAC	Muddy River Riparian Habitat Protection & Restoration	\$	227,240.00	\$ 181,491.23
NEVADA DIVISION OF FORESTRY	Forester II & Native Flora Propagation & Protection	\$	174,464.00	\$ 110,013.40
NATIONAL PARK SERVICE	Spring-fed Wetlands & Riparian Restoration (227) Plant Material Production for Interagency Restoration (233) Law Enforcement at Lake Mead Nat'l Recreation Area (272)	\$	649,340.00	\$ 315,600.00 \$ 269,490.00 \$ 49,750.00
NATIONAL PARK SERVICE	Control of Mustard Weed	\$	59,000.00	\$ -
ORTON, MARY	Meeting Facilitation	\$	2,500.00	\$ 2,400.00
PACIFIC AGRI	Land Appraisal Services	\$	15,000.00	\$ 7,982.84
ROBERT OLIVER	Law Enforcement Boulder City Conservation Easement	\$	145,000.00	\$ 130,505.00
SELZER, EALY, HEMPHILL & BLASDEL*	Legal Consulting Services	\$	250,000.00	\$ 175,736.78
SIGUENZA, RUTH	IMC Meeting Facilitation	\$	78,745.00	\$ 31,399.19
SNEI	Desert Tortoise Transfer & Holding Facility (251) Desert Tortoise Translocation Program (329)	\$	475,265.00	\$ 423,416.50 \$ 45,287.45
SNWA	Habitat Enhancement in the Las Vegas Wash	\$	73,500.00	\$ -
TNC	Muddy River Acquisition Expenses	\$	48,000.00	\$ 12,217.10
TNC	Jean Lake Allotment	\$	5,000.00	\$ 1,682.48
UNLV	Education Work Program	\$	3,500.00	\$ 3,396.60
URBAN GROUP	Meeting Facilitation	\$	7,000.00	\$ 6,000.00
USFS	Resource Protection & Law Enforcement (234) Seed Collection of Rare & Native Species (322)	\$	565,970.00	\$ 433,776.19 \$ 34,375.15
YTD TOTALS:		\$	4,131,209.02	\$ 3,419,167.87
less non-credit expenditures*				\$ 224,100.48
<b>TOTAL OF CREDIT EXPENDITURES</b>				<b>\$ 3,195,067.39</b>

\*MSHCP does not earn credits for these expenditures

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SECTION 10 PIE EXPENDITURES  
2003-2005 BIENNIUM**

<b>Project</b>	<b>Commodity</b>	<b>Amount</b>
5 Star Strategic Group	PIE Assessment	\$ 105,757.08
Clark County Print Shop	General Printing	\$ 23,659.69
Clark County Fair	Booth Space	\$ 3,262.50
Conservation District	Conservation Calendar	\$ 5,000.00
Coach USA	Buses	\$ 1,840.00
Gill's Printing	Printing of Species Account Manuals	\$ 14,132.29
KNPR	Alamanc	\$ 9,000.00
Matteson Media	Mojave Max Campaign	\$ 147,400.00
My Dollar Store	Outreach Products	\$ 9,520.00
Network Solutions	Licensing	\$ 35.00
Nu World Graphics	Mojave Max T Shirts	\$ 1,030.00
Office Depot	Office Supplies	\$ 1,978.55
Red Rock Interpretive Association	Mojave Max Education Program	\$ 43,497.62
Shoshona South	Video Tape Duplication	\$ 854.00
Steve N Kids	Mojave Max Mascot	\$ 8,770.00
Vizuel EFX	Outreach Products	\$ 1,915.00
<b>2003-2005 Total Expenditures</b>		<b>\$ 377,651.73</b>
<b>2003-2005 PIE Budget</b>		<b>\$ 278,300.00</b>
<b>PIE Contingency Amount Released</b>		<b>\$ 105,222.00</b>
<b>Amount Remaining In Budget</b>		<b>\$ 5,870.27</b>

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
SNPLMA EXPENDITURES  
2003-2005 BIENNIUM**

VENDOR	COMMODITY	CONTRACT AMT	BIENNIUM EXPENDITURES
AGEE, JAMES K.	Adaptive Management Science Team Member	\$ 400.00	\$ -
BLM	Ecological Site Inventory for the Spring Mountains Ecosystem (344)	\$ 1,925,220.00	\$ 768,106.25
	Road Designations (347)		\$ 90,750.00
	Virgin River Conservation Management Strategy (350)		\$ 133,218.75
	Geographic Information System Support (353)		\$ 342,875.00
	Evaluating Impacts of Cattle Grazing on Vegetation (361)		\$ 133,250.00
	Integrated Mesquite/Acacia Conservation Management Strategy (367)		\$ 90,600.00
CABLIK, MARY	Adaptive Management Science Team Member	\$ 400.00	\$ 300.00
CLARK COUNTY	Administrative	\$ 250,000.00	\$ 204,273.49
DELEHANTY, DAVID	Adaptive Management Science Team Member	\$ 2,800.00	\$ 1,790.00
JONES & STOKES	NEPA Training	\$ 2,500.00	\$ -
MUTH, ALLAN	Adaptive Management Science Team Member	\$ 2,400.00	\$ 150.00
NDA	Coordinated Weed Management	\$ 126,500.00	\$ 24,000.00
NPS	Songbird Monitoring (178)	\$ 1,500,778.00	<i> canceled</i>
	Relict Leopard Frog Monitoring (179)		\$ 120,850.00
	Wildlife Inventory Monitoring & Management (229)		\$ 144,359.50
	Lake Mead Nat'l Recreation Area Date Collection & Analysis (235)		\$ 159,950.00
	Lake Mead Nat'l Recreation Area Monitoring Ground Disturbance, Illegal Tracks (314)		\$ 35,600.00
	Vegetation Monitoring Program (363)		\$ 388,270.00
	Virgin River Conservation Management Strategy (350)		\$ 10,000.00
NPS/UNLV	Habitat Preferences for Adult Rana Onca (232)	\$ 145,526.00	\$ 104,258.00
OUTSIDE LAS VEGAS	Virgin River Partnership Facilitation	\$ 90,000.00	\$ 22,500.00
PIC	GPS Roads and Mapping - 2003-PIC-256-P	\$ 297,000.00	\$ 181,875.00
SHIPLEY GROUP	3 DWMA'S & Coyote Springs Conservation Management Strategy	\$ 210,000.00	\$ 197,627.78
SWCA - KEN KINGSLEY	Adaptive Management Science Team Member	\$ 40,000.00	\$ 19,787.68
SNWA	Bat Species Diversity/Las Vegas Wash -2003-SNWA-266-P	\$ 63,607.00	\$ 63,607.00
	Amphibian Diversity/Las Vegas Wash - 2003-SNWA-286-P		
TNC	Muddy River Land Acquisition & Management Plan - 2003-TNC-437-P	\$ 177,147.00	\$ 86,535.02
TNC	Plant Conservation - 2003-TNC-330-P	\$ 113,100.00	\$ 35,815.00
UNLV	Law Enforcement Proposal Review	\$ 2,000.00	\$ -
UNLV	Evaluation of Non Vascular Plants (331)	\$ 30,340.00	\$ 16,462.50
UNLV	Effects of Athel on Riparian Habitats (294)	\$ 120,000.00	\$ 35,750.00
	Factors Effecting Rarity of Las Vegas Bearpoppy (305)		\$ 35,750.00
UNLV	Temperature Acclimation of Rana Onca Habitat (232)	\$ 83,450.00	\$ 54,451.37
UNLV	Floristic Survey of Black Mountains	\$ 26,750.00	\$ -
UNR BRRC	Baseline Density Monitoring (252)	\$ 1,555,000.00	\$ 567,000.00
	Translocation Long-term Monitoring/Establishment of LSTS (289)		\$ 101,250.00
	Ecosystem Indicators (387)		\$ 370,375.00
UNR BRRC	Red Rocks to the Summit (369)	\$ 447,600.00	\$ 332,502.84
UNR BRRC	Science Advisory Team (321)	\$ 925,355.00	\$ 647,747.00
USDA-ARS	Pollinator Ecology (349)	\$ 208,611.00	\$ 83,564.81
USDA-FS	Spring Mountain National Recreation Area Landscape Assessment (196)	\$ 2,671,279.00	\$ 532,391.80
	Inventory & Monitoring of Rare Plant Species (200)		\$ 37,812.69
	Bat Inventories of the Spring Mountains (388)		\$ 8,872.90
	Peregrine Falcon Nesting Survey (389)		\$ 9,000.00
	All Bird Monitoring Program (390)		\$ 47,493.26
	Northern Goshawk Survey (392)		\$ 20,022.85
	Butterfly Monitoring (394)		\$ 7,182.28
USDA-WS	Assist in Development of Wildlife Damage Management (232)	\$ 91,418.00	\$ 56,636.25
USGS	Adaptive Management Science Team Member	\$ 45,000.00	\$ -
<b>YTD TOTALS:</b>		<b>\$ 11,154,181.00</b>	<b>\$ 6,324,614.02</b>

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
 PIE SNPLMA EXPENDITURES  
 2003-2005 BIENNIUM**

VENDOR	COMMODITY		CONTRACT AMOUNT	EXPENSES
	CONTRACT/PIE ASSESSMENT			
STRATEGIC SOLUTIONS			106,000.00	105,757.08
<b>YTD TOTALS:</b>			<b>\$</b>	<b>105,757.08</b>
<b>PIE (PLMA) BUDGET:</b>			<b>\$</b>	<b>357,500.00</b>
<b>AMOUNT REMAINING IN BUDGET:</b>			<b>\$</b>	<b>251,742.92</b>

**CLARK COUNTY DESERT CONSERVATION PROGRAM  
EXPENDITURES AND CREDITS for Section 10  
2001 - 2003 BIENNIUM**

BIENNIUM	FISCAL YEAR 1	ORIGINAL BASE AMOUNT 2	CREDIT ADJ AMT 3	ADJ BASE AMT 4	CPI ADJ AMT 5	ADJUSTED REQUIRED EXPENDITURES 6	ACTUAL EXPENDITURES 7	CPI CURR JUNE 8	CPI ADJ FACTOR 9	CREDIT 10	REM- AINING YEARS 11	CREDIT EARNED PER YEAR 12	TOTAL CREDIT EARNED 13
1	99/00	\$2,050,000	0	\$2,050,000	\$0	\$2,050,000	\$3,582,129	N/A	0	\$1,532,129	29	\$52,832	\$52,832
	00/01	\$2,050,000	\$52,832	\$1,997,168	\$0	\$1,997,168	\$3,985,744	N/A	0	\$1,988,576	28	\$71,021	\$123,853
2	01/02	\$2,005,810	\$123,853	\$1,881,957	\$173,186	\$2,055,144	\$2,642,000	178	0.0920	\$586,856	27	\$21,735	\$145,588
	02/03	\$2,005,810	\$145,588	\$1,860,222	\$194,011	\$2,054,233	\$2,255,809	180	0.1043	\$201,576	26	\$7,753	\$153,341
3	03/04	\$2,050,000	\$153,341	\$1,896,659	\$290,899	\$2,187,558	\$2,224,146	188	0.1534	\$36,588	25	\$1,464	\$154,804
	04/05	\$2,050,000	\$154,804	\$1,895,196	\$383,690	\$2,278,885	\$3,301,585	196	0.2025	\$1,022,699	24	\$42,612	\$197,417
4	06/07	\$2,050,000	\$197,417	\$1,852,583	\$420,525	\$2,273,108	\$2,273,108	200	0.2270	\$0	23	\$0	\$197,417
	07/08	\$2,050,000	\$197,417	\$1,852,583	\$465,987	\$2,318,570	\$2,318,570	204	0.2515	\$0	22	\$0	\$197,417
5	08/09	\$2,050,000	\$197,417	\$1,852,583	\$511,449	\$2,364,032	\$2,364,032	208	0.2761	\$0	21	\$0	\$197,417
	09/10	\$2,050,000	\$197,417	\$1,852,583	\$556,911	\$2,409,495	\$2,409,495	212	0.3006	\$0	20	\$0	\$197,417
6	10/11	\$2,050,000	\$197,417	\$1,852,583	\$602,374	\$2,454,957	\$2,454,957	216	0.3252	\$0	19	\$0	\$197,417
	11/12	\$2,050,000	\$197,417	\$1,852,583	\$647,836	\$2,500,419	\$2,500,419	220	0.3497	\$0	18	\$0	\$197,417
7	12/13	\$2,050,000	\$197,417	\$1,852,583	\$693,298	\$2,545,881	\$2,545,881	224	0.3742	\$0	17	\$0	\$197,417
	13/14	\$2,050,000	\$197,417	\$1,852,583	\$738,760	\$2,591,343	\$2,591,343	228	0.3988	\$0	16	\$0	\$197,417
8	14/15	\$2,050,000	\$197,417	\$1,852,583	\$784,222	\$2,636,805	\$2,636,805	232	0.4233	\$0	15	\$0	\$197,417
	15/16	\$2,050,000	\$197,417	\$1,852,583	\$829,684	\$2,682,267	\$2,682,267	236	0.4479	\$0	14	\$0	\$197,417
9	16/17	\$2,050,000	\$197,417	\$1,852,583	\$875,147	\$2,727,730	\$2,727,730	240	0.4724	\$0	13	\$0	\$197,417
	17/18	\$2,050,000	\$197,417	\$1,852,583	\$920,609	\$2,773,192	\$2,773,192	244	0.4969	\$0	12	\$0	\$197,417
10	18/19	\$2,050,000	\$197,417	\$1,852,583	\$966,071	\$2,818,654	\$2,818,654	248	0.5215	\$0	11	\$0	\$197,417
	19/20	\$2,050,000	\$197,417	\$1,852,583	\$1,011,533	\$2,864,116	\$2,864,116	252	0.5460	\$0	10	\$0	\$197,417
11	20/21	\$2,050,000	\$197,417	\$1,852,583	\$1,056,995	\$2,909,578	\$2,909,578	256	0.5706	\$0	9	\$0	\$197,417
	21/22	\$2,050,000	\$197,417	\$1,852,583	\$1,102,457	\$2,955,040	\$2,955,040	260	0.5951	\$0	8	\$0	\$197,417
12	22/23	\$2,050,000	\$197,417	\$1,852,583	\$1,147,920	\$3,000,503	\$3,000,503	264	0.6196	\$0	7	\$0	\$197,417
	23/24	\$2,050,000	\$197,417	\$1,852,583	\$1,193,382	\$3,045,965	\$3,045,965	268	0.6442	\$0	6	\$0	\$197,417
13	24/25	\$2,050,000	\$197,417	\$1,852,583	\$1,238,844	\$3,091,427	\$3,091,427	272	0.6687	\$0	5	\$0	\$197,417
	25/26	\$2,050,000	\$197,417	\$1,852,583	\$1,284,306	\$3,136,889	\$3,136,889	276	0.6933	\$0	4	\$0	\$197,417
14	26/27	\$2,050,000	\$197,417	\$1,852,583	\$1,329,768	\$3,182,351	\$3,182,351	280	0.7178	\$0	3	\$0	\$197,417
	27/28	\$2,050,000	\$197,417	\$1,852,583	\$1,375,230	\$3,227,813	\$3,227,813	284	0.7423	\$0	2	\$0	\$197,417
15	28/29	\$2,050,000	\$197,417	\$1,852,583	\$1,420,693	\$3,273,276	\$3,273,276	288	0.7669	\$0	1	\$0	\$197,417
	29/30	\$2,050,000	\$197,417	\$1,852,583	\$1,466,155	\$3,318,738	\$3,318,738	292	0.7914	\$0	0	\$0	\$0

**bold = actual**  
*script = estimated*

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## **CONCLUSION**

During the 2003-2005 biennium, three basic categories of work were funded, including Multiple Species Habitat Conservation Plan (MSHCP) development and implementation projects and desert tortoise protection projects. Federal, state, and local agencies, along with nonprofit organizations and private contractors, received Section 10, Section 7, and Southern Nevada Public Lands Management Act (SNPLMA) funding for conservation projects aimed at addressing priorities outlined in the MSHCP.

### **Project Funding and Expenditures**

For the subject biennium, a total of five agencies and contractors, including Clark County, were awarded Section 7 funds for projects totaling \$2,911,502 (includes \$1 million for a Clark County Fencing Program). Under the direction of the agencies and contractors enlisted, a total of eight projects were funded, all eight were initiated, and all were either completed or expected to be completed by the end of their respective contract term.

During the 2003-2005 biennium, a total of 13 agencies and contractors, including Clark County, were awarded Section 10 funds for projects. Under the direction of the agencies and contractors enlisted, a total of 22 projects were funded, all have been initiated, 10 have been completed, and the remaining 12 are in progress and expected to be completed by the end of their respective contract terms.

Clark County's Adjusted Required Expenditures for the 2003-2005 biennium was \$4,468,203. After subtracting two non-credit expenditures, Clark County receives credit for spending \$5,301,630 in Section 10 funds administering and implementing the DCP.

A total of 12 agencies, including Clark County, were awarded SNPLMA funds for projects totaling \$12,808,463. Under the direction of the agencies and contractors enlisted, a total of 46 projects were funded. In addition, six projects or programs were funded through Clark County. Of the total 45 projects, two were canceled, three have been completed one was not initiated, and the remaining 39 are in progress and expected to be completed by the end of their respective contract terms. It is important to note SNPLMA funding does not function under the biennium time frame.

### **Land Disturbance and Revenues Generated**

In cooperation with the cities of Henderson, North Las Vegas, Las Vegas, Boulder City, Mesquite, and the Nevada Department of Transportation, Clark County tracks land disturbance through permitting processes within each entity's jurisdiction. In summary 20,098.84 acres were disturbed from July 1, 2003 through June 30, 2005.

The Clark County DCP respectfully submits this report to the Board of County Commissioners and the U.S. Fish and Wildlife Service as required by Section 2.12.1 of the MSHCP and reaffirms its commitment as a steward of the plan and the DCP.

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## Appendix I

### CLARK COUNTY DESERT CONSERVATION PROGRAM IMPLEMENTATION AND MONITORING COMMITTEE

The organizations/agencies and the individuals who have been nominated/appointed by their respective groups to serve on the Clark County Desert Conservation Program's Implementation and Monitoring Committee are as follows:

<u>Organization/Agency</u>	<u>Name</u>
1. U.S. Fish and Wildlife Service	Cynthia Martinez
2. Bureau of Land Management	Gayle Marrs-Smith
3. National Park Service	Ross Haley
4. U. S. Geological Survey	Todd Esque
5. Nevada Division of Wildlife	Brad Hardenbrook
6. Nevada Division of Forestry	John Jones
7. Nevada Department of Transportation	Julie Ervin-Holoubek
8. Nevada Department of Agriculture	Thomas Smigel
9. U. S. Forest Service	Susan Barrow
10. Southern Nevada Water Authority	Holly Johnson
11. Clark County	Lewis Wallenmeyer
12. City of Las Vegas	Lori Wohletz
13. City of North Las Vegas	Jan Schweitzer
14. City of Henderson	Shelly Labay
15. City of Boulder City	Steve Koon
16. City of Mesquite	David Vincelette
17. Partners in Conservation (northeast County rural interests)	Elise McAllister
18. Representative of mining interests	Ron Schreiber
19. Representatives of Off-Highway Vehicle (OHV) interests	Don Dayton
20.	Mark Trinko
21. Southern Nevada Home Builders Association	Julene Haworth
22. The Nature Conservancy	Janet Bair
23. University of Nevada, Reno	C. Richard Tracy
24. Muddy River Regional Environmental Impact Alleviation Committee (MRREIAC)	Ann Schreiber
25. Conservation District of Southern Nevada	John Hunt
26. Sierra Club	Jane Feldman
27. The Conservation Fund	Michael Ford
28. Red Rock Audubon Society	Hermi Hiatt
29. Greater Las Vegas Association of Realtors	David Donovan
30. Searchlight Town Advisory Board	Steve Ferrand



## APPENDIX II

The following represents an update on the status of projects that were outstanding during the 2001-2003 biennium.

### Section 10

Agency or Contractor	Project	Section 10 Funding Awarded	Status reported in 2001-2003 Biennium	Current Status
Bureau of Land Management	Springs/Riparian Protection	\$50,000	Partially Completed/Extended through June 2004	Completed
Nevada Division of Forestry	Native Flora Propagation & Protection	\$129,464	Partially Completed/Extended through September 2004	Completed
Las Vegas Springs Preserve	Las Vegas Bearpoppy Research, Buckwheat Salvage Study, Soil Studies, Germination Trials	\$40,000	Partially Completed/Extended through June 2004	In Progress

### PLMA

Agency or Contractor	Project	Section 10 Funding Awarded	Status reported in 2001-2003 Biennium	Current Status
Bureau of Land Management	Bat Inventory	\$90,000	Partially Completed/Extended through March 2004	Completed
The Nature Conservancy	Muddy River Watershed Assessment	\$260,820	Partially Completed/Extended through June 30, 2005	Completed

The following represents an update on the status of projects that were outstanding during the 1999-2001 biennium.

#### **University of Nevada, Las Vegas - Desert Tortoise Survivorship Study**

Completed. Final report has been received.

#### **University of Nevada, Las Vegas - Palmer's Chipmunk Study**

Completed. Final report has been received.

#### **University of Nevada, Las Vegas - Desert Pocket Mouse Study**

This project is expected to be completed in June 2006.

#### **Great Basin Bird Observatory - Nevada Breeding Bird Atlas**

Completed. Final report has been received.

#### **Donald Sada, Ph.D - Restore and Reintroduce Springsnails and Develop Monitoring Protocol**

Completed. Final report has been received.

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## **APPENDIX III**

The following report was prepared by Southern Nevada Environmental, Inc. (SNEI) and outlines the progress, achievements, and trends associated with the operation and management of the Desert Tortoise Conservation Center, Desert Tortoise Transfer and Holding Facility, and Desert Tortoise Translocation Program during the 2003-2005 biennium.



**2003-2005 Biennial Report**

**July 1, 2003 through June 30, 2005**

**Clark County Desert Tortoise Transfer and Holding Facility,  
Desert Tortoise Conservation Center &  
Desert Tortoise Translocation Program.**

Submitted To:

Marci Henson  
Clark County Multiple Species  
Habitat Conservation Plan Administrator  
Clark County Government Center  
500 South Grand Central Parkway  
Las Vegas, Nevada 89155-1712

By

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September 20, 2005

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## **Section 1: Introduction**

This report prepared by Southern Nevada Environmental Inc. illustrates the progress, achievements, and trends associated with the operation and management of the Clark County Desert Tortoise Transfer and Holding Facility (DTTHF), the operation and maintenance of the Desert Tortoise Conservation Center (DTCC), and the desert tortoise Translocation Program.

Since February 1993, SNEI has been contracted by Clark County to operate and manage the DTTHF. The transfer facility responsibilities of the DTTHF include operating a desert tortoise hotline and county wide pickup service with a comprehensive call log and database. The hotline and pickup service is operated 365 days a year from 6 AM to 6 PM. The holding facility responsibilities of the DTTHF include a disease-screening program, data collection and tagging, keeping a comprehensive database of all incoming and outgoing tortoises, care and feeding, as well as pen construction and maintenance. SNEI prepares and submits monthly comprehensive reports for the DTTHF to Clark County and the Implementation and Monitoring Committee (IMC) of the Clark County Multiple Species Habitat Conservation Plan (MSHCP).

Since July of 1997 SNEI has been contracted by Clark County to operate and maintain the DTCC. SNEI has maintained the DTCC and its more than 300 tortoises throughout the last four bienniums (1997-2005). SNEI's responsibilities include providing care for the Bureau of Land Management tortoises, maintaining the DTCC main building, landscaping, research pens, irrigation system, well system, receiving salvaged plants from contractors, as well as care and watering of salvaged plants. Biological duties also include assisting, organizing and monitoring other maintenance work and repairs under the auspices of the BLM and various contractors

Since February of 1997, SNEI's has been contracted by Clark County for the preparation and release of qualified tortoises to the Large Scale Translocation Site (LSTS) as part of the University of Nevada – Reno (UNR), U.S. Geological Survey (USGS) Desert Tortoise Translocation Study. SNEI's responsibilities include gathering qualified tortoises from DTTHF and DTCC pens, external tagging, notching, recording measurements, transporting tortoises to predetermined release sites, watering tortoises prior to release, releasing tortoises, documenting release sites using a global positioning system (GPS), and keeping a comprehensive database of all translocation activities. Monthly comprehensive reports for translocation are prepared and submitted to Clark County and the IMC.

## Section 2: Clark County Desert Tortoise Transfer and Holding Facility

### 2 Introduction

SNEI has been contracted to operate and manage the Clark County Desert Tortoise Transfer and Holding Facility (DTTHF) since February of 1993. For almost 13 years, SNEI has been operating the desert tortoise hotline and pickup service as well as the desert tortoise temporary holding facility since 1993. Biologists have received, cared for, and maintained nearly 14,000 desert tortoises. Much of the data and information contained in this report is comprehensive. By analyzing data collected throughout the last six MSHCP biennium periods, SNEI has identified trends and patterns. This information provides a realistic understanding of how programs, procedures, and protocols are working. This section of the report outlines the data collected and methods used by SNEI in managing the DTTHF. Conclusions and recommendations to the IMC pertaining to each program or subsection are provided in Section 5, Conclusions and Recommendations.

#### 2.1 Desert Tortoise Transfer and Holding Facility Incoming Tortoises

Incoming tortoises in the 2003-2005 biennium totaled 2,715. This is a considerable increase compared to 2,272 collected in the 2001-2003 biennium. The 2003-2005 totals are in line with the 2,682 in the 1999-2001 biennium, and 2,697 in the 1997-1999 biennium, although a significant increase compared to 1,568 in the 1995-1997 biennium and 1,131 in the 1993-1995 biennium (FIGURE 1 – Desert Tortoises Collected by DTTHF during Biennium Periods 1993-2005, page 29). In the last four biennium periods the number of incoming tortoises has stabilized at an average of slightly fewer than 2,600 tortoises per biennium. The majority of tortoises entering the DTTHF were of unknown origin collected by the hotline and pickup service.

Throughout the 2003-2005 biennium, there were no tortoises collected from voluntary Section 10 clearances or from Section 7 clearances. In the 2003-2005 biennium 152 known wild tortoises entered the DTTHF.

The age class breakdown for incoming tortoises during the 2003-2005 biennium is 40% adult (1,084), 7% sub-adult (195), 19% juveniles (514), and 34% hatchlings and yearlings (922) (FIGURE 2. Desert Tortoises Collected by Age Class during 2003-2005 Bienniums, page 30). Figure 2 takes a closer look at the seasonal pattern of incoming tortoises by age class. The most significant observation in Figure 2 is the late summer, early fall influx of incoming hatchlings. The majority of hatchlings enter the DTTHF through the pick up service in August, September and October. This pattern is consistent with periods when tortoise eggs are hatching. Incoming adult, sub-adult and juvenile tortoises demonstrate a similar trend and follow a more temperature dependent pattern.

Since the creation of the DTTHF, incoming tortoises of all categories have continued to follow a distinct seasonal pattern (FIGURE 3. Desert Tortoises Collected by Biennium

Periods 1993-2005, page 31). Few tortoises are collected in the winter months (6%) between November 1<sup>st</sup> and February 28<sup>th</sup>, with large numbers of tortoises having been collected in spring, summer and fall months (94%) between March 1<sup>st</sup> and October 31<sup>st</sup>. Peak collection months include April, May and June, as well as August, September, and October. The 2001-2005 biennium followed this seasonal pattern. (FIGURE 4. DTTHF Incoming Desert Tortoises Collected via Countywide Pickup Service per, page 32). This predictable seasonal pattern is temperature dependent with the majority of tortoises being collected when daily high temperatures reach between 85 and 105 degrees F. Tortoise collection in March and July are usually relatively light in comparison to other non-winter months. March in Southern Nevada is usually cool with daily high temperatures rarely reaching 85 degrees F. July is typically hot with daily high temperatures commonly exceeding 105 degrees F.

Over the last five biennium periods the sex ratio of incoming tortoises has varied between categories. Desert tortoises begin to show secondary sex characteristics at approximately 18 to 25 years of age or approximately 180 to 200 mm Mean Carapace Length (MCL). For the purpose of this report a tortoise that is of unknown sex is too young to sex by visual inspection. The pool of incoming desert tortoises over the last five biennium periods display a sex ratio of 0.68 : 1.0, females to males respectively (FIGURE 5. DTTHF Incoming Desert Tortoises Classified by Sex 1991-2005, page 33). On a percentage basis 20% are female, 27% are male, and 53% are unknown sex (FIGURE 6. DTTHF Sex Ratio of Cumulative Incoming Tortoises 1991-2005, page 34). Looking specifically at presumed wild incoming tortoises from 1991-2005 the sex ratio changes to approximately 1.0 : 0.72, females to males respectively (FIGURE 7. DTTHF Incoming Presumed Wild Tortoises by Sex Class 1991-2005, page 35). On a percentage basis 37% are female, 29% are male, and 33% are unknown sex (FIGURE 8. DTTHF Sex Ratio of All Presumed Wild Tortoises Between 1991-2005, page 36). This data demonstrates a considerable difference in the sex ratios between wild tortoise populations in the Las Vegas Valley and the incoming tortoises of unknown origin collected by the pickup service.

### **2.1.1 Accepting Unwanted Pet Desert Tortoises**

As directed by the IMC, SNEI has been receiving unwanted pet desert tortoises since October 1996. Of the 2,715 tortoises picked up by the hotline service in the 2003-2005 biennium, 938 (35%) were pets given up by their owner. Of the 2,272 tortoises picked up by the hotline service in the 2001-2003 biennium, 824 (36%) were pets given up by their owner. In the 1999-2001 biennium 1,056 of 2,562 tortoises (41%) were pets given up by their owner compared to the 1997-1999 biennium in which 909 of 2,581 tortoises (35%) were pets given up by their owner. In the 1995-1997 biennium 289 of 1,377 tortoises (21%) were pets given up by their owner. The 1995-1997 biennium numbers above reflect only 9 months (October 1996 to June 1997) of accepting unwanted pets (FIGURE 9. DTTHF Desert Tortoises Collected via Hotline Service 1993-2005, page 39).

Owners that wish to give up hatchlings or small juveniles are asked to either physically separate mated pairs or give up one of the mated pair to prevent further generation of hatchlings. Most pet owners are willing to comply with the donation of one adult in

addition to the juveniles. Occasionally owners have refused to comply with this protocol; therefore tortoises were not collected by the pickup service. A sizeable increase in abandoned pet pickups was noticed within the 2001-2005 bienniums. Pet tortoises were occasionally left abandoned in yards and adjacent areas, in which case the new owners or tenants would call the pickup service to collect them. Often pet owners give up multiple pet tortoises. It is not unusual to receive more than 20 tortoises from a single pet owner. Pet owners turning in more than 20 tortoises usually have multiple generations produced by the same mated pair or trio. Usually these multiple tortoise submissions are dropped off at the SNEI office or handled with a single pickup. Additionally, SNEI biologists commonly receive calls from elderly pet owners who can no longer physically or financially care for their pets.



**Photo 1- Wild adult desert tortoise (*Gopherus agassizii*) collected on a construction site in the Las Vegas Valley. Photo taken by Charles La Bar.**

### **2.1.2 Wild Desert Tortoises**

The implementation of Desert Conservation Plan (DCP) in August 1995 and new optional tortoise removals on private lands has resulted in a drastic reduction of wild Section 10 clearance tortoises entering the DTTHF. Throughout the 2003-2005 and 2001-2003 bienniums, no tortoises were received from an optional Section 10 clearance. Only one (1) tortoise was received from an optional Section 10 clearance in the 1999-2001 biennium. This number was down significantly from the 416 wild tortoises collected during the 1993-1995 biennium when Section 10 clearances on private lands were



mandatory. Some wild tortoises are collected by concerned citizens and turned in to the pickup services or possibly kept as pets; however, the vast majority of these wild tortoises on private land are believed to be killed via incidental take.

A few wild tortoises are still turned in to the DTTHF by concerned citizens. These non-clearance wild tortoises are collected by the countywide pickup service. Some of these tortoises are collected by well meaning citizens prior to the onset of construction or during construction. Others wander into new development sites from areas of once suitable habitat. Often it is difficult to distinguish these tortoises from escaped pets. Some people will deliberately withhold information on the exact location tortoises were discovered out of fear of prosecution by law enforcement.



**Photo 2- Dead wild adult male desert tortoise (*Gopherus agassizii*) found adjacent to a construction site in a heavy equipment tire track. This tortoise is an example of an incidental take. Photo taken by Charles La Bar in August of 2001.**

No wild tortoises were received from formal Section 7 clearances in the 2003-2005 biennium. Only seven (7) wild tortoises were received from formal Section 7 clearances in the 2001-2003 biennium. In the 1999-2001 biennium, only seven (7) wild tortoises were received from formal Section 7 clearances. All of these animals came from the Las Vegas Beltway project. In the 1997-1999 biennium 42 wild tortoises were received from formal Section 7 clearance. Thirty-nine of these wild Section 7 tortoises were received from the Las Vegas Beltway project. Only two (2) wild tortoises were received from

formal Section 7 clearances in the 1995-1997 biennium (FIGURE 10. Wild Desert Tortoises Entering DTTHF from Section 10 and Section 7 Clearances, page 38).

### **2.1.3 Progeny Generated at the DTTHF**

In the 2003-2005 biennium 67 progeny were found in pens at the DTTHF compared to 102 progeny found in the 2001-2003 biennium and 106 progeny found in the 1999-2001 biennium. Only ten (10) progeny were found in the 1997-1999 biennium, 81 found in the 1995-1997 biennium, and 110 found in the 1993-1995 biennium. This decrease in progeny can be attributed to adult females being translocated to the LSTS instead of being maintained at the DTTHF during the egg-laying seasons. In the 2001-2003 biennium many adult females were held as select study animals for researchers such as the University of Nevada - Reno (UNR) and U.S. Geological Service (USGS) density study at the DTCC. Additionally, release of qualified tortoises to the LSTS (Large Scale Translocation Site) were held to a minimum and delayed by permitting difficulties during the 1999-2001 and 2001-2003 biennium periods. In the 2003-2005 biennium most adult females were transferred to adoption programs, research, or released at the LSTS via translocation before they could lay eggs in holding at the DTTHF.

Since early 1993, SNEI has implemented procedures to reduce the number of progeny generated at the DTTHF. Adult female tortoises are kept physically separated from adult male tortoises whenever possible. The only exception to this occurs when the DTTHF approaches its maximum holding capacity. Occasionally, the DTTHF will reach maximum capacity when translocation is postponed or when SNEI is directed to store large numbers of tortoises for upcoming research projects. Some of the progeny that were generated during the 2001-2003 and 1999-2001 bienniums could have resulted from female tortoises being fertilized prior to entering the DTTHF. It should be noted however, that female desert tortoises are known to exhibit sperm storage and may lay fertile eggs up to three (3) years after copulation thus reducing the effectiveness of any progeny mitigation at the DTTHF.

### **2.1.4 Non-Desert Tortoises**

In addition to the native desert tortoise, there are many exotic species of turtles and tortoises found in Southern Nevada. At least three introduced species of turtles are believed to be established in Southern Nevada including the Texas spiny softshell turtle (*Apalone spinifera ssp.*), the red-eared slider (*Trachemys scripta elegans*), and possibly the Sonoran mud turtle (*Kinosternon sonoriense*). Texas spiny softshell turtles, red-eared sliders, and other exotics are relatively common in ponds and lakes of city and county parks, state parks, national recreation areas, naturally occurring and manmade washes, golf courses and residential subdivisions. Examples of these species can be found in bodies of water including Sunset Park, Lorenzi Park, Floyd Lamb State Park, Lake Mead, Lake Las Vegas, the Lakes, Desert Shores, TCP Summerlin, Angel Park Golf Course, the Las Vegas Wash, Bonnie Springs, and many more.

In addition to the many established species of reproducing exotics in Southern Nevada there are several species of turtles and tortoises that are not established that have entered

Clark County through the pet trade. This species list includes, but is not limited to, Russian tortoises (*Testudo horsfieldii*), Texas tortoises (*Gopherus berlandieri*), African spurred tortoises (*Geochelone sulcata*), red-footed tortoises (*Geochelone carbonaria*), and yellow-footed tortoises (*Geochelone denticulata*). The list of turtle species includes ornate box turtles, western box turtles, three-toed box turtles (*Terrapene ssp.*), eastern painted turtles (*Chrysemys picta ssp.*), Sonoran mud turtles (*Kinosternon sonoriense*), and snapping turtles (*Chelydra serpentina*). These animals often escape or are released and found crossing roads, sidewalks, and yards.



**Photo 3- Russian tortoise (*Testudo kleinmanni*) collected by the countywide pickup service. Russian tortoises are common in local pet shops. However, wild populations are in decline. Photo by Charles La Bar.**

SNEI has implemented a series of protocols to identify non-desert tortoise hotline callers prior to pickup. SNEI's biologists routinely screen hotline callers with a series of questions designed to determine if the caller is requesting the pickup of a desert tortoise or a non-desert tortoise species. These include questions about size, shape, color, webbed feet, pointed noses, carapace pattern, elephantine limbs, colored facial striations or limb striations, hinged plastrons, etc.

Hotline callers usually fall into one of four categories; (1) callers who determine they do have a desert tortoise, (2) callers who determine they do not have a desert tortoise, (3) callers who can not determine what they have, and (4) callers who prevaricate about

having a desert tortoise so the pickup service will respond and take it off of their hands. Therefore, SNEI has established outlets for incoming non-desert tortoises that can be used before or after a non-desert tortoise pickup has occurred. Currently there are four main outlets for these animals. They are; (1) the caller keeps the non-desert tortoise species and is advised on care and how to get care information, (2) the caller is referred to the Southern Nevada Turtle and Tortoise Club, (3) an SNEI employee gives it a good home, or (4) SNEI contacts persons (mostly hotline callers and biologists) that wish to give a turtle or tortoise a good home.



**Photo 4- Box turtles (*Terrapene p.*) collected by the countywide pickup service. SNEI biologists have given these box turtles a good home. Photo by Charles La Bar.**

SNEI keeps records of both callers and pickups of non-desert tortoises (FIGURE 11. DTTHF Non-Desert Tortoises Collected 1993-2005, page 39). These pickups consist mostly of a variety of species of North American box turtles (*Terrapene ssp.*) (28%), red-eared sliders (*Trachemys scripta elegans*) (18%) and Russian tortoises (*Testudo horsfieldii*) (21%) (FIGURE 12. Percentage of DTTHF Non-desert Tortoises Collected during 1993-2005 Bienniums, page 40). The “Other turtles and tortoises” category shown in Figure 12 is a conglomeration of miscellaneous exotic species. Many of these were kept by the finder or directly referred to the Southern Nevada Turtle and Tortoise Club. There were 51 other turtles and tortoises collected or accepted by the pickup service between 1993 and 2001 that were identified to species. Of these 50 animals 18% were

spiny softshell turtles (*Apalone spinifera ssp.*), 14% were western painted turtles (*Chrysemys picta belli*), 18% were Texas tortoises (*Gopherus berlandieri*), and 20% were African spur-thighed tortoises (*Geochelone sulcata*). The remaining 30% of other turtles and tortoises are broken down on figure 13 (FIGURE 13. DTTHF Breakdown of Known Other Turtles and Tortoises Identified Throughout 1991-2001, N=50, page 41).

## **2.2 Transfer and Holding Facility Outgoing tortoises**

Tortoises leave the DTTHF through translocation, research, adoption, returned pets, natural death, and euthanasia. In the 2003-2005 biennium 14% were transferred to USFWS approved research projects, 61% were translocated, 1% were adopted, 1% returned to owners, 7% died of various causes, and 15% were euthanized (FIGURE 14. DTTHF Outgoing Tortoises for 2003-2005 Biennium by Category, page 42).

### **2.2.1 Desert Tortoise Adoptions**

There were 20 adoptions in the 2003-2005 biennium all by the Tortoise Group. In the 2001-2003 biennium there were 38 adoptions (Tortoise Group n = 14, Reno Tur-Toise Club (RTC) n = 24). In the 1999-2001 biennium there were 59 adoptions (Tortoise Group n = 18, RTC n = 41). In the 1997-1999 biennium there were 99 adoptions (Tortoise Group n = 22, RTC n = 77). In the 1995-1997 biennium there were 208 adoptions (Tortoise Group n = 41, RTC n = 167) (FIGURE 15. DTTHF Outgoing Tortoises Adopted for Biennium Periods 1993-2005, page 43). This relatively low number of adoptions in the 1999-2001, 2001-2003 and 2003-2005 bienniums is a result of the decrease in demand for pet tortoises. In Southern Nevada, many tortoises are available from various pet owners or citizens who find tortoises and do not contact the pickup service. Although several members of the public invest a valid interest in tortoise adoptions groups, they do not take the effort to create landscape changes that meet Tortoise Group requirements for adoption.

Since 1993 the Tortoise Group has requested primarily adult tortoises for their adoption program (FIGURE 16. Tortoise Group Adoptions by Age Class 1993-2005, page 44). The majority of adult tortoises requested for adoption were female (FIGURE 17. Tortoise Group Adoptions by Sex 1993-2005, page 45). This trend of adopting adult female tortoises is attributed to the fact that adult females are less aggressive, allowing adopters to have multiple tortoises without fighting. The MSHCP has not funded the Tortoise Group's adoption program since 1995.

RTC did not request any tortoises from DTTHF in the 2003-2005 biennium period stating they had plenty of previously placed tortoises that had been turned back in to fulfill adoption requests. Since 1993 the RTC has requested primarily adult tortoises for their adoption program (FIGURE 18. Reno Tur-Toise Club Adoptions by Age Class 1993-2005, page 46). The RTC has requested approximately 50% of the total adoptions to be females (FIGURE 19. Reno Tur-Toise Club Adoptions by Sex 1993-2005, page 47). Unlike the Tortoise Group, the RTC's primary adoption function was to give relief to the DTTHF. Prior to 1997 when translocation was not an option, the RTC was the primary outlet for hundreds of incoming tortoises. RTC's adoption area is 350 miles outside of

suitable desert tortoise habitat where it is far too cold for escaped tortoises to survive. RTC's goal was to place as many tortoises as possible to help DTTHF make space for incoming tortoises. The sex and age classes adopted by RTC were largely dependent on what was available at the DTTHF. The RTC's adoption program was fully funded in the 1995-1997 biennium, partially funded in the 1997-1999 biennium, and was not funded in the 1999-2005 biennium periods.

Desert tortoise adoption has become less of a priority since the implementation of the translocation program in the spring of 1997. Tortoise disposition priorities have shifted towards research and translocation and away from adoption. Even with the shift in disposition priorities the tortoise adoption programs receive all requested tortoises from the DTTHF. However, the main priority of the DTTHF is to provide research animals for USFWS approved research projects. Most research and adoption programs request a higher percentage of adult female tortoises. This can be attributed to the fact that adult tortoises have a higher survivability rate than tortoises with a mean carapace length of >180 mm. Also, adult female tortoises are more desirable for studies of reproduction and exhibit less aggressive behavioral characteristics making them more suitable for research studies with restricted accommodations.

### **2.2.2 Returned Pets to Owners**

Owners of escaped pet tortoises that are collected by the hotline service are usually welcome to reclaim their pets. Most are eager to pick up escaped pet(s) at SNEI's office as well as making the necessary landscape and housing changes to prevent any further escapes. If pet tortoises are found to be habitual escapees or are found to live in apartment complexes or any other improper habitat, SNEI does not return the animal. However, only a small fraction of pet owners will call looking for their pet tortoise(s). Only 37 escaped pets were returned to their owners in the 2003-2005 biennium. In the 2001-2003 biennium 25 escaped pets were returned, in the 1999-2001 biennium 32 escaped pets were returned, in 1997-1999 biennium 37 escaped pets were returned to their owners. In the 1995-1997 biennium 26 escaped pets were returned to their owners.

### **2.2.3 Animals to Research**

One of the priorities of the DTTHF is to provide animals for USFWS approved research projects.

Throughout the 2003-2005 biennium 276 tortoises of mixed ELISA status were transferred to the University of Nevada-Reno (UNR) and Georgia Southern University (GSU) for their joint research on disease transmission at the DTCC.

Throughout the 2001-2003 biennium 152 ELISA positive tortoises were transferred to research entities such as UNR, GSU, San Diego Zoo-Center for Reproduction of Endangered Species (CRES), Red Rock Conservation Area, and others. The DTTHF transferred 125 ELISA positive and URTD symptomatic tortoises on two separate occasions for a UNR upper respiratory tract disease (URTD) transmission related

research project. Dr. C. Richard Tracy, Dr. Ronald Marlow, and David Hyde (graduate student-UNR) received 50 research animals on 11/13/2002 as well as a second set of research animals on 7/24/2003 (n = 75).

Throughout the 2001-2003 and 2003-2005 biennium periods 150 ELISA positive animals were euthanized and the carcasses were transferred to Dr. Ronald Marlow (UNR) and Phil Medica (USFWS & USGS) for a study on decomposition of desert tortoises at the DTCC.



**Photo 5-Malnourished desert tortoise (*G. agassizii*) collected by countywide pickup service. Notice the concave carapace, long claws, and yellow overall color. The carapace of this specimen was soft to touch and pliable. This tortoise was likely kept indoors in a terrarium and fed lettuce. Photo by Ryan Hewitt.**

#### **2.2.4 Animals Died, Euthanized, and Missing**

In the 2003-2005 biennium 161 tortoises at the DTTHF died of unknown causes. Of the 161 that died of unknown causes, 61% (n = 118) were hatchlings and yearlings, 10% (n = 16) were juveniles, 4%(n = 7) were sub-adults, and 25% (n = 40) were adults (FIGURE 20. DTTHF Desert Tortoises that Died of Unknown Causes 2003-2005, page 48).

A total of two (2) adult desert tortoises at the DTTHF were found dead as a result accidentally turning over in the sun throughout the 2003-2005 biennium period. A total of two (2) hatchling and yearling desert tortoises at the DTTHF were found dead as a result accidentally turning over in the sun throughout the 2003-2005 biennium period.



**Photo 6- This juvenile desert tortoise (*G. agassizii*) with rear section missing was mauled by a dog and turned in alive to the countywide pickup service. This animal was euthanized for grievous injuries. Photo by Ryan Hewitt.**

In the 2003-2005 biennium a veterinarian humanely euthanized 19 tortoises for grievous injuries. One (1) tortoise died at the veterinarian clinic. This grievous injury occurred prior to pick-up and the animal died before euthanasia occurred. In the 2003-2005 biennium 21 tortoises were euthanized for extreme malnutrition or other medical problems. Improper care or neglect of pet tortoises that leads to extreme malnutrition and a variety of medical problems is responsible for the majority of animals in need of euthanasia. Throughout this period, 360 tortoises were euthanized for receiving a positive or suspect ELISA test for URTD (FIGURE 21. DTTHF Desert Tortoises Euthanized by Reason 2003-2005, page 49).

In the 2003-2005 biennium forty (40) tortoises were declared missing. Of the missing tortoises 98% (n = 39) were hatchlings and yearlings and 2% (n = 1) were juveniles (FIGURE 22. DTTHF Missing Tortoises by Age Class 2003-2005, page 50). No sub-



adults or adults were missing at the DTTHF. Predation by ravens, coyotes, kit foxes, wood rats, red racers, fire ants, raptors, and roadrunners is believed to be the primary source of missing hatchlings and juveniles. Direct predation by wood rats, red racers, fire ants, and common ravens has been observed and documented at the DTCC.



**Photo 7-** This desert tortoise (*G. agassizii*) was struck by a motor vehicle and turned in alive to the countywide pickup service. This animal was euthanized for grievous injuries. Photo by Ryan Hewitt.

### **2.3 ELISA Testing of Incoming Tortoises**

SNEI continues to subject all visually asymptomatic incoming tortoises to ELISA testing for URTD. Throughout the 2003-2005 biennium 72% (n = 1,976) of the incoming tortoises were subjected to the ELISA test. Incoming hatchling tortoises are held for 1 year prior to ELISA testing to reduce the risk of false-positives due to the presence of maternal antibodies. Approximately 19% (n = 388) of incoming tortoises tested positive or suspect and were euthanized. Approximately 81% (n = 1,588) tested negative and were placed into holding for research, translocation, and adoption. Tortoises coming in between October 31<sup>st</sup> and June 30<sup>th</sup> were held in quarantine pens until they could be tested eight to ten weeks into the active season. Tortoises ELISA-tested during the inactive season have an increased risk of yielding false-negative results.

ELISA data collected supports the hypothesis that older tortoises are more likely to be exposed to URTD and elicit a positive or suspect ELISA result. Separating the ELISA results by age class shows that approximately 33% of adults (n=1640), 20% of sub-adults

(n=177), 12% of juveniles (n=236), and 8% of hatchlings and yearlings (n=272) have a positive or suspect ELISA (FIGURE 23. ELISA Results by Age Class 1995-2005, page 51).



**Photo 8 – SNEI biologist Ryan Hewitt collected a blood sample via brachial venipuncture to be processed by SNEI biologists and shipped to the University of Florida for ELISA testing. Photo by Sharon Whitaker.**

Thirty-two percent of male tortoises (n=1,095) and 30% of female tortoises (n=675) entering the DTTHF have a positive or suspect ELISA whereas only 10% of unknown sex tortoises (n=552) have a positive or suspect ELISA (FIGURE 24. ELISA Results by Sex Class 1995-2005, page 52). Approximately 25% (n = 2,293) of known pet tortoises entering the DTTHF exhibit an ELISA positive or ELISA suspect test result. (FIGURE 25. ELISA Results of Known Pet Tortoises by Age Class, page 53).

Throughout the last five MSHCP biennium periods 31% of presumed wild tortoises entering the DTTHF had a positive or suspect ELISA result. Of the presumed wild tortoises, 41% (n = 200) of adults, 20% (n = 27) of sub-adults, 21% (n = 40) of juveniles, and 12% (n = 6) of hatchlings and yearlings had ELISA positive or ELISA suspect results (FIGURE 26. ELISA Results of Presumed Wild Tortoises by Age Class, page 54). The vast majority of these presumed wild tortoises have been collected in the Las Vegas Valley. Wild tortoises collected from additional locations in Clark County have demonstrated dissimilar results. Resident tortoises in the LSTS were tested prior to the initiation of translocation; 97% of these tortoises had a negative ELISA, 35 had a suspect

ELISA and no tortoises had a positive ELISA (n=30). This data supports the hypothesis that wild desert tortoise populations in the Las Vegas Valley exhibit a higher percentage of ELISA positive and ELISA suspect animals than populations sampled from additional areas in Clark County.



**Photo 9- Desert tortoise (*G. agassizii*) in holding at the Desert Tortoise Conservation Center (DTCC). SNEI biologists are caring for over 300 BLM desert tortoises at the DTCC. Photo by Charles La Bar.**

The ELISA test administered to incoming tortoises is significant in reducing the transmission of UR TD to healthy tortoises. SNEI biologists have noticed a significant decrease in the number of symptomatic tortoises found in holding pens at the DTTHF. Prior to implementing ELISA testing for all incoming tortoises, biologists regularly found symptomatic tortoises in holding pens. Since testing implementation, fewer than 6 symptomatic tortoises are found in holding pens annually. Adult and sub-adult tortoises are usually kept singly or in pairs. Juveniles and hatchlings are often kept several to a pen. Infected tortoises housed with multiple animals are likely to infect an entire pen. Additionally, workers at the facility could inadvertently spread UR TD from pen to pen with routine care and maintenance. Animals slated for adoption, translocation, or uncontrolled research should be ELISA negative to prevent the spread of UR TD within wild and captive populations. The USFWS requires that tortoises entering adoption programs be ELISA negative. The only approved outlet for tested ELISA positive or ELISA suspect tortoises is through USFWS approved research projects.

## **Section 3: Desert Tortoise Conservation Center Projects**

### **3.0 Introduction**

SNEI has been contracted by Clark County to operate and maintain the Desert Tortoise Conservation Center (DTCC) since July of 1997. With the support of the Bureau of Land Management and Clark County SNEI has successfully maintained the DTCC and its more than 300 tortoises throughout the last four MSHCP biennium periods (1997-2005).

### **3.1 DTCC Responsibilities**

Biological responsibilities include the maintenance of desert tortoise pens, DTCC main building, landscaping, research pens, irrigation system, well system, care and feeding of the BLM tortoises, as well as receiving, caring, and watering of salvaged plants from various entities contracted by the BLM. Additional responsibilities include assisting, organizing, and monitoring maintenance work and repairs for the DTCC. SNEI has assisted and coordinated with researchers from the Smithsonian Institute, University of Nevada-Reno (UNR), U.S. Geological Survey-Biological Resources Division (USGS), San Diego Zoo-Center for Reproduction of Endangered Species (CRES), Georgia Southern University (GSU), University of California-Las Angeles (UCLA), and the Desert Research Institute.

Currently, SNEI cares for an additional 425 research animals for the Smithsonian Institute. Funding is uncertain at this time for Smithsonian Institute (SI). There has not been a representative for SI at the DTCC for approximately 1 year. SNEI has taken on the responsibility of care and feeding of these animals although they have not officially been transferred over to Clark County.

The Density study that had occurred at the DTCC is completed. There are approximately 400 animals residing within the 9 –10 acre pens. The Fish and Wildlife Service has requested to continue to house these animals within these pens for possible future research.

Responsibilities of the DTCC also include organization, care, and maintenance for approximately 260 animals for the Bureau of Land Management. This number includes 105 adult, 10 sub-adult, and 20 juvenile desert tortoises that are not presently involved in a research study for the BLM. The majority of adult tortoises were ELISA tested in 1996 and produced ELISA negative results.

SNEI continues to care for 40 adult and 125 juvenile desert tortoises for Dr. David C. Rostal in collaboration with Georgia Southern University and the San Diego Zoo-Center for Reproduction of Endangered Species for a long-term URTD research project at the DTCC.



**Photo 10- Over the years the DTCC has become a materials storage facility for many entities. Some of the materials are being stored for projects that are in progress, however much of the stockpiled material is just being stored at the DTCC. Photo by Charles La Bar.**

### **3.2 DTCC Projects**

In August 2003, SNEI biologists initiated re-roofing of the hatchling Pens A, B, C. This project involved replacing the roof with new material and adding new shade cloth. Due to excessive winds, there was extensive damage to the hatchling pens. The damage was compromising the security of these pens.

The use of the BLM trailer was terminated in the 2001-2003 biennium due to unhealthy conditions caused by excess rat and mouse excrement. Concurrently, the pump house was cleaned up using respirators, hand tools, and a bleach solution. The pump house is currently in a usable condition, and will be maintained with the implementation of the baiting program. Other buildings at the DTCC do not appear to be in jeopardy of infestation. In July 2003, SNEI assisted with the removal of the BLM trailer from the DTCC premises.

Over the years the DTCC has become a storage facility for many entities. The stockpiling of excess materials was a contributing factor to wood rat infestation. Biologists have

cleaned up material storage areas located near holding pens and moved those materials to the centralized material storage area. SNEI has also set many traps within the tool shed to attempt to alleviate the problem.

In January and February 2005, two (2) episodes of vandalism occurred at the DTCC. The fence was spliced on the south end in both occurrences. It was apparent that the individual(s) entered the premises with an ATV and traveled to the BLM materials holding yard. The assailants opened the sheds but it did not appear that any items were taken. The Bureau of Land Management's Ranger was immediately notified.

During April of 2004 SNEI biologist Michelle McDermott coordinated with the Desert Research Institute and the University of Redlands to conduct a canine tracking study. Preliminary tests were conducted to introduce the canines as well as the handlers to various aspects of the facility and research area. This research project took place between April 1<sup>st</sup> and April 16<sup>th</sup>. The objective of this study was to quantify the reliability and efficiency of dogs trained to locate desert tortoises. SNEI assisted with the initial set up to ensure project efficiency.

During July of 2004 SNEI biologist Michelle McDermott coordinated with BLM and Orion Construction for the initiation of the upgrade of the irrigation system at the DTCC. SNEI assisted in informing all parties of the problematic areas as well as exclusive needs. The project began in May of 2005. SNEI was responsible for providing tortoise training to all construction personnel upon the request of BLM. Michelle McDermott requested minimal rotation of construction crew to alleviate the need for additional tortoise training and coverage of the rules of the DTCC. Orion construction was compliant.

During the 2003-2005 biennium there was abundant rainfall. SNEI witnessed a dramatic increase in fence and burrows repairs. Hatchling pens were monitored continuously to prevent excess flooding. In addition, there were many compromises in the research pens. Repairs involved replacing sections of fence with new material.

## **Section 4: Translocation Study**

### **4.0 Introduction**

As part of the responsibilities outlined by Clark County and the MSHCP, SNEI continually prepares and releases qualified desert tortoises to the Large Scale Translocation Site (LSTS) as part of the University of Nevada-Reno, U.S. Geological Survey Desert Tortoise Translocation Study. SNEI has released 5,943 tortoises from holding pens at the DTTHF and DTCC. In spring 1997 the translocation program initially selected three release sites in Southern Nevada to serve as appropriate desert tortoise translocation sites. These translocation sites included Bird Springs Valley, Lake Mead National Recreation Area, and the Large Scale Translocation Site (LSTS).

Currently, the translocation effort is focused primarily on releasing tortoises held at the DTTHF that meet the criteria for translocation as outlined by the USFWS and the Clark

County MSHCP. Approximately 1,350 desert tortoises enter the DTTHF annually. With this large number of incoming animals it is necessary to translocate approximately 800 tortoises annually to ensure that there is adequate space for incoming tortoises. To qualify for translocation a tortoise must produce a negative ELISA result and exhibit no external signs of URTD. Blood samples are collected from all incoming tortoises entering the DTTHF in an effort to eliminate the transmission of URTD to wild and captive populations of desert tortoises within the Las Vegas Valley. Samples are collected and processed by SNEI biologists and express shipped to the University of Florida - Gainesville where the ELISA tests are conducted. Experienced research technicians at the University of Florida process samples weekly. A negative ELISA result indicates that a tortoise has not been exposed to *Mycoplasma agassizii*, the primary cause of URTD. The translocation of ELISA negative tortoises is believed by USFWS to be a minimal threat to the spread of URTD. Currently, Clark County is permitted by USFWS to release only ELISA negative tortoises.

#### **4.1 Bird Springs Valley Releases**

No tortoises were released in Bird Springs Valley Study area during the 2003-2005 biennium. The total number of tortoises transferred from the DTTHF and released in the Bird Springs Valley study area was 76 in Spring 1997 and Winter 1998.

#### **4.2 Lake Mead National Recreation Area Releases**

No tortoises were released in the Lake Mead National Recreation Area study site during the 2003-2005 biennium. The total number of tortoises transferred from the DTTHF and released in the Lake Mead study area was 30 in January 1998.

#### **4.3 Large Scale Translocation Site (LSTS) Releases**

SNEI has participated in the translocation study since its inception in spring 1997. Since then, SNEI has released 5,943 desert tortoises. The majority of released tortoises were hatchlings and yearlings (39%, n = 2,328) and adults (32%, n = 1,905) (Figure 27. Desert Tortoises Released for Translocation to LSTS by Age Class for each MSHCP Biennium, page 55). The majority of adult tortoises released by SNEI were males (Figure 28. Desert Tortoises Released for Translocation to LSTS by Sex, page 56) due to the fact that adult female tortoises are in demand by research and adoption programs. Total numbers of desert tortoises participating in the Translocation Study will vary by age class and sex throughout each biennium depending on ELISA negative tortoises that are available in holding at the DTTHF.

SNEI released 1,596 tortoises at the LSTS during the 2003-2005 biennium. In October of 2003 SNEI released 589 tortoises to the LSTS in April of 2004 92 tortoises were released to the LSTS in October of 2004 424 tortoises were released to the LSTS and in April of 2005 491 tortoises were released to the LSTS.

The total number of tortoises participating in the Translocation Study for each biennium is dependent upon USFWS permitting, total number of qualified tortoises available, and holding requirements from the DTTHF. Throughout the last five biennium periods (1995-2005), SNEI has released a total of 5,943 desert tortoises to the LSTS for translocation. SNEI released 1,252 tortoises at the LSTS during the 2001-2003 biennium. During the 1999-2001 biennium 779 tortoises were released at the LSTS. During the 1997-1999 biennium 1,724 tortoises were released compared to only 300 tortoises being released in the 1995-1997 biennium.

## **Section 5 Conclusions and Recommendations**

### **5.0 Introduction**

In this section SNEI will make conclusions and recommendations based on the data collected for each subsection reported on in sections 2, 3, and 4 of this report. These recommendations and conclusions will appear in the same order as the data are presented in this report.

### **5.1 DTTHF Incoming Tortoises Conclusions and Recommendations**

In the last six years, the mean number of incoming tortoises has stabilized at slightly fewer than 2,700 tortoises per biennium. The majority of tortoises entering the DTTHF were of unknown origin collected by the hotline and pickup service.

Protocols for handling incoming tortoises have been developed over the last 12 years under the direction of the Clark County MSHCP, BLM and USFWS. These protocols continue to function well. The subsections of section 5.1 will specifically discuss the conclusions and recommendations applicable to each category of incoming tortoises.

#### **5.1.1 Accepting Unwanted Pet Desert Tortoises Conclusions and Recommendations**

Accepting unwanted pet desert tortoises solves several problems faced by Clark County, USFWS, BLM, Redrock National Recreation Area, NDOW, National Park Service, Lake Mead National Recreation Area, the Tortoise Group, and other agencies and entities associated with the Clark County MSHCP. This service provides a legal and accessible outlet for pet owners who either no longer want their pet(s) or are no longer able to provide care for their pet(s). The program is designed to reduce the number of tortoises that are “disposed of” by well-meaning but unknowledgeable members of the public. Often these animals are given to friends and family who may be unaware of the proper care of desert tortoises. Alternatively, many individuals dispose of unwanted pets by releasing the animals into the desert. Not only is the animal in danger of being released in an inappropriate habitat but also wild tortoises could be exposed to URTD or other diseases and parasites from the released pet due to the relatively high incidence of URTD and other diseases and parasites in captive tortoises.



SNEI concludes that the benefits of accepting unwanted pet desert tortoises are consistent with the goals and objectives of the Clark County MSHCP. This program gives the IMC, USFWS, and administrators of the MSHCP control over the disposition of unwanted pet tortoises. Without this program, problems associated with unwanted pet tortoises in Southern Nevada would grow at an alarming rate. The cessation of unwanted pet pickups would be accompanied by an increase in diseased tortoises that are released into the wild as well as the associated detrimental effects. SNEI strongly recommends the hotline and pickup service continue to deal proactively with the problem of unwanted pet desert tortoises and continue to implement this program.

### **5.1.2 Wild Tortoises Conclusions and Recommendations**

The implementation of the DCP in August 1995 and the associated optional tortoise surveys and removals on private lands has resulted in a drastic reduction of wild Section 10 clearance tortoises entering the DTTHF. Throughout the 2003-2005 and 2001-2003 biennium periods, no tortoises were collected from an optional Section 10 clearance. Only one tortoise was received from an optional Section 10 clearance in the 1999-2001 biennium. These numbers are down significantly from the 416 wild tortoises collected during the 1993-1995 biennium when Section 10 clearances on private lands were mandatory. Although several wild tortoises are collected by concerned citizens and turned in to the pickup services or kept as pets, the vast majority of wild tortoises dwelling in development or recreational areas are believed to be killed via incidental take.

Throughout the Las Vegas Valley, wild tortoise populations are a valuable resource that may potentially be utilized to aid in recovering diminished desert tortoise populations within Southern Nevada. The decision to make clearances on private lands optional in Clark County was a pre-Translocation Study decision. As more is learned about disease transmission and translocation the value of these wild tortoises could be fully recognized.

### **5.1.3 Progeny Generated at the DTTHF Conclusions and Recommendations**

In the 2003-2005 biennium 67 progeny were found in pens and adjacent areas at the DTTHF compared to 102 progeny located during the 2001-2003 biennium and 106 progeny located during the 1999-2001 biennium. During the 1997-1999 biennium, only 10 progeny were found at the DTTHF. This increase in progeny produced during the 2001-2003 and 1999-2001 biennium periods can be attributed to adult females being maintained at the DTTHF during egg-laying seasons throughout both biennium periods. To reduce the numbers of progeny produced at the DTTHF females are separated from males in an effort to reduce fertilization. However, female desert tortoises are known to store sperm and may lay fertile eggs up to three years after successful copulation. Many adult females were held at the DTCC to insure that adequate selections could be made by research entities such as UNR. Additionally, efforts to release qualified tortoises to the LSTS were held to a minimum during the 1999-2001 and 2001-2003 biennium periods.

The generation of progeny at the DTTHF could have been minimized by transferring adult female tortoises out of holding at the DTTHF prior to oviposition. In the 1997-1999 biennium period most adult females were transferred to the Tortoise Group, researchers, or released at the LSTS before egg-laying seasons occurred. This transfer effort resulted in the generation of only 10 progeny at the DTTHF during the 1997-1999 biennium.

SNEI recommends the continuation of annual spring translocation programs prior to female oviposition. The protocol should specify releasing as many qualified adult desert tortoises before egg laying season as a priority over releasing as many qualified adult female tortoises as possible from the DTTHF. SNEI further recommends adult males should be slated for research or adoption when possible. This allows adequate space to separate adult female and male tortoises during the mating season thus reducing the number of generated progeny. This endeavor will require a cooperative effort from SNEI, Clark County, UNR, USGS, and USFWS to insure translocation permits are in place in early March, and research animals are selected and transferred to research pens prior to May 1st each year.

#### **5.1.4 Non-Desert Tortoises Conclusions and Recommendations**

SNEI has implemented a series of protocols to identify non-desert tortoise hotline callers prior to pickup. Biologists routinely screen hotline callers with a series of questions designed to determine if callers are requesting pickup of a desert tortoise or a non-desert tortoise species. Hotline callers usually fall into one of four categories; (1) callers who determine they have a desert tortoise, (2) callers who determine they do not have a desert tortoise, (3) callers who can not determine exact species, and (4) callers who prevaricate about having a desert tortoise so the pickup service will respond and remove it from the premises.

The objective of the pickup service does not include collecting non-desert tortoise species. However, in many instances it is impossible to determine if callers possess a desert tortoise. Most members of the public are unable to distinguish between a turtle and a tortoise, much less a desert tortoise from a Texas tortoise or Russian tortoise. Therefore it is necessary to respond to callers who cannot determine if the animal is in fact a desert tortoise. In response, SNEI has established outlets for incoming non-desert tortoises that can be used before or after a non-desert tortoise pickup has occurred. The current procedures for dealing with non-desert tortoise species have been developed and implemented over the last 11 years and are proving to be effective. This protocol not only saves money by limiting unnecessary pickups but also provides outlets for displaced animals. By collecting these non-desert tortoise species SNEI is assisting in preventing the establishment of unwanted exotic species as well as the spread of disease in Southern Nevada. Many of these exotic turtles and tortoises are carriers of viral and bacterial diseases that could potentially affect wild desert tortoise populations.

The benefits of implementing these non-desert tortoise-handling protocols are consistent with the goals and objectives of the MSHCP. Dealing with unavoidable non-desert

tortoises calls in a proactive manor allows SNEI to field the volume of calls that would likely be forwarded to Clark County, USFWS, BLM, NDOW, and the Tortoise Group.

## **5.2 DTTHF Outgoing Tortoises Conclusions and Recommendations**

The current procedures in place for dealing with outgoing tortoises have been developed over the last 13 years. The subsections of section 5.2 will specifically discuss the conclusions and recommendations applicable to each of the categories for outgoing tortoises.

### **5.2.1 Desert Tortoise Adoptions Conclusions and Recommendations**

Desert tortoise adoption programs have become less of a priority since the implementation of the translocation program in the spring of 1997. Tortoise disposition priorities have shifted towards research and translocation and away from adoption.

SNEI recommends continuing to provide USFWS authorized adoption entities with qualified tortoises. The adoption programs promote desert tortoise awareness as well as providing a valuable outlet for excess tortoises at the DTTHF. Adoptions that minimize hatchling production should be promoted.

### **5.2.2 Returned Pets to Owners Conclusions and Recommendations**

Returning escaped pet tortoises to their original owners is a necessary service that benefits the public as well as the MSHCP program. This policy returns escaped pets to troubled owners at minimal cost, supplies the owner with information on proper care and feeding, as well as reduces the DTTHF husbandry and translocation cost.

SNEI recommends continuing the policy of returning escaped pets to their owners.

### **5.2.3 Tortoises to Research Conclusions and Recommendations**

Providing desert tortoises to USFWS approved research projects has become a priority at the DTCC. Providing researchers with quality research animals is essential. This procedure is consistent with the goals and objectives outlined by the Clark County MSHCP.

SNEI recommends continuing to make the provision of research animals to USFWS approved research projects a top priority.

### **5.2.4 Tortoises Died, Euthanized and Missing Conclusions and Recommendations**

In the 2003-2005 biennium 161 tortoises died of unknown causes. Approximately 61% of the 161 tortoises were hatchlings and yearlings. We believe many of the hatchling and yearling tortoises were victims of drastic changes in ambient temperatures or malnutrition and poor care prior to entering the DTTHF. SNEI recommends keeping hatchling and

yearling tortoises indoors in a climate-controlled room at the DTTHF over the winter months and returning them to outdoor pens in the spring. This change in handling procedure should significantly reduce the hatchling and yearling mortality rate at the DTTHF.

Licensed veterinarians humanely euthanized 392 tortoises during the 2003-2005 biennium. The majority of these tortoises (92%) were euthanized for having a positive or suspect ELISA result. The only approved outlet for ELISA positive or ELISA suspect tortoises is through USFWS approved research projects or euthanasia. ELISA positive and suspect tortoises do not qualify for adoption, or translocation, and are rarely requested by researchers. SNEI recommends continuing to implement the current USFWS protocols and procedures for dealing with ELISA suspect and ELISA positive tortoises, extremely malnourished tortoises, injured tortoises, and tortoises showing signs of URTD.

There were 40 tortoises declared missing in the 2003-2005 biennium. The majority of these missing tortoises are believed to have been lost to predation. Incidences of predation on small tortoises by wood rats, ravens, kit fox, red racers, gopher snakes and fire ants have been documented at the DTCC. Other potential predators include roadrunners, owls, raptors, and coyotes, as well as feral cats. SNEI had hired Terminix to implement a rodent control program at the request of BLM in 2001, however the program was cancelled at BLM's request. BLM cited concerns over poisoning native small mammals other than wood rats as a reason for canceling the program. Since canceling the program the number of missing tortoises has climbed from 8 in the 2001-2003 biennium to 40 in the 2003-2005 biennium.

SNEI recommends reinstating the Terminix rodent control program. SNEI biologists will continue to construct and maintain predator proof pens to minimize lose to predators.

### **5.3 ELISA Testing of Incoming Tortoises Conclusions and Recommendations**

The ELISA test performed on tortoises entering the DTTHF is vital in minimizing the transmission of URTD. Biologists have noticed a significant difference in the number of tortoises with signs of URTD being found in holding pens at the DTTHF. Prior to implementing ELISA testing of all incoming tortoises SNEI biologists would regularly find tortoises showing signs of URTD in DTTHF holding pens. Since the implementation of ELISA testing biologists find fewer than six tortoises with signs of URTD annually. Adult and sub-adult tortoises are usually kept singly or in pairs. Juveniles and hatchlings are often kept several to a pen. An infected tortoise in a pen with other tortoises could potentially infect them all. There is also the risk that workers at the DTTHF could inadvertently spread URTD from pen to pen. Any infected tortoises could infect other animals wherever they are placed. Animals being used in the translocation study are required to be ELISA negative in order to maintain the health of the wild tortoise population. Additionally, the USFWS requires that tortoises entering adoption programs be ELISA negative. Currently, the only outlet for ELISA positive or ELISA suspect tortoises is through research programs approved by USFWS.

SNEI strongly recommends continuing the ELISA testing of all incoming tortoises. Without ELISA testing there is a significant risk of spreading UR TD to tortoises held at the DTTHF. Withholding ELISA testing could also prove detrimental to research projects by releasing ELISA positive animals into scientific studies.

#### **5.4 DTCC Conclusions and Recommendations**

The DTCC is aging and no longer has the appropriate facilities for the volume of research being conducted at the DTCC. The DTCC lacks office space, laboratory space, storage space, and climate controlled tortoise-holding space. This summer researchers and administrators from BLM, SNEI, Clark County, USFWS, and UNR met at the DTCC to discuss the construction and possible Public Lands Management Act (PLMA) funding of a new building. The existing DTCC main building was built in 1990. Since then the need for additional research and storage space has been an ongoing problem. Historically, building multiple smaller sheds and climate controlled one-room buildings has solved this space problem. The consensus of the group was that one large well-planned building of approximately 3,000 square feet could meet the needs of the BLM, researchers, and SNEI.

SNEI recommends the IMC explore the potential for PLMA funding to construct a new building at the DTCC. Having the appropriate facilities to operate the DTTHF, conduct research, and support BLM and MSHCP related projects and objectives would be a great asset to both the BLM and the MSHCP.

The wood rat problem at the DTCC has been identified, and actions are being taken to control wood rat and other rodent infestations. Wood rats seriously infested both the BLM trailer and the DTCC pump house. A new building was constructed under the direction of the BLM to provide adequate housing of incoming tortoises to the DTCC. By the request of OSHA and BLM, the trailer was removed from the DTCC due to excessive health risks by asbestos presence and rodent infestation and excrement. The DTCC pump house has been cleaned up and with regular maintenance can continue to be operational. SNEI recommends the continuation of the Terminix zinc phosphate-baiting program to help control wood rat and other rodent populations at the DTCC.

SNEI also recommends research entities provide previous estimates on the number of research animals needed to initiate studies at the DTCC. Known future projects in need of captive and wild adult tortoises would eliminate unnecessary delays in the release of ELISA negative tortoises via the translocation program.

#### **5.5 Translocation Conclusions and Recommendations**

Translocation provides a necessary outlet for the hundreds of ELISA negative tortoises collected by the DTTHF. Without the translocation program pen construction and husbandry costs could increase exponentially. In 1994-95 the cost of pen construction at the DTTHF was approximately \$1,500 per 25' by 25' block wall enclosure for materials

and labor. The necessary construction of additional pens sufficient for 800 tortoises annually would cost approximately \$1,000,000 a biennium.

The current USFWS, UNR and USGS approved translocation handling protocols eliminate the need for installation of burrows, wearing gloves between ELISA negative tortoises, implanting passive integrated transponder (PIT) tags, and separate transportation for each ELISA negative tortoise. These modified handling protocols have greatly reduced the cost of translocation. Throughout the 2003-2005 biennium periods SNEI billed for approximately \$65,000 of an \$80,000 budget.

The preliminary reports on the Desert Tortoise Translocation Study by UNR and USGS describe the translocation program as a great success. Tortoises released in the spring and fall settle into the release site in three or four days, establish new burrows and cover sites, and begin to gain wild behavioral characteristics in a relatively short period of time. Mortality rates of released tortoises have been reported to mirror that of monitored wild populations. However, SNEI recommends that additional studies should be conducted to fully understand mortality rates of released tortoises as well as the success of the Desert Tortoise Translocation Study on the LSTS.

The USFWS has designated the translocation program as an ongoing priority under the Clark County MSHCP. This program serves as a political and economical success that meets the goals and objectives of the Clark County MSHCP as well as satisfying necessary USFWS incidental take permit requirements. SNEI strongly recommends the continuation of the translocation program. SNEI will continue to streamline release procedures to minimize program cost.

### Desert Tortoises Collected by DTTHF during Biennium Periods 1993-2005

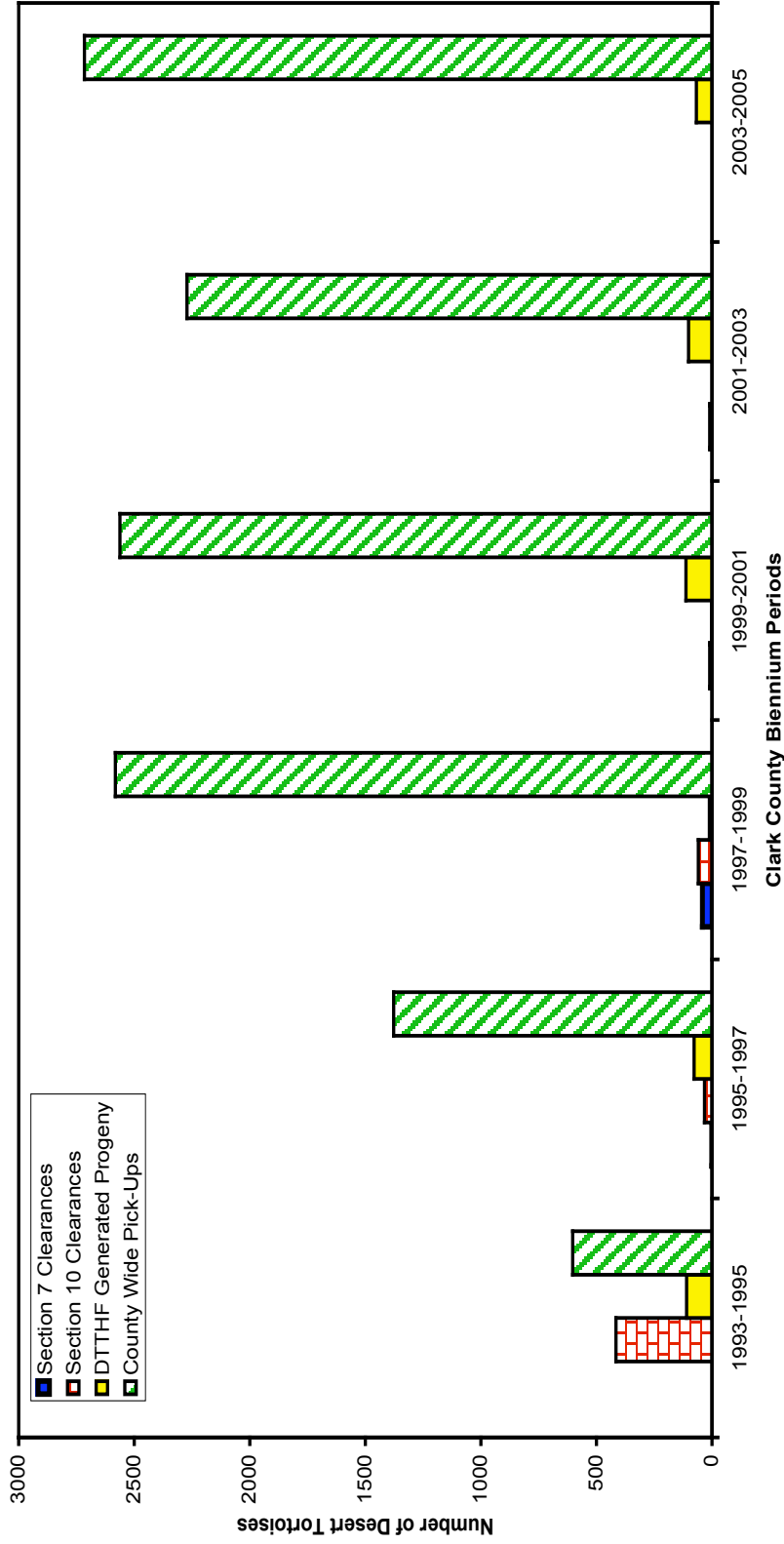


Figure 1. Number of desert tortoises (*Gopherus agassizii*) collected and processed by the Desert Tortoise Transfer and Holding Facility throughout the 1993-2005 MSHCP Biennium Periods in Clark County, Nevada. Graph shows a significant increase throughout 1997-2005 in *G. agassizii* collections by the County Wide Pick-up Service well as a decrease in *G. agassizii* collections by Section 7 and Section 10 Clearances.

Desert Tortoises Collected by Age Class during 2003-2005 Biennium.

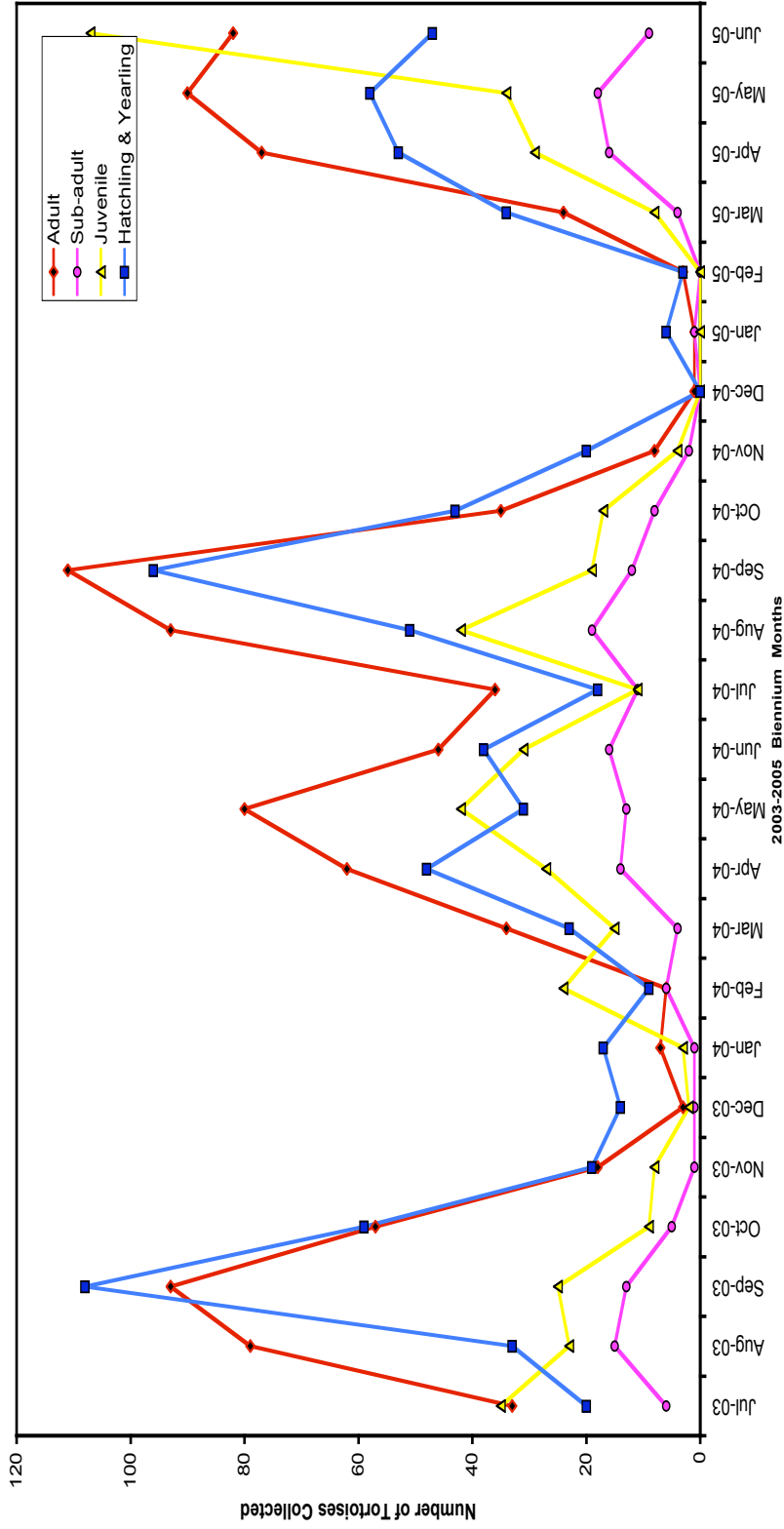


Figure 2. Number of Desert Tortoises (*G. agassizii*) collected by age class during each month of the MSHCP 2003-2005 Biennium Period in Clark County, Nevada. Graph demonstrates a seasonal trend with *G. agassizii* collected in the Las Vegas Valley. Incoming adult, sub-adult, and juvenile tortoises follow a more temperature dependent pattern. The number of hatchlings and yearlings collections are consistent with periods when tortoise eggs are hatching.



1993-2005 Incoming Tortoises by Month - Seasonal Pattern

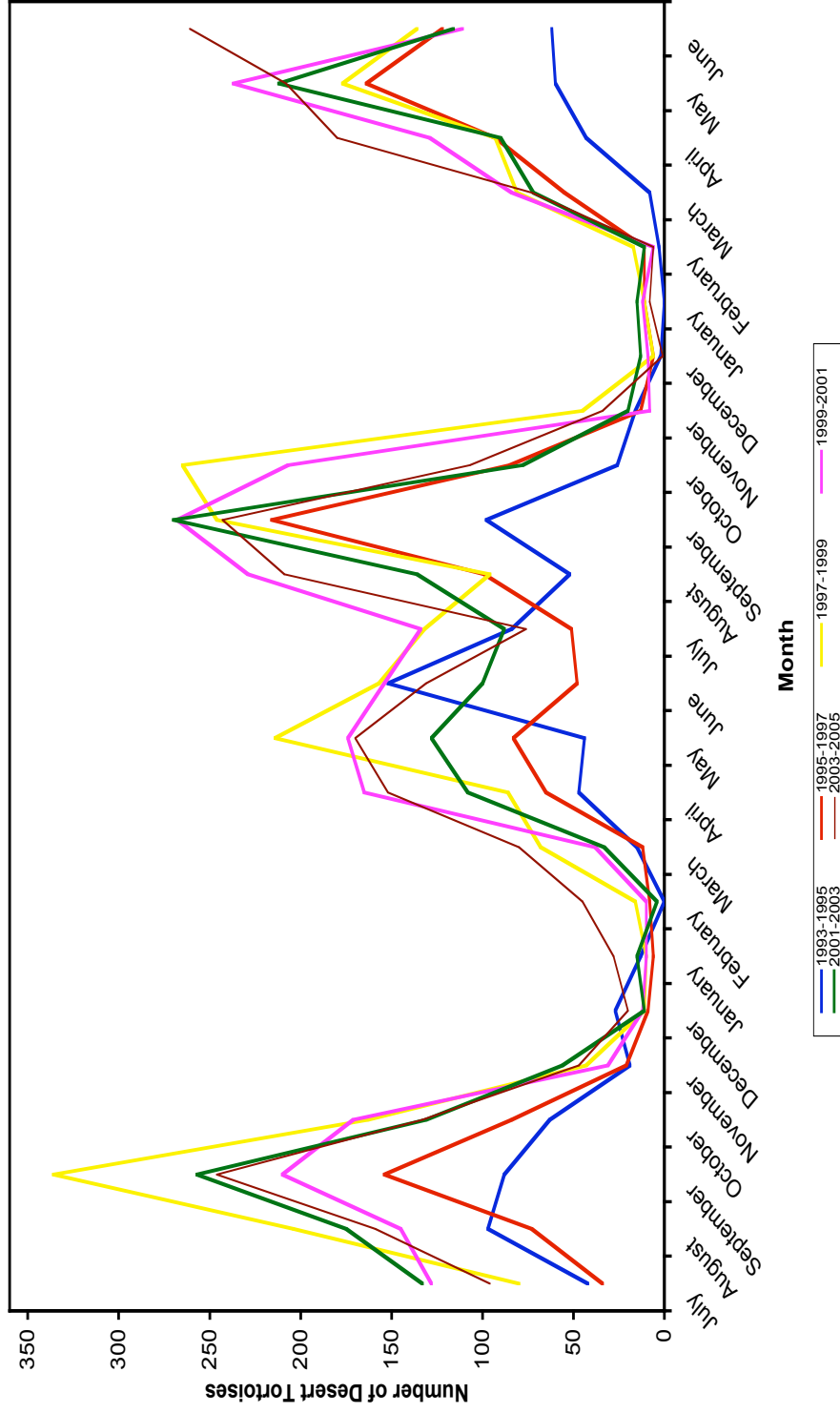


Figure 3. Number of desert tortoises (*G. agassizii*) collected during each month of the last six MSHCP Biennium Periods (1993-2005) in Clark County, Nevada. Graph shows a continual seasonal trend for incoming *G. agassizii* to the Desert Tortoise Transfer and Holding Facility.

Incoming Desert Tortoises during 2003-2005 Biennium Period

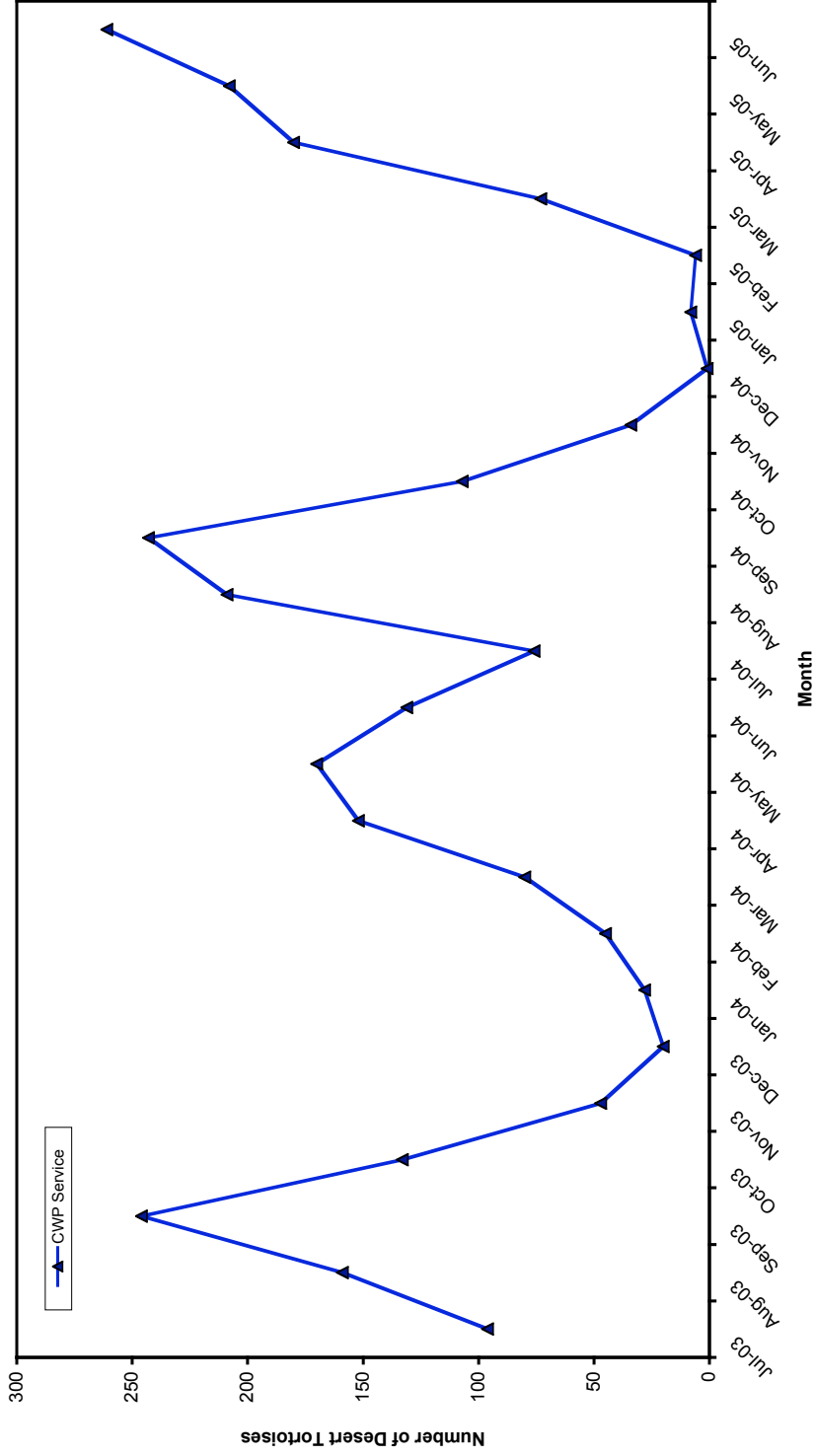


Figure 4. Number of desert tortoises (*G. agassizii*) collected by the county wide pick-up service for each month of the 2003-2005 MSHCP Biennium Period in Clark County, Nevada. Graph shows ongoing seasonal trend for incoming *G. agassizii* to the Desert Tortoise Transfer and Holding Facility.

DTTHF Incoming Desert Tortoises Classified by Sex 1993-2005

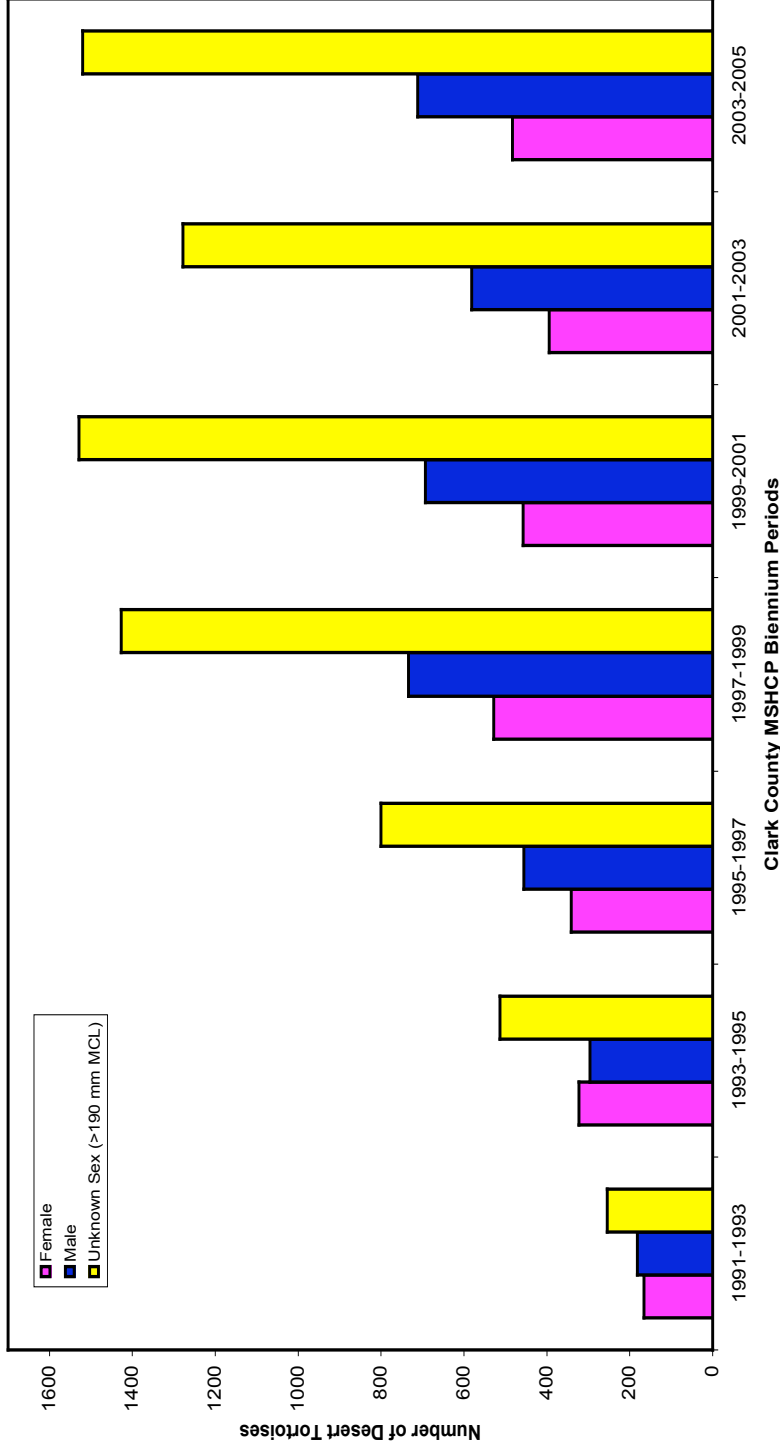


Figure 5. Number of desert tortoises (*G. agassizii*) collected by sex class for the last seven MSHCP Biennium Periods (1991-2005) in Clark County, Nevada. *G. agassizii* begin to show secondary sex characteristics at ~18 to 25 years of age or approximately 180 to 200 mm Mean Carapace Length (MCL). For the purpose of this study, a tortoise that is of unknown sex is too young to sex by visual inspection. The sex ratios of all types of incoming *G. agassizii* are about three males to every two females (1.00 : 0.68; respectively).

DTTHF Sex Ratio of Cumulative Incoming Tortoises 1991-2005

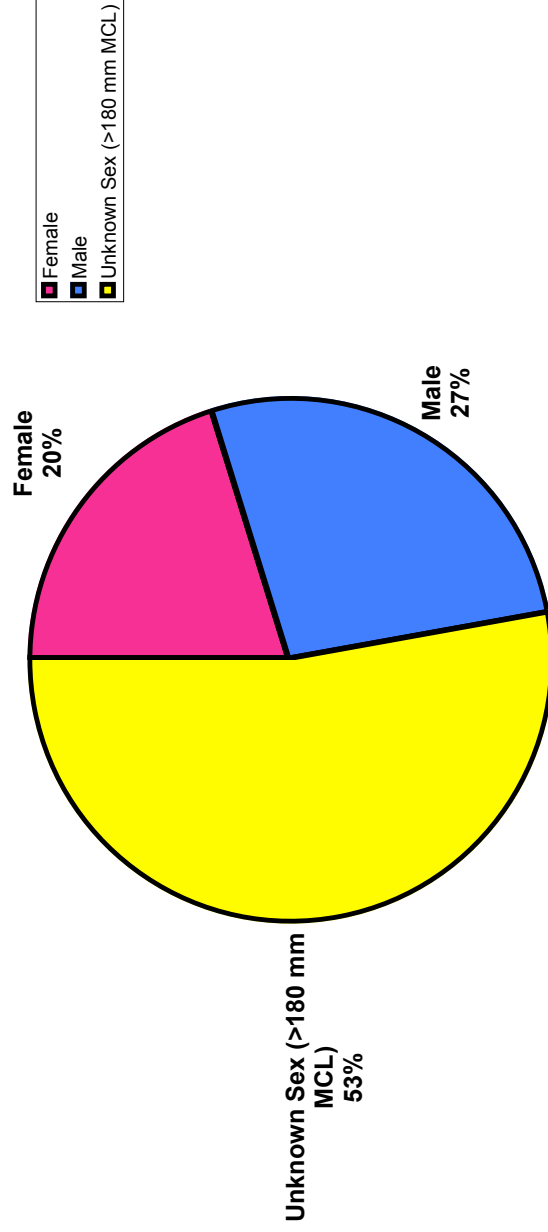


Figure 6. Percentage of desert tortoises (*G. agassizii*) collected by the Desert Tortoise Transfer and Holding Facility (DTTHF) throughout the last six MSHCP Biennium Periods (1993-2005) in Clark County, Nevada. Graph shows a greater percentage of unknown sex (<180 mm MCL) entering the facility from tortoises collected in the Las Vegas Valley.

**DTTHF Incoming Presumed Wild Tortoises by Sex Class 1991-2005**

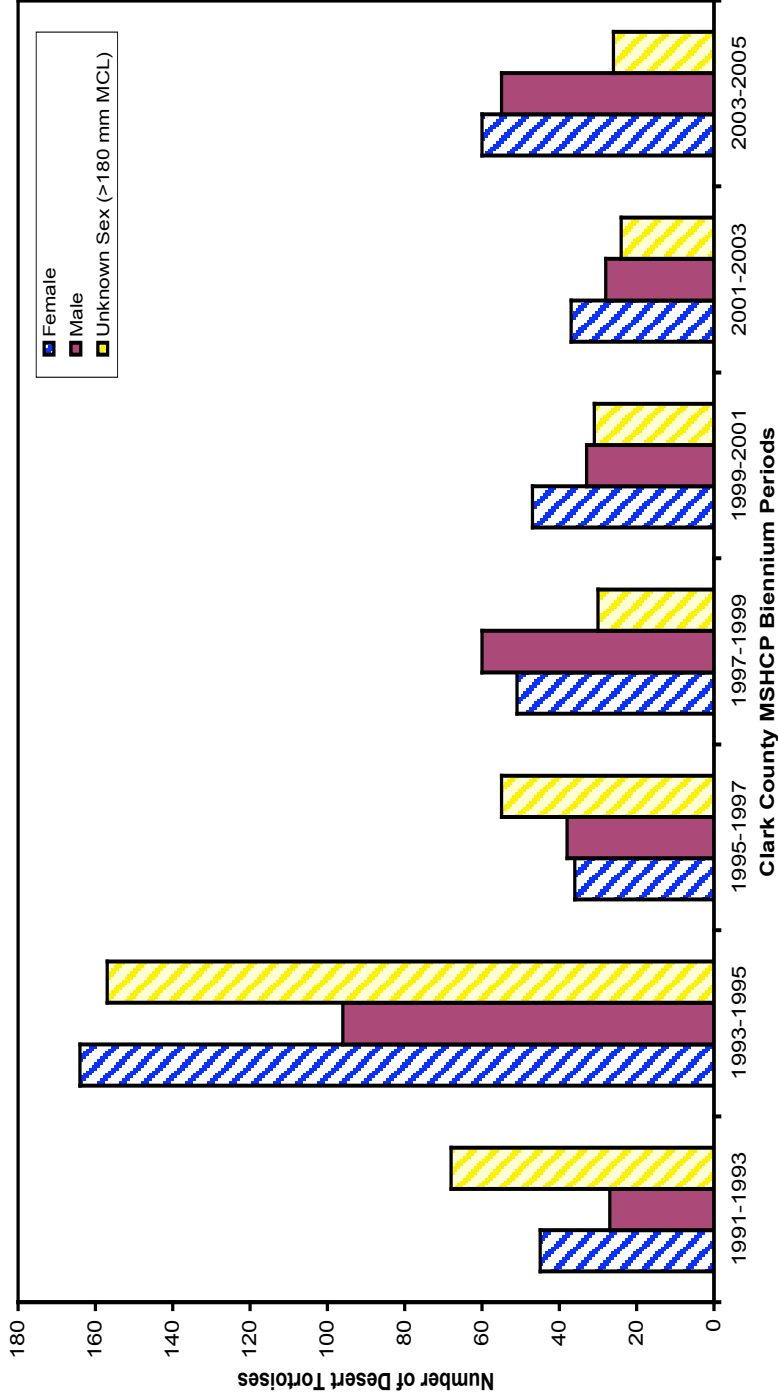


Figure 7. Number of presumed wild desert tortoises (*G. agassizii*) collected by the Desert Tortoise Transfer and Holding Facility during each biennium period (1991-2005) in Clark County, Nevada. Looking specifically at presumed wild incoming tortoises from 1991-2005, the sex ratio changes to approximately four females to every three males (1.00 : 0.72; respectively).

**DTTHF Sex Ratio of All Presumed Wild Desert Tortoises Between 1991-2005**

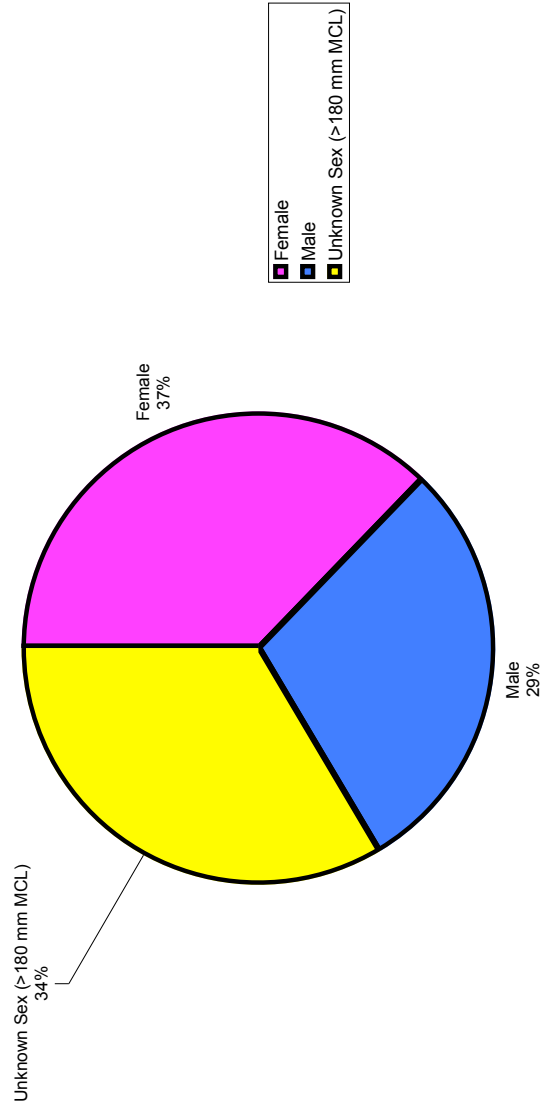


Figure 8. Percentage of desert tortoises (*G. agassizii*) collected by the Desert Tortoise Transfer and Holding Facility throughout 1991-2005 in Clark County, Nevada. The sex ratio of incoming presumed wild desert tortoises is approximately four females to every three males (1.00 : 0.72) respectively.

DTTHF Desert Tortoises Collected via Hotline Service 1993-2005

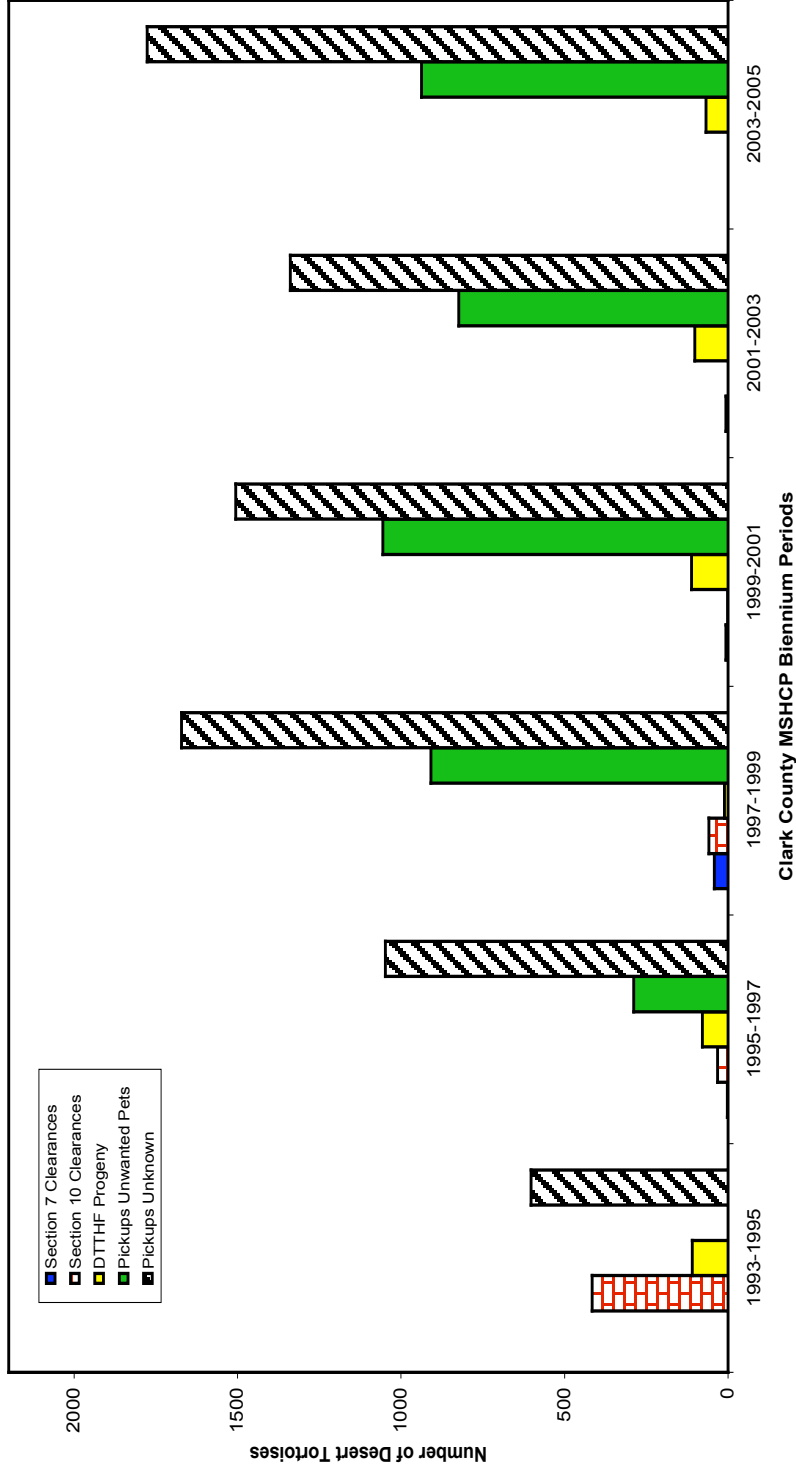


Figure 9. Number of desert tortoises (*G. agassizii*) collected by the countywide pickup service during each MSHCP biennium period (1993-2005) in Clark County, Nevada. Graph shows a substantial increase in pet tortoise collections by the Desert Tortoise Transfer and Holding Facility throughout the last four biennium periods (1997-2005). No tortoises have entered the DTTHF from Section 10 and Section 7 clearances in the 2003-2005 biennium.

### Wild Desert Tortoises Entering DTHF via Section 10 and Section 7 Clearances 1993-2005

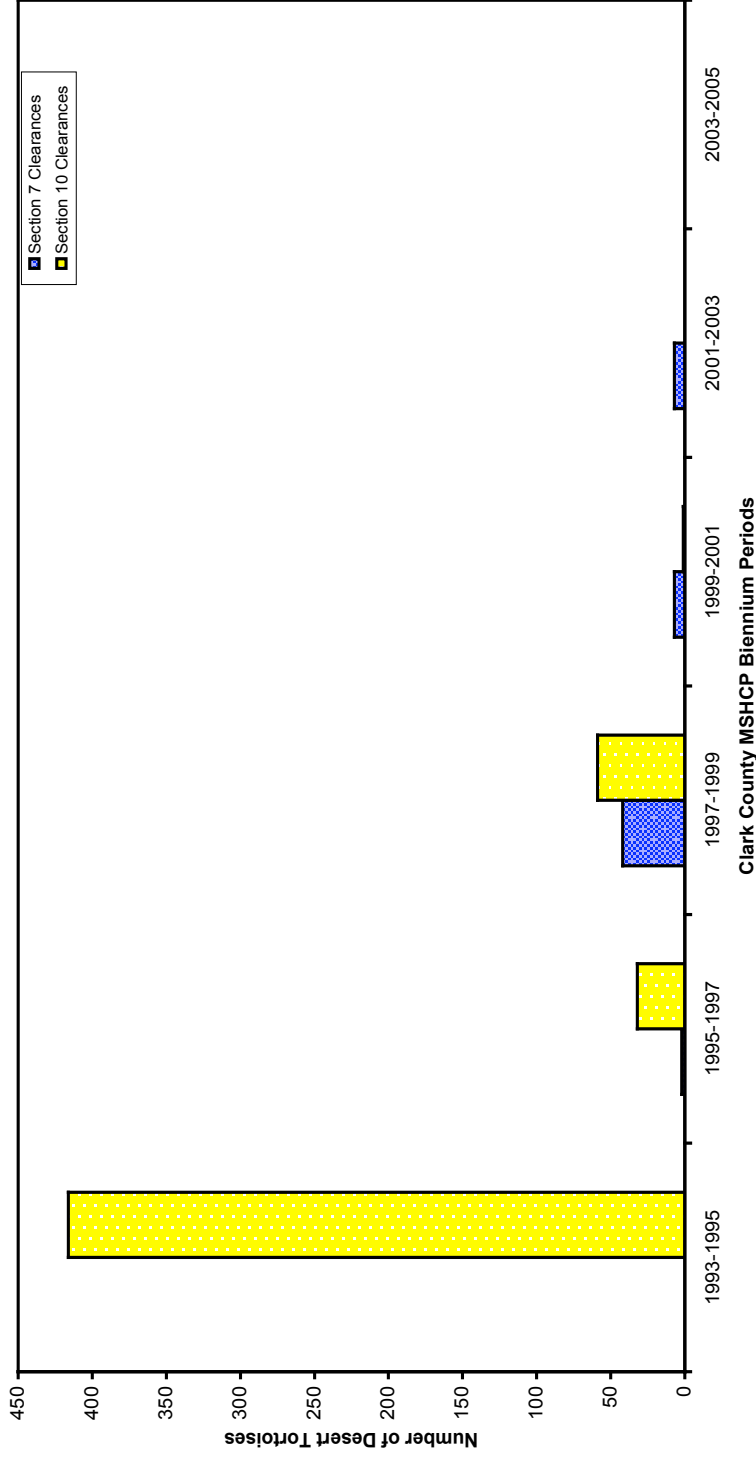


Figure 10. Number of desert tortoises (*G. agassizii*) collected from Section 7 and Section 10 clearances during each MSHCP Biennium Period (1991-2005) in Clark County, Nevada. Graph shows a substantial decrease in both Section 7 and Section 10 tortoise collections in the last three biennium periods (1999-2005). Modifications in desert tortoise handling protocol for Section 7 clearances as well as the discontinuation of mandatory Section 10 clearances on private lands have resulted in this decrease of tortoises transferred to the Desert Tortoise Transfer and Holding Facility.



**DTTHF Non-Desert Tortoises Collected 1993-2005**

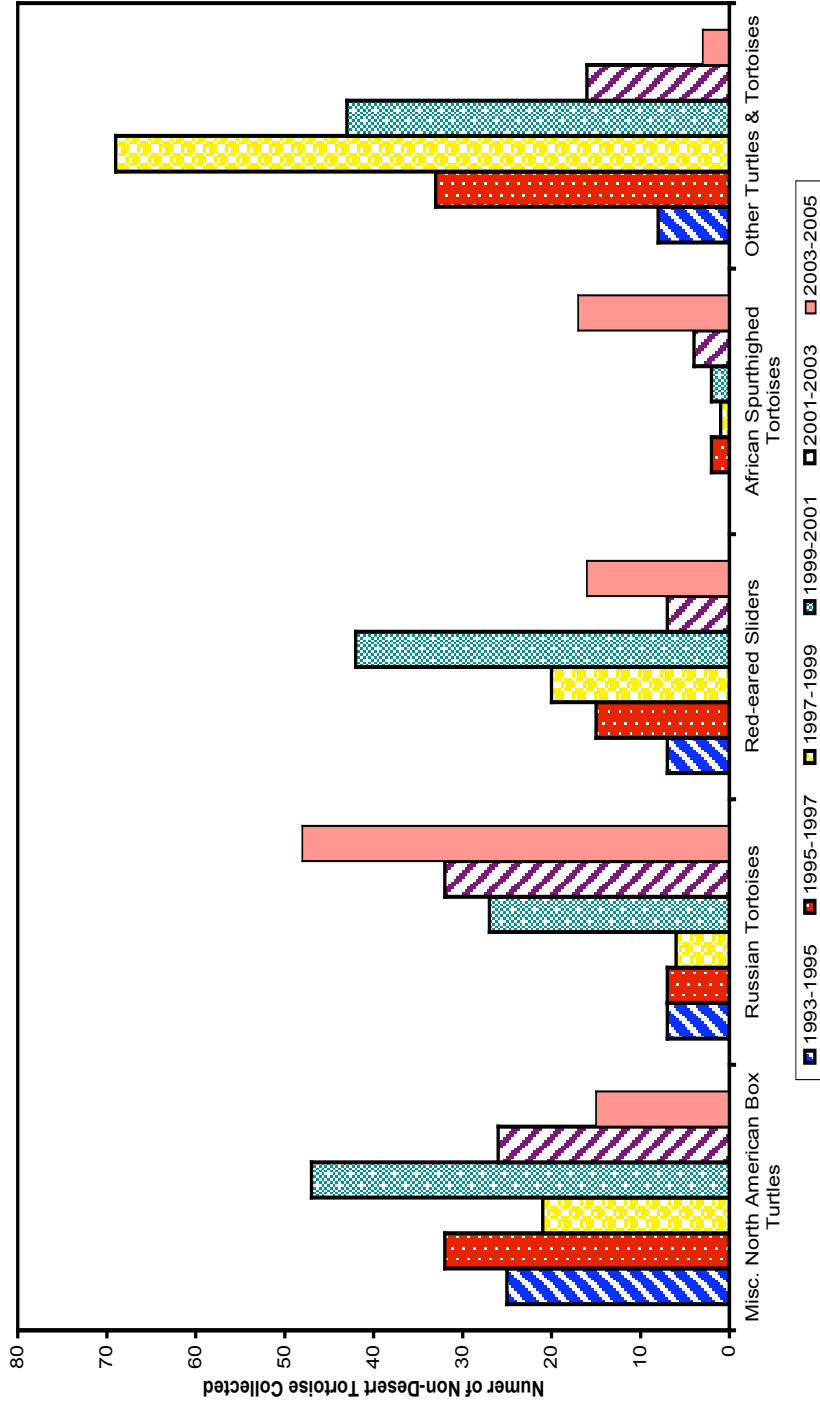


Figure 11. Number of non-desert tortoises collected by the countywide pickup service for the 1993-2005 MSHCP biennium periods. Non-desert tortoises picked up by the hotline service represent individual cases where concerned citizens cannot determine if they have a desert tortoise. These exotic animals often escape or are released by the pet owner and are found in areas such as roadsides, sidewalks, or yards.

Percentage of DTTHF Non-Desert Tortoises Collected during 1993-2005 Bienniums

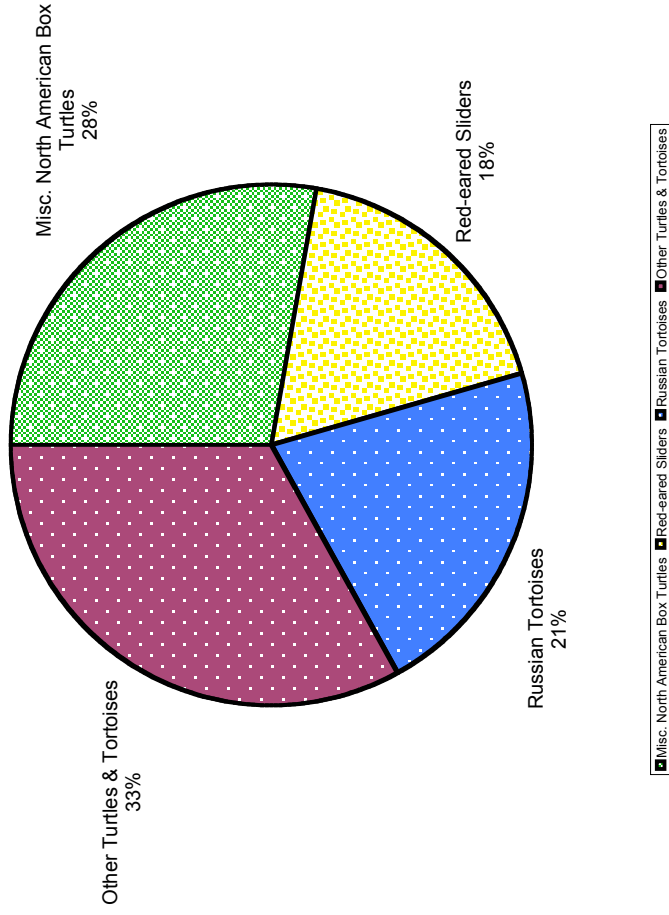


Figure 12. Percentage of non-desert tortoise collections by the countywide pickup service by category collected throughout the last six MSHCP biennium periods (1993-2005) in Clark County, Nevada. The countywide pickup service only collects non-desert tortoise species when concerned citizens are unable to distinguish between desert tortoise and exotic species.

**DTTHF Breakdown of Known Other Turtles and Tortoises Identified Throughout 1993-2005 N=50**

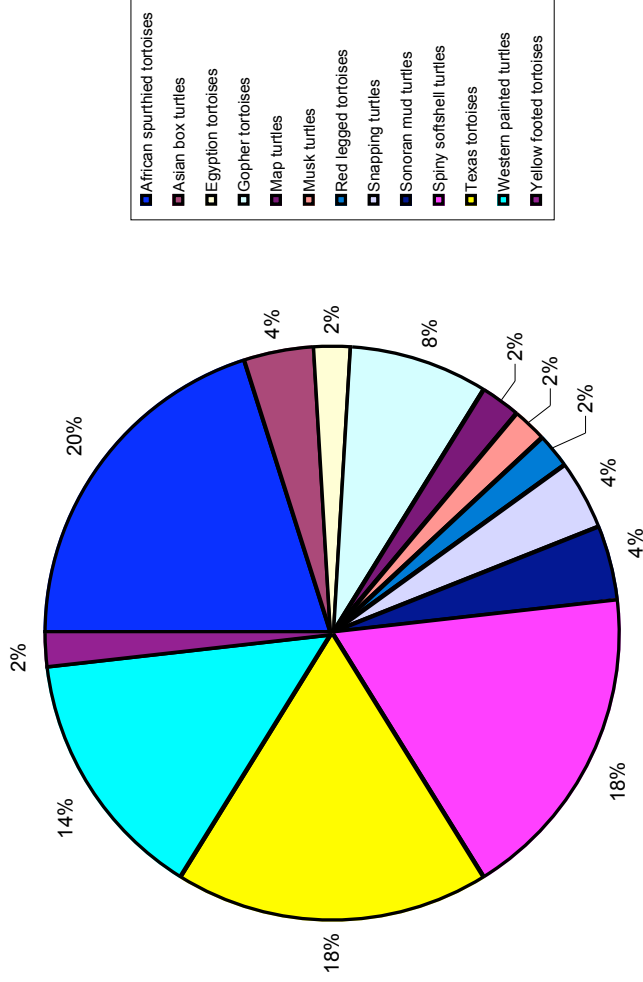


Figure 13. Percentage of known “Other Turtles and Tortoises” identified and collected by the countywide pickup service throughout the 1993-2005 MSHCP biennium periods in Clark County, Nevada. Data indicates a greater percentage of African spur-thighed tortoises and spiny softshell turtles are collected by the countywide pickup service. The pickup service only collects non-desert tortoise species when concerned citizens are unable to distinguish between desert tortoise and exotic species.

**DTTHF Outgoing Desert Tortoises for 2003-2005 Biennium by Category**

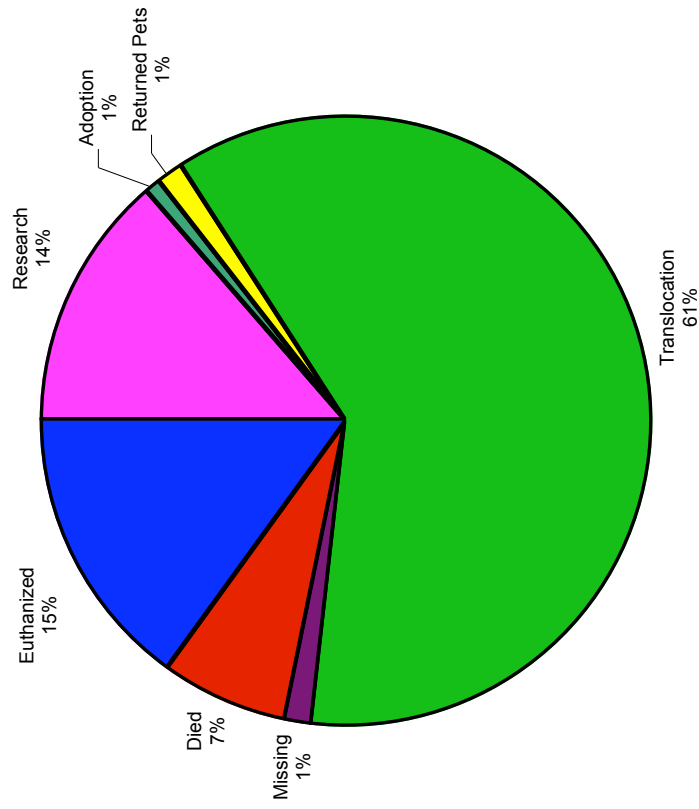


Figure 14. Percentage of desert tortoises (*G. agassizii*) that were transferred, died, euthanized, or determined missing by the Desert Tortoise Transfer and Holding Facility throughout the 2003-2005 biennium period in Clark County, Nevada. Approximately 76% of tortoises were transferred to research, adoption, and translocation programs.

DTTHF Outgoing Tortoises Adopted for Biennium Periods 1993-2005

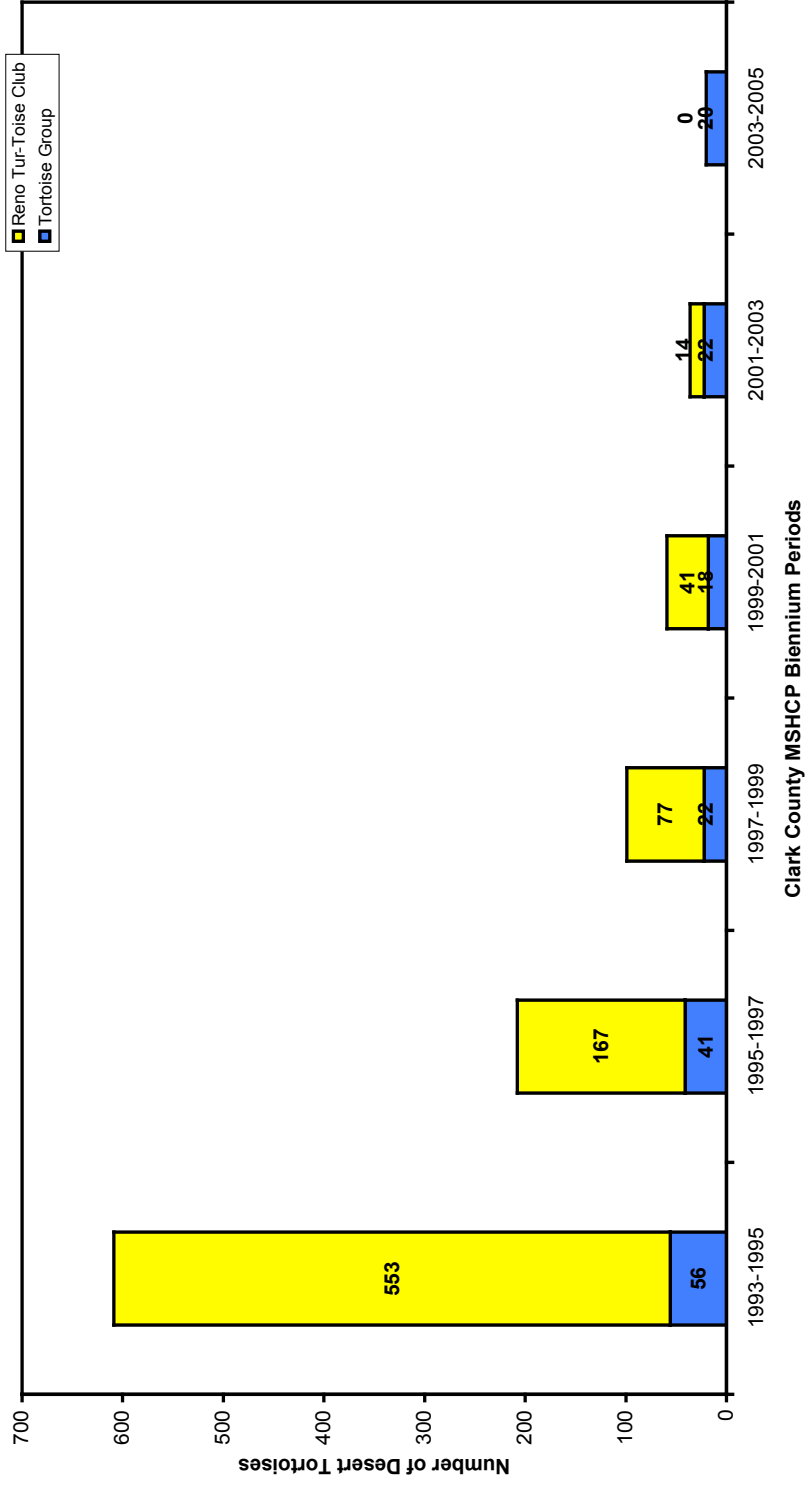


Figure 15. Number of desert tortoises (*G. agassizii*) transferred to Tortoise Group and Reno Tur-Toise Club Adoption Programs during each MSHCP Biennium Period (1993-2005). Desert tortoise adoptions have become less of a priority since the implementation of the translocation program in the spring of 1997. Even with the shift in disposition priorities, the tortoise adoption program receives all requested tortoises from the Desert Tortoise Transfer and Holding Facility.

Tortoise Group Adoptions by Age Class 1993-2005

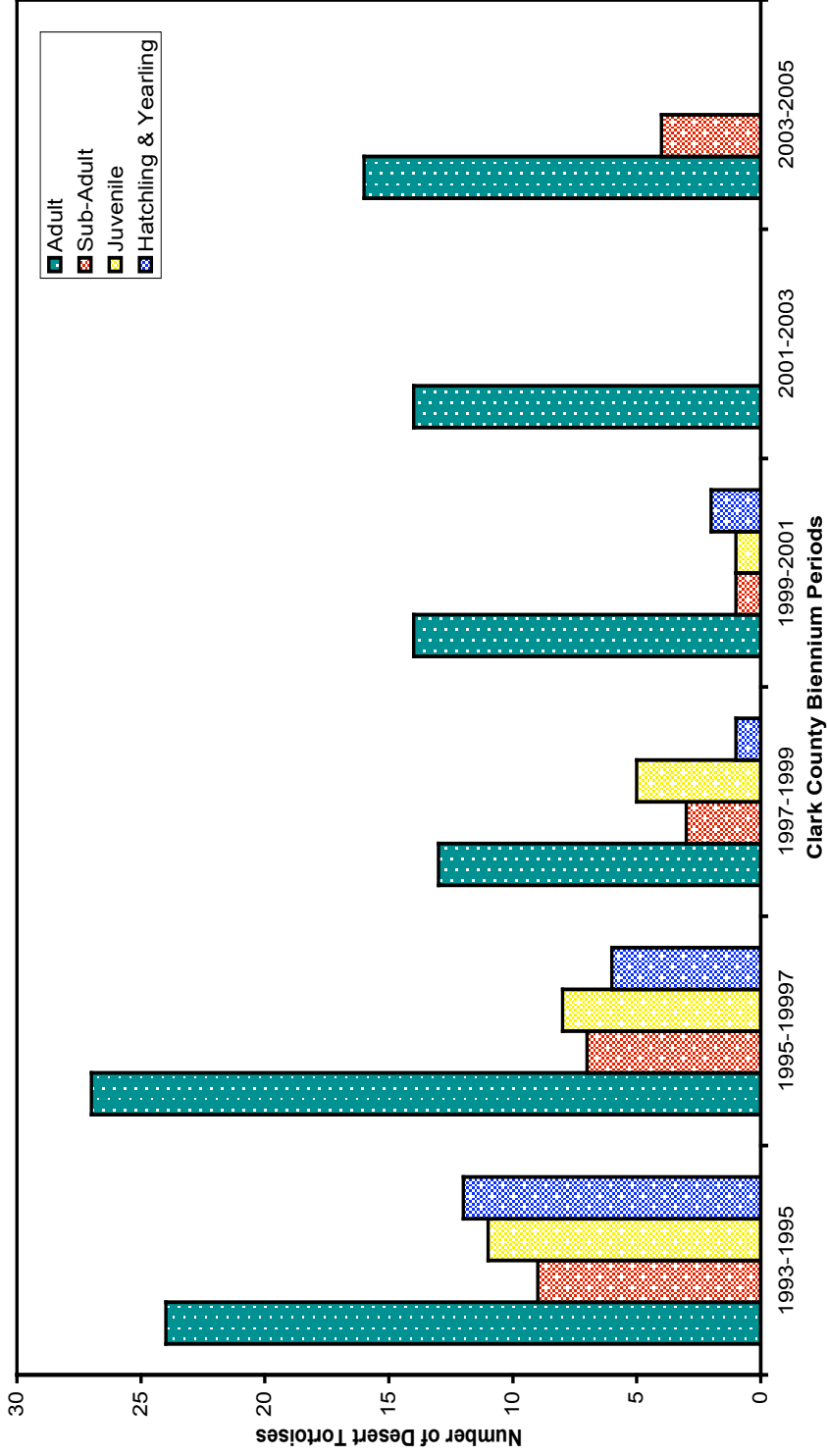


Figure 16. Number of desert tortoises (*G. agassizii*) transferred from the Desert Tortoise Transfer and Holding Facility in Clark County, Nevada to the Tortoise Group Adoption Program by age class for each MSHCP biennium period. The data indicates Tortoise Group primarily requested adult tortoises for adoption.

Tortoise Group Adoptions by Sex 1993-2005

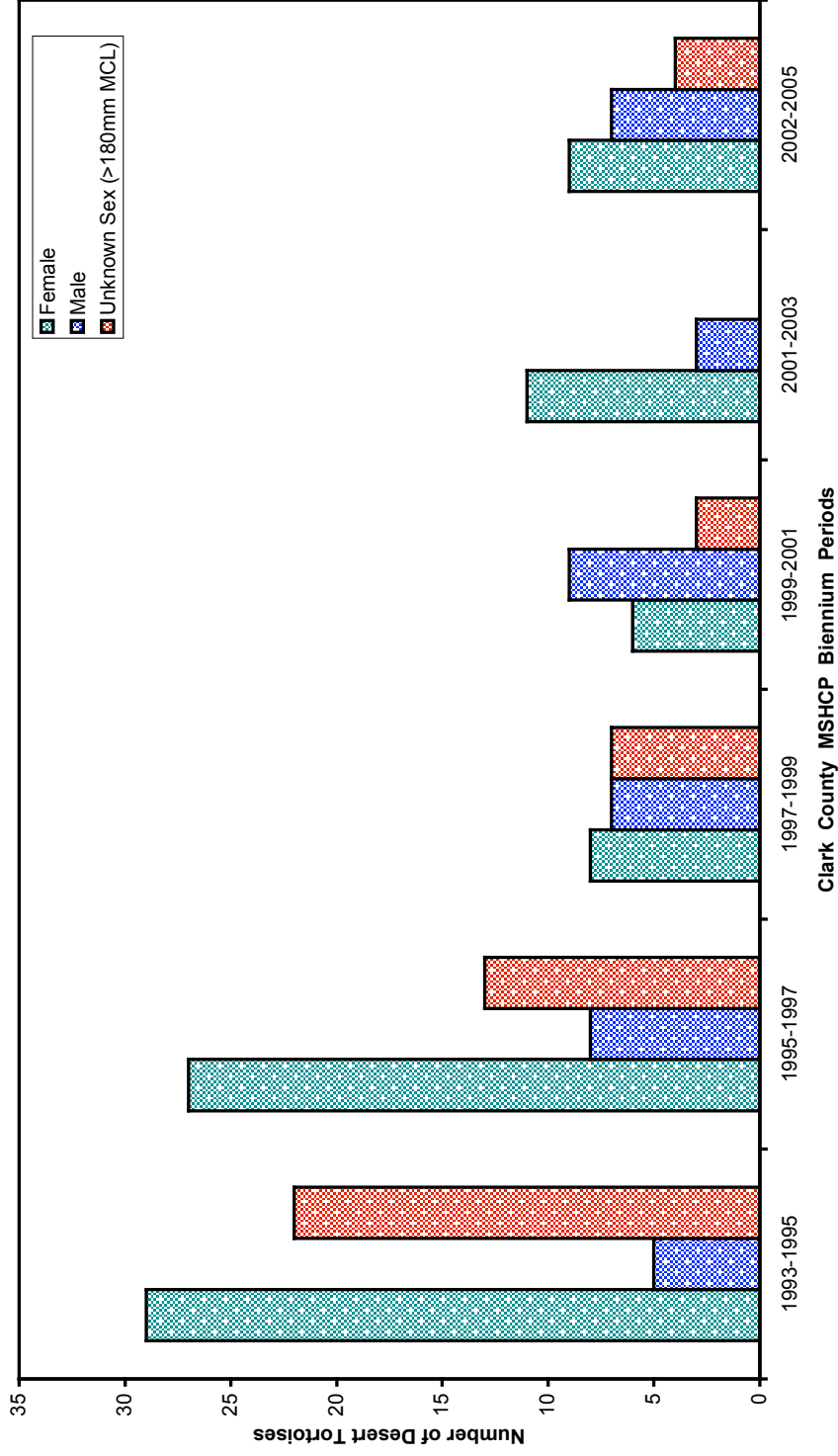


Figure 17. Number of desert tortoises (*G. agassizii*) transferred from the Desert Tortoise Transfer and Holding Facility in Clark County, Nevada to the Tortoise Group Adoption Program by sex class for each MSHCP biennium period. The tortoise Group has historically used a greater percentage of females for adoption.

Reno Tur-Toise Club Adoptions by Age Class 1993-2005

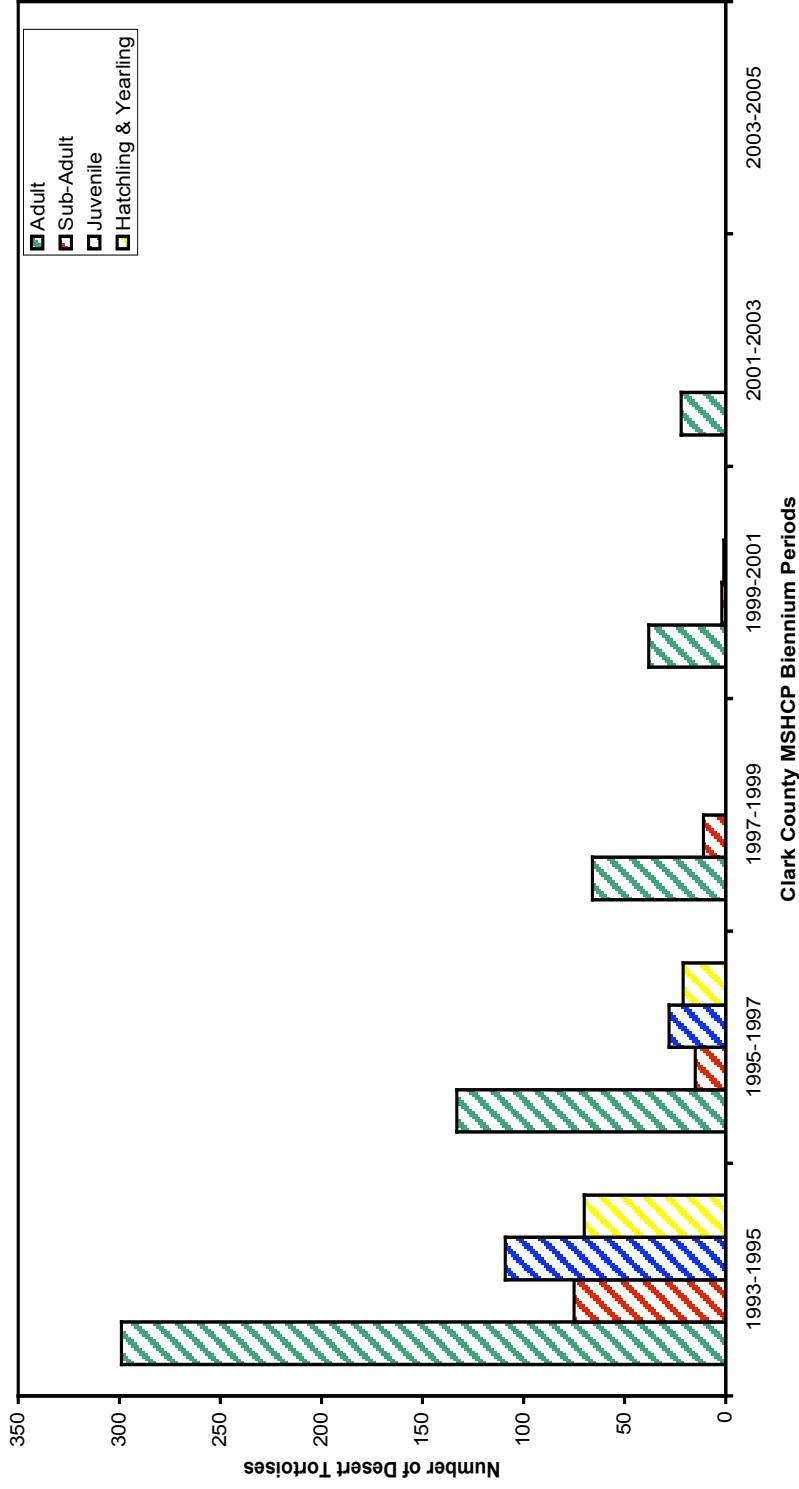


Figure 18. Number of desert tortoises (*G. agassizii*) transferred from the Desert Tortoise Transfer and Holding Facility in Clark County, Nevada to the Reno Tur-Toise Adoption Program in Reno, Nevada by age class for each MSHCP biennium period. Data indicates that a greater number of adult tortoises were requested for adoption.



Reno Tur-Toise Club Adoptions by Sex 1993-2005

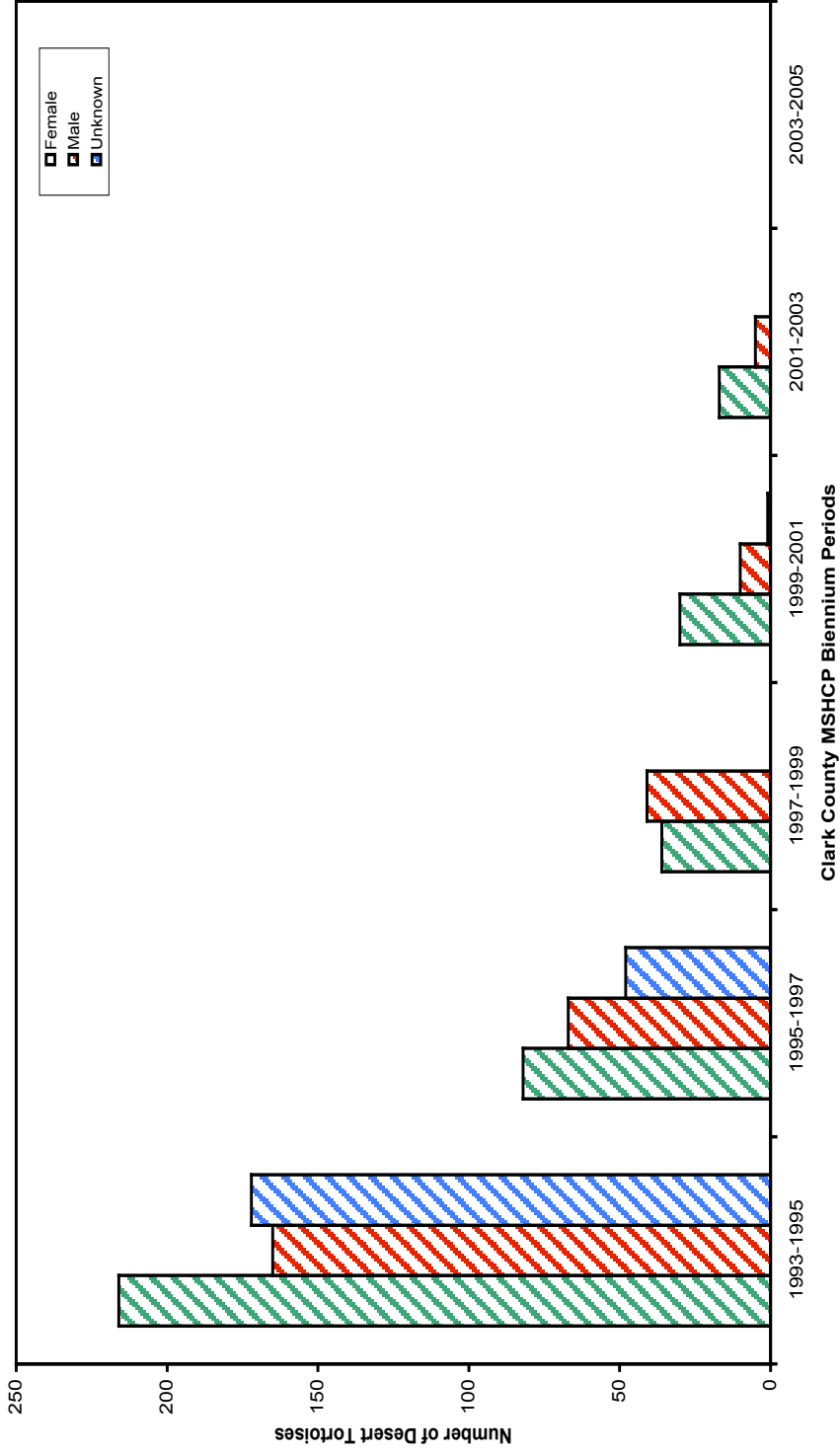


Figure 19. Number of desert tortoises (*G. agassizii*) transferred from the Desert Tortoise Transfer and Holding Facility in Clark County, Nevada to the Reno Tur-Toise Adoption Program in Reno, Nevada by sex class for each MSHCP biennium period. Reno Tur-Toise Club has historically adopted a greater percentage of females for adoption.

**DTTHF Desert Tortoises that Died of Unknown Causes in 2003-2005 Biennium**

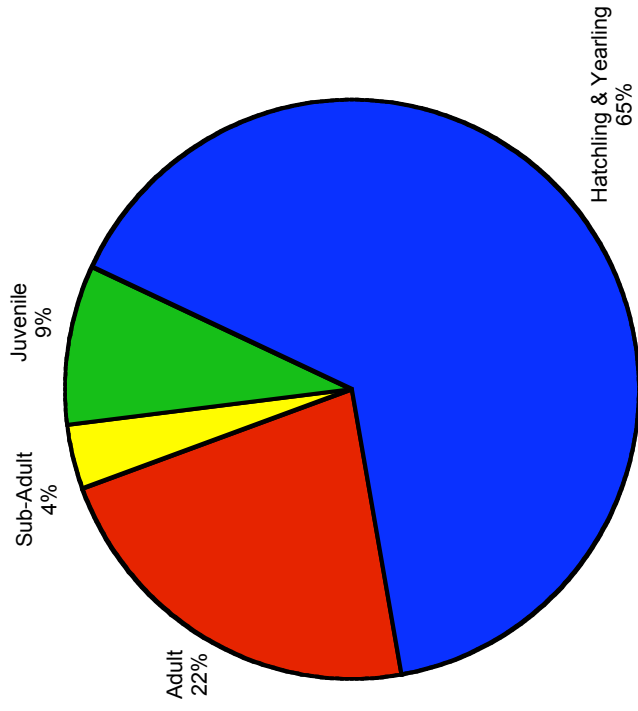


Figure 20. Percentage of desert tortoises (*G. agassizii*) that died of unknown causes at the Desert Tortoise Transfer and Holding Facility in Clark County, Nevada during the 2003-2005 biennium. The majority of hatchlings and yearlings were victims of drastic changes in ambient temperatures, malnutrition and poor care prior to entering the DTTHF, and increased mortality rates in the hatchling and yearling age class.

**DTTHF Desert Tortoise Euthanized by Reason for 2003-2005 Biennium**

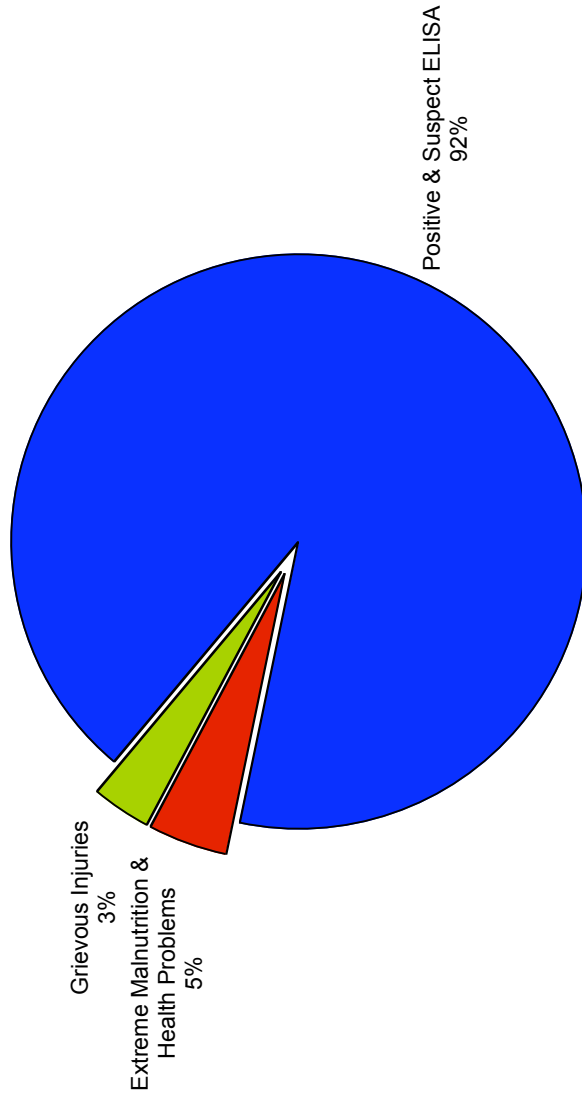


Figure 21. Percentage of desert tortoises (*G. agassizii*) that were euthanized by reason at the Desert Tortoise Transfer and Holding Facility during the 2003-2005 MSHCP biennium period in Clark County, Nevada.

**DTTHF Missing Desert Tortoises by Age Class 2003-2005**

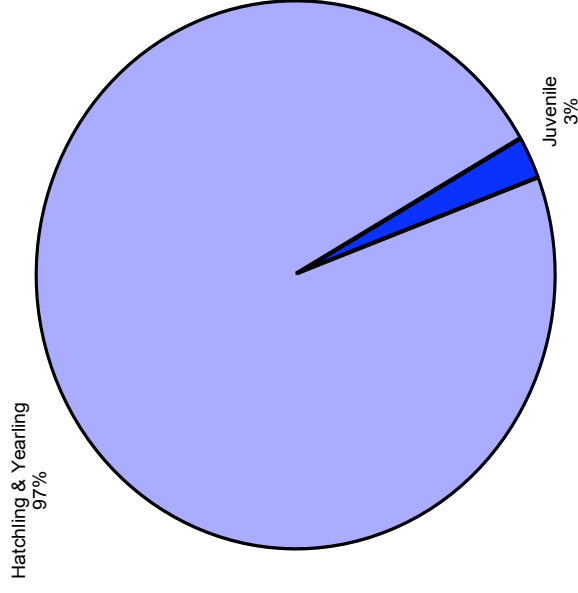


Figure 22. Percentage of desert tortoises (*G. agassizii*) that were declared missing at the Desert Tortoise Transfer and Holding Facility during the 2003-2005 MSHCP biennium period in Clark County, Nevada. Presumed missing tortoises were likely due to predation at the DTTHF and Desert Tortoise Conservation Center. Predation on hatchling and juvenile tortoises by wood rats, common ravens, red racers, gopher snakes, and fire ants has been observed at the DTTHF and DTCC.

ELISA Results by Age Class 1995-2005

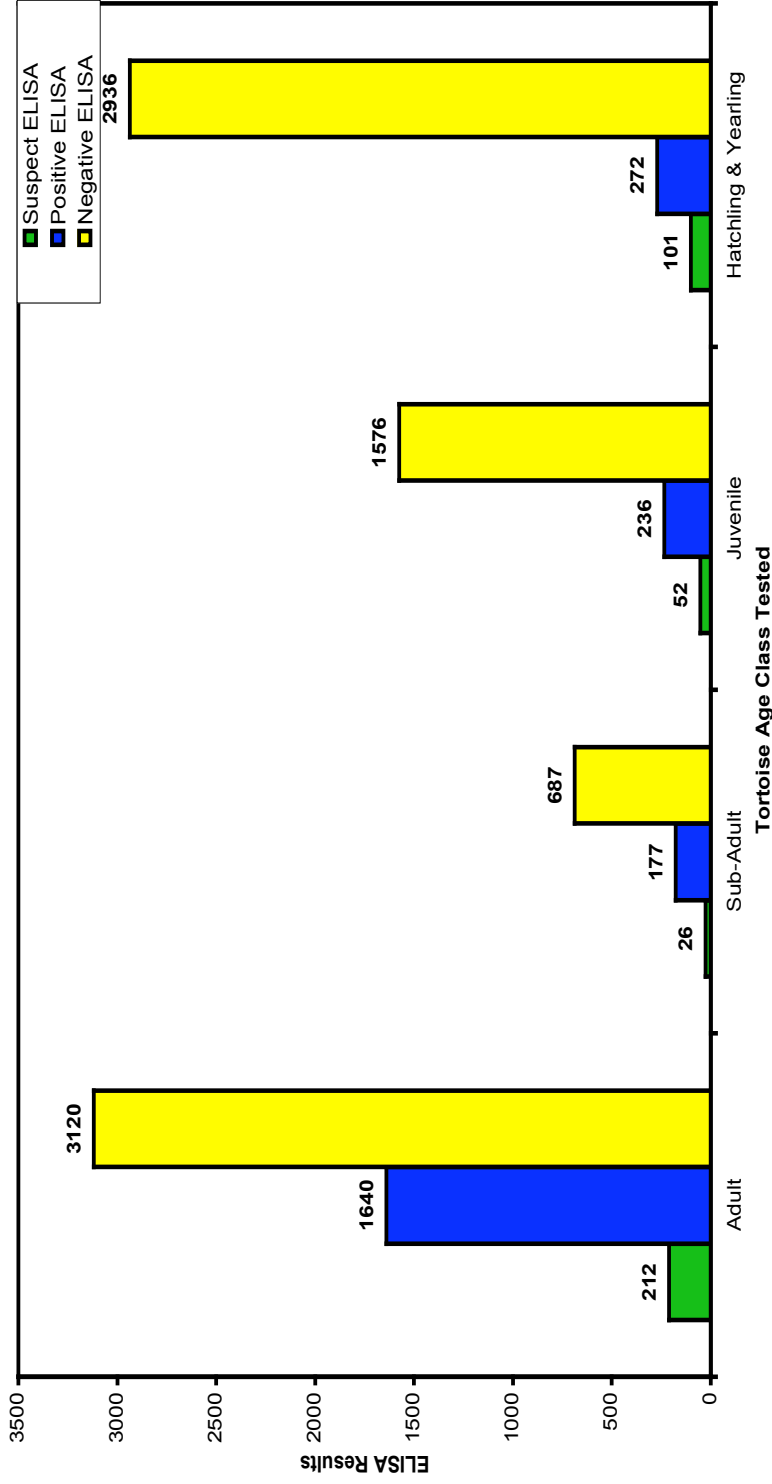


Figure 23. ELISA results for desert tortoises (*G. agassizii*) entering the Desert Tortoise Transfer and Holding Facility from 1995-2005 in Clark County, Nevada. Results indicate a significantly higher number of ELISA negative tortoises enter the facility than tortoises having ELISA suspect or ELISA positive results. Results also indicate adult tortoises are much more likely to produce a positive or suspect ELISA result than any other age class. This may be the result of older tortoises having more opportunities for exposure to URTD symptomatic tortoises.

ELISA Results by Sex Class 1995-2005

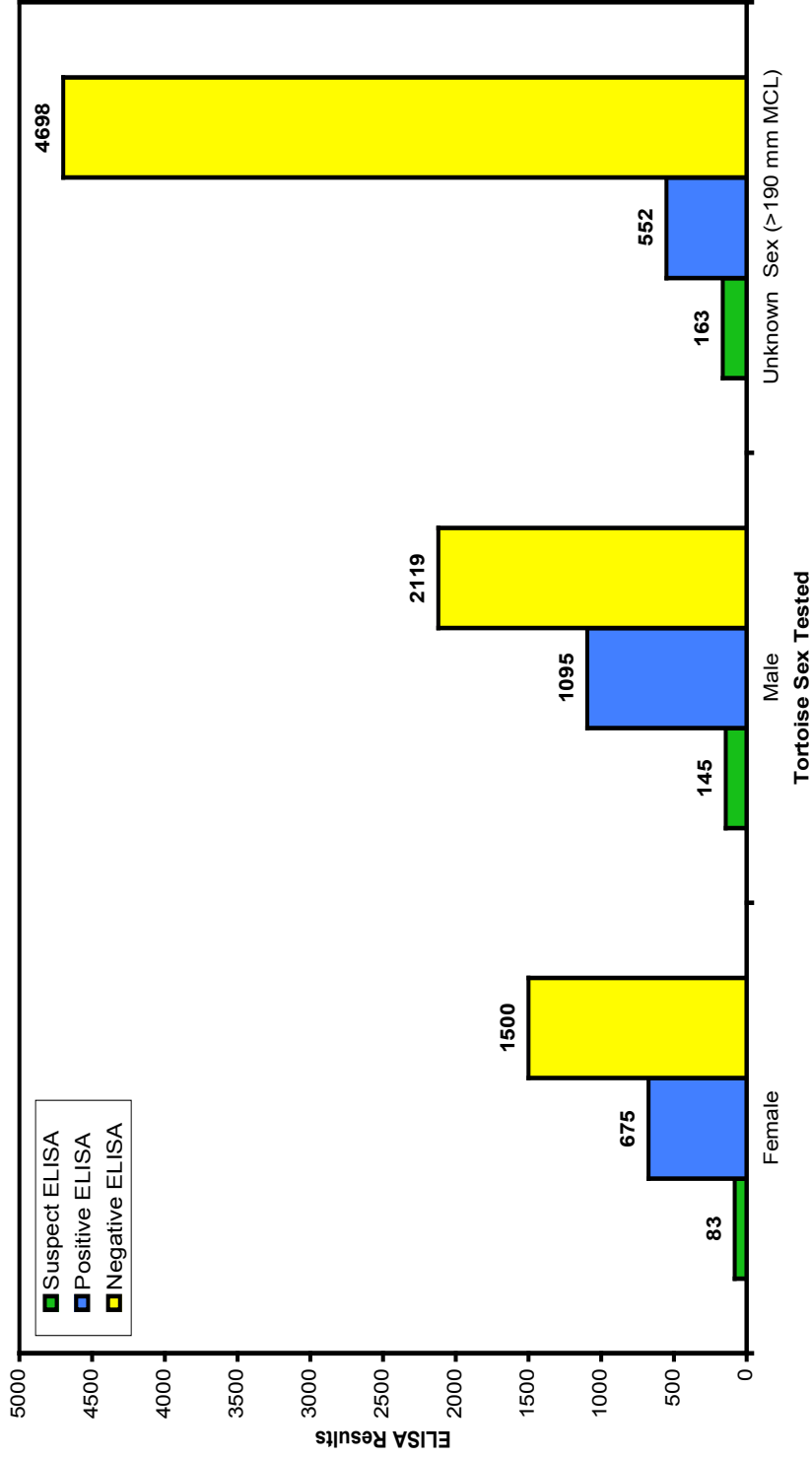


Figure 24. ELISA results for desert tortoises (*G. agassizii*) entering the Desert Tortoise Transfer and Holding Facility from 1995-2005 in Clark County, Nevada. A significantly higher number of ELISA negative tortoises in each sex category enter the facility than tortoises with ELISA suspect or ELISA positive results.

ELISA Results of Known Pet Tortoises by Age Class

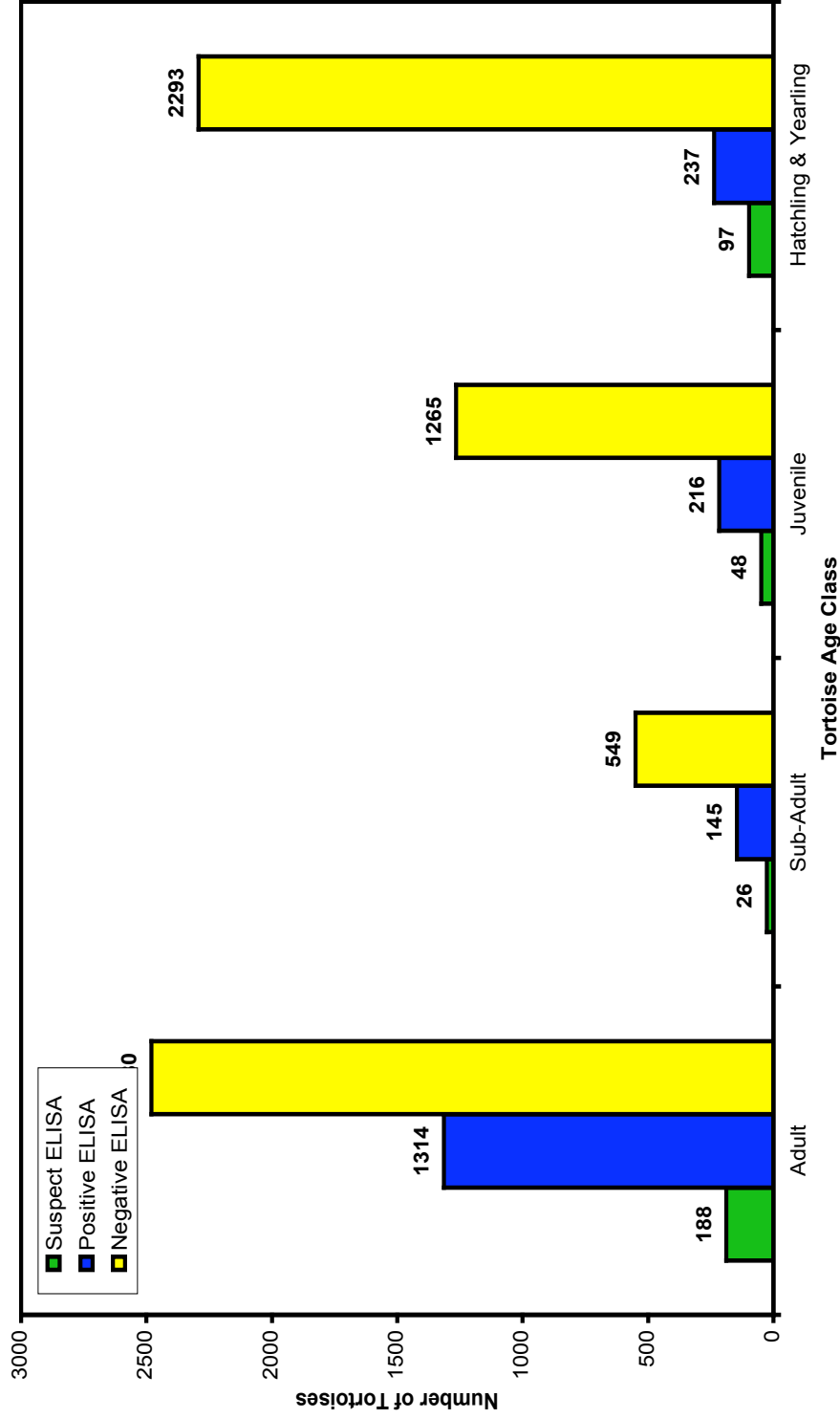


Figure 25. ELISA results for known pet desert tortoises (*G. agassizii*) entering the Desert Tortoise Transfer and Holding Facility from 1995-2005 in Clark County, Nevada. Results indicate a significantly higher number of ELISA negative tortoises (75%) enter the facility than tortoises exhibiting ELISA suspect or ELISA positive results (25%).

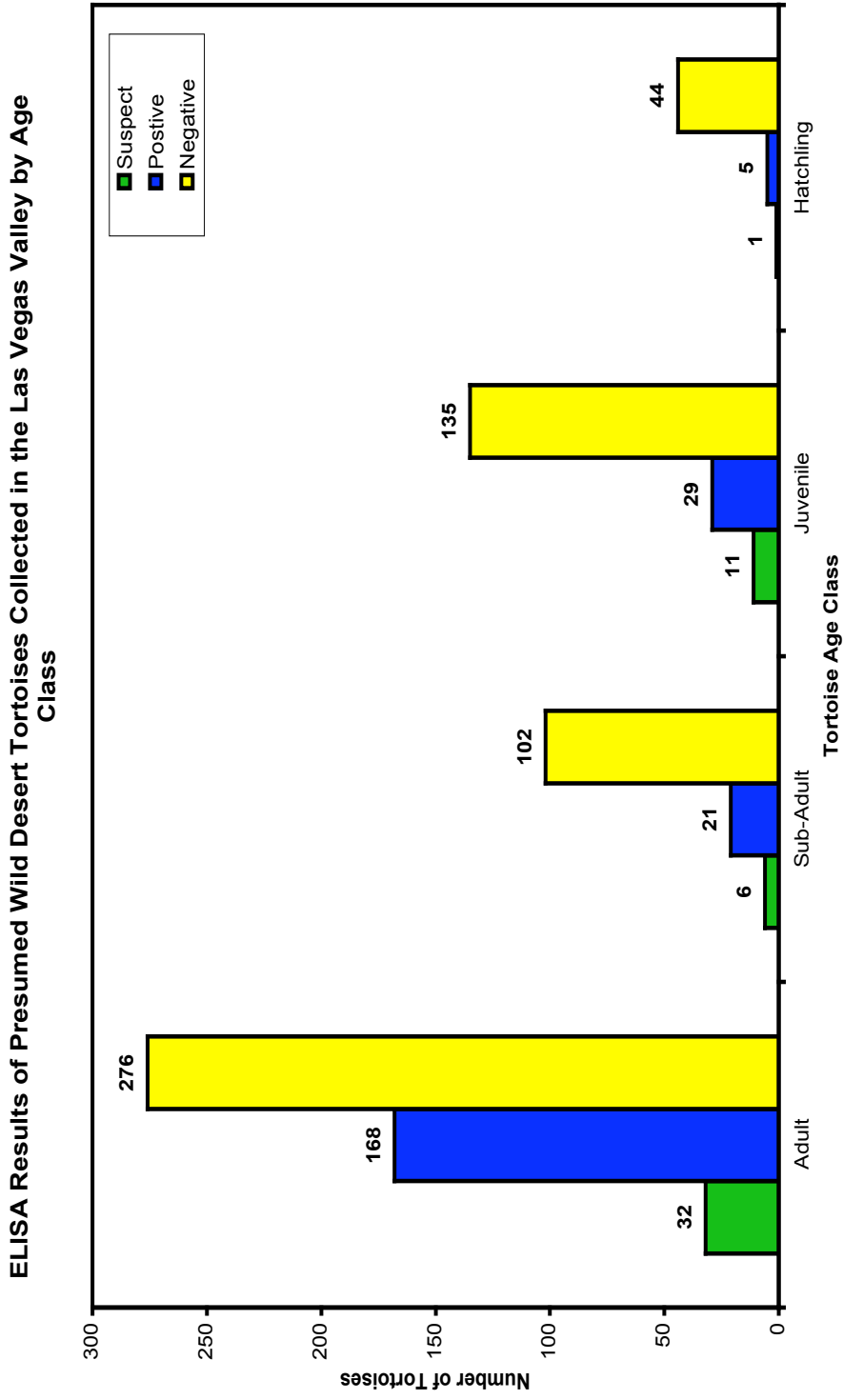


Figure 26. ELISA results for presumed wild desert tortoises (*G. agassizii*) entering the Desert Tortoise Transfer and Holding Facility by age class from 1995-2005 in Clark County, Nevada. Results indicate a higher number of ELISA negative wild tortoises enter the facility than ELISA suspect or ELISA positive presumed wild tortoises.



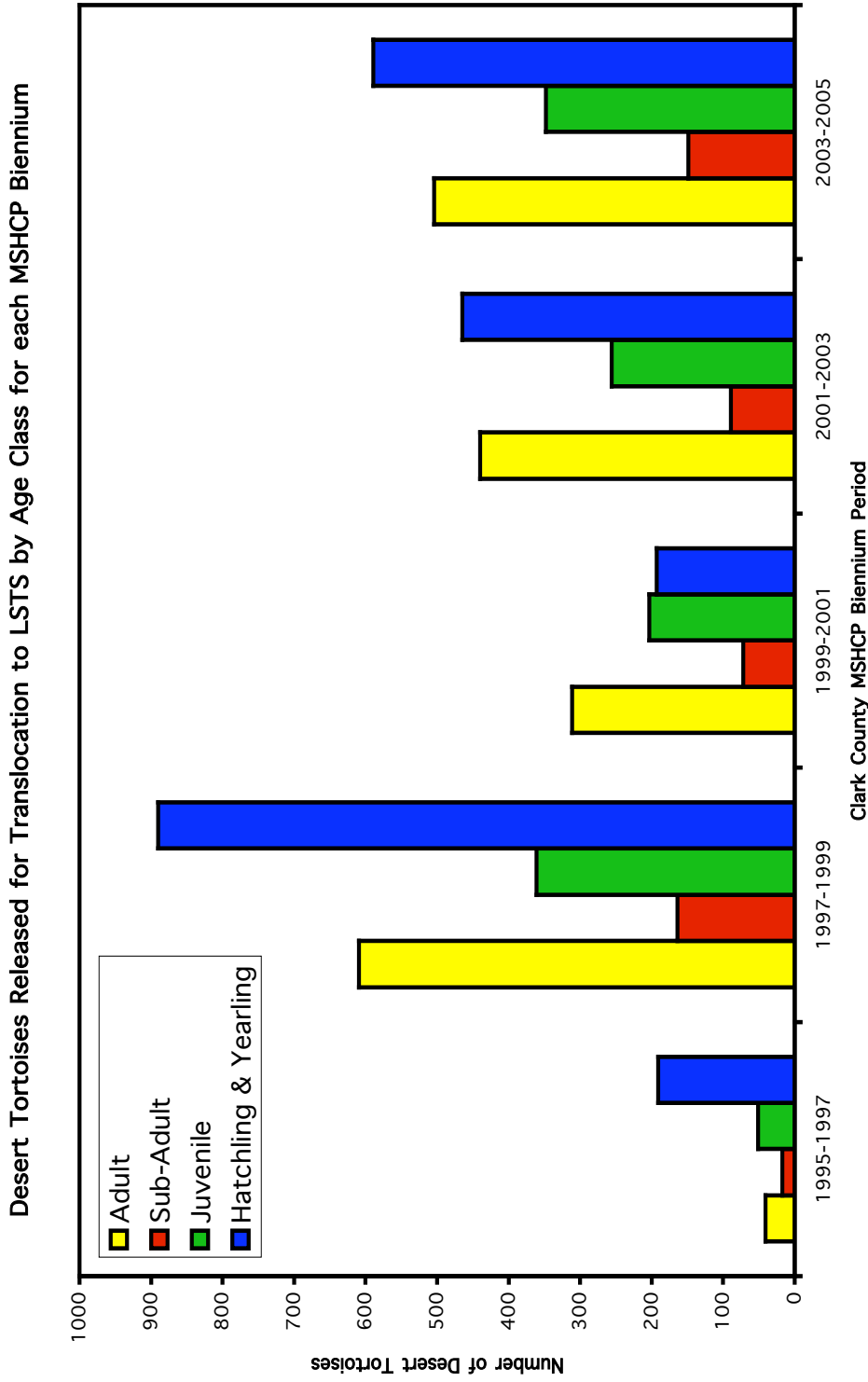


Figure 27. Number of ELISA negative desert tortoises (*G. agassizii*) released through translocation at the Large Scale Translocation Site in Jean, Nevada by age class during each Clark County MSHCP biennium period. Results indicate tortoises released at the LSTS have been primarily hatchling and yearling tortoises, and secondarily, adult tortoises.

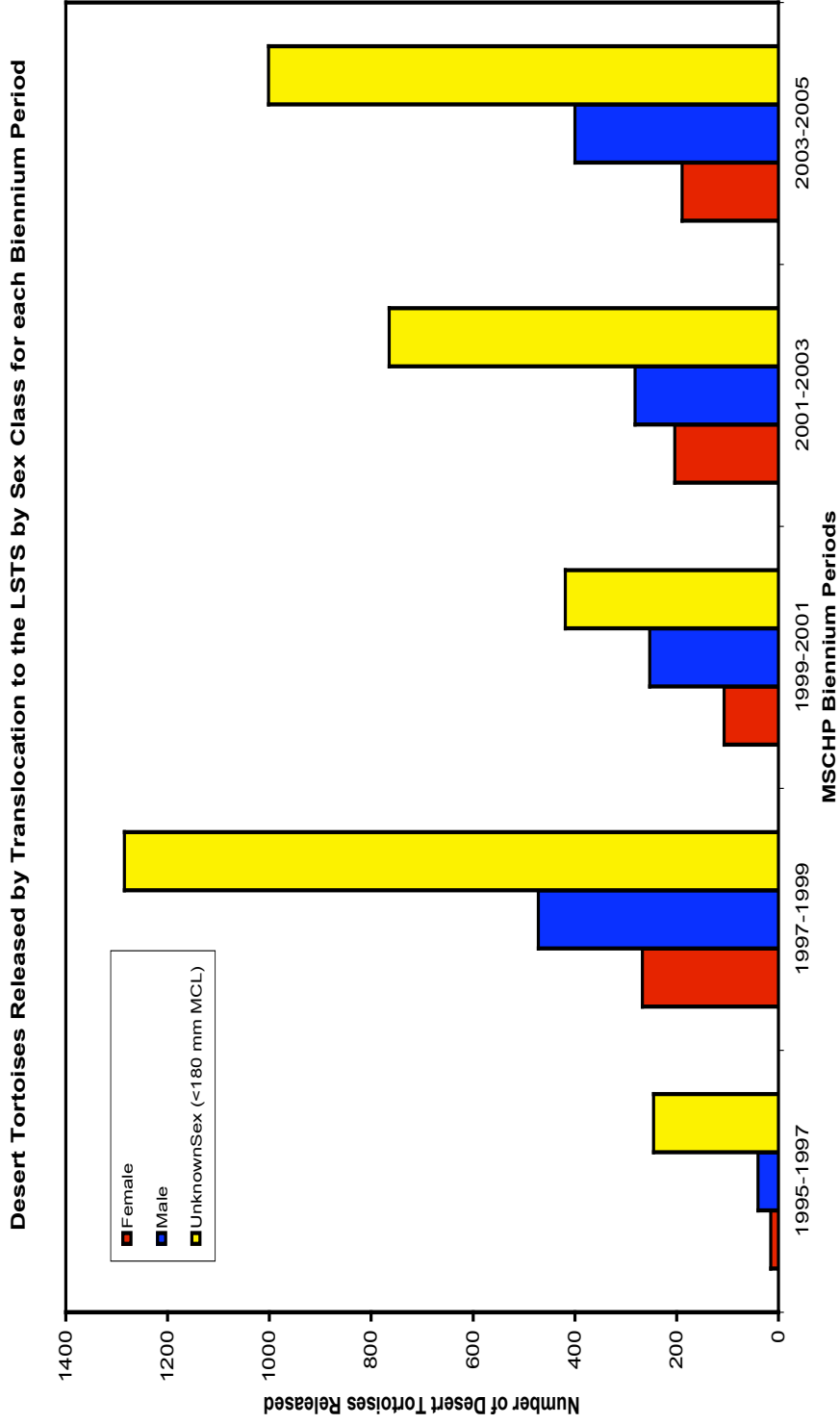


Figure 28. Number of ELISA negative desert tortoises (*G. agassizii*) released through translocation at the Large Scale Translocation Site in Jean, Nevada by sex class during the Clark County MSHCP 1995-2005 biennium periods. This graph indicates the majorities of tortoises released at the LSTS are not sexually mature, and are of unknown sex. Also demonstrated in this graph is that a higher proportion of the adults released to LSTS are male.