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INTRODUCTION

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 1999–2001. It therefore addresses work completed by agencies and contractors; and accounts for land disturbance activities, revenues generated, expenses incurred, and desert tortoise activities conducted during the subject biennium.

The Progress Report documents accomplishments in five categories of work: 1) Public Information and Education; 2) Highway Fencing in Clark County, Nevada; 3) Habitat Maintenance and Restoration Projects; 4) Species Inventory and Monitoring Projects; and 5) Research and Adaptive Management Projects. It also includes a Land Disturbance and Financial Summary and a Biennial Tortoise Report. Each category of work has a dedicated section that begins with a summary introducing the category and outlining the nature of the work completed. Following the summary is a brief synopsis of each project that includes the name of the contractor, contract and project numbers, project accomplishments, recommendations, and a financial funding summary. Section 10 funded projects are described in the body of this report. Section 7 funded projects are summarized in Appendix I.

THE REPORTING PROCESS

Agencies and contractors that received funding for the 1999-2001 biennium were required to submit progress reports on September 1 of every odd year, per Section 2.12.2.6 of the MSHCP. In addition, Clark County began to initiate a quarterly reporting requirement for contractors during this biennium. These reports were collected, summarized, and presented in a preliminary draft of this document. Clark County is also required to submit monthly Disturbance and Fee Reports per section 2.12.2.2 of the MSHCP. Again, these reports were summarized and presented in a preliminary draft of this document.

The preliminary draft was then forwarded to the MSHCP Implementation and Monitoring Committee (IMC) for review and subsequently approved at an IMC meeting. The final draft of the Progress 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 (DCP). 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 act as another standard by which the County measures its progress.

To obtain further information about the Clark County Desert Conservation Program, please write the Clark County, Nevada Department of Comprehensive Planning, 500 S. Grand Central Parkway, Las Vegas, NV 89155, call us at (702) 455-3395 or visit our website at www.co.clark.nv.us.

PROJECTS

INTRODUCTION

The following section contains key information for each project conducted during the 1999–2001 biennium. For the subject biennium, a total of 25 agencies and contractors were awarded Section 10 funds totaling over $7,000,000. Under the direction of the agencies and contractors enlisted, a total of 64 projects were initiated within five categories of work. In addition, the Public Information and Education (PIE) and Clark County Fencing programs performed numerous projects in support of their missions. A breakdown of agencies, contractors, and projects follows.

Federal agencies awarded funds include:

- Bureau of Land Management (BLM)
- National Park Service (NPS)
- U. S. Department of Agriculture Animal Damage Control (USDA/ADC)
- U. S. Forest Service (USFS)
- U. S. Geological Survey (USGS)

State agencies awarded funds include:

- Nevada Division of Forestry (NDOF)
- Nevada Division of Wildlife (NDOW)
- University of Nevada, Las Vegas (UNLV)
- University of Nevada, Reno (UNR)

Local agencies awarded funds include:

- Clark County Desert Conservation Program Public Information and Education Working Group (PIE)
- Clark County Department of Parks and Recreation (CCPR)
- Las Vegas Valley Water District (LVVWD)

Others:

- Budd-Falen Law Offices
- Michael Creathbaum
- Great Basin Bird Observatory (GBBO)
- Muddy River Regional Environmental Impact Alleviation Committee (MRREIAC)
- Pacific AgriBusiness
- Partners in Conservation (PIC)
- Reno Tur-Toise Club
- Donald Sada, Ph.D.
- Selzer, Ealy, Hemphill and Blasdel
- Southern Nevada Environmental, Inc. (SNEI)
- The Conservation Fund (TCF)
- The Nature Conservancy (TNC)
- Mark Trinko

LIST OF SECTION 10 PROJECTS PER CONTRACTOR

Bureau of Land Management – Contract No. 1999-BLM-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-BLM-1-A	Bat Gates	$5,250	Completed
1999-BLM-1-B	Bearpoppy Seed Bank Study	$94,000	Completed
1999-BLM-1-C	Fencing: Las Vegas Bearpoppy Apex & ACEC/DWMA	$194,250	Completed
1999-BLM-1-D	Law Enforcement	$504,000	Partially Completed; one LE position not filled – BLM was not paid.
1999-BLM-1-E	Neo-tropical Bird Surveys & Monitoring	$10,500	These funds were transferred to the GBBO.
1999-BLM-1-F	PabCo Road Bearpoppy Restoration	$0	Completed
1999-BLM-1-G	Plant Inventories	This project was incorporated into 1999-BLM-1-B	Completed
1999-BLM-1-H	Public Education and Landscape Interpretation	$3,750	Completed
1999-BLM-1-I	Restoration of Mesquite Woodlands	$63,000	Completed
		$974,750 ($100,000 contingency)	**Actually Paid: $660,930**

National Park Service – Contract No. 1999-NPSLM-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-NPSLM-1-A	Law Enforcement	$133,350	Completed
1999-NPSLM-1-B	Multiple Species Mgt (Amphibians)	$15,000	Completed
1999-NPSLM-1-C	Multiple Species Management (Bats)	$16,800	Completed
1999-NPSLM-1-D	Multiple Species Management (Birds)	$78,800	Completed
1999-NPSLM-1-E	Plant Material Production for Interagency Restoration Program	$60,000	Completed
1999-NPSLM-1-F	Rare Plant Inventory and Monitoring	$136,500	Completed
1999-NPSLM-1-I	Rare Plant Inventory and Monitoring – Sticky Buckwheat	$0	Completed
1999-NPSLM-1-J	Rare Plant Inventory and Monitoring – Threecorner Milkvetch	$0	Completed
1999-NPSLM-1-K	Riparian Restoration Team	$315,000	Completed
1999-NPSLM-1-L	Road Maintenance, Barrier Installation and Signs	$78,750	Completed
		$834,200	**Actually Paid: $768,990**

U.S. Department of Agriculture/Animal Damage Control – Contract No. 1999-USDAA-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-USDAA-1-A	Wildlife Damage Control	$57,350	Completed
		$57,350	**Actually Paid: $57,350**

U.S. Forest Service – Contract No. 1999-USDAF-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-USDAF-1-A	Interagency Restoration Teams	$50,000	Not completed; returned $50,000
1999-USDAF-1-B	Interagency Restoration Teams – Sawmill Enclosure	This project was incorporated into 1999-USDAF-1-B	
1999-USDAF-1-C	Interpretive Signs and Brochures	$15,000	Partially Completed; Returned $12,483
1999-USDAF-1-D	Law Enforcement	$383,000	Partially Completed; Returned $110,972
1999-USDAF-1-E	Native Seed Collection	$10,000	Not Completed; returned $10,000
		$458,000	**Actually Paid: $274,545**

U.S. Geological Survey – Contract No. 1999-USGS-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-USGS-1-A	Desert Tortoise Translocation	$283,202	Completed
		$283,202	**Actually Paid: $283,202**

Nevada Division of Forestry – Contract No. 1999-NDF-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-NDF-1-A	Desert Tortoise Fencing	$360,000	Completed
1999-NDF-1-B	Protection and Propagation of Selected Species	$115,260	Not completed; not paid
		$475,260	**Actually Paid: $231,005**

Nevada Division of Wildlife – Contract No. 1999-NDOW-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-NDOW-1-A	Chuckwalla	$24,000	Partially completed; returned $12,000; final report forthcoming
1999-NDOW-1-B	Surveys: Gilbert Skink, Banded Gecko, Night Lizard	$34,566	Not completed; not paid.
		$58,566	**Actually Paid: $12,000**

University of Nevada, Las Vegas -Contract No. 1999-UNLVGS-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-UNLVGS-1-A	Distribution & Status of Migrant Birds	$40,000	Completed
1999-UNLVGS-1-B	Desert Tortoise Survivorship	$48,300	Partially completed; final report forthcoming
1999-UNLV-1-C	Palmer's Chipmunk Study	$53,246	Partially completed; final report forthcoming
		$241,546 ($100,000 contingency)	**Actually Paid: $154,536**

University of Nevada, Reno – Contract No. 1999-BRRC-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-BRRC-1-A	Science-based Adaptive Management Program	$1,150,000	Completed
1999-BRRC-1-C	Desert Tortoise Translocation	$541,794	Completed
		$1,691,794	**Actually Paid: $1,353,950**

Clark County Desert Conservation Program – PIE – Contract No. 1999-PIE-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
N/A	PIE Working Group	$236,115	Completed
		$236,115	**Actually Paid: $240,418**

Clark County Department of Parks and Recreation – Contract No. 1999-CCPR-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-CCPR-1-A	Riparian Restoration	$115,000	Completed
1999-CCPR-1-B	Riparian Restoration, Trails	$0	Completed
		$115,000	**Actually Paid: $115,000**

Las Vegas Valley Water District – Contract No. 1999-LVVWD-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-LVVWD-1-A	Desert Pocket Mouse	$45,000	Partially Completed; final genetics report forthcoming
		$45,000	**Actually Paid: $42,197.47**

Budd-Falen Law Offices – Contract No. 1999-BF-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-BF-1-A	Legal Representation of Special Interest Groups & Rural Communities	$93,000	Completed
		$93,000	**Actually Paid: $74,576**

Michael Creathbaum – Contract No. 1999-CREATH-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-CREATH-1-A	Law Enforcement	$96,942.50	Completed
		$96,942.50	**Actually Paid: $96,942.50**

Great Basin Bird Observatory – Contract No. 1999-GBBO-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-GBBO-1-A	Nevada Breeding Bird Atlas	$130,500	Partially Completed; Atlas forthcoming
		$130,500	**Actually Paid: $130,500**

MRREIAC – Contract No. 1999-MRRE-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-MRRE-1-A	Muddy River Regional Environmental Impact Alleviation Committee	$196,603	Completed
1999-MRRE-1-B	Riparian Habitat Restoration and Public Education	$4,890	Completed
		$201,493	**Actually Paid: $201,487**

Pacific AgriBusiness – Contract No. 1999-PACAG-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-PACAG-1-A	Property Appraisals, Habitat Acquisition and Stewardship Projects	$50,000	Completed
		$50,000	**Actually Paid: $15,128**

Partners in Conservation – Contract No. 1999-PIC-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-PIC-1-A	Fencing and Public Education	$9,000	Completed
		$9,000	**Actually Paid: $9,000**

Reno Tur-Toise Club – Contract No. 1999-TURT-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-TURT-1-A	Tortoise Adoption	$20,000	Completed
		$20,000	**Actually Paid: $20,000**

Donald Sada, Ph.D. – Contract No. 1999-SADA-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-SADA-1-A	Restore and Reintroduce Springsnails	$9,500	Completed
1999-SADA-1-B	Springsnail Surveys	$9,000	Completed
N/A	Develop Monitoring Protocol	$9,500	Partially Completed; final protocol forthcoming
		$28,000	**Actually Paid: $28,000**

Selzer, Ealy, Hemphill and Blasdel

Project Number	Project Description	MSHCP Funding Awarded	Project Status
Not Applicable	Legal & Facilitation	$300,000	Completed
		$300,000	**Actually Paid: $295,285**

Southern Nevada Environmental, Inc. – Contract No. 1999-SNEI-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-SNEI-1-B	Desert Tortoise Transfer and Holding Facility	$479,776	Completed
1999-SNEI-1-C	Desert Tortoise Translocation	$120,000	Completed
		$659,647 ($60,000 for unexpected operating expenses)	**Actually Paid: $659,647**

The Conservation Fund – Contract No. 1999-TCF-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-TCF-1-A	Acquisition of Grazing Permits	$122,300	Completed
		$122,300	**Actually Paid: $83,358**

The Nature Conservancy – Contract No. 1999-TNC-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-TNC-1-A	Bees of Clark County	$33,627 in the 1997-1999 Biennium	Completed
1999-TNC-1-B	DWMA- Site Conservation Planning Template	$0 This project was entirely funded by the USFWS	Completed
1999-TNC-1-C	Muddy River Project Director	$120,000	Completed
1999-TNC-1-D	Penstemon Research	$46,310	Completed
		$166,310 (120,000 +46,310)	**Actually Paid: $136,310**

Mark Trinko – Contract No. 1999-TRINKO-1

Project Number	Project Description	MSHCP Funding Awarded	Project Status
1999-TRINKO-1-A	Volunteer Coordination in Assistance of Agency Conservation Measures	$52,000	Completed
		$52,000	**Actually Paid: $21,000**

Note: "MSHCP Funding Awarded" amounts refer to Section 10 allocations and were obtained from DCP files and the MSHCP database. Information regarding actual funds paid per project is unavailable. Most contractors invoiced Clark County one lump sum per contract. It is Clark County's intent to revise the invoicing policy to mandate invoices per project.

Clark County would like to acknowledge the additional $2 million (approximately) in matching funds or grants that also supported the projects listed above.

ACCOMPLISHMENTS

PUBLIC INFORMATION AND EDUCATION PROGRAM

The structure and goals for the PIE Program are outlined in section 2.8.3.4 of the MSHCP. The objectives of the program are to "1. Inform the public of the terms of the Section 10(a) Permits; 2. Encourage respect, protection, and enjoyment of natural ecosystems in Clark County; 3. Through education, increase the public understanding and awareness of the value of Clark County's natural ecosystems."

Telephone Service Hotline: 383-TORT

The hotline provides recorded messages that answer commonly asked questions about tortoise adoption, laws concerning tortoises, the effect of the ESA on development, and what to do if one finds a wandering tortoise. The hotline also lists phone numbers for tortoise adoption, pick-up, and reporting harm to wild tortoises. The hotline was updated in February 2000 with MSHCP facts and information.

Tortoise Pick-up Hotline: 593-9027

The tortoise pick-up telephone line provides information and instructions for the collection of stray desert tortoises. No changes were made to this service and the line remains in operation.

Desert News

The PIE committee originally produced this newsletter in 1995. It was updated in 1998. Approximately 30,000 were printed and approximately 20,000 copies were distributed to the public during 1999-2001. Desert News was distributed to schools, clubs, community centers, libraries, and many other organizations through various entities represented on the IMC.

Mojave Max Emergence Contest

The first and second annual Mojave Max emergence contests were held in the spring of 2000 and 2001. Students were encouraged to estimate the time that Mojave Max, a live desert tortoise and program mascot, would first exit his burrow after hibernation. The contest was very successful and resulted in thousands of students researching Mojave Desert temperatures and desert tortoise habits.

A new program website, www.mojavemax.com, was implemented and information about the contest and other environmental education programs can be found on the site. In the future, it will provide species facts, science-based classroom activities, and links to other valuable environmental education sites.

Products

In 1995, the PIE program purchased stickers and patrol cards for distribution to the public. This proved to be an efficient way to send the message of "respect, protect and enjoy our desert" to thousands of people. During the 1999-2001 biennium, the PIE program purchased a number of new products for distribution to the public, desert users, children, and other target markets. Unless otherwise noted, all products were printed with one or more of the following messages: "Mojave Max," "Respect, Protect & Enjoy Our Desert," "383-TORT." Costs, production numbers, and target markets were evaluated prior to each product purchase to maximize effectiveness and efficiency. Costs varied greatly depending on vendor, color selection, and amount purchased. A total of $45,095 was spent on products during this biennium.

The products purchased and distributed during the 1999-2001 biennium include the following:

PRODUCT	DESCRIPTION	TARGET MARKET	NOTES
Can coolers	Foam can holder	Desert users, LE use	Good for desert users. Gets message out, and product has medium life span
Desert survival kits	Plastic container to hang around a person's neck, filled with band-aids, antibiotic ointment, sunscreen, and lip balm	Desert users, Children, Volunteers	Excellent message. "Be wise and responsible when using the desert; take care of yourself and the desert."
Frisbees (miniature)	Small plastic Frisbee	Children	Did not provide substantial conservation message
Hats	Printed baseball cap	Volunteers	
Litter Bags	Printed plastic bags. Bags filled with literature and products during an event and used to collect trash afterwards	General public	
Magnets	Nevada-shaped magnet, printed with pertinent phone numbers	General public	
Patrol Cards	Business-sized card with tortoise protection information	Children	Red Rock, Lake Mead and Tortoise Group use this item during school presentations

Rulers	Thin plastic rulers with desert characters	Children, Public	Can be used for science projects
Stickers	Circular Mojave Max stickers	Children	
Sun Shades	Cardboard sun shields for placement on vehicle dashboards	Interest Groups	New item not yet rated
T-shirts	Printed shirts	Volunteers	Good for small volunteer projects where ample commitment made. Should be limited distribution unless production is otherwise funded. Cost is $6-$10 per shirt
Water bottle holders	Plastic gadget that clips onto a person's waist-band or belt and holds a bottle of water	Public, Volunteers	Works well for specific events
Whistle Straws	Non-printed straws that whistle when blown through	Children, General public	Not suitable for outreach events. Children enjoyed, but other vendors did not like additional noise caused by the whistling
Zipper pulls	Small rubber circle with hook, to be hooked onto jackets, shoes, book-packs. Printed with Mojave Max	Children, General public	Huge hit. Very popular, very inexpensive, approx. $ .11 each

Public Events

The PIE program continued to represent the MSHCP and DCP at public events. Committee members and County staff manned the booths, passed out products, and provided people with information about the program. Some of the events the DCP participated in during this biennium were the Clark County Fair, the Southern Nevada Homebuilders Fair, and several Earth Day events. The PIE program received 260 completed surveys at the Clark County Fair and the results were very positive.

School Curriculum Auxiliary Team (SCAT)

The PIE Committee has worked on developing educational materials on the species and environments of Clark County for several years. The PIE Committee researched and evaluated existing environmental education programs in order to identify programs the DCP should support, and to identify additional programs the DCP might develop.

The first SCAT subcommittee meeting was held on October 13, 1998, to discuss the development of a collaborative desert curriculum program. Teachers, educators, and PIE representatives participated on the subcommittee and developed a strategic plan for the program. The primary goal of the team was to develop suggestions for the PIE subcommittee that could "Provide information, resources, and opportunities to teachers and school children regarding environmental education on the Mojave Desert."

The SCAT subcommittee reviewed all local environmental educational programs offered to teachers. After a lengthy review and analysis of the programs, the team concluded that the environmental programs from Red Rock National Conservation Area and Lake Mead National Recreation Area provided information to teachers and children that correlated with the DCP's mission. The subcommittee also concluded:

- Teachers do not want to be told how to teach, but want information and assistance.
- Teachers generally do not have the ability to purchase additional classroom books and materials.
- Teachers do not want another book or curriculum guide that will sit in on a shelf.
- There are many ways to reach teachers and children. Only one of those ways is directly through the School District's Board. Principals, teachers, parents and eventually the students greatly influence the exact materials that are used in the classrooms.

The team continued to meet regularly throughout 1998 and 1999. In January 2000, the subcommittee submitted a list of priorities to the PIE Committee. The list of priorities is as follows:

1. Increase capacity of Red Rock's program
2. Increase capacity of Lake Mead's program
3. Develop a new Professional Development Education (PDE) course with a schoolyard as the field site.
4. Hold a "Conservation in the Classroom" Fair.
5. Publish Environmental Materials Book.
6. Produce video(s).

As of June 2001, SCAT was working on programs that could address priorities one through four above. As of the end of the biennium, no related contracts have been completed. Some programs have been outlined and discussed at length, but no programs were actually initiated.

MEDIA

Along the Way

The DCP sponsored a radio program created and aired by KNPR. The radio program focused on Nevada's natural scenery and memorable sites. Because the program did not focus on conservation, the USFWS requested that funding be discontinued. The PIE program sponsored "Along the Way" from July 1999 through December 2000.

Public Television
The PIE program continued to air Public Service Announcements (PSAs) on the Las Vegas PBS outlet, KLVX - Channel 10, throughout the biennium encouraging the public to respect, protect and enjoy our desert.

Radio Announcements
Radio PSAs were strategically placed on stations that targeted users. The topics discussed during these announcements were: 1) Drive on roads; 2) Shoot responsibly; 3) Dump only at dumps; 4) Keep your desert clean and safe; and 5) Respect, protect and enjoy our desert.

Newspaper Advertisements
Advertisements were placed in rural newspapers targeting desert users. The rural newspapers included the Moapa Valley Progress, Boulder City News, and Searchlight News. The topics for these announcements were similar to those used for the targeted radio announcements.

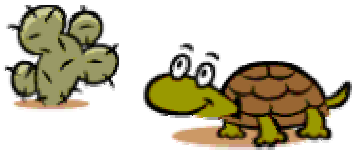
Tortoise Group
Tortoise Group conducts classroom visits to schools in the Clark County School District to educate students about the biology of the desert tortoise, adoption and care of tortoises, and the DCP. Periodically, schools will adopt tortoises as a result of these visits. Tortoise Group publications have been in circulation for more than 12 years. The group distributes more than 1,000 pamphlets annually entitled, "Desert Tortoise Adoption and Care."

MRREIAC
MRREIAC participated regularly in the efforts of the PIE Committee. The group created brochures promoting the MSHCP and rural conservation, and most especially represented the MSHCP and related programs during the Clark County Fair in 2001. MRREIAC created an excellent display and ensured professional representation of the MSHCP and its projects at the County Fair.

BLM/Red Rock National Conservation Area
The tortoise enclosure at the Red Rock Visitor Center houses nine adult tortoises and three hatchlings, and remains open to the public. Phase Two, which will expand the tortoise habitat and display, is under consideration.

Financial Summary
The IMC approved a PIE budget of $236,115 for the 1999-2001 biennium. Actual expenditures for the period were $240,418. See the Financial Summary section for a detailed breakdown of expenses.

2001 Mojave Max Emergence Contest
Winning Classroom



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A PROGRAM OF THE CLARK COUNTY
DESERT CONSERVATION PLAN

Mojave Max Website

ACCOMPLISHMENTS

HIGHWAY FENCING PROGRAM IN CLARK COUNTY, NEVADA

Highway fencing to prevent desert tortoise mortalities is identified as a conservation action in the Desert Tortoise Recovery Plan (1994). The Desert Tortoise Management Oversight Group (MOG) and their Technical Advisory Committee (TAC) also have identified highway fencing as one of the conservation actions necessary for the establishment of Areas of Critical Environmental Concern (ACECs) for the desert tortoise. The United States Fish and Wildlife Service (USFWS) has required fencing of new roads and of road expansion projects in desert tortoise critical habitat and ACECs as mitigation. Thus, Clark County's long-term Desert Conservation Plan placed a high priority on the installation of fencing or barriers to protect desert tortoise populations and other wildlife from highway traffic as mitigation for take of tortoises and tortoise habitat in Clark County.

History

In 1994, the Clark County Desert Conservation Plan Implementation and Monitoring Committee (IMC) proposed to spend $500,000 (1994 dollars) per year for highway fencing. However, in the first several years of the incidental take permit, attention was focused on the development and testing of cost-effective tortoise barriers. Less than $500,000 per year was spent in those years as specified in the Clark County Desert Conservation Plan.

> "…approximately $100,000 will be expended over a period of one year to determine which sort of barrier is effective to deter tortoises wandering onto roadways at the least cost of construction and maintenance." (DCP, 1995, p. 88)

> "…. for the first year of the permit it is unlikely that more than $150,000 will be spent because the field-testing phase will not be completed until the end of that year. It is also contemplated that less than $500,000 will be spent during the second year of the permit to allow time to gear up for the construction activities and to enter into the required contracts. Money not spent on the construction and maintenance of barriers and fences during the first two years will be allocated to other important conservation activities or retained and spent on barriers and fencing in later years." (DCP, 1995, p. 89)

The Clark County Desert Conservation Plan IMC has recommended expenditure of the unspent highway fencing allocation for other projects in each year that projected fencing program expenditures were less than $500,000.

Development and testing of fencing or barriers was accomplished in two phases. First, Clark County entered into a contract with EnviroPlus Consulting in 1995 to determine effective and economically feasible road barriers to decrease tortoise mortality along roadways. EnviroPlus completed the study and concluded that 1" x 2" galvanized steel mesh was the best of the materials they tested to use for constructing tortoise barriers along roadways.

Second, Clark County entered into a contract with the Nevada Division of Forestry (NDF) and the Nevada Department of Transportation (NDOT) in April 1996 to conduct the field-

testing phase of the road barrier study. The IMC decided to use the Large-Scale Translocation Study site (LSTS) as the site of the fencing field test. Using this site would accomplish both the field-testing goals for the tortoise barriers and area. Approximately five (linear) miles of new fencing were installed. The NDF-supervised crews retrofitted approximately 13 (linear) miles of existing NDOT right-of-way fencing along I-15 (one side). In addition, the NDF crews constructed approximately two (linear) miles of new fence along the southern border of the LSTS.

At the same time (1995-1996), Clark County explored alternative methods of low-cost fence installation. The Nature Conservancy (TNC) organized and supervised weekend fence-retrofitting efforts in Piute Valley with Las Vegas-based volunteers. Clark County purchased the fencing materials. Approximately 5,600 feet of tortoise fencing was satisfactorily installed with no labor cost. However, TNC reported that administrative and support costs for the volunteer effort were higher than anticipated and the expanded use of volunteers for large-scale fence installation might not be warranted based on cost effectiveness and efficacy.

In 1998, the County contracted with a licensed fencing contractor to complete the barrier construction on the northern border of the translocation site.

Monitoring And Repair Of Damage

Until the end of 1999, NDOT monitored tortoise fencing in the LSTS quarterly. Clark County assumed responsibility for monitoring all tortoise fencing starting in 2000. That responsibility was assigned to the University of Nevada, Reno (UNR) as a part of the Adaptive Management Program (AMP). Fences are currently monitored quarterly with additional spot checks in likely damage areas such as washes, and following likely damage-causing events such as floods. Damage is mapped using GIS. UNR personnel repair small damage during monitoring. Larger damage is repaired by NDOT at their discretion. The monitoring effort is being refined to decrease manpower needs and increase effectiveness in locating and repairing damage as part of the AMP.

Identification Of Fencing Priorities

Clark County's IMC established the Fencing Committee as a subcommittee of the IMC to deal with fencing matters. County staff organizes the Fencing Committee meeting schedule and agenda. County staff also handles all contracting using Section 10 funds. Land managers, scientists, and interested parties attend meetings. The Fencing Committee reports to the IMC. The mission of the Fencing Committee is to direct the installation of barriers or fencing consistent with the objectives of the Desert Tortoise Recovery Plan and the Clark County DCP and MSHCP. Priorities for fencing projects are established based on direction from the Desert Tortoise Recovery Plan, the best available information on the possible conservation benefits of the project, and the project cost.

The Fencing Committee has identified approximately 462 miles of paved major roads through tortoise habitat in Clark County that may require fencing (see maps, figures 1 and 2). Areas inside and outside of tortoise ACECs were included. Highway fencing projects were prioritized as very high, high, and medium on the basis of the Committee's consideration of the population size, road traffic levels and management status. Of the 462

miles of major roads through tortoise habitat, 124 miles were prioritized as high-very high, 161 miles were prioritized as medium-high, and 177 miles were prioritized as medium (see Appendices I and II for details). Low-priority projects were not considered.

General priorities were established for the 1999-2001 biennium:

- Work toward securing the Piute-Eldorado Valley Desert Wildlife Management Area (DWMA) and Area of Critical Environmental Concern (ACEC) by installing tortoise barriers along the major paved roads
- Work with NDOT to coordinate the installation of tortoise barriers as an integral part of highway widening and improvement projects in tortoise habitat throughout Clark County

Fencing Progress During The 1999-2001 Biennium

Fence construction or retrofitting on many stretches of paved roadway are in progress or completed. The major projects include US 95 in the Piute and Eldorado Valleys, SR 163 in Piute Valley and I-15 south of Las Vegas. Most of the fencing that is paid for with Clark County's Section 10 funds is being installed by NDF-supervised prison crews due to the low labor cost (see Costs, below). Fencing along the NDOT highway-widening projects does not expend Section 10 funds.

In addition to ongoing fencing work by NDOT and the NDF, several rural and community groups have expressed an interest in contributing to the conservation program by participating in fencing projects. In January 2000, Partners In Conservation (PIC) proposed to retrofit 3,000 ft. of I-15 on Mormon Mesa for $9,000 ($3.00/ft.). The project is to involve Boy Scouts or other volunteer groups who would be paid for their work. Boy Scout leaders were given an introductory training session on retrofitting existing fence with tortoise barriers. An encroachment permit was obtained from NDOT for this demonstration project and potential sites for the project were reviewed. This project, if satisfactorily completed, may serve as a model project for future conservation fencing work by community groups.

Fencing Accomplishments In The 1999-2001 Biennium

Approximately 95 miles of fencing along highways was completed during the 1999-2001 biennium. The majority of the fencing has been through critical tortoise habitat within the Piute-Eldorado Valley DWMA and ACEC. Of this, approximately 87 miles will be within the southern DWMA. This constitutes 72 percent of major paved roads within the southern DWMA. An additional 34 miles of possible roadway fencing has been identified for the southern DWMA. The fencing requirements of those road segments will be evaluated in the 2001-2003 biennium. Discussion of possible fencing requirements in this area will be in coordination with the National Park Service or the Bureau of Land Management, as appropriate.

The total identified fencing miles as well as southern DWMA fencing miles identified and completed in the 1999-2001 biennium are delineated in the table below.

FENCING IN CLARK COUNTY AND THE SOUTHERN DWMA FOR 1999-2001

Priority	Total CC miles Identified	CC Miles to be Completed	% CC miles to be Completed	S.DWMA Miles Identified	S. DWMA Miles to be Completed	% S. DWMA Miles to be Completed
High- very high	124	30.8	25%	39.8	29.8	75%
Medium-high	161	57.4	36%	81.4	57.4	71%
Medium	177	8	4.5%	0	0	0
TOTAL	462	95.2	21%	119	87.2	72%

Costs

The cost estimates used are based on completed contracts that have been invoiced and paid. Only one contract has been let for new fence construction alone. The five-mile fence at the north end of the LSTS cost approximately $4.39/ft., or $23,180/mile, for materials and labor (Beco).

Materials for retrofitting of tortoise barriers to existing four-strand barbed wire fence have cost $1.06/ft (from Tiberti Fence Co.) and $.49/ft (from Ocotillo). Labor and transportation costs for the fence retrofitting by NDF crews on the LSTS fence along I-15 and the existing fence on US 95 cost approximately $ .48/ft and $1.05/ft. The difference in NDF labor costs is due to differences in how far the crews must travel. A combined materials and labor cost of $1.54 per foot is used to estimate fence retrofit cost in the Appendices.

Other cost estimates for ongoing and future work include: 1) The proposed Partners in Conservation demonstration project along I-15 on Mormon Mesa at $3.00/ft. for labor only; and 2) Tiberti Fencing Co. estimated that retrofitting along I-15 south of Sloan would cost approximately $3-4/ft including materials (information provided by NDOT).

All costs for fencing contracts completed to date are shown in the table below.

EXPENDITURES

Date	Job Location	Miles	New/ Retro	Contractor	Total	Cost/ft
1995	Study	---	---	EnviroPlus	$100,000	---
1996	Labor-LSTS	15	2/13	NDF *	$38,000	$ .48
1996	Materials-LSTS	15	2/13	Tiberti	$84,000	$1.06
1997	Mat&Labor-LSTS	5	New	Beco	$116,000	$4.39
1999	Materials	100	Retro	Ocotillo	$257,000	$ .49
1999-2000	Labor-US95	32	Retro	NDF *	$178,000	$1.05

* Labor costs for NDF include all necessary tools and transportation.

Due to the existence of four-strand barbed wire fence suitable for retrofitting with tortoise fence along most of the large paved roads in the Southern DWMA, most fencing during the 1999-2001 biennium has focused on retrofitting. The NDF-supervised prison crews have provided very cost-effective labor. Purchase of fencing materials separate from labor has also resulted in significant savings. As a result, a large amount of tortoise fence has been installed for relatively low cost during the 1999-2001 biennium.

Future Direction

Future fencing projects will involve more new fence than in the current biennium. No low-cost contractor has yet been identified. The Fencing Committee has discussed contracting with NDF-supervised crews for the remaining required new fence construction in the Piute-Eldorado Valley DWMA. If using NDF crews is both timely and cost effective compared to commercial fencing contractors, then significant reduction in the estimated cost may be possible.

At the DCP spending level of $1,000,000 per biennium, and using cost estimates based on completed contracts, it will require approximately six funding cycles (12 years, starting in the 2001-2003 biennium) to complete all the identified fencing projects listed. However, further evaluation of fencing needs during the 2001-2003 biennium may result in more precise targeting of fencing projects and greater cost-effectiveness of the fencing program.

We believe that the conditions of the MSHCP will require the IMC and the Fencing Subcommittee to identify fencing needs throughout Clark County, prioritize those needs, and propose a biennial fencing plan and budget. This plan and budget must be approved by the USFWS.

Projected expenditures of the fencing program in future biennia (starting in the 2001-2003 biennium) will include monitoring and repair costs, and may also accommodate fencing needs for research and possibly also non-tortoise habitat protection projects as deemed appropriate by the Clark County MSHCP IMC. The monitoring and repair costs are expected to increase as the amount of fencing installed increases.

HIGHWAY FENCING PROJECTS FOR THE CLARK COUNTY DESERT CONSERVATION PROGRAM FOR THE 1999-2001 BIENNIUM

Note: Cost estimates are based on previous contract costs for materials and labor New: $4.39/ft.(Beco), Retrofit: $1.54/ft. (Ocotillo/NDF)

Ref. No.	Job Description/Location	Priority	Miles	New/ Retro	Status	Cost Estimate
99-**01**	The west side of U.S. 95 from the intersection of State Route 163, the Laughlin Turnoff, north 6.5 miles in the Piute Valley 6.5 miles just south of the town of Cal-Nev-Ari	high-very high	6.5	Retro	Complete	$52,853
99-**02**	The east side of U.S. 95 from the Loran Road immediately north of the town of Cal-Nev-Ari to a point approximately 5.5 miles north just south of the town of Searchlight	high-very high	5.5	Retro	Complete	$44,722
99-**03**	The west side of U.S. 95 from the Loran Road immediately north of the town of Cal-Nev-Ari to a point approximately 5.5 miles north just south of the town of Searchlight	high-very high	4.6	Retro	Complete	$37,404
99-**04**	The east side of U.S. 95 from the intersection of State Route 163, the Laughlin Turnoff, north 6.5 miles in the Piute Valley just south of the town of Cal-Nev-Ari	high-very high	6.5	Retro	Complete	$52,853
99-**05**	The west side of U.S. 95 from the Nevada-California border north approximately 1.2 to the intersection of State Route 163, the Laughlin Turnoff in the Piute Valley just south of the town of Cal-Nev-Ari	medium-high	1.2	Retro	Complete	$9,758
99-**06**	The east side of U.S. 95 from the Nevada-California border north approximately 1.2 to the intersection of State Route 163, the Laughlin Turnoff in the Piute Valley just south of the town of Cal-Nev-Ari	medium-high	1.2	Retro	Complete	$9,758
99-**07**	The west side of U. S. 95 from a point 8.3 miles south of the intersection with State Route 165 to a point 25.3 miles south of the intersection with State Route 165	medium-high	17	Retro	In progress	$138,230
99-**08**	The east side of U. S. 95 from a point 10.1 miles south of the intersection with State Route 165 to a point 25.3 miles south of the intersection with State Route 165	medium-high	15.2	Retro	In progress	$123,594
99-**09**	The south side of State Route 163 from the intersection with U. S. 95 to a point approximately 0.5 mi. east of the intersection	medium-high	.5	Retro	In progress	NDOT Budget
99-**10**	The north side of State Route 163 from the intersection with U. S. 95 to a point approximately 4.7 mi. east of the intersection	high-very high	4.7	Retro	In progress	NDOT Budget
99-**11**	The south side of State Route 163 from a point 0.5 miles east of the intersection with U. S. 95 to a point approximately 8.0 mi. east of the intersection	medium-high	7.5	New	In progress	NDOT Budget
99-**12**	The north side of State Route 163 from a point 4.7 miles east of the intersection with U. S. 95 to a point approximately 8.0 mi. east of the intersection	medium-high	2.8	New	In progress	NDOT Budget
99-**13**	Interstate 15 widening project south of the Las Vegas Valley. The initial phase of retrofitting from Sloan to approximately 4 miles S. of Sloan (both sides)	medium	8	Retro	Complete	NDOT Budget

Ref. No.	Job Description/Location	Priority	Miles	New/ Retro	Status	Cost Estimate
99-**14**	The south side of State Route 164 from a point 0.6 miles west of the intersection with U. S. 95 in the town of Searchlight to a point approximately 6.0 mi. west of the intersection at the access road to the Walking Box Ranch	medium-high	6.0	Retro	In progress	$48,787
99-**15**	The north side of State Route 164 from a point 0.6 miles west of the intersection with U. S. 95 in the town of Searchlight to a point approximately 6.0 mi. west of the intersection at the access road to the Walking Box Ranch	medium-high	6.0	Retro	In progress	$48,787
99-**16**	Unfenced portions of US 95 in Eldorado and Piute Valleys	high-very high	2-3	New	In progress	$46,358 - $69,537
	COMPLETED FENCING FOR 1999-2001 BIENNIUM (APPROXIMATE)		**95 MILES**			**$700,000**
	Purchase of Fencing materials for next biennium					**300,000**
	TOTAL EXPENDITURES FOR 1999-2001 BIENNIUM					**$1.0M**

PRIORITIES OF THE FENCING COMMITTEE FOR THE 2001-2003 BIENNIUM

Ref. No.	Job Description/Location	Priority	Miles	New/ Retro	Status	Cost Estimate
01-**05**	I-15 both sides from approximately 5 miles North of US93 to Hidden Valley Road (both sides)	medium-high	22	Retro	pending	$180,000
01-**06**	I-15 both sides from 1 mile east of Moapa to 1.5 miles west of SR170 (Riverside off ramp) (both sides)	medium-high	26	Retro	pending	$212,000
01-**12**	The west side of U. S. 95 from the intersection with State Route 165 south to meet existing fence.	medium-high	8.3	New	pending	$192,387
01-**13**	The east side of U. S. 95 from the intersection with State Route 165 south to meet existing fence.	medium-high	10.1	New	pending	$234,109
	Maintenance and Logistics (UNR)					$50,000
	LSTS/DTCC Fencing for Disease Study Pens					$90,000
	Total for identified immediate fencing priorities + 5%					$1,036,000
	Materials from 1999-2001 biennium					$300,000
	Additional Fencing Materials (to allow purchasing flexibility because of price fluctuations) or small fencing projects					$74,000
	TOTAL		**66.4 MILES**			**$800,000**

Figure 1. Clark County MSHCP Highway Fencing 1999-2001

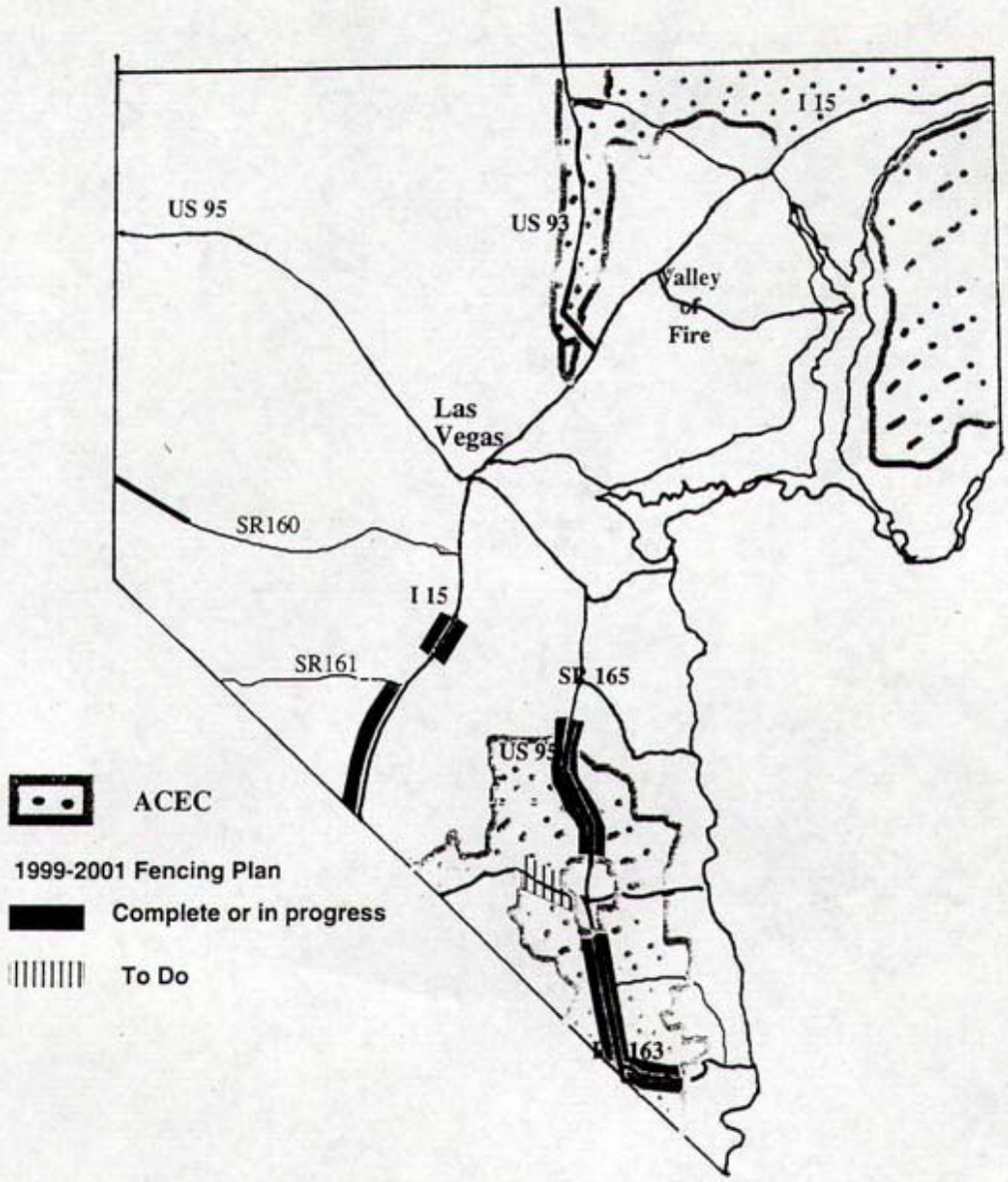
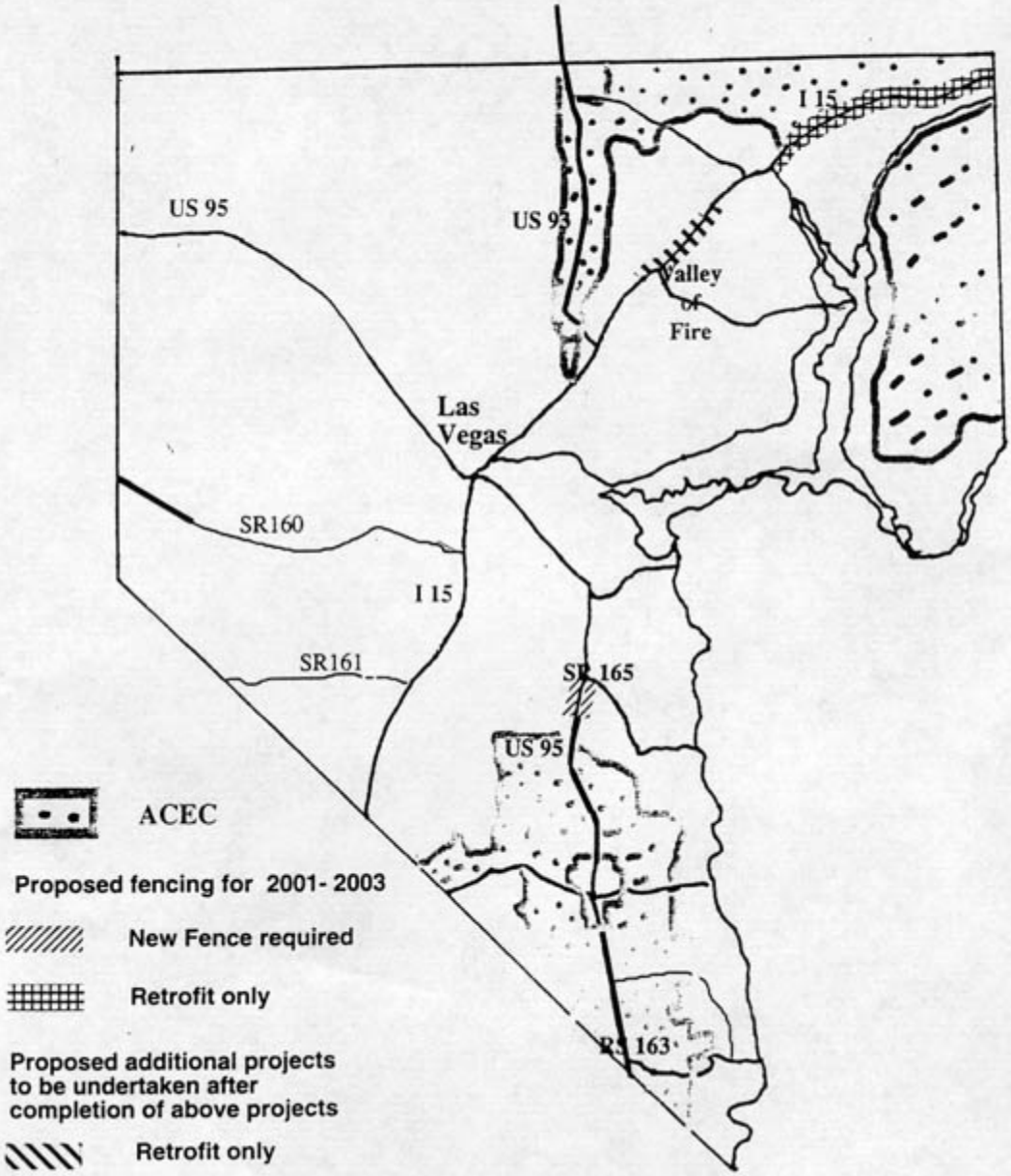


Figure 2. Clark County MSHCP Highway Fencing Plan 2001-2003



ACCOMPLISHMENTS

HABITAT MAINTENANCE AND RESTORATION PROJECTS

This section of the Progress Report illustrates the accomplishments of projects focused on restoring and maintaining habitats listed in the MSHCP, thereby benefiting species covered in the Plan. Accomplishments in this work category include providing law enforcement officers to patrol various federal lands and the Boulder City Conservation Easement, installing bat gates, restoring closed roads and riparian areas, producing native plant material for use in restoration projects, and conducting property appraisals for potential habitat acquisitions.

Restoration projects comprised approximately $2,000,000 of the Section 10 funds allotted in the 1999-2001 biennium. The details of each project follow.

Boy Scouts Working on a Restoration Project Along the Muddy River

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-A

Project Description: Bat Gates

Accomplishments: Wounded Knee Cave is confirmed to have experienced past habitat use by the sensitive taxon, Townsend's big-eared bat, including possible attempts at establishing a maternity roost colony. In recent years, however, this species has abandoned the cave, most likely in response to ongoing human disturbance that resulted from the habitat's unrestricted access. The Southern Nevada Grotto, at the request of and working in coordination with the BLM, designed and installed a permanent bat gate structure within the entry tunnel to Wounded Knee Cave. The structure features a minimum of vertical bars (bat flight obstructions); all-steel construction; components that were welded in place onto anchor rods drilled six inches into live rock ceiling and walls; a concrete footing; and twin tamper-proof padlocks. The gate cross section was tailored to conform to the exact shape of the cave's crawlspace opening and thus varies in width from four to seven feet and from two to three feet in height. A metal interpretive plaque was permanently mounted to the cave wall adjacent to the gate structure. The interpretive text includes a history of the gating project, plus contact instructions for those individuals wishing to enter Wounded Knee Cave. The Southern Nevada Grotto, the local affiliate of the American Speleological Society, volunteered approximately $3,500 in labor (152 total person hours, contributed by six individuals).

Two BLM personnel expended roughly $2,250 in labor costs (90 person hours). The Las Vegas Metropolitan Police department Search and Rescue Service contributed $750 in helicopter flight costs (3 service hours; Hughes 530F aircraft) and $360 in labor (12 total person hours by the pilot and three-man ground crew) for aerial transport of the generator. Follow-up actions to the installation of the gate will be implemented by members of the Southern Nevada Grotto, under a Memorandum of Understanding with the BLM. Wounded Knee Cave will be routinely monitored to determine bat occupancy and use status, in addition to inspecting the maintenance integrity of the gate structure. The Grotto organization will also be responsible for controlling access to the cave through a procedure that will involve vetting and screening all prospective visitors and, in most cases, escorting the approved individuals on-site. At the direction of the BLM, non-scientific visitation at Wounded Knee Cave will be halted entirely should the habitat prove to be reoccupied by Townsend's big-eared bat, or any other sensitive bat species.

Financial Funding Summary:

MSHCP: $5,250

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-C

Project Description: Fencing at Apex and ACEC/DWMA

Accomplishments: Mormon Mesa ACEC (Lincoln County): The objective of this fence is to keep wild horses and livestock out of critical desert tortoise habitat in Lincoln County. This fence will provide a boundary between the open portion of the Gourd Springs Allotment and the eastern portion of the Mormon Mesa ACEC. This fence was surveyed for a total of 6.1 miles. An environmental assessment was completed and approved, fence specifications were developed, and a bid package was prepared.

Mormon Mesa ACEC: Two fencing projects in the Mormon Mesa ACEC are in development. Both project sites have been surveyed using GPS technology. Environmental documents are under review. Both projects will fence vehicle pull-off areas from trash blowing into the ACEC. One site is in the Carp-Elgin area and another in a pull-off area between the Carp Elgin Road and the Riverside exit, both on the west side of I-15.

Piute Valley ACEC: The purpose of this project was to repair an existing tortoise fence on both sides of Highway 95 from Searchlight south to the southern boundary of the ACEC. Breaches in the tortoise-proof fence in Piute Valley had been identified in the fall of 2000 and were discussed in the November IMC Fencing Subcommittee. More breaches in the fence were identified during restoration activities in Piute Valley in early spring, 2001. In mid-July, funding from the USFWS Section 6 funds became available to implement fence repairs. The USFWS provided the funding; The Nature Conservancy administered the contract; and BLM mapped the fence breaches with GPS technology, developed the scope of work, and provided on-site guidance to the contractor. The BLM SNRT crew expended 144 people hours checking and mapping needed fence repairs.

The SNRT crew also checked the entire length of tortoise proof fence along Highway 95 and documented holes, gaps washouts, cattle guards needed, and condition of existing cattle guards. BLM calculated that a total of 153 separate repairs were needed for a total of 2.4 miles. The major repairs include gaps in the fence, washouts, areas where the tortoise mesh was not buried, cattle guards that are full and no longer act as a barriers for tortoises, and places where the tortoise mesh was never attached to cattle guard structures. An additional 40 hours was spent developing maps, tables, scope of work, and fence repair contract. The BLM worked in cooperation with the US Fish and Wildlife Service and The Nature Conservancy. Mark Blair, a local contractor from Searchlight, was awarded the contract.

Bearpoppy Fencing: A post-and-cable fence to protect 60 acres of bearpoppy habitat in the Apex area has been evaluated. An environmental assessment was developed and

reviewed internally by BLM for compliance with environmental regulations. A design to protect the habitat has been completed.

Recommendations: The Mormon Mesa and bearpoppy projects are behind schedule due to attrition of the BLM work force. Projects are being implemented as soon as possible, following the completion of the environmental documentation and preparation of the design work. Continued work on these projects is recommended.

Piute Valley ACEC: The contractor will also develop methods for fencing active washes that continue to be a problem. Many of the fence problems are due to poor construction. If Clark County continues to use prison crews for fence installation, they need to have a quality control representative checking on the construction. BLM noted that many of the cattle guards in Piute Valley are full of dirt. BLM believes that the source is from Clark County road maintenance activities. We need to communicate with Clark County road maintenance personnel who are blading the roads in the ACEC to work in such a way so that the cattle guards are not filled in. It is costly and labor intensive to clean out the cattle guards. BLM will contract to have these cattle guards cleaned out and develop other contracts to install new cattle guards where needed.

Financial Funding Summary:

MSHCP: $194,250

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-D

Project Description: Law Enforcement

Accomplishments: Despite aggressive recruitment, one of the Law Enforcement (LE) positions was not filled during the biennium. Thus, total law enforcement costs funded by the HCP were less than that requested. About $160,000 of HCP law enforcement funding was not expended. Nevertheless, other law enforcement staff worked what they could to cover for the vacant position.

Areas covered included Piute/Eldorado Valley, Gold Butte, Mormon Mesa, Coyote Springs, and Rainbow Gardens ACECs. Patrol report forms for the ACECs were filled out by the attending ranger, detailing contacts made, violations reported, and resource damages noted. Rangers reported back to the BLM MSHCP Coordinator concerning problems encountered, recommendations for improving land management, and requests for signs. Efforts were also expended on working on compliance of OHV competitive speed-based events in Jean Lake, Nelson Hills, and Laughlin areas. Details of accomplishments by ACEC are given below:

Accomplishments in the Piute/Eldorado Desert Tortoise ACEC included the following.

- Replaced designated road signs as needed.
- Made contacts with public using the area, including all-terrain vehicle users and four-wheel drive motorists.
- Stopped illegal seed collectors in Piute Valley.
- Made contacts with mountain bikers, campers, and off-highway vehicle users.
- Contacted residents in the area and got updates on what use they were seeing.

As expected, heaviest use occurs from the fall to late spring. The heaviest use occurs in Eldorado Valley, especially on the east side of US 95. A serious problem with dirt bikers was identified for Eldorado Valley, occurring on closed roads and cross-country. It is very difficult to apprehend violators and even more difficult to catch them in the act. The use tapers down about June in Piute Valley, although some heavy use continues in Eldorado Valley into the summer months. Recommendations are to restore roads that have been designated as closed in order to eliminate use. Larger, more conspicuous signs in critical staging areas may help to educate the public.

Accomplishments in the Gold Butte ACECs included the following:

- Made detailed reports of problem sites, especially in the Whitney Pockets area. Trespass cattle continue to be a problem noted by the ranger. Some littering and dumping also is starting to increase. ATVs are pushing further and further into the southern ACEC toward rock art sites.
- Posted "no motor vehicles" signs in areas where new disturbance was occurring.
- Made contacts with public using the area, including geologists, hunters, sightseers, RV campers, all-terrain vehicle users, four-wheel drive motorists, and horseback riders.
- Made recommendations on how to improve management of the area.
- Made contacts with mountain bikers, campers, and off-highway vehicle users.
- Contacted residents in the area and got updates on what use they were seeing.

Like Piute Valley and the other areas, the use in Gold Butte is very high in spring with the public contacts at well over 100 per day in the peak season, and begins to slow down in early May as the weather warms.

Accomplishments in the Mormon Mesa and Coyote Springs areas include the following:

- Made contacts with sightseers, hikers, campers, hunters, and target shooters.
- Identified and removed abandoned vehicles.
- Investigated dumping and wire-burning sites. Removed "No Trespassing" signs on public land.

The following are the main accomplishments in Rainbow Gardens:

- Installed information signs relating to the camping and shooting closures for the area.
- Issued warnings and citations to shooters and campers who ignored the signs.
- Identified abandoned cars for removal by the BLM volunteer coordinator.
- Made contacts with hikers, tourists, and off-road vehicle users.
- Investigated incidents of dumping and vandalism to signs and kiosks.
- Replaced signs as needed.

Recommendations: Increased law enforcement activity particularly in the Piute/Eldorado Valley ACEC and the Rainbow Gardens ACEC has resulted in understanding the uses, problems, and opportunities for improving the area. Currently, Piute Valley ACEC is experiencing fairly good compliance, except for Eldorado Valley near Boulder City from which a lot of use comes. Rainbow Gardens ACEC will continue to require more intensive law enforcement presence to make a significant difference. More signs, post-and-cable fencing, and continued clean-ups are needed for this area. The other remaining ACECs, due to their distance from Las Vegas, receive less intensive patrolling.

BLM's objective is to have one HCP law enforcement ranger reside in Mesquite, Nevada, to achieve a greater level of patrol time in the Gold Butte. This will also enable the ranger to work with the local communities and build a positive relationship. A second ranger will be assigned to patrol Mormon Mesa and Coyote Springs ACECs, along with other

sensitive areas as determined by the BLM Renewable Resource staff. This ranger will also assist the Rainbow Gardens ACEC ranger when needed. A third ranger will continued to be assigned to Piute Valley full time and finally a fourth ranger will be assigned full time to the Rainbow Gardens/Sunrise Mountain Management Area.

Additional informational material needs to be developed for handouts to the public by the rangers. Rangers will also take an active role in replacing road designation signs where appropriate.

It is very obvious that road designations in the Gold Butte, Mormon Mesa, and Coyote Springs ACECs will favorably aid the law enforcement rangers in accomplishing land management goals and objectives. Currently, BLM has addressed road designations only in Piute Valley and the Sunrise Management Area. The other three ACECs need to have this issue resolved, so that land use enforcement can be more efficient and yields better results. To that end, BLM will work with groups such as Partners In Conservation to reach agreement on road designations in these areas.

BLM has been challenged to successfully hire and maintain rangers in the Las Vegas Field Office. Though required, lengthy background checks can slow the hiring of new staff. High personnel turnover and attrition of the existing work force continues to be a problem because this leaves ACECs under patrolled until the positions can be refilled. A temporary solution may be to detail rangers from other Field Offices to work during critical months (for instance, in the fall and spring when use by the public is at the highest level) while working diligently to fill ranger positions.

Financial Funding Summary:

MSHCP: $504,000

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-F

Project Description: PabCo Road Bearpoppy Restoration

Accomplishments: Bearpoppy Hill restoration: As a part of agreed mitigation, PabCo Gypsum was required to contract for the restoration of one acre of bearpoppy habitat which was disturbed during road maintenance activities. Gypsum soil matching the site was identified on PabCo's private lands and prior to disturbance was sampled for seed bank analysis. The top six inches of soil was removed and stored for surface soil, and the remainder was used to reconstruct the hill. No additional seeding was required.

Seed Bank Study: Prior to disturbance, SAIC sampled the soil on PabCo's private land to determine if bearpoppy seeds were present. Several live poppies and many dead poppies occurred on the site, indicating that a seed bank in the soil was probable. Surprisingly, only six seeds were found in 26 soil samples. The preliminary results of the seed bank analysis suggest the soil that was moved from Pabco's private land was depauperate in bearpoppy seeds despite numerous live and dead individuals immediately adjacent to where the sample cores were taken. Seed predation or transportation by wind or surface water flows may be a mechanism for lack of seed presence nearby intact individuals.

Gypsum Spring Restoration: As part of agreed mitigation, PabCo Gypsum was required to restore Gypsum Spring which was severely damaged during road maintenance activities. SAIC was contracted to perform the work. Fortunately, the spring itself was not damaged, and thus the restoration focused on reconstructing and protecting the biological component of the system. Methods for restoration included the construction of a rock drop structure to slow surface flows and re-creation of a sustainable native plant community in the wash. Monitoring, recruitment, reproduction, and vegetative spread were documented, suggesting that important functional aspects are back in place. Although the success criterion of "20 percent of estimated undisturbed vegetative cover" was not achieved, it is very likely that the site will reach that benchmark in a reasonable period of time (two to three years).

Recommendations: None available.

Financial Funding Summary:

PabCo Gypsum, Inc funded this project.

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-I

Project Description: Restoring of Mesquite Woodlands

Accomplishments: General: BLM incorporated all internal BLM comments into the final draft of the Southern Nevada Mesquite Woodland Habitat Management Plan (HMP), and began working on environmental documentation for public review. BLM began implementing management guidelines from the Final Draft Southern Nevada Mesquite Woodland HMP into the review process on all actions taking place on BLM lands in or adjacent to the proposed Mesquite Woodlands Habitat Management Areas. The wells at Moapa, Stump Springs, and Stewart Valley were monitored, although the data is not yet analyzed. The Pahrump Valley well has been vandalized. An expert will be consulted to determine if a new well will need to be drilled. Permanent monitors for each well were purchased that will monitor daily levels. These monitors will be installed in the fall of 2001. BLM completed a pre-plan budget request for analyzing the designation of the Mesquite Woodland Habitat Management Areas (identified in the Mesquite Woodland HMP) as Areas of Critical Environmental Concern. This action requires a land use plan amendment. Specific actions for the mesquite woodlands follow.

Moapa: Ron Schreiber supplied the equipment and labor for the cleanup of approximately 100 acres of various types of trash, including household items, motorcycles, car parts, and appliances. Two 28-yard dumpsters were filled. Many of the items had been used as shooting targets. Approximately 14 tons of trash were removed. During the cleanup Ron observed the public dumping in areas that had just been cleaned! Several campfires were noted during his cleanup efforts; often the fires were still hot with no one around. A representative from BLM was on-site during the cleanup to document it and insure that all areas of concern were cleaned up and took some photos of a recent fire still hot in the mesquite stand. Trash had already accumulated from the weekend. Fireworks had been discharged and evidence of small spot fires were in and around the mesquite.

Pahrump and Stewart Valleys: Clean up of dumpsites in the mesquite woodlands around Pahrump and in Stewart Valley were conducted.

Cactus Springs: BLM is restoring and protecting 25 acres of mesquite woodland and riparian area at Cactus Springs, which is located a few miles north of the town of Indian Springs. An exclosure will be constructed to protect the riparian and mesquite habitats from degradation. The exclosure will help protect the spring source and will allow the spring and riparian habitat to recover from its present degraded condition to proper functioning condition (PFC). Illegal woodcutting, trampling, and compaction from vehicular traffic has impacted the mesquite woodland around Cactus Spring. The mesquite woodland in the area provides nesting habitat for the Phainopepla, a sensitive bird species in Nevada. The fence will enhance bird habitat for sensitive bird species as

well as resident bird species and will create a buffer between permitted recreation activities and nesting birds.

The fence includes both a railroad post-and-cable portion and a T-post/four-strand smooth wire portion. The railroad tie/cable fence is primarily on the west and north sides and the smooth wire fence on the east and south sides. The entire fence is approximately 0.8 mile in length. The fence meets all wildlife specifications for passage. Picnic tables will be placed outside the exclosure and cottonwood trees will be planted and maintained to provide shade to users. Two walk-through gates will be constructed towards the back of the exclosure to afford foot access into the site. Entrance walk-ins along the fence provide access for foot traffic.

Recommendations: We are continuing to work with Nye County and other entities that have proposed projects within or adjacent to the proposed Mesquite Habitat Management Areas. BLM will continue to work with local communities to educate people on the values of mesquite habitat. BLM will continue to work with the PIE Committee on education materials.

Financial Funding Summary:

MSHCP: $63,000

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-A

Project Description: Law Enforcement

Accomplishments: There is interest in the Desert Tortoise Conservation program among other Ranger staff within Lake Mead. Currently, three Rangers patrol the Desert Wildlife Management Area (DWMA) in an effort to provide coverage of this wide-ranging management area. Though funding is provided for one ranger, other rangers in Lake Mead have an interest in the backcountry. Ranger Dan Fangen-Gritis patrols the Katherine's Landing area backcountry. Cottonwood Cove Ranger staff patrols the remaining portion of the DWMA within the boundaries of Lake Mead NRA (Spirit Mountain north to Boulder City). Rangers Laurence Olson and Mike Gardiner provide these patrols. During the summer months, seasonal rangers are brought into the district. These rangers provide patrol of the DWMA when assigned.

Ranger Fangen-Gritis provided interpretive programs highlighting the desert tortoise for children at the community library.

The actual Desert Tortoise Ranger position is funded at Cottonwood Cove. Ranger Mike Gardiner currently occupies this position, though Ranger Laurence Olson provides patrol to the DWMA as well. Both are actively involved in backcountry management. Approved roads in the backcountry have been regularly monitored in an effort to stabilize and improve the habitat. Travel off designated roadways has been of major concern in some parts of the backcountry. Where it is an issue, a lot of monitoring and mitigation (e.g., posting signs, raking tracks, etc.) is common.

A handheld Global Positioning System Unit is being used by field ranger staff to record sightings of tortoises, burros, and off road violations.

A handheld pit tag reader is also used by ranger staff to specifically identify a tortoise found that has such a tag.

Carsonite posts with appropriate signage were purchased and placed throughout the approved road areas. These signs have been placed on all approved roads to advise users of the appropriate use of the area.

Signage informing backcountry visitors of cultural resources and their protection was posted on all entry points and areas of cultural significance. These signs serve to inform visitors of both the cultural and natural importance of protecting the Mojave Desert.

Off-road violations are on the rise. Establishing contact and influencing the persons responsible for these violations often proves to be difficult. However, most contacts with

backcountry users are positive and provide a good atmosphere to inform the public regarding desert conservation. There are still, however, backcountry locations that pose quite a challenge. These locations are visited frequently in an effort to reduce litter, sanitation, vandalism, off-road driving and discharge of firearms, all of which have an impact on the health of the DWMA.

During the summer months, seasonal park rangers augment the staff. These rangers are also tasked to perform patrols of the backcountry areas. During the summer of 1999 a seasonal Park Ranger stationed at Cottonwood Cove provided increased patrol of the DWMA.

This past winter, Ranger Michael Gardiner attended the Federal Law Enforcement Training Center in Glynco, GA. This training lasted from February 13th to May 21st. During this time Rangers Olson and Fangen-Gritis provided coverage of the DWMA.

Recommendations: All existing programs are producing intended results of improved management through increased funding. Having a dedicated law enforcement position fully funded through the County HCP program obviously increases the ability of the National Park Service to live up to its commitment to provide a high level of protection for the lands in the Desert Wildlife Management Area within the Lake Mead National Recreation Area. With approximately 180,000 acres to patrol in a very popular recreation area, this funding still provides what should be considered to be an absolute minimum level of effort and commitment from the County to mitigate the impacts of urban growth on tortoise habitat in the County.

Financial Funding Summary:

MSHCP: $133,350

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-E

Project Description: Plant Material Production for Interagency Restoration Program

Accomplishments: In the first year of the biennium, the following was accomplished:

- Expanded facility by over half an acre
- Built a 1600 square foot grass propagation bed with irrigation
- Planted grass bed with *Sporobolis airoides* and *Distichilis spicata*
- Added eight outside irrigation stations with the capacity for 3000 plants
- Added 1200 square feet to the shaded grow-out area

In the second year of the biennium the following was accomplished:

- Provided 4200 wetland emergents (*Scirpus* ssp., *Anemopsis* sp.) for the Bureau of Reclamation
- Provided 700 desert species plants (*Larrea*, *Ambrosia*, *Encelia*, *Opuntia*, etc.) for Lake Mead Projects

Recommendations: NPS recommends this support for this propagation facility continue.

Financial Funding Summary:

MSHCP: $60,000

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-K

Project Description: Riparian Restoration Team

Accomplishments: The NPS team treated approximately 700 acres of tamarisk at numerous springs on federal lands throughout the County. The crew field season was from October to May each year within the biennium. The ten-person crew was specially trained to operate chainsaws and apply pesticides safely. The crew obtained a Pesticide Applicators License through the Nevada Department of Agriculture. The NPS at Lake Mead NRA provided significant matching funds in order to keep the program operating for six months per year. Much of the infrastructure, vehicles, and equipment were provided by the NPS.

The interagency Southern Nevada Restoration Team developed the crew priorities for each season. Spring-fed wetlands, washes, and remote drainages were the team's priorities. Tamarisk was removed from numerous springs and some areas were transplanted with native species after removal. Tamarisk was eradicated at most springs on the priority list. Follow-up maintenance was also conducted to keep treatment areas free of tamarisk. The crew also assisted the BLM on the Virgin River Tamarisk Removal Demonstration Site with tamarisk control and re-vegetation of native species.

At Gold Butte, 16 sites were completed. At Bridge Canyon five miles were completed. At RRCNCA, 15 sites were completed. In total, 416.4 acres of exotics were treated with 146.11 gallons of herbicide applied in 2,979 labor hours with no accidents.

Recommendations:

Soil moisture increased following tamarisk control, which helps facilitate the native plant recovery process.

Financial Summary:

MSHCP: $315,000

Contractor: NPS

Contract Number: 1999-NPSLM-1

Project Number: 1999-NPSLM-1-L

Project Description: Road Maintenance, Barrier Installation, and Signs

Accomplishments: In the first year of the biennium, the following was accomplished:

- GIS (Arcview) and Access files established
- GPS work accomplished
- Environmental and cultural clearances completed or underway
- Tribal consultations initiated in culturally sensitive areas

In the second year of the biennium the following was accomplished:

- Installed 15,994 linear feet (3.03 miles) of post/post and cable barrier
- Treated 25,267 linear feet (4.8 miles) of disturbance
- Areas treated were Echo Wash, Clives Landing, St Thomas, Nelsons Landing, and the Newberry Mountains

Financial Funding Summary:

MSHCP: $78,750

Contractor: U.S. Forest Service

Contract No.: 1999-USDAF-1

Project No.: 1999-USDAF-1-B

Project Description: Interagency Restoration Teams – Sawmill Exclosure

Accomplishments: This project was not initiated, but the Southern Nevada Restoration Team did continue to assist with other restoration projects.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $0

Contractor: U.S. Forest Service

Contract No.: 1999-USDAF-1

Project No.: 1999-USDAF-1-A

Project Description: Interagency Restoration Teams

Accomplishments: This project was not initiated or completed. None of the funds for this project were expended and the USFS returned the $50,000 to Clark County in November 2002. The Southern Nevada Restoration Team did assist with other restoration projects as needed.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $50,000

Contractor: U.S. Forest Service

Contract No.: 1999-USDAF-1

Project No.: 1999-USDAF-1-D

Project Description: Law Enforcement

Accomplishments: Hiring of one additional Law Enforcement Officer and a Wilderness Ranger completed this project. A west-side Fire Protection Officer was also hired. In November 2002 the USFS returned $110,972 of the $383,000 originally funded due to a delay in hiring these positions. As of November 2002, all three positions were still on board and fulfilling their duties.

Recommendations: None available

Financial Funding Summary:

MSHCP: $383,000

Contractor: Clark County Department of Parks and Recreation

Contract No.: 1999-CCPR-1

Project No.: 1999-CCPR-1-A and 1999-CCPR-1-B

Project Description: Riparian Restoration, Trails

Accomplishments:

1. Completion of the PabCo Road Erosion Control Structure Planting Plan, including aquatic plantings; tamarisk eradication; and mesquite, cottonwood, and willow plantings

2. Completion of Erosion Control Structure No. Three Planting Plan, including aquatic plantings; tamarisk eradication; and mesquite, cottonwood, and willow plantings

3. Completion of the Nature Preserve Planting Plan, including aquatic plantings; tamarisk eradication; and mesquite, cottonwood, and willow plantings

4. Wetlands creation and enhancement associated with the PabCo Road Erosion Control Structure, Erosion Control Structure No. Three, and the Nature Preserve

Project Partners: MSHCP, USDOI, Bureau of Reclamation, University of Nevada Las Vegas, USDA, Natural Resources Conservation Service, Nevada Division of Environmental Protection, Clark County Parks and Community Services, Southern Nevada Water Authority, and AAA.

Recommendations: No recommendations available

Financial Funding Summary:

MSHCP: $115,000

Contractor: Michael Creathbaum

Contract No.: 1999-CREATH-1

Project No.: 1999-CREATH-1-A

Project Description: Law Enforcement

Accomplishments: In general, the effort was devoted to education of the area's users. Experience over the last three years has shown that most people will cooperate if shown the consequences of their resource abuse. Upgrade and maintenance of the signage in the area is an ongoing process, mostly due to weathering and vandalism. As in other areas of the County, dust from activities in the Eldorado Valley has become an issue with the residents of Boulder City. Several off-road events on the Eldorado dry lake over the past year have contributed to the perception of a dust problem.

Recommendations: Law enforcement should work with Boulder City to develop an enforceable speed limit for the unpaved roads to reduce dust.

Financial Funding Summary:

MSHCP: $96,942.50

Contractor: Muddy River Regional Environmental Impact Alleviation Committee

Contract No.: 1999-MRRE-1

Project No.: 1999-MRRE-1-A and 1999-MRRE-1-B

Project Description: MRREIAC

Accomplishments: Tamarisk removal: Nevada Division of Forestry prison crews have finished cutting the dense tamarisk infestation along the Muddy River corridor on most of the Hidden Valley dairy and the adjacent Nevada Power property. All newly cut stumps have been painted with Garlon. An approximately one Km section of the river corridor where cutting was delayed to provide for biological inventories and studies remains to be cut in the next year. The total cut area is now approximately 60 acres.

Tamarisk regrowth suppression: The prolonged drought and early onset of fire season resulted in prison crews being redirected to fire duty sooner than expected and a shorter tamarisk removal season than was planned. As a result, the planned annual suppression of tamarisk regrowth was delayed in some portions of the project area for up to a year. We decided to attempt suppression of the second-year regrowth using foliar application of Garlon in the same way that first-year regrowth is treated. We saw no difference in the initial success of regrowth suppression between first and second year regrowth. We will continue to monitor the treatment areas and we are optimistic that long-term maintenance of near tamarisk-free areas will be far less labor intensive and far less costly than anticipated.

Russian Knapweed mapping: MRREIAC monitors the tamarisk removal areas and adjacent disturbed areas for invasion by noxious weeds and other invasive plant species. Russian Knapweed has been documented for several years and has increased noticeably in the last two years. With assistance from the USFWS, we have mapped approximately 20 acres of Russian Knapweed in several large patches spreading along and out from access roads. We plan to eradicate the identified knapweed as soon as there is sufficient growth for the herbicide to be effective. That will require at least some rain. We have consulted with several weed suppression specialists to identify the appropriate herbicides. We plan to use several herbicides on test plots, and to monitor the results carefully. In part because suppression of tamarisk regrowth may be less expensive than we had planned, the initial knapweed treatment will be accomplished within the budget for the current biennium.

Partnership in HCP projects: MRREIAC provides support to numerous organizations in a variety of projects relating to conservation activities including management efforts, research and education. We are particularly grateful to The Nature Conservancy for their partnership in several projects:

1. Muddy River biological inventories and studies
2 Evaluation of the effectiveness of management actions
3. Weed inventory and removal actions

4. Support to the three-day Muddy River Workshop in July 2002
5. Cooperation with the MSHCP Muddy River Acquisition working group
6. Participation and partnership in MSHCP public information and education (PIE) projects

MRREIAC organized and provided personnel to the Clark County MSHCP Booth at the County Fair in Logandale, Nevada, in April 2002. In cooperation with Partners In Conservation, USDA Wildlife Services, and numerous volunteers, MRREIAC passed out MSHCP literature and promotional materials, hosted Mojave Max photo opportunities, and conducted a survey of booth visitors that provided the MSHCP IMC with feedback on who visited the booth and the general level of desert natural history knowledge of those visitors.

Long-term goals: MRREIAC hopes to remove tamarisk from the entire Upper Muddy River (from Warm Springs to I-15) within the next few years and to contribute to the maintenance of native vegetation and wildlife along the Muddy River in perpetuity.

Recommendations: MRREIAC has worked to protect the river by removing non-native vegetation, but has become aware that planned water uses and other development in the surrounding area may compromise and render ineffective any efforts to restore native Muddy River plants and animals. In particular:

- Pacific Gas and Electric Company has proposed a power plant that uses over 4,000 acre feet of Muddy River water and may contribute the pollution of both air and ground water
- Coyote Springs Investment has proposed a very large residential development that will use a volume of water from nearby aquifers that may compromise the spring flow and both in-stream and groundwater levels.
- South 15 Development group has proposed a project on the old Mormon Ranch that may include more than 1,000 new homes. The potential of such development to adversely affect the endangered and threatened species on the river is substantial.

Financial Funding Summary:

MSHCP: $196,603 and $4,890

Contractor: Partners in Conservation

Contract No.: 1999-PIC-1

Project No.: 1999-PIC-1-A

Project Description: Fencing and Public Education

Accomplishments: PIC completed 3600 feet of desert tortoise fencing in 2001 using three Boy Scout Troups. Ron Marlow assisted PIC in inspecting and addressing any deficiencies in the fencing.

Recommendations: PIC did experience some quality of work and communication issues. To address these problems, PIC offers the following solutions. PIC should attend all Fencing Working Group meetings. In future projects, PIC will give all troops a set amount of time to complete their projects. PIC will maintain strict quality control standards. PIC will define governmental points of contact upfront and deal directly with those staff. PIC will become more efficient at communicating internally and with other rural organizations by using fax, e-mail and phone on a daily basis.

Financial Funding Summary:

MSHCP: $9,000

Contractor: The Conservation Fund

Contract No.: 1999-TCF-1

Project No.: 1999-TCF-1-A

Project Description: Acquisition of Grazing Permits

Accomplishments:

Allotments Closed in 2000	Acres	Date	Full Market Value
Toquop Sheep	25,000	1/2000	$32,000
Table Mountatn./Roach Lake	107,225	1/2000	$38,000
Arrow Canyon	88,108	5/2000	$42,000
Upper Mormon Mesa	46,325	5/2000	$45,000
Mesa Cliffs	13,681	5/2000	$30,000
White Basin	218,512	12/2000	$50,000
Subtotal for 2000	499,381		$237,000
Allotments Closed in 2001	**Acres**	**Date**	**FMV**
Sandhollow	35,174	6/2001	$195,000
Beacon	41,110	6/2001	$128,000
Subtotal for 2001	76,384		$323,000
Grand Total for 1999 – 2001	**575,665**		**$560,000**

Recommendations: No recommendations available

Financial Funding Summary:

MSHCP: $122,300

Contractor: The Nature Conservancy

Contract No.: 1999-TNC-1

Project No.: 1999-TNC-1-B

Project Description: DWMA – Site Conservation Planning Template

Accomplishments: The following items were delivered to USFWS on the dates indicated below:

- Coyote Springs Final Draft Site Conservation Plan August 30, 2001
- Eldorado-Piute Final Draft Site Conservation Plan September 30, 2002
- Mormon Mesa Final Draft Site Conservation Plan September 30, 2002
- Gold Butte Pakoon Final Draft Site Conservation Plan September 30, 2002

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $0 – this project was funded entirely by the USFWS

Contractor: The Nature Conservancy

Contract No.: 1999-TNC-1

Project No.: 1999-TNC-1-A

Project Description: Muddy River Project Director

Accomplishments: Bob Lewis Exchange: In January 2000, worked with Lewis to revise and clarify Offered Lands and Selected Lands in initial exchange proposal. Proposed in March 2000 an Exchange Agreement between Lewis and The Nature Conservancy, which outlined roles and responsibilities for the proposed land exchange. Agreement finalized and signed May 2001 after 15 months of negotiation. A resolution from Lincoln County Commissioners was required by the Ely BLM field office in order to gain their support for the exchange. Researched information on additional Offered Lands proposed by Lewis. Concluded that these additional Offered Lands would be held in reserve until the Feasibility Report with the originally proposed lands had been approved. In June 2000, began to coordinate and to participate with the Lincoln Co. MSHCP process to further Clark County's MSHCP goals and permit conditions tied to the Lewis exchange. Met and coordinated with PG&E National Energy Group to explore opportunities to leverage their interest in the exchange which would also benefit Clark County MSHCP.

Coon Trust Exchange: In January 2000, worked with Bob Behmer to revise and clarify what was to be included as Offered Lands and Selected Lands in initial exchange proposal. Prepared and submitted draft TNC/Coon Trust Feasibility Report to BLM in April 2000. Drafted Exchange Agreement with assistance from TNC attorneys. As of June 2001 the agreement and exchange were still in process, pending estate settlement.

Missouri Holding Company: In June 2000 obtained property information and have made numerous attempts through June 2001 to contact Union Pacific lands specialists in Omaha, NE. This parcel is an in holding within the proposed Offered Lands of the TNC/Coon Trust exchange.

Mary Premo: In March 2000 gathered property information and worked closely with Bruce Lund to present information about protection options for their property to Premo and her family. The Premo family as of June 2001 has expressed little interest. Will continue to pursue this property, due to its strategic location and significant resource values, with the goal to get it under some type of protected status.

Don Davis: Working with Bruce Lund, met with Don Davis in April 2000 to discuss conservation options for his property. Conservation easements and management agreements were both addressed. Davis indicated that he would be willing to consult with TNC on management actions, but he was not ready as of June 2001 to enter into a formal agreement. Will continue to pursue.

Nevada Power Co. Perkins Ranch: In February 2000, began dialogue with Nevada Power lands staff about a possible TNC purchase of the Perkins Ranch. In March 2000, prepared purchase agreement with the help of TNC legal staff and negotiated with Nevada Power through May 2000 on the language and terms. Purchase price was to be determined by an appraisal. In subsequent negotiations we were unable to reach an agreement on a purchase price. By the end of June 2000 due to circumstances surrounding the potential SPPC-NPC merger, the property was reported to be off the market. Will continue to pursue opportunities to get the Nevada Power Co. Perkins Ranch into protected status.

Shirley Perkins Ranch: In April 2001 Bruce Lund and Rob Scanland initiated dialog with S. Perkins. The project was still in process as of June 2001.

Update Upper Muddy River Site Conservation Plan: Updated Plan completed August 2000. Provided copy of the revised Plan to Clark County, USFWS, and other partners.

Update Upper Muddy River GIS information: Worked closely with the TNC staff and Clark County to update ownership and land status map of the Upper Muddy River project area.

Assisted IMC with SNPLMA nominations, water rights filings, and potential Cal Baird grazing allotment transfer.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $120,000

Contractor: Mark Trinko

Contract No.: 1999-TRINKO-1

Project No.: 1999-TRINKO-1-A

Project Description: Volunteer Coordination in Assistance of Agency Conservation Measures

Accomplishments:

1. Call, visit or meet with leadership of each of the OHV Clubs to present objectives, activities, and opportunities for OHV participation and to receive comments, suggestions, and concerns.

Early in the year this objective was accomplished. Contact was made with each club known and continued communication remained in place throughout the year via Internet, fax, and personal communication.

2. Make formal presentations at regular scheduled meetings of each of the OHV clubs.

This was completed with those clubs that would entertain a presentation. The structure of some clubs is so informal that a presentation in someone's home is not appropriate. Those larger clubs (including LVJC, VV4W, Vegas Broncos, Landcruisers, TRACON) received the information with open arms and did not present any negative comments. Individual communication with the SS4W was very regular via Dick Franta.

3. Solicit comments, suggestions, and concerns about the DCP and MSHCP from each of the OHV Clubs and present those to the IMC.

The only real feedback received from the organized clubs was that of TRACON's concern with the bearpoppy situation behind Frenchman Mountain.

4. Solicit participation in the DCP and MSHCP effort from each OHV Club to include:

    - Encouraging club leadership to attend IMC meetings
    - Encouraging attendance at special interest sub-committee meetings
    - Requesting written comments from OHV Clubs regarding DCP implementation and future plans

While the club members were encouraged to attend meetings, almost always this was impossible for them as most work day jobs. Several OHV BLM meetings were held. There was an enthusiastic response from the organized OHV community. Although written comments were requested, no club had reason to write any comments.

5. Seek volunteer effort from each of the OHV Clubs and organize activities emphasizing public participation in the DCP conservation activities including:
   a. Volunteer fence construction
   b. Volunteer OHV trail rehabilitation
   c. Volunteer clean-up

In most cases, various federal agencies requested specific ideas for a volunteer "event." One hundred percent of these requests from agencies were implemented. Fortunately, these events not only reached out to the organized OHV clubs but also attracted individual users. This resulted in a database of "Desert Friendly" people who want to help at future events. While the year started slowly, the schedule quickly resulted in about one event per month. The events involved agencies such as BLM, NPS, NDOW, etc. In each case the "scope of the event" was coordinated with a federal employee, with the implementation being coordinated by Mark Trinko. These events also served to provide excellent public relations for Clark County and the DCP. Media (from television and radio to newspapers) covered various events. Trail rehab and cleanup was the prevalent effort at events. The average attendance at events was about 30 with at least three or more clubs (OHV and others) being represented.

6. and 7. Ensure at least one event in the first six months and at least two events in the second six months are accomplished.

This milestone was far exceeded.

8. Submit to DCP Administrator a report detailing activities, accomplishments, and recommendations five and eleven months following startup.

Quarterly reports were submitted to the DCP Administrator.

Recommendations: While some of the events were outside the boundaries of DWMAs, these projects offer each agency a picture of how to integrate volunteers, along with County coordination, into desert conservation activities. Volunteers need access to water and events should not last longer than three hours since they tend to lose interest in the activity.

Financial Funding Summary:

MSHCP: $52,000

ACCOMPLISHMENTS

SPECIES INVENTORY AND MONITORING PROJECTS

These projects are focused on gathering crucial information about species and ecosystems covered in the MSHCP. Another key element of the MSHCP is to monitor these species and habitats to learn what effect disturbances, management activities, and the Plan may be having on covered species and ecosystems. Accomplishments in this work category include rare plant inventories, neo-tropical bird surveys and monitoring, wildlife damage control, desert pocket mouse studies, and tortoise adoptions.

Species inventory and monitoring projects received approximately $750,000 of the Section 10 funds allotted in the 1999-2001 biennium. The details of each project follow.

Palmer's Chipmunk (*Tamias palmeri*)

Desert Tortoise (*Gopherus agassizii*)

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-B

Project Description: Bearpoppy Seed Bank Study and Special Status Plant Inventories

Accomplishments: Unusually dry conditions in the spring of 2000 precluded surveys being conducted for several low elevation special status plant species: 1) Sticky buckwheat; 2) Three-cornered milkvetch; and 3) Beaver Dam breadroot. Surveys for the Las Vegas buckwheat (*Eriogonum corymbosum* var. *aureum)* and Las Vegas bearpoppy (*Arctomecon californica*) in the Las Vegas Valley were conducted in the fall of 2000. Favorable conditions prevailed during the 2001 field season and approximately 44,800 acres were surveyed for five special status plants. The species surveyed included three-cornered milkvetch (*Astragalus geyeri* var. *triquetrus*), sticky Buckwheat (*Eriogonum viscidulum*), Beaver Dam breadroot (*Pediomelum castoreum*), yellow two-tone penstemon (*Penstemon bicolor* ssp. *Bicolor*), and rosy two-tone penstemon *(Penstemon bicolor* spp.*Roseus*). All surveys were conducted using global positioning system technology. Results were appended into the BLM GIS rare plant database. Details of these surveys by area follow.

Moapa Area: In spring 2001, a special status plant survey was conducted in the Moapa area along the northern portion of the Bitter Spring Backcountry Byway. Approximately 23,000 acres in this area were covered. Throughout the survey there were no findings of *E. viscidulum* and a very small handful of *Pediomelum castoreum* and *Penstemon bicolor* ssp. *Roseus* were found. *Pediomelum* was clustered alongside a dirt road (T17S R56E Section 10N Center) and were in flower. Rosy two-tone penstemon was found in a small wash (T18S R65E Section 8 NW ¼) and all were in flower except one that was vegetative only.

Astragalus geyeri var. *triquetrus* was found more or less everywhere in the area surveyed. There are a few noteworthy "hot spots" to mention. These areas had populations which exceeded a few hundred plants: T17S R65E Sections 20 NE 1/4, 21 All, 16 SW ¼; T17S R65E Section 31 SE ¼; T16S R65E Sections 15 and 22 - plants extend thru the center of both sections; and finally T18S R65E Section 4. Seeds were collected from these larger population sites. This species tends to thrive in deep sands within a creosote habitat. They share this habitat with many lupines, phacelias, gilias, winterfat, some chollas and prickly pear cactus, and many other *Astragalus* species. They were in various life cycle stages and for the most part were robust. However, at a few of the sites visited some individuals appeared to be infested by a tiny insect, possibly a beetle. This was damaging to the fruit set of those plants (insect larvae lived in the seed pod and fed off the embryos). It will be interesting to revisit those sites next year to see how much the population might fluctuate.
Mormon Mesa Area: In spring 2001, *Astragalus geyeri* var. *triquetrus* was also surveyed for in the Mormon Mesa area, south of I-15. The surveyed area encompassed approximately 22,000 acres. There is substantial potential habitat for *A. geyeri triquetrus* in this area; however, only two very small populations were found. Their locations are: T14S R68E Section 5, very close to I-15 and Sections 16 and 17. No seeds were collected from these

sites since the population numbers were so low. Cows were observed in the area not far from one of the populations and are part of the Lower Mormon Mesa allotment.

Other Inventories. Inventories for *Arctomecon californica* (Las Vegas Bearpoppy) and *Eriogonum corymbosum* (Las Vegas Buckwheat) were conducted in the North Las Vegas area in the fall of 2000. Many previously recorded bearpoppy populations are now extinct. A few remaining populations of *A. californica* remain within the confines of the city limits, most of which are threatened by impending development. On BLM land adjacent to the City of North Las Vegas, few *A. californica* individuals were found near the drainage corridor for upper Las Vegas Wash north of Grand Teton Drive.

Populations of *Eriogonum corymbosum* in the North Las Vegas were documented within the city limits and are also threatened by development. *E. corymbosum*, which is often found growing in clusters, was also found throughout the "badland" topography near the drainage for the upper Las Vegas Wash. Two typical areas found to inhabit *E. corymbosum* are the tops of the rolling hill formations and shallow fissure-like drainages within the badland area.

Another inventory conducted was a bryophyte survey on both BLM and Park Service lands in the vicinity of North Shore Road north to the Valley of Fire State Park (see Attachment 1 for a full report). Dr. Lloyd Stark with UNLV documented a total of 44 new sites for Gold Butte moss (*Didymodon nevadensis*), *Crossidium seriatum*, *Trichostomum sweetii*, *Targionia* sp. nov., and *Pseudocrossidium crinitum*.

Seed Collection: Many plant species, both rare and common, were collected this season and are detailed in the following. A permit from the Nevada Division of Forestry was obtained for Critically Endangered species.

Special Status Species Collected Include: three-cornered milkvetch (*Astragalus geyeri* var. *triquetrus*), Pahrump Valley buckwheat (*Eriogonum bifurcatum*), Blue Diamond Cholla (*Opuntia whipplei* var. *multigeniculata*), rosy two-tone penstemon, yellow two-tone penstemon (*Penstemon bicolor* ssp *bicolor* and *Penstemon bicolor* ssp *roseus*), white-margined penstemon (*Penstemon albomarginatus*), small-leaf sunray (*Enceliopsis argophylla*), Las Vegas bearpoppy (*Arctomecon californicum*), Las Vegas Valley buckwheat (*Eriogonum corymbosum*), Death Valley Beardtongue (*Penstemon fruticiformis*).

Common Species Collected Include: Coyote Melon (*Cucurbita palmata*), Mojave Thistle (*Cirsium mohavense*), Salt Grass (*Distichlis spicata*), Mojave Desert Aster (*Xylorhiza tortifolia*), Desert Golden Weed (*Haplopappus acradenius*), Witchgrass (*Panicum species*), Stiff Blue-Eyed Grass (*Sisyrinchium demissum*), Singleleaf Ash (*Fraxinus anomala*), and alkali sacaton (*Sporobolus airoides*). Seed collecting took place late May thru mid to late October and timing was very important with some of the species. These species will be useful in restoration of disturbed lands.

Recommendations: *Astragalus geyeri* var. *triquetrus:* All seed collecting was done in the Moapa area and only from large populations. This was a very difficult plant to collect. Many visits were required to gauge the best collecting time for proper seed maturity. Some

collected were still green which we are hoping will ripen up in the sun. They have been placed on screens in the sunshine and monitored often. It appeared that some were able to ripen and some never did due to environmental factors. Finally by mid-May, mature seed was ready to collect. Some seed was collected off the plants directly and some seed could be collected off the ground when found. It took an extremely long time to collect a small amount of seed. Within a few days of full maturity the seeds and the plants were gone. They were so dry they just blew away. The window of opportunity for this Astragalus species was unbelievably very short (a day or two).

Eriogonum bifurcatum: Seed was collected from a dry lakebed just outside the enclosures of the Cottonwood Restoration Site. This species of buckwheat was a little difficult to distinguish from a common one in the same area. Therefore, great care was taken to insure the rare species was collected. This small annual plant has very small seeds that were hard to see in the field. A lot of chaff was included during collection and as of yet the seed has not been processed to see exactly how much pure seed was obtained. This plant had a small window of collection time also. Field observations were done a couple of times; however, we still missed the best collection times by just a few days. Seed was collected on 7/20/01.

Opuntia whipplei var. *multigeniculata:* Seed was collected for this species on Blue Diamond Hill, which is the only place it is found in Nevada. A few fruits from several plants were collected. Each fruit contained a lot of seeds - sometimes as many as 50 - with the average being about 15-20 seeds per fruit. Seed collecting was done with tongs and each fruit will be individually opened to get the seed. Mature seed was hard to determine at first. However, after a few visits to the site it was agreed that the seed would be a dark brown color. Seed was collected on 7/02/01 and could have probably lasted a few more days past that.

Financial Funding Summary:
MSCHP: $94,000 Note: This project was amended to also include 1999-BLM-1-G, Plant Inventories.

Las Vegas Bearpoppy (*Arctomecon californica*)

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-E

Project Description: Neo-tropical Avian Surveys and Monitoring

Accomplishments: In an "unspent funds" proposal approved by the IMC on May 23, 2001, BLM asked that the total request for this item be transferred to the Great Basin Bird Observatory (GBBO) for the Nevada Breeding Bird Atlas data processing. The goals of the GBBO were close to that of BLM and past information has been incorporated into their ongoing work. With this funding, GBBO will permanently archive the results of the surveys on an interactive website, including predictive models of distribution, and make information available by CD. BLM will be able to use the above product for future evaluations on day-to-day decisions. Once it is identified where the covered and watch bird species have been located as breeding, the BLM can incorporate mitigation measures to protect nests.

Recommendations: Support ongoing efforts of the Nevada Breeding Bird Atlas data input. The data format that is currently being worked on will assist agency biologists to give hard data to the decision makers when discretionary projects are reviewed. Also will help biologist prioritize with management concerns.

Financial Funding Summary:

MSHCP: $10,500

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-G

Project Description: Plant Inventories

Accomplishments: This project was incorporated into project 1999-BLM-1-B, Bearpoppy Seed bank Study and Special Status Plant Inventories.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $0

Contractor: BLM

Contract No.: 1999-BLM-1

Project No.: 1999-BLM-1-H

Project Description: Education and Interpretive Program

Accomplishments: Hired a professional artist for layout and artwork for a Piute/Eldorado ACEC and DWMA brochure. Incorporated map of designated roads into brochure that had been routed to the PIE Committee several years ago. BLM staff worked on incorporating comments from PIE Committee on the latest draft brochure and added more specific and positive information. The brochure was completed in 2002.

Recommendations: This will be the prototype for future brochures to be made for Coyote Springs, Mormon Mesa, and Gold Butte. We hope to incorporate special plants, animals, and features unique to each area.

Financial Funding Summary:

MSHCP: $3,750

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-B

Project Description: Multiple Species Management (Amphibians)

Accomplishments: Frog populations at Blue Point, Rogers, and Corral Springs were monitored weekly, with longer intervals when necessary for habitat recovery. Springs were checked for number and location of adults, juveniles, metamorphs, and eggs. Once per month, adults were captured to collect weight and length data. Toe clips were provided to UNLV during spring/summer 1998 for DNA analysis. Population estimates for the *Rana onca* populations within the Blue Point drainage are approximately 100 individuals, and approximately 50 within the Rogers spring drainage. No frogs were observed at Corral Spring from 7/1/97 – 6/30/99.

During fall 1997 and spring 1998, call-monitoring experiments from the previous season were continued. It was determined that call monitoring, an effective census technique for many amphibian species, does not provide accurate results for *Rana onca*.

Potential habitat was mapped at Scirpus Spring. No frogs were observed at Scirpus Spring between 7/1/97 – 6/30/99. There may not be enough water volume or pooling to support leopard frogs at Scirpus Spring.

Suitable habitat is being mapped using GPS and data is being entered into GIS. Initial mapping of channel lengths and pool widths was completed at Blue Point, and will continue to be updated. Vegetation category mapping was experimented with as well. Mapping was done using CMT GPS units, with parameters set to obtain submeter accuracy.

Specific hydrological and vegetative habitat data were also collected. Water depth, distance to main course, distance to dry edge, and shortest distance to cover were recorded at each location. Vegetation species and heights were randomly sampled within a square meter of each frog observation. Key pools were photographed to record vegetation changes.

Additional springs at Lake Mead NRA were surveyed at various times of the year to determine the distribution of amphibian populations. Between 7/1/97 – 6/30/99, all springs along the base of the Muddy Mountains and all larger springs in the outlying bajada were surveyed. Springs with reliable water and/or potentially suitable habitat, including Valley of Fire Wash Upper, Valley of Fire Wash Lower, Gnatcatcher, and several unnamed springs, were surveyed monthly or quarterly. Sugarloaf Spring was surveyed for frogs and toads in 9/97, with a concentrated effort 4/98 – 6/98 and continued quarterly surveys. Boyscout Canyon was also surveyed 4/98 – 6/98, with continued surveys when possible. Other Black Canyon springs surveyed include Bighorn and Salt Cedar Spring.

Ephemeral, rain-formed pools were surveyed when available for the presence of toads. Despite substantial rainfall at times and relatively large pools in some locations, pools dried rapidly (lasting a maximum of 3 days) and no amphibians were found using the pools. The toads seem to prefer spring-fed pools, some of which do not contain surface water during the summer months.

To conserve populations, toad tadpoles were collected for identification only when it was not possible to identify them in the field.

Mitigation measures and/or management actions

Fence maintenance was performed at Corral Spring in 1998. Beginning approximately 1/98, there was a reduction in burro impacts at unfenced springs, including Rogers and Blue Point. This trend began reversing in late spring 1999.

No non-native frogs were found in the springs. Tropical aquarium fish, including gambusia, mollies, and cichlids, remain prevalent in Rogers and Blue Point spring. Pilot projects during 1998 demonstrated that dip-netting and minnow traps may not be feasible long-term solutions for removing fish. Turtle trapping, to remove non-native soft-shell turtles from Rogers Spring, was attempted in fall 1997 and spring 1998.

At Rogers Spring, algae mats dislodged by visitors were removed as needed (approximately weekly) from the main pool outflow. Dislodged algae mats are not a natural phenomenon in the springs and adversely affect frog habitat below the outflow. It was also necessary to constantly remove plastic bags, cans, etc from the outflow for the same reason.

Natural channeling and streambed collapses, and subsequent habitat changes, were documented throughout 7/1/97 – 6/30/99. The most substantial change occurred in the Blue Point drainage, where a series of collapses and rechanneling occurred near a principal frog pool. Collapses occurred in intervals, allowing partial habitat recovery in each section before the next portion collapsed. Unauthorized damming near the source of Rogers Spring accelerated during 1999. Although relatively small-scale, rock dams built by visitors substantially rerouted and changed water flow. These dams were removed regularly to protect frog habitat.

Appropriate potential locations for artificial dams, to increase pooling and *Rana onca* habitat, were identified at both Rogers and Blue Point springs. Suitable damming materials, which will not degrade in the warm mineralized water and which would be relatively simple to install and remove, were identified.

Recommendations: All existing programs are producing intended results of improved management through increased funding. Having a dedicated law enforcement position fully funded through the County HCP program obviously increases the ability of the National Park Service to live up to it's commitment to provide a high level of protection for the lands in the Desert Wildlife Management Area within the Lake Mead National Recreation Area. With approximately 180,000 acres to patrol in a very popular recreation area, this funding still

provides what should be considered to be an absolute minimum level of effort and commitment from the MSHCP program to mitigate the impacts of urban growth on tortoise habitat in the County.

Multiple species management and monitoring efforts should continue to be funded with some long-term commitment from the MSHCP program to existing programs. Ecological trends tend to occur slowly and are almost imperceptible unless measurements and systematic observations are recorded and periodically analyzed. The species, which are being monitored at Lake Mead, have been carefully selected through numerous meetings and discussions with biologists, land managers and special interest groups as those most likely to cause political and economic problems for the county in the future. A commitment should be made to maintain a relatively constant level of funding throughout the life of the permit to manage these species in the long-term. Funding should also be added to monitor bird populations, since many neotropical species have shown dramatic declines in recent years. Any number of these birds could prove to be the next species to cause economic problems in the future.

The basic premise behind the Clark County HCP and the Section 10 permit issued by the U.S. Fish and Wildlife service is to mitigate losses of habitat in Clark County by augmenting agency budgets to improve management on lands that have been identified for conservation purposes. The land management agencies, which made commitments of substantial quantities of land to be managed under special conditions set forth in the permit, should be able to count on some level of MSHCP baseline funding in order to insure a higher level of management. The process should be streamlined for efficiency to minimize agency biologists' time in meetings and maximize time in field efforts.

Financial Funding Summary:

MSHCP: $15,000

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-C

Project Description: Multiple Species Management (Bats)

Accomplishments: Bat surveys were conducted in May and June of 1997 and 1999, at two previously installed bat gate sites, the Dupont Mine and the Reid Tunnel. Bat populations have increased at both sites, with a substantial increase at the Reid Tunnel. These two sites contained the only known wintering populations of California leafnosed bat (Macrotus) in the state of Nevada. During the 1999 surveys, we discovered three additional populations of Macrotus at mine sites within the state of Nevada, at Lake Mead NRA. Bat gates were installed at two of the three new sites, with current plans to gate the third site. Another rare species in Nevada, the Townsend's big-eared bat, was discovered in a mine adit near the Dupont complex. Park Biologist Bryan Moore attended a weeklong training on design, fabrication and installation of bat gates, sponsored by the Forest Service. Lake Mead NRA bat gates meet the American Cave Association, zero airflow restriction specifications and follow the designs from Roy Powers.

We have purchased needed equipment to conduct thorough bat surveys and population monitoring. We have recorded and analyzed many echolocation calls, and entered them into a database. Bat houses have been installed at five locations around the Recreation Area, and plans are in the works to install five more. Mist netting surveys were conducted at two locations on Lake Mead and two sites on Lake Mohave.

Recommendations: All existing programs are producing intended results of improved management through increased funding. Having a dedicated law enforcement position fully funded through the County HCP program obviously increases the ability of the National Park Service to live up to it's commitment to provide a high level of protection for the lands in the Desert Wildlife Management Area within the Lake Mead National Recreation Area. With approximately 180,000 acres to patrol in a very popular recreation area, this funding still provides what should be considered to be an absolute minimum level of effort and commitment from the MSHCP program to mitigate the impacts of urban growth on tortoise habitat in the County.

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Financial Funding Summary:

MSHCP: $16,800

Pale Townsend's Big-Eared Bat (*Corynorhinus townsendii pallescens*)

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-D

Project Description: Multiple Species Management (Birds)

Accomplishments: In the year 2000, the banding station was operated nine days throughout the breeding season, beginning in mid-May and continuing through early August. All birds captured were identified, banded, aged, and sexed according to protocols developed by the Institute for Bird Populations as part of the Monitoring Avian Productivity and Survivorship (MAPS) program. There were 395 birds captured, including some species not normally found in southern Nevada. The recapture rate was 15 percent, a suitable level for this study. In 2001, the same protocols were followed. There were 192 birds captured, and the recapture rate climbed to 18 percent. Data from all years on each bird's age, sex, breeding status, and date, time, and location of capture have been incorporated into a database. This database is being used by Park biologists to evaluate trends in populations of neotropical migrants and has been sent to the Institute for Bird Populations where it will be used to detect changes in avian productivity and survivorship at the regional level.

Recommendations: All existing programs are producing intended results of improved management through increased funding. Having a dedicated law enforcement position fully funded through the County HCP program obviously increases the ability of the National Park Service to live up to it's commitment to provide a high level of protection for the lands in the Desert Wildlife Management Area within the Lake Mead National Recreation Area. With approximately 180,000 acres to patrol in a very popular recreation area, this funding still provides what should be considered to be an absolute minimum level of effort and commitment from the MSHCP program to mitigate the impacts of urban growth on tortoise habitat in the County.

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purposes. The land management agencies, which made commitments of substantial quantities of land to be managed under special conditions set forth in the permit, should be able to count on some level of MSHCP baseline funding in order to insure a higher level of management. The process should be streamlined for efficiency to minimize agency biologists' time in meetings and maximize time in field efforts.

Financial Funding Summary:

MSHCP: $78,800

Contractor: NPS

Contract No.: 1999-NPSLM-1

Project No.: 1999-NPSLM-1-F

Project Description: Rare Plant Inventory and Monitoring

Accomplishments: The objective during this biennium was to inventory special status plant populations at Lake Mead NRA, identify threats to those populations and make management recommendations for their protection. This work was conducted on a contract basis and is complete. NPS supplied Clark County with final reports on these projects. Clark County has apparently misplaced these documents. The principal investigator on this project is on extended leave, but Clark County will work with NPS to obtain additional copies of these final reports for our files.

Recommendations: See recommendations under project nos. 1999-NPSLM-1-D and 1999-NPSLM-1-G.

Financial Funding Summary:

MSHCP: $136,500

Contractor: USDA-ADC

Contract No.: 1999-USDAA-1

Project No.: 1999-USDAA-1-A

Project Description: Wildlife Damage Control

Accomplishments: Projects administered and presented in this report address wildlife damage management applied for the protection of identified threatened and/or endangered (T&E) species in Clark County as listed in the MSHCP. These species include: desert tortoise *(Gopherus agassizii)*, southwestern willow flycatcher *(Empidonax trailii estimus)*, and Palmer's chipmunk *(Tamias palmeri)*. Wildlife damage management techniques were applied to species recognized as representing the greatest potential threat to the listed T & E species; these species include: common raven *(Corvus corax)*, brown-headed cowbird *(Molothrus ater)*, and feral dogs/cats, respectively. This report reflects management techniques applied to these potentially damaging species.

Although this report was compiled to be complete in context, it is not all-inclusive. The intended purpose of this document is to report on the projects assigned and the total amount of hours performed for the MSHCP for the benefit of the IMC.

Control Projects by Species: Raven control work has been done on three sites, which includes two landfill sites and one private property site located within Clark County. Feral animal (cat and dog) wildlife damage management activities indicate that the majority of animals removed were from the Mt. Charleston Inn property area. The brown-headed cowbird (BHCO) project was recently completed for the 2001 season. The preliminary evidence appears to provide strong baseline data supporting the hypothesis that a potential threat of nest parasitism by a localized cowbird population exists along the Muddy River.

Information on Activities: The number of new activities, as well as the number of ongoing activities, includes the number of direct control work contacts and technical assistance contacts. Activities specific to CCMSHCP projects are as follows:

New activities – 10
Ongoing activities – 10
Direct control contacts – 50
Technical assistance activities – 4

Species Handled: Species handled as a direct result of ongoing MSHCP projects or resulting from health and safety issues include: brown-headed cowbird *(Molothrus ater)*, common raven *(Corvus corax)*, coyote *(Canis latrans)*, raccoon *(Procyon lotor)*, grey fox *(Urocyon cinereoagenteus)*, kit fox *(Vulpes macrotis)*, waterfowl spp., feral dog, and feral cat.

Resources Protected. Resources that have been protected through control projects or by intervention include: southwestern willow flycatcher *(Empidonax traillii estimus)*, Palmer's chipmunk *(Tamias palmeri)*, desert tortoise *(Gopherus agassizii)*, pets, and human health and safety.

Interagency cooperation for all projects administered by NADCP for the MSHCP has been excellent with support assistance provided by USFWS, USFS, NDOW, BLM, TNC, OHV interests, various animal control agencies, etc. As a result, NADCP has been able to provide an effective wildlife damage management program in Clark County through this fiscal year. This wildlife damage management "program" has not only benefited the resources identified by the MSHCP more efficiently, but also has allowed NADCP to provide quality wildlife damage management for Clark County.

Recommendations: The ADC Program staff recommends the continuation of a wildlife control program in Clark County.

Financial Funding Summary:

MSHCP: $57,350

Contractor: USFS

Contract No.: 1999-USFS-1

Project No.: 1999-USFS-1-E

Project Description: Native Seed Collection

Accomplishments: Initial seed collection was conducted using Forest Service funds; however, no MSHCP funds were used and the project was not completed. The USFS returned $10,000 to Clark County in November 2002.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $10,000

Contractor: NDF

Contract No.: 1999-NDF-1

Project No.: 1999-NDF-1-B

Project Description: Protection and Propagation of Selected Species

Accomplishments: This contract was to pay for the salary and benefits of a Forester II position in order to help prepare and implement a "master permit" for state-listed endangered plants.

Clark County and NDF were not able to enter into an agreement for this position until October 2002. Therefore, this project was not accomplished and NDF was not paid. NDF anticipates filling this position by March 2003.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $115, 260

Contractor: NDOW

Contract No.: 1999-NDOW-1

Project No.: 1999-NDOW-1-A

Project Description: Chuckwalla

Accomplishments: NDOW subcontracted this investigation to Utah State University (USU). The fieldwork has been completed and a preliminary report has been prepared and forwarded to NDOW. NDOW was not satisfied with the quality of the report prepared by USU. Brad Hardenbrook is continuing to work with USU to finalize the report. NDOW returned $12,000 to Clark County since they failed to meet the contractual deadline and have failed to supply a final report as of November 2002.

Brad Hardenbrook has suggested he and the investigators from USU present the findings and the preliminary report to the IMC in January or February 2003. Clark County will continue to work with Brad Hardenbrook to ensure that the final report is prepared and presented to the IMC.

Recommendations: No recommendations available

Financial Funding Summary:

MSHCP: $24,000

Western Chuckwalla (*Sauromalus obesus*)

Contractor: NDOW

Contract No.: 1999-NDOW-1

Project No.: 1999-NDOW-1-B

Project Description: Surveys: Gilbert Skink, Banded Gecko, Night Lizard

Accomplishments: These surveys were not conducted and NDOW was not paid.

Recommendations: Not applicable

Financial Funding Summary:

MSHCP: $34,566

Contractor: UNLV

Contract No.: 1999-UNLVGS-1

Project No.: 1999-UNLVGS-1-A

Project Description: Distribution & Status of Migrant Birds

Accomplishments:

Muddy River Restoration Efforts and Avifauna Use

Year 2000
Surveys conducted at the MRREIAC restoration and control sites in 2000 began on May 17 and continued through July 20. The restoration site surveys were conducted from May 17 to July 18. Thirty-one bird species, equaling a total of 541 individuals were observed at the restoration site (Table 1). An average of 54.1 individuals and 15.7 species were observed during each survey. The most common species observed and the average number of individuals sighted per survey (in parentheses), were Abert's Towhee (*Pipilo aberti*) (10.5), Verdin (*Auriparus flaviceps*) (9.3), Song Sparrow (*Melospiza melodia*) (5.0), Black Phoebe (*Sayornis nigricans*) (4.8), Cliff Swallow (*Hirundo pyrrhonota*) (4.6) and Brown-headed Cowbird (4.3). During the surveys, breeding behavior and/or fledglings was observed for 12 species. Breeding behavior was established by observation of nesting activity (carrying nesting material, nests with eggs, parental care of young, etc.) or recently fledged young. Black Phoebe and Verdin nests were discovered on the restoration site. Nesting behavior and fledglings were observed for Western Kingbird (*Tyrannus verticalis*). Fledglings of 10 other species were also sighted: Abert's Towhee, American Kestral (*Falco sparverius*), Black Phoebe, Blue Grosbeak (*Guiraca caerulea*), Gambel's Quail (*Callipepla gambelii*), Mourning Dove (*Zenaida macroura*), Ring-necked Pheasant (*Phasianus colchicus)*, Song Sparrow, Verdin, and Western Meadowlark (*Sturnella neglecta*).

Another eleven species were sited on the restoration site but were not included in the point count survey data. Included are Canada Goose (*Branta Canadensis)*, Black-necked Stilt (*Himantopus mexicanus)*, Killdeer (*Charadrius vociferous)*, Lesser Nighthawk (*Chordeiles acutipennis*), Pidgeon (*Columba)*, Ring-billed Gull (*Larus delawarensis)*, Say's Phoebe (*Sayornis saya*) and White-faced Ibis (*Plegadis chihi)*. Hooded Oriole (*Icterus cucullatus*), American Coot (*Fulica Americana*), and Black-crowned Night-Heron (*Nycticorax nycticorax*),

Surveys conducted at the control site during 2000 began on May 18 and continued through July 20. A total of 740 individuals from 26 bird species, were observed during point count surveys at the control site (Table 2). An average of 74.0 individuals and 16.0 species were observed during each survey. The most common species and average number of individuals counted (in parentheses) per survey, were Abert's Towhee (11.9), Bewick's wren (*Thyromanes bewickii*) (11.1), Brown-headed Cowbird (8.5), Verdin (5.9) Cliff Swallow (5.5) and Yellow-breasted Chat (*Icteria virens*) (11.9).

During surveys and at other times of observation seventeen of the species recorded in the point count surveys on the control site showed indications of breeding. Fledglings were seen for the following species: Bewick's wren, Mallard (*Anas platyrhunchos*), Gambel's Quail, Black Phoebe, Verdin, Abert's Towhee, Blue-gray Gnatcatcher (*Polioptila caerulea*), Brown-headed Cowbird, Blue Grosbeak, Lucy's Warbler (*Vermivora luciae*), Black-tailed Gnatcatcher (*Polioptila melanura*) and Red-tailed Hawk (*Buteo jamaicensis*). Nests were found for several species including Yellow-breasted Chat, Mourning Dove, Cliff Swallow, Verdin and Black Phoebe.

An additional 20 species were observed at the control site but not during point count surveys. Some individuals of these species indicated breeding behavior by presence of fledglings or nests. Three species were observed with fledglings including Ring-necked Pheasant (*Phasianus colchicus)*, Common Yellowthroat (*Geothlypis trichas)* and Phainopepla (*Phainopepla nitens*). Nests with offspring were found for four species including Crissal Thrasher (*Toxostoma crissale*), Hooded Oriole (*Icterus cucullatus*), Brown-crested Flycatcher (*Myarchius tyrrannulus)* and Barn Owl (*Tyto alba)*. Other species seen on the control site include American Coot (Fulica Americana), Black-crowned Night-Heron (*Nycticorax nycticorax*), Canyon Wren (*Catherpes mexicanus*), Common Raven (*Corvus corvax*), Great Blue Heron (*Ardea herodius*), Lesser Nighthawk (*Chordeiles acutipennis*), Northern Mockingbird (Mimus polyglottus), Northern Rough-winged Swallow (*Stelgidopterix serripennis*), Say's Phoebe (*Sayornis saya*), Spotted Sandpiper (*Actitus macularia*), Turkey Vulture (*Cathartes aura)*, Western Kingbird (*Tyrannus verticalis*) and White-throated Swift (*Aeronatis saxatalis*).

During the 2000 season for both transects was 42 species with a range of 10 to 18 species per transect per visit for all species (Table 3). The number of individual birds detected across transects varied from 36 to 92 individuals per transect for each visit. Each site had a slightly different suite of the most common species with some overlap of species between sites. The Abert's towhee was the most common species found at both sites. The verdin was the next most common species found at the restoration site, however the Bewick's wren and brown-headed cowbird were seen more frequently than the verdin at the control site. There were no Bewick's wren seen at the restoration site. Figure 1 compares the abundance of 9 species sited frequently at both sites. Other species observed frequently at the control site but not at the restoration site include yellow-breasted chat, Lucy's warbler, and blue-grey gnatcatcher. Birds frequently seen at the control site but not at all on the restoration site include western meadowlark and ringed-neck pheasant.

2000 Breeding Season Vermilion Flycatcher Nest Search Surveys

A total of 34 vermilion flycatcher (VEFL) broods were located in the Warm Springs Ranch study area along the Muddy River (Table 4). The broods were determined from 18 different breeding pairs of vermillion flycatchers, some pairs having one known brood and some pairs with several broods. Of those broods, 76.5% were successful (26 of 34 broods). Brown-headed cowbird (BHCO) parasitism occurred in 32.4% (11 of 34) of the broods, however, only 23.6% (8 of 34 broods) resulted in total loss of VEFL brood. Three of the 11 parasitized broods yielded 4 VEFL fledges. Of the successful broods 88.5% fledged VEFL (23 of 26 broods) and 19.2% fledged BHCO (5 of 26 broods). Two of those broods included both VEFL and BHCO fledges. Forty-six VEFL were fledged from the successful broods for an average of 1.8 fledglings per successful brood. Only five VEFL nesting pairs produced a brown-headed cowbird fledgling. Two of those pairs also produced one VEFL fledgling at the same time. One parasitized brood produced 2 VEFL and no BHCO fledglings.

Nest substrate for all 19 of the nests was documented. VEFL nested 100% of the time in native trees including 78.9% in honey mesquite *(Prosopis glandulosa*) (15 of 19 nests), 10.5% in Ash (2 0f 19 nests) and 10.5% in Fremont cottonwood (*Populus fremontii*) (2 0f 19 nests). Nest height in mesquite varied from 167cm to 655 cm and the nests in the tall cottonwoods and ash were all over 10 m high.

Reconnaissance Surveys of Vermilion Flycatcher in Northern Clark County.

One vermilion flycatcher pair was sited in the Bunkerville Park, this pair produced three broods resulting in 5 offspring. The park is a large grassy area surrounded by large ash, cottonwoods and mulberry trees. The VEFL pair nested (the only nest found outside of Warm Springs) in one of the mulberry trees. There are pastures and agricultural fields bordering the park. Two other VEFL pairs were sighted in private yards near the park. The private yards near the park are also bordering the agricultural fields. There is no apparent source of running water nearby, however the park is watered daily by a sprinkling system. Logandale, a rural residential area was also surveyed. VEFLs were seen in open field areas with large trees located along a several foot wide flowing irrigation ditch. Two VEFL males were observed along the irrigation ditch near the Logandale post office. Both engaged in territorial displays. One male was associated with a juvenile male. No breeding females were observed. In Mesquite, one male was observed for a brief 2-3 week period in the spring near the recreation center at the north end of the town. The area is a grass-covered park with large trees and is located near a stream. One adult male was observed engaging in territorial displays in the park located in the center of town of Blue Diamond. No female or offspring were seen. The park is an open grassy area filled with numerous large trees. The park is immediately surrounded by housing and there is no apparent open water in the immediate vicinity.

2001 Breeding Season Vermilion Flycatcher Nest Search Surveys

Surveys for breeding success and Brown-headed Cowbird parasitism of vermilion flycatcher (VEFL) continued during the 2001 breeding season a total of 85 (VEFL) broods were located in the study area investigated along the Muddy River at Warm Springs Nevada. The broods were determined from 39 different breeding pairs of vermilion flycatchers some pairs having one known brood and some pairs with several broods. Of those broods, 69.4% were successful (59 of 85 broods). Brown-headed cowbird (BHCO) parasitism occurred in 21.2% (18 of 85) of the broods, however, only 14.1% (12 of 85 broods) resulted in total loss of VEFL brood. Five of the 18 parasitized broods yielded 9 VEFL fledges. Of the successful broods 86.4% fledged VEFL (51 of 59 broods) and 13.6% fledged BHCO (8 of 59 broods). One hundred thirty four VEFL were fledged from the successful broods for an average of 2.3 fledglings per successful brood. Only eight VEFL nesting pairs produced a brown-headed cowbird fledgling. Two of those pairs also produced one VEFL fledgling at the same time. Five parasitized broods produced a total of 9 VEFL with no BHCO fledge.

There were 46 broods associated with 35 viewable nests from 25 established territories. The unsuccessful nestings (16 of 46 nests) consisted of 34.7% of the nests. Depredated nests consisted of 13.0% nests (6 of 46 nests) where the nest contents were gone and there was damage to the nest structure. Nests that were abandoned with VEFL eggs remaining and no adults tending (2 of 46) consisted of 4.3% of the nests. Brown-headed cowbird parasitism occurred with 23.9% (11 of 46 nests) of the nestings however, only 17.4% of the parasitized nests (8 of 46) caused total loss of VEFL brood since 3 of the parasitized nests yielded 1, 2, or 3 VEFL offspring.

Other areas around northern Clark County were surveyed but yielded no sightings of vermilion flycatchers. These were Corn Creek, selected rural areas of Overton, Nevada Department of Wildlife Management Area at Overton (OMA), the Las Vegas Wash in Henderson and several Las Vegas golf courses including Craig Ranch, Las Vegas Country Club and Las Vegas Golf Club.

Other Neotropical Migrant Species

Assessment of yellow-billed cuckoo (*Coccyzys americanus*), summer tanager (*Piranga rubra*), phainopepla, and blue grosbeak geographic distribution included recording observations on singing males, pairs and any nesting events. At both the MRRIEAC control and experimental survey sites there were sightings of blue grosbeak and phainopepla. Yellow-billed cuckoo and summer tanager were sighted at the Warm Springs survey area. A pair of summer tanagers was also sighted in the park located in the center of Blue Diamond.

Observation of species impacted by brown-headed cowbird brood parasitism included Lucy's warbler, yellow-breasted chat and Abert's Towhee.

Recommendations:

1. This project has been funded to continue through June 2001.We recommend continuation of the surveys to expand information, including nesting status, on

neotropical migratory bird species on the Virgin and Muddy Rivers as well as other riparian areas within Clark County.

2. The recently planted vegetation (cottonwoods and coyote willow) on the MRRIEAC restoration site does not appear to be growing very quickly. To encourage establishment of several of the species of concern for Clark county, rapid establishment of large trees is beneficial. Planting of several larger (3-5cm diameter) cottonwoods or Gooding willow along the restored site may help attract certain target species to the location. The larger trees may establish deeper roots more quickly and therefore establish strong root expansion above the water table along the river.
3. Along the MRRIEAC control site there is and area adjacent to the river that has high ground water. If the tamarisk were removed, the site could be established as a wetland in just a few years. There are small sections of cattails, and other marsh vegetation as well as numerous large mesquite. The wetlands combined with the sheer rock cliff to the east, and the well established mesquite grove to the north would present a diverse desert habitat that could attract a variety of avian species.

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Financial Funding Summary:

MSHCP: $40,000

Contractor: UNLV

Contract No.: 1999-UNLVGS-1

Project No.: 1999-UNLVGS-1-B

Project Description: Desert Tortoise Survivorship

Accomplishments: Adult tortoise (*Gopherus agassizii*) survival rates were studied at two closely situated, but physiographically different, sites in the Lake Mead National Recreation Area, Nevada, over a nine-year period (spring 1992 - spring 2001). Survival rates were initially derived from demographic surveys conducted over a 3-year period and by radio-telemetry monitoring over a 7-year period beginning in 1994. After a period of initial stability, survival rates on the two sites diverged over the study period, and 7-year survival rates estimated from radio-telemetry monitoring were 0.900 and 0.269, respectively. A die-off in 1996 on the latter site appears to have been triggered by a period of drought, which began in the summer of 1995, coupled with a failure of annual vegetation production in 1996. Depressed survival rates on this site were associated with drought conditions lasting 3 of 4 years. Although the decline had the appearance of an epizootic, there were no clinical signs of disease. Relatively short-term drought, combined with little or no annual biomass, appears to have caused severe reductions in tortoise survival. If periods of drought-induced low survival are common over relatively small areas, then source-sink population dynamics may be an important factor determining tortoise population densities.

The final report is forthcoming. It is anticipated the final report will be submitted to Clark County in December 2002. Clark County will continue to work with Kathy Longshore at UNLV to ensure that the final report is prepared and submitted to the IMC.

Recommendations: Forthcoming

Financial Funding Summary:

MSHCP: $48,300

Desert Tortoise (*Gopherus agassizii*)

Contractor: UNLV

Contract No.: 1999-UNLVGS-1

Project No.: 1999-UNLVGS-1-C

Project Description: Palmer's Chipmunk Study

Accomplishments: Part one of this study focused on the preparation of a monitoring protocol for Palmer's Chipmunk. A draft of the monitoring protocol has been prepared and is currently being edited by Chris Lowery, UNLV Graduate Student and M.S. candidate in Biology and Dr. Brett Riddle, Associate Professor, UNLV Biological Sciences. Part two of this study is focused on determining habitat attributes for Palmer's Chipmunk. This report is also being prepared by Chris Lowery and Dr. Brett Riddle and is scheduled for completion by November 2002. Part three of this study focuses on establishing the Palmer's Chipmunk's geographic genetic architecture and taxonomic status. Dr. Riddle has obtained DNA sequence data from all except the last three to four necessary individuals of chipmunks sampled throughout the Great Basin, Wasatch, and White Mountains.

The preliminary analysis has been completed and a final report is scheduled for completion by December 2002. Clark County will continue to work with Dr. Brett Riddle and Chris Lowery to ensure that this final report is completed and submitted to the IMC.

Recommendations: Forthcoming

Financial Funding Summary:

MSHCP: $53,246

Contractor: Las Vegas Valley Water District

Contract No.: 1999-LVVWD-1

Project No.: 1999-LVVWD-1-A

Project Description: Desert Pocket Mouse

Accomplishments: The LVVWD used part of the funds awarded to pay for two graduate students to conduct research on the desert pocket mouse. The LVVWD was not able to fully complete the work during the 1999-2001 biennium and formally requested and received a one-year extension to complete the work and submit a final report. The life history and population ecology of the species on the LVVWD's North Well Field is completed and the report follows. The other part of the project has been expanded to include analysis of samples from four other subspecies across the southwest. This will help evaluate the relative importance of the desert pocket mouse as a unique taxa. To date, samples from all locations (except Death Valley and the southern edge of the Salton Sea) have been collected and processed. A good understanding of the distribution has been achieved. A final report will be presented to the IMC at the time of completion. Clark County will continue to work with Dr. Brett Riddle to ensure that the final report is prepared and submitted to the IMC.

The following was taken from "The Population Ecology and Demography of the Desert Pocket Mouse, *Chaetodipus penicillastus sobrinus*, in the Las Vegas Valley" by Kerstan Micone and Dr. Brett Riddle.

The goal for the two-year mark-recapture study was to monitor the population of *C. p. sobrinus* on the Preserve in order to acquire baseline data on the population ecology and demography of this subspecies. The baseline data will allow informed management prescriptions to be made for other extant populations, and more importantly, to better understand how to manage the small isolated population that is found on the Las Vegas Valley's North Well Field, currently under development as the Las Vegas Springs Preserve (Preserve).

Several objectives were defined early in the study in order to collect data that would be beneficial for management purposes. The first objective was to gather population demographic information, including estimates of survival, emigration, immigration, sex ratio, and abundance over a two-year period of time. The second objective was to assess movement patterns of *C. p. sobrinus* across the Preserve. The final objective was to determine if *C. p. sobrinus* at the Preserve study site selected microhabitat based on a set of pre-selected environmental parameters. Microhabitat selection will assist with defining criteria for recognizing critical habitat components for this subspecies. Microhabitat

selection was studied over a one-year time frame. Environmental variables found to contribute to presence or absence of *C. p. sobrinus* at this study location can be used as a baseline model in future studies of other extant populations.

Population Demographics. -- A total of 28,000 trap nights were successfully completed and roughly 384 individual C. p. sobrinus were marked over the two-year period of time. The frequency of capture within this population was highly skewed, with the majority of the individuals captured only once. Recapture frequencies between the sexes were not significantly different ($x^2 = 0.022$, df = 1, $P > 0.05$) and recapture frequency also did not vary among habitat types, thus trapping efficiency did not appear to vary within different habitat types (Gp = 13.94, df = 2, $P > 0.05$) or between sexes.

Sexual size dimorphism was observed within this population. Median weight (g) of non-breeding males was significantly larger when compared to females (W = 113359.5, n = 376, n = 304, P = 0.000). The average non-breeding adult male weighed 20 g, whereas females tended to weigh slightly less than 19 g on average.

The maximum life spans that were observed in C. p. sobrinus were 14 months for two male adults and 16 months for one female adult. The frequency of males and females to survive from one year to the next was not significantly different ($x^2 = 0.23$, df = 2, $P>0.05$). When juveniles and subadults of the opposite sex were compared there was also no significant difference observed between the frequency of male and female captured from one year to the next ($x^2 = 1.76$, df = 2, $P>0.05$).

Chaetodipus p. sobrinus seasonal activity was correlated with average minimum ambient temperatures (r = 0.44, n = 25, $P<0.05$). During both years there was a large decline in activity that occurred during the winter months (approximately December to February). Several individuals found in traps during the month of November 1999 (1st year of the survey) died due to exposure to low temperatures. The average ambient temperature at night was 9 C° during the November 1999 trapping session. Critical minimum temperature for C. penicillatus has previously been documented between 13 – 15 C° (Grubbs 1974). The mortality that was observed during this month suggests that C. p. sobrinus at the Preserve site may have similar lower critical temperature thresholds.

Sex ratios in C. p. sobrinus were typically 1:1, except during the early spring months both survey years. Sex ratio during the early springtime favored males. During the first year this occurred during April and March and the second year this occurred over a longer period of time from February to March.

The reproductive season began between March and May both years with the presence of scrotal males in the population. Males were reproductive from May to October. Pregnant females were encountered as early as June and documented until September. Lactating females and the presence of subadults and juveniles peaked during July and August, although a few young were present in the population as early as June.

Abundance Year One. -- C. p. sobrinus abundance peaked between July and October. Peak abundance coincided with production of new seed crops throughout the Preserve and with the recruitment of new individuals into the population. Abundance decreased during the colder months (December – March). Abundance Year Two. -- Abundance during the second year was estimated each month, making possible a more robust assessment of differences in abundance between different habitat types. During most periods of activity abundance estimates averaged 5 – 15 individuals per hectare. The second year also showed peak numbers during the breeding season (May – November) and was followed by a sharp decrease in numbers during the winter months (January – February). There was a slight increase in abundance during the month of March preceding the onset of the breeding season, which corresponded as well with an increase of male mobility and mate finding.

Abundance varied between habitat types ($F = 3.96$, $df = 2$, $P = 0.029$). Habitat two had significantly higher numbers when compared to habitat one over a one-year period of time ($F = 3.96$, $df = 2$, $P = 0.029$). Habitat two also had slightly higher mean abundance estimates when compared to habitat three, but the difference was not significant. There were no significant differences between habitats one and three. The highest abundance occurred in habitat two and was about 24 individuals per hectare (95% CI 14.45 – 41.1).

Dilution rate (emigration/immigration) was also tracked during the second survey year. Habitats varied throughout the year, but overall there was not a significant difference observed between habitat types ($F\ 3, 33 = 0.32$, $P = 0.726$). All habitats had the highest additions to the population from July to October. This occurs during the breeding season and is most likely due to new recruitment into the area. However, all habitats also exhibited partial increases during the early spring (February-March). During this month most captures are males and this may be due to males moving larger distances (expanding home range) due to the breeding season onset. Lastly, during late fall and winter months (October – December) there is a loss of individuals from each habitat that may be due to young dispersing out of the area or due to high mortality rates during the winter months.

The definition of survival in this study means staying alive and remaining on the study area. The Jolly – Seber estimate corrects for accidental deaths and removals, however it is not able to distinguish between mortality and emigration. The probability of survival was not significantly different depending on habitat type ($F\ 3, 24 = 3.04$, $P = 0.067$), although habitat one did have a smaller probability of survival (0.4136) compared to habitats two (0.697) and three (0.691).

Frequency of home range size (ha) was highly skewed to the right. The mean home range was 0.0625 ha and the median home range was 0.0314 ha. Home range area ranged from 0.0019 ha to 0.446 ha. Using log-transformed estimates, home range estimates were significantly larger for male C. p. sobrinus compared to female ($T= -1.75$, $df = 32$, $P= 0.05$). Home range size was not significantly different among habitat types ($F\ 3, 31 = 1.71$, $P = 0.198$). Individuals in habitat one appeared to have slightly smaller home range size, but sample size within this habitat was low ($N = 6$).

Home range size was positively associated with average body weight for each individual ($r = 0.459$, $n = 34$, $P = 0.006$). When sexes were split, this relationship was found to be significant for females $r = 0.537$, $n = 20$, $P = 0.015$), but not males (($r = 0.200$, $n = 14$, $P = 0.493$). However, with one outlier removed from the data, average male weight was significantly associated with home range size ($r = 0.553$, $n = 13$, $P < 0.05$).

Degree of overlap (as a percentage of total home range size) also was skewed to the right. Mean percent overlap was 26.21% (median = 12.94 %), which was roughly the same for both males (25.68%) and females (26.77 %) (median = 12.55 % and 13.34 %) respectively.

Chaetodipus p. sobrinus home range overlap varied between females and males. There was a significant difference found between simple probability indices within the three types of overlap (f-f intrasexual, m-m intrasexual, and intersexual) ($H = 13.48$, d.f. = 2, $P = 0.001$). Female intrasexual overlap was significantly greater when compared to male intrasexual overlap ($W = 173.0$, $n = 12$, $n = 10$, $P = 0.0229$). Female intrasexual overlap was also greater than overlap between females and males or intersexual overlap ($W = 340.5$, $n = 12$, $n = 25$, $P = 0.0003$). Simple probability indices of intrasexual overlap and intersexual overlap did not differ significantly in males ($W = 430.05$, $n = 25$, $n = 10$, $P = 0.4878$).

Variation in home range overlap between sexes was also observed using Lloyd's index of mean crowding ($F\ 3, 44 = 5.56$, $P = 0.007$). Female intrasexual overlap had higher indices of mean crowding when compared to intersexual overlap. However, female intrasexual overlap was not significantly greater when compared to male intrasexual overlap using this index. Again male intrasexual overlap and intersexual overlap indices did not differ significantly.

There was no dispersal detected between habitat types throughout the two-year mark recapture study. There was also no movement outside of the trapping grids while trapping linear transects throughout the study area over the two-year period. The mean maximum distance moved per individual over the second year of study was approximately 36 meters (SD = 29.13 m). Maximum linear distance was not significantly different between sexes ($T = 0.37$, $df = 80$, $P = 0.71$), although males did tend to move farther. The maximum distance moved for a male was 132.70 m, whereas the maximum distance moved for females was 114 m.

Sex-biased dispersal was not observed in C. p. sobrinus within the Preserve population. If male subadults were dispersing at a higher rate from the natal area one would expect a higher frequency of females to occur within the trapping grid the following breeding season. This was not the case. The frequency of subadult males and females did not differ from one year to the next ($x^2 = 1.76$, $df = 2$, $P > 0.05$). Adult females also did not occur at a significantly higher frequency within the study area from one year to the next ($x^2 = 0.23$, $df = 2$, $P > 0.05$).

Principal Component Analysis. -- Using PCA, three distinct principal component loadings were determined, which contributed to 72.6 % of the maximum variance within the data set. The remaining principal component axes were dropped using both the Latent Root Criterion (Guttman 1954; Cliff 1988) and the Scree Plot Criterion (Cattell 1966). Fine soil composition loaded highly onto the first PC axis--as percent sand decreases, percent clay and

silt increase. The second axis explained variance due to plant cover, plant height, bulk density and course gravel. Plant cover and plant height were positively associated, however both plant cover and height were negatively associated with percent course gravel and soil bulk density. Lastly the third PC axis explained variance due to distance to food sources (mesquite and acacia) and was not associated with other variables within the loading.

Binary Logistic Regression. -- The full binary logistic regression model included the first three principal component loadings as the predictor variables. The presence or absence of *C. p. sobrinus* in traps was significantly related to microhabitat variables ($G = 11.51$, $df = 3$, $P = 0.009$; Table 9). PC1 (fine soil composition) did not significantly contribute to the model, whereas both PC2 (plant height and cover;soil bulk density and percent course gravel) and PC3 (distance to the nearest mesquite/ acacia) were significantly important in determining *C. p. sobrinus* occurrence throughout all microhabitats sampled.

PC2 describes variance due to plant physiogamy (cover and height) and soil properties. PC2 correlates negatively with total canopy cover and maximum plant height and positively with soil bulk density and percent gravel (soil particle size > 2.0 mm). As the overstory thins, soil properties change, areas with less overstory tend to have higher coarse gravel composition and higher bulk density. Thus as PC2 increases, soil bulk density and course gravel increase while cover decreases and the odds ratio decreases to 0.58. This means that *C. p. sobrinus* will occur nearly half as often in areas of sparse vegetation and high soil bulk density and high percent course gravel as they would occur near vegetative structures that provide canopy cover and height and lower course gravel composition and lower soil bulk density.

PC3 describes the variance in the data due to the distance C. p. sobrinus was found (captured) from the nearest food source (mesquite/ acacia). As PC3 increases, the distance to the nearest mesquite or acacia decreases and the odds ratio changes to 1.91. C. p. sobrinus is nearly twice as likely to occur in areas which are closer to mesquite and acacia.

Ordinal Logistic Model. -- The results of the ordinal logistic model corroborated those of the binary logistic model. Again the overall model was significant ($G = 16.00$, $df = 3$, $P = 0.001$). Fine soil composition (sand, silt, and clay) or PC1 did not contribute significantly to the number of *C. p. sobrinus* trapped at each trap site. PC2 and PC3 were both significant, thus degree of use is also explained by vegetative physiognomy, course gravel composition, soil bulk density, and distance to the nearest food source.

The positive coefficient value of PC2, and the odds ratio larger than one, indicates that an increase in PC2 is associated with lower numbers of unique individuals captured at each trap site. Again, an increase in PC2 is associated with an increase in course gravel and soil bulk density, as well as a decrease in plant canopy cover and plant height. Microhabitat lacking plant canopy cover and plant height and composed of higher percent gravel and higher soil bulk density was nearly twice (odds ratio = 2.05) as likely to have less *C. p. sobrinus* individuals present.

The distance to mesquite and acacia was also significant in determining number of unique individuals found within a microhabitat. As PC3 decreases the distance to the nearest

mesquite increases. The odds ratio demonstrates that high numbers of unique *C. p. sobrinus* individuals are nearly half as likely (odds ratio = 0.61) to occur in microhabitat located far away from mesquite and acacia.

Recommendations: This demographic and population ecology study identifies many life history traits of *C. p. sobrinus* that will be important in the development of a regional conservation plan for this subspecies. We can begin to better understand what types of environmental parameters are important in designating suitable habitat for *C. p. sobrinus*. However, a thorough study on macrohabitat selection in *C. p. sobrinus* throughout its regional distribution should be conducted. Population trends should also be assessed regionally. Trends may vary in different localities and regional studies should be conducted before broad management prescriptions are made.

Ongoing research on the population genetics and regional distribution (Part 2 of Contract no. 1999-LVVWD-1; report to be submitted separately) will also provide strong management tools for this subspecies. Once assessed, restoration and preservation of habitat within the region can be better designed. Restoring connectivity between extant populations on a regional scale can also be prescribed if needed.

The major point that needs to be addressed in the regional management of this species is that policy makers and resource managers begin to assess the ecosystem that this subspecies is associated with. Once the floral and faunal composition and structure of biodiversity in these areas is better understood, a clear picture will emerge as to what needs to be done to maintain suitable habitat and overall viability of populations of *C. p. sobrinus. Chaetodipus p. sobrinus* is associated with dry, sand washes that border major waterways, specifically the Colorado River and its main confluences, the Virgin and Muddy Rivers (Hall 1946; Hoffmeister 1986). The recent (< 100 years ago) disturbances to these major water arterials due to damming, increased agricultural use, human development, and recent invasion of exotic species has severely disturbed, damaged, or completely removed historic habitat. Numerous species ecologically associated with *C. p. sobrinus* are in need of critical management decision-making. An adaptive management strategy, along with an ecosystem approach, will not only benefit this subspecies, but all others that are currently in population decline. What we do know is that any disturbance to specific habitat parameters such as plant cover and height, soil particle size, or food resources (mesquite and acacia) will probably impact *C. p. sobrinus* negatively to some degree. Potential threats should be identified and plans implemented to mitigate these negative effects.

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Financial Funding Summary:

MSHCP: $45,000

Contractor: Great Basin Bird Observatory

Contract No.: 1999-GBBO-1

Project No.: 1999-GBBO-1-A

Project Description: Nevada Breeding Bird Atlas

Accomplishments: In 1999, the GBBO conducted fieldwork and workshops. The workshops consisted of half-day sessions that focused on teaching volunteers how to count birds and fill out the data sheets. The GBBO also conducted workshops for land managers that focused on teaching agency staff how to use the data collected by the GBBO. In 2000, the GBBO conducted a more targeted, specialized survey to collect breeding bird information that would allow modeling to predict for where breeding birds are likely to occur. In 2001, no fieldwork was conducted. Work conducted in 2001 focused on conducting workshops and attending MSHCP meetings.

In an uspent funds proposal to the IMC, the BLM requested $10,500 originally slated for Neotropical Bird Surveys and Monitoring be redirected to the GBBO for publication of the Nevada Bird Breeding Atlas, the creation of a website and a data CD.

The PIE Working Group also funded the GBBO an additional $40,000 for publication of the Atlas. As of November 2002, Clark County is in receipt of a 1,400-page draft of the Atlas. This draft will be published by the University of Nevada Press in 2004. The GBBO also completed the website and data CD. The GBBO anticipates distributing the data CD to federal land managers in early 2003. Clark County will ensure that this CD is distributed to the federal land managers.

Clark County will continue to monitor the publication of the Nevada Breeding Bird to ensure it is prepared and submitted to the IMC.

Recommendations: Volunteers, if properly supervised by agency scientists, can conduct intensive field-based survey work. Significant new information was collected about where breeding birds occur along the Muddy and Virgin Rivers and where they occur within the Spring Mountains.

Financial Funding Summary:

MSHCP: $130,500

Contractor: Donald Sada, Ph.D.

Contract No.: 1999-SADA-1

Project No.: 1999-UNLVGS-1-A

Project Description: Restore and Reintroduce Springsnails and Develop Monitoring Protocol

Accomplishments: The Willow Spring restoration program was initiated during 1998 when the spring was fenced and water returned to its historic channel. Soil was turned along the springbrook and vegetation allowed to establish through natural processes. The spring brook was quickly colonized by aquatic beetles, and dragonfly and black fly larvae.

On August 20, 2001, 100 *P. deaconi* and *P. turbatrix* (from Red Spring and Lost Canyon Creek, respectively) were stocked into Willow Spring. Red Spring is the nearest habitat to Willow Spring that is occupied by *P. deaconi* and Lost Canyon Ck. is the nearest habitat occupied by *P. turbatrix*. Extreme care was taken not to introduce other macroinvertebrates along with springsnails. Each springsnail was individually selected and placed into Willow Spring using forceps.

Springsnails are highly sensitive to environmental change, and Sada and Sada (1998) found that three species of *Pyrgulopsis* from the Owens River basin, Inyo County, California, were intolerant of being introduced into water from any place other than their home spring. Complete mortality of all three species occurred within 35 hours of immersion in foreign spring water.

To minimize mortality and provide for acclimatization, springsnails were reintroduced into Willow Spring using four different conditions (trials). Twenty-five individuals of each species were involved in each trial, and species were isolated for each trial. The trials included:

1) Placing springsnails in standard petri dishes (one for each species) that contained a small rock (~1.5 cm) and water from either Red Spring (for *P. deaconi*) or Lost Canyon Ck. (for *P. turbatrix*). Two-1.5 mm holes were drilled into opposing sides of each dish to allow slow mixing of Willow Spring water with water from Red Spring and Lost Canyon Ck.
2) Placing *P. deaconi* in two glass vials (180 ml volume) with a 1:1 mixture of Willow Spring and Red Spring water.
3) Placing *P. turbatrix* in two glass vials (180 ml volume) with a 1:1 mixture of Willow Spring and Lost Canyon Ck. water.
4) Placing springsnails on partially emergent, moistened sandstone rocks in the Willow Spring spring brook.

Trials were observed for 1.5 hours. No mortality was observed during this period. Greatest movement was observed in petri dishes and on stones. There was little springsnail movement in glass vials.

Further observations were made on August 22, 2001, which found:

Trial 1--Seven *P. turbatrix* remained in the petri dish; no indication whether the remaining 18 springsnails voluntarily left the petri dish or were taken by predators. All animals were released into Willow Spring following observation. Twenty-five *P. deaconi* remained in the petri dish. All animals were moving and appeared healthy. All were released into Willow Spring following observation.

Trial 2—All animals active, and released into Willow Spring.

Trial 3—All animals active, and released into Willow Spring.

Trial 4—No springsnails remained on emergent rocks. Not possible to determine if they left the rock voluntarily or were taken by predators.

These observations suggested that slow acclimation to Willow Spring may allow successful translocation of *P. deaconi* and *P. turbatrix*. With these positive results, an additional 200 individuals from Red Spring and Lost Canyon Ck. were translocated into Willow Spring on August 22, 2001.

Surveys by Patrick Putnam (Las Vegas BLM) found springsnails in Willow Spring during the summer of 2002. Collections have not been made to identify species. This will be accomplished sometime during late 2002.

Springsnail sample protocols have been prepared and will be included in the adaptive management plan that is being prepared by the MSHCP Springs Working Group. This plan will be complete by early 2003. Clark County to will continue to monitor this project and will ensure that the protocols are prepared and presented to the IMC.

References

Sada, D.W. and J.L. Nachlinger. 1998. Spring Mountains ecosystem: Vulnerability of spring-fed aquatic and riparian systems to biodiversity loss. Part II. Springs surveyed in 1997. Unpublished report to the U.S. Bureau of Land Management, Las Vegas, Nevada.

Sada, A.K. and D.W. Sada. 1998. Isolating mechanisms in springsnails as indicated by mortality of three *Pyrgulopsis* species (Family Hydrobiidae) from desiccation and association with water from foreign habitats. Unpublished report for Advanced Biology, Bishop Union High School, Bishop, California.

Recommendations: These observations suggested that slow acclimation to Willow Spring may allow successful translocation of *P. deaconi* and *P. turbatrix*.

Financial Funding Summary:

MSHCP: $19,000

Contractor: Donald Sada, Ph.D.

Contract No.: 1999-SADA-1

Project No.: 1999-SADA-1-B

Project Description: Springsnail Surveys

Accomplishments: With surveys conducted during 1999 – 2001, approximately 170 springs have been surveyed in the Clark/Nye County portion of southern Nevada over the past 10 years (e.g., Sada and Nachlinger 1996, 1998, Hershler 1998). Environmental information collected at each site, and sites occupied by springsnails are being organized and compiled in a database that is currently being constructed by the MSHCP Springs Working Group. This database will be complete by early 2003.

A total of eight species of springsnails (including 20 extant populations) in two genera are known from Clark County and immediately surrounding drainages. A total of six populations have been extirpated from southern Nevada over the past 30 years, including extinction of *Pyrgulopsis coloradenis*. The location of extant and extirpated populations, and the County of occurrence of each species are shown in Table 1. This list includes all known localities, with the exception of *Tryonia clathrata* (from Muddy River Springs) that is known from a number of additional thermal springs in Lincoln and White Pine Counties, Nevada, and *Tryonia porrecta* that is known from a number of localities in California, northern Nevada, and Hawaii (Hershler 2001, Hershler and Sada 2001).

Surveys conducted for the MSHCP during the late 1990s and early 2000s located two previously unknown populations of *P. deaconi* at Horse Springs, and three new *P. turbatrix* populations at Wood Canyon, Middle Horseshutem, and Harris Ranch Springs. Horse, Wood Canyon, and Horseshutem Springs occur in the Pahrump Valley basin, Nye County, Harris Ranch is along the east side of the Spring Mountains, Clark County. Locating *P. deaconi* in Horse Springs effectively doubled the number of extant populations of this species; the addition of three *P. turbatrix* populations increases the number of extant populations to 10.

The status of springsnails has declined in southern Nevada over the past 30 years, with the disappearance of *P. deaconi*, *P. turbatrix*, *P. coloradensis*, and *Tryonia porrecta* populations, and substantial reductions in *P. fausta* abundance. There have also been decreases in the abundance of springsnails in springs at Moapa, but it appears that these decreases have been comparatively small. The most significant changes in springsnail abundance and distribution of species in Clark County are described below.

Pyrgulopsis coloradensis was first discovered in Blue Point Spring, Lake Mead Recreation Area, during 1993 and described in 1998 (Hershler 1998). Surveys have not located this species elsewhere (with the exception of dead shells [that may have been *P. coloradensis*, but species can only be identified from live specimens] at Rogers Springs, that is located 2 km southwest of Blue Point Spring). Since it has not been found elsewhere, *P. coloradensis* is believed to be endemic to Blue Point Spring (which also supported a population of *Tryonia porrecta*, which also occurs in California, Nevada, and Hawaii). *P. coloradensis* was not

found during several intensive surveys during the late 1990s and early 2000s and it is believed to be extinct (Sada field notes, 2001). Causes of extinction are unknown, but decreases in its abundance during the 1990s (Sada field notes) appeared to coincide with introduction of the red-rimmed thiara (*Melanoides tuberculata*) (a predaceous snail that is native to Africa, Asia, and India) that appeared in the spring sometime after 1993. Blue Point Spring habitat has been impacted by ungulates (primarily burros) grazing, but it appears to be comparatively in good condition (similar to what existed during 1993), and suitable for springsnails. Live springsnails were never collected from Rogers Spring, which may be attributed to habitat alteration that occurred many decades ago when its source was impounded to enhance recreational bathing. These alterations occurred may years before springsnail surveys were conducted. Over the past 40 years, the spring has also supported a number of cichlid species, which are highly aggressive and actively feed on all members of the macroinvertebrate community. Spring impoundment and cichlids are both known to extirpate aquatic macroinvertebrates and fish populations (Taylor et al. 1984).

Pyrgulopsis turbatrix was first described in 1998. It is known from 10 populations, which makes this species one of the most widely distributed springsnails in southern Nevada (Hershler 1998). Several populations have been extirpated, including one from the Grapevine Springs complex (Nye County) sometime between 1992, when it was first collected (D.W. Sada field notes), and 1995 when the site was visited again by Sada and Nachlinger (1996). This population was extirpated when the spring was dried following its capture into a pipe. Another population was extirpated from Willow Spring, Red Rock Canyon National Conservation Area, Clark County. This population was extant during the early 1970s (J.J. Landye field notes), but was extirpated by 1995 when Sada and Nachlinger (1996) conducted spring surveys in the Spring Mountains. Precise reasons for its extirpation are unknown, but Sada and Nachlinger (1996) attributed it to habitat alterations caused when its discharge was diverted into pipes and troughs when the Willow Spring picnic area was constructed. Other *P. turbatrix* populations occupy habitats that have been highly altered by excessive ungulate grazing (e.g., Horseshutem and Grapevine [Nye Co.] Springs). Although these impacts may eliminate springsnail populations, current levels of disturbance at these springs have probably decreased their abundance, but this disturbance does not appear sufficient to extirpation populations.

Table 1. The spring name, County, estimated length of occupied habitat, and subjective estimates of springsnail abundance known from springs in Clark County and surrounding areas, Nevada.

Species	Location	Length (m)	Abundance	Ownership
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Pyrgulopsis fausta	Corn Ck. Spg. #1 (Clark)	5	Scarce	USFWS
P. fausta	Corn Ck. Spg. #2 (Clark)	1	Scarce	USFWS
P. deaconi	Kiup Spg.	5	Scarce	USFS
P. deaconi	Red Spg.	20	Common	BLM
P. deaconi	Horse Spg., #1 (Nye)	75	Abundant	USFS
P. deaconi	Horse Spg., #2 (Nye)	30	Abundant	USFS
P. deaconi	Manse Spg., (Nye)		Extirpated	Private
P. deaconi	Rainbow Spg. (Clark)	10	Scarce	BLM
P. deaconi	Willow Spg. (Clark)		Extirpated[1]	BLM
P. turbatrix	La Madre Spg. (Clark)	50	Common	BLM
P. turbatrix	Lost Canyon Ck. (Clark)	30	Scarce	BLM
P. turbatrix	Willow Spg. (Clark)		Extirpated[1]	BLM
P. turbatrix	Willow Ck. Spg. (Clark)	75	Scarce	USFS
P. turbatrix	Cold Ck. Spg. (Clark)	75	Scarce	USFS
P. turbatrix	Horseshutem Spg. (Nye)	40	Common	Private
P. turbatrix	Middle Horseshutem Spg. (Nye)	15	Common	Private
P. turbatrix	Grapevine Spg. #1 (Nye)		Extirpated	BLM
P. turbatrix	Grapevine Spg. #2 (Nye)	40	Abundant	BLM
P. turbatrix	Wood Canyon Spg. (Nye)	30	Common	USFS
P. turbatrix	Cain Spg. (Nye)	5	Common	DOE
P. turbatrix	Harris Spg. (Clark)	?	Common	Private
P. coloradensis	Blue Point Spg. (Clark)		Extinct	NPS
P. avernalis	Muddy River Spgs. (Clark)	2000	Abundant	USFWS & Private
P. carinifera	Muddy River Spgs. (Clark)	2000	Abundant	USFWS & Private
Tryonia clathrata	Muddy River Spgs. (Clark)[2]	2000	Abundant	USFWS & Private
T. porrecta	Blue Point Spgs. (Clark)[3]		Extirpated	NPS

[1]Populations of *P. turbatrix* and *P. deaconi* were syntopic in Willow Spring before they were extirpated during the 1980s. Attempts have been made to reestablish both taxa in this spring (see text).
[2]*Tryonia clathrata* is known from a number of additional localities in Lincoln and White Pine Counties, Nevada (Hershler 2001).
[3]*T. porrecta* is known from a number of additional localities, mostly in California and northern Nevada (Hershler 2001, Hershler and Sada 2001).

Pyrgulopsis deaconi was also described in 1998 (Hershler 1998). During the early 1970s it was syntopic with *P. turbatrix* in Willow Spring, Red Rock Canyon National Conservation Area (Hershler 1998). Both species had been extirpated from the site by 1995 when Sada and Nachlinger (1996) conducted spring surveys. Precise reasons for their extirpation are unknown, but Sada and Nachlinger (1996) attributed it to habitat alterations from diverting the spring's discharge into pipes and troughs when a picnic area was developed at the site. Early collections also documented *P. deaconi* from Manse Spring, Pahrump Valley, Nye County (J.J. Landye field notes, Hershler 1998), which is also the only historic habitat for the endangered Pahrump poolfish (*Empetrichthys latos latos*). Its disappearance from Manse Spring is believed to coincide with drying of the spring by nearby groundwater pumping in the early 1970s, which also eliminated the poolfish population (Minckley and Deacon 1968).

Pyrgulopsis fausta was also described in 1998 (Hershler 1998), and it is endemic to two small springs at Corn Creek, Desert National Wildlife Range, Clark County. All known populations are extant but its abundance has declined since its first collection in 1971 by J.J. Landye. These reductions occurred when a concrete channel was constructed through all but 5 m of its habitat in the largest spring that it occupies. These modifications were removed in 2002 when a spring restoration program was initiated. Its abundance should increase as the habitat stabilizes.

Tryonia porrecta is comparatively widespread throughout California, Nevada, and Hawaii (Hershler 2001, Hershler and Sada 2001). Early collections (e.g., early 1990s) documented an exceedingly small population of *Tyronia* in Blue Point Spring, Lake Mead National Recreation Area (Sada field notes). Because they were scarce, collections were small and insufficient material was collected to identify the species. Subsequent surveys have not found the species, its identity remains undetermined, and the population is believed to be extinct. The ubiquitous distribution of *Tryonia porrecta* suggests, however, that this species may have occupied Blue Point Spring. Disappearance of this population is coincident with extinction of *P. coloradensis* and attributed to competitive and predatory interactions with *Melanoides tuberculata*.

Hershler, R. 2001. Systematics of the North and Central American aquatic snail genus *Tryonia* (Rissooidea: Hydrobiidae). Smithsonian Contributions to Zoology Number 612.

Hershler, R. and D.W. Sada. 2001. A new species of hydrobiid snail of the genus *Pyrgulopsis* from northwestern Nevada. The Veliger 43:367-375.

Hershler, R. 1998. A systematic review of the hydrobiid snails (Gastropoda: Rissoidea) of the Great Basin, Western United States. Part I. Genus *Pyrgulopsis*. The Veliger 41:1-132.

Hershler, R. 1994. A review of the North American freshwater snail genus *Pyrgulopsis* (Hydrobiidae). Smithsonian Contributions to Zoology Number 554.

Minckley, W.L. and J.E. Deacon. 1968. Southwestern fishes and the enigma of 'endangered species'. Science 159:1424-1432.

Sada, D.W. and G.L. Vinyard. 2002. Anthropogenic changes in historical biogeography of Great Basin aquatic biota. Smithsonian Contributions to Earth Science 33.

Sada, D.W. and J.L. Nachlinger. 1996. Spring Mountains ecosystem: Vulnerability of spring-fed aquatic and riparian systems to biodiversity loss. Unpublished report to the U.S. Fish and Wildlife Service, Las Vegas, Nevada.

Taylor, J.N., W.R. Courtenay, Jr., and J.A. McCann. 1984. Known impacts of exotic fishes in the continental United States. Pages 322-373 *in*, W.R. Courtenay, Jr. and J.R. Stauffer (eds.). Distribution, biology, and management of exotic fishes. Johns Hopkins University Press, Baltimore.

Recommendations: Although additional springsnail populations may be located during future surveys, it is doubtful that the number of additional populations will be significant because surveys in the region have been relatively thorough. For similar reasons, it is unlikely that additional surveys will locate new taxa.

Financial Funding Summary:

MSHCP: $9,000

Contractor: The Nature Conservancy

Contract No.: 1999-TNC-1

Project No.: 1999-TNC-1-A

Project Description: Bees of Clark County

Accomplishments: The following information was taken from the "Results" section of the "Final Report for A Survey of the Rare Bees of Clark County, Nevada" by Terry Griswold et al. The full report is appended on the MSHCP Implementation and Monitoring Database under the contract and project numbers listed above.

A total of 370 field days were logged by scientists and field technicians between March and October 1998 with 589 sites sampled at least once and 719 unique site-dates. Sampling effort was concentrated in the late spring and early summer, the season when the majority of the species were known to be active. More than 48,271 specimens were collected over the course of the field season. Only a few of these specimens were of the target species, but bees can only be accurately measured in the laboratory. To maximize information on Clark County bees, we attempted to capture available information from pre-1998 collecting in the region. This effort, at Bee Lab expense, provided an additional 8,371 records from Clark County.

Recommendations: Because sampling was focused on seasons, localities, and flora previously identified as most likely to produce information on the target bee species, large gaps in our understanding of bee diversity in Clark County remain. Undoubtedly additional endemic species remain undiscovered as evidenced by the new species incidentally collected within the scope of this project. Some of these undetected bees are likely to occur early in the flowering season before sampling began or in the poorly sampled late fall. The higher elevations of mountain ranges have not been sampled. Restricted habitats such as mesquite thickets and sand dunes were not a primary focus of collecting and were not systematically sampled. These limitations apply equally to collections made in the region prior to this study.

Financial Funding Summary:

MSHCP: **$36, 958**

Contractor: The Nature Conservancy

Contract No.: 1999-TNC-1

Project No.: 1999-TNC-1-D

Project Description: Penstemon Research

Accomplishments: This report was taken from the "Final Report to the Nature Conservancy on a Study of Genetic Diversity of *Penstemon bicolor*" by Andrea D. Wolfe et al. The full report is appended on the MSHCP Implementation and Monitoring Database under the contract and project numbers listed above. The objectives of this study were to: 1) determine the amount of genetic diversity within and among populations of each variety; 2) determine the amount of genetic distinctiveness between the two varieties of *P. bicolor*; and 3) assess if any geographic patterns of relationships within and among varieties of *P. bicolor.*

All populations of both varieties of *P. bicolor* are very similar genetically and share the majority of ISSR loci assayed in this study. Populations of variety *bicolor* do not all cluster together in the NJ tree. Instead, these populations form two clusters among clusters of variety *roseus*. The topology of the tree is consistent with a pattern of recent infraspecific differentiation. The restricted distributed of variety *bicolor* as compared to the widespread distribution of variety *roseus* and the sister *P. palmeri*, indicates that variety *bicolor* is probably the most recently derived taxon in this group.

There are no significant differences in the genetic profiles of the two varieties in the quantitative analyses conducted, and the majority of genetic diversity occurs within populations rather than among populations or varieties. However, there are detectable differences among the varieties with a qualitative consideration of rare alleles with the distribution of populations at increasing elevation. *Penstemon bicolor* var. *bicolor* is endemic to the Spring Mountains of Clark County, Nevada, whereas the distribution of variety *roseus* is relatively widespread encompassing southern Nevada and parts of Utah, Arizona, and California. There is no significant difference in the mean elevation of the two varieties, with var. *roseus* populations occurring at lower elevation than var. *bicolor*. Furthermore, although one would expect there to be a higher proportion of unique alleles associated with large populations, we found that most of the unique alleles detected in this survey are small populations of *P. bicolor* var. *bicolor*.

Recommendations: The lack of anthocyanin pigment in the corolla of var. *bicolor* may be under simple genetic control, and this needs to be examined further with crossing experiments. A careful examination of the effect of floral color differences on pollination biology should also be made to see if pollinator selection for this color is an isolating mechanism. Further study is needed to determine whether unique alleles result from genetic drift associated with small population size, adaptation to specific habitat types, or if there is a possibility of hybridization with other species of *Penstemon*. Surveys are needed to assess population size in all remaining populations of variety *bicolor*.

In addition, it would be beneficial to establish a long-term monitoring study of population demographics, pollination success, seed set, seedling recruitment, and the role of disturbance in maintaining population size and genetic diversity.

Financial Funding Summary:

MSHCP: $46,310

Contractor: Reno Tur-Toise Club

Contract No.: 1999-TURT-1

Project No.: 1999-TURT-1-A

Project Description: Tortoise Adoption

Accomplishments: The Reno Tur-Toise Club publishes a quarterly newsletter with information on the care of tortoises, conducts programs at northern Nevada schools and libraries, and hosts special events. The main emphasis is on tortoise adoption. To achieve this goal the tortoise club inspects the yards of those hoping to adopt a tortoise, secures tortoises to be adopted, and matches appropriate homes with tortoises. The club also rescues desert tortoises and takes badly injured or diseased tortoises and treats them in a club-funded infirmary or takes them to a veterinarian for care.

Recommendations: The Reno Tur-Toise Club is the only turtle and tortoise facility and infirmary in northern Nevada and should continue to be operated.

Financial Funding Summary:

MSHCP: $20,000

ACCOMPLISHMENTS

RESEARCH AND ADAPTIVE MANAGEMENT PROJECTS

These projects comprise activities aimed at fulfilling the MSHCP research and adaptive management agendas as outlined in Sections 2.8.2.2, 2.8.2.3 and 2.8.2.4 of the Plan.

Research and Adaptive Management Projects comprised approximately $2,000,000 of the Section 10 funds allotted in the 1999-2001 Biennium. A summary of each project follows.

Contractor: University of Nevada, Reno - BRRC

Contract No.: 1999-BRRC-1

Project No.: 1999-BRRC-1-A

Project Description: Science Based Adaptive Management Program

Accomplishments: Work was conducted on the following projects. Please refer to Appendix II: Executive Summary, March 15 Report to the Implementation and Monitoring Committee (2001-2002).

- Implementation database
- Indicators and Indicator Species
- Biological Considerations in Rural Roads Management
- AMP Workshops
- Identify and evaluate species that appear most likely to be listed without preemptive action
- Evaluation of Means to Enhance Cost-Effectiveness in Existing Species and Habitat
- Management Actions (Muddy River demonstration project)

Recommendations: Recommendations are summarized in Appendix II: Executive Summary, March 15 Report to the Implementation and Monitoring Committee (2001-2002).

Financial Funding Summary:

MSHCP: $1,150,000

Contractor: University of Nevada, Reno - BRRC

Contract No.: 1999-BRRC-1

Project No.: 1999-BRRC-1-C

Project Description: Desert Tortoise Translocation

Accomplishments: Tortoise Translocation experiments were conducted at Bird Springs Valley, LSTC, and Lake Mead. Investigators are currently analyzing the data and preparing publications for peer-reviewed journals. They will present the results to date at the Desert Tortoise Council meetings each spring, and also the combined herpetology meetings in La Paz in 2000. The data suggest strongly that translocation can be an efficacious method for dealing with displaced tortoises from areas of development in Clark County.

Recommendations: Recommendations are summarized in Appendix II: Executive Summary, March 15 Report to the Implementation and Monitoring Committee (2001-2002).

Financial Funding Summary:

MSHCP: $541,794

FINANCIAL SUMMARY

SOURCES OF FUNDS

Conservation activities described and reported herein were funded through the MSHCP process. Funds are generated from mitigation fees paid to Clark County for disturbance of non-federal lands (referred to as Section 10 funds), from remuneration fees required by federal agencies and paid to Clark County for disturbance of desert tortoise habitat located on federal lands (referred to as Section 7 funds), and funds paid to Clark County at the direction of the Secretary of Interior and pursuant to the provisions of the Southern Nevada Public Lands Management Act of 1998 (referred to as PLMA funds). During the 1999-2001 Biennium, no projects were proposed or funded with PLMA funds.

EXPENDITURE OF FUNDS

Clark County has been designated as the administrator of the MSHCP and of the funds as they are received from various sources of the Plan, on behalf of itself, the cities located within Clark County, and the Nevada Department of Transportation.

Section 10 funds are used for implementation projects based upon recommendations of the IMC and are approved by the Board of County Commissioners and the USFWS. Section 7 funds are used specifically for desert tortoise projects at the sole direction of the USFWS. PLMA funds are used for MSHCP development projects as recommended by the IMC, the BCC and the USFWS and as approved by the PLMA Executive Committee and the Secretary of the Interior.

This portion of the progress report documents land disturbance and revenue generated from land disturbance fees, itemizes the expenditures of the program during the 1999-2001 biennium, and projects the program budget for the term of the Section 10(a) incidental take permit.

LAND DISTURBANCE

Section 10 Land Disturbance Report for the 1999-2001 Biennium

REPORTS By:	Henderson	North LV	Boulder City	Mesquite	Las Vegas	CC Building	CC PW	NDOT	Refunds	TOTALS
July 1999	152.71	145.56	0	18.1	72.902	179.97		0		569.242
August	57.85	87.67	0.79	25.39	105.16	219.3		0		496.16
September	22.13	60.65	1.86	0	303.6	154.2		0		542.44
October	14.83	61.68	1.8	116	45.16	151.04		0.8		391.31
November	9.87	17.05	9.46	7.73	74.14	103.08		204.5		425.83
December	69.09	287.65	0	80.13	92.21	174.55		150		853.63
January 2000	68.32	78.88	0.2	2.43	81.4	679.88		0.7		911.81
February	265.72	65.05	0.61	0	22.5	384.82		3.9		742.6
March	301.19	85.05	0.34	5.5	15.26	452		3.3		862.64
April	239.023	111.43	6.33	0	105.53	238.12		0		700.433
May	158.64	69.3	0.38	0	147.846	374.82		0		750.986
June 2000	27.737	65.830	1.170	4.200	48.690	226.540		2.400		376.567
Subtotal:	1,387.11	1,135.80	22.94	259.48	1,114.40	3,338.32		365.60	-22.07	7,601.58
July 2000	19.34	29.57	0	5.4	25.87	361.2		1.3		442.68
August	129.62	151.04	8.23	0	46.03	340.17		14.2		689.29
September	137.24	17.77	0.26	0	61.4	236.33		0		453
October	180.24	72.16	2.08	0	68.79	164.52		0		487.79
November	69.22	58.61	0.44	0	68.61	175.19		0		372.07
December	76.17	66.58	0.42	10.56	74.16	295.61		0		523.5
January 2001	261.42	27.12	0.44	0	52.05	268.97		0		610
February	41.96	7.7	0	0	90.82	421.42		0		561.9
March	113.03	40.54	0.66	25.99	153.2	293.77		0		627.19
April	96.91	66.73	22.78	0	69.5	290.07		0		545.99
May	48.63	44.23	8.97	63.5	117.61	329.78	37.68	6.85		657.25
June 2001	27.699	240.51	0.76	0	74.09	330.19	24.72	0		697.969
Subtotal:	1,201.48	822.56	45.04	105.45	902.13	3,507.22	62.40	22.35	-22.06	6,646.57
Projected - 2001 (actual: [6,646.57] = 94.3% of projection)										7,046.00

REPORTS By:	Henderson	North LV	Boulder City	Mesquite	Las Vegas	CC Building	CC PW	NDOT	Refunds	TOTALS
TOTAL '00	1,387.11	1,135.80	22.94	259.48	1,114.40	3,338.32	0.00	365.60	-22.07	7,601.58
TOTAL '01	1,201.48	822.56	45.04	105.45	902.13	3,507.22	62.40	22.35	-22.06	6,646.57
TOTAL BIEN	2,588.59	1,958.36	67.98	364.93	2,016.53	6,845.54	62.40	387.95	-44.13	14,248.15
CARRY FWD	10,178.15	4,184.04	531.02	538.10	11,404.74	20,797.55	0.00	24.95	-182.17	47,476.38
GRAND TOTAL	12,766.74	6,142.40	599.00	903.03	13,421.27	27,643.09	62.40	412.90	-226.30	61,724.53

Projected - 1999-2001 (actual: [14,248.15] = 96.5% of projection for biennium)

SECTION 10 REVENUES GENERATED

CLARK COUNTY DESERT CONSERVATION PROGRAM
REVENUES
BIENNIUM July 1, 1999 - June 30, 2001

	July 99 - Sep-99	Oct 99 - Dec-99	Jan 00 - Mar-00	Apr 00 - Jun-00	July 00 - Sep-00	Oct 00 - Dec-00	Jan 01 - Mar-01	Apr 01 - Jun-01	SUB-TOTAL FY 2000	SUB-TOTAL FY 2001	TOTAL BIEN 1999-2001
ENTITY											
HENDERSON	$115,047	$20,646	$0	$482,391	$66,567	$215,888	$208,538	$115,467	**$618,084**	**$606,460**	**$1,224,544**
N. LAS VEGAS	$89,738	$66,767	$245,914	$116,619	$30,272	$164,790	$55,702	$82,929	**$519,038**	**$333,693**	**$852,731**
BOULDER CITY	$2,011	$2,138	$8,729	$4,546	$644	$5,814	$715	$17,408	**$17,423**	**$24,580**	**$42,003**
MESQUITE	$28,818	$33,633	$23,337	$7,661	$3,069	$310	$6,061	$28,544	**$93,449**	**$37,983**	**$131,431**
LAS VEGAS	$137,984	$189,640	$132,683	$174,202	$64,539	$115,789	$110,752	$187,375	**$634,508**	**$478,455**	**$1,112,962**
CLARK COUNTY	$315,486	$241,214	$976,871	$550,695	$475,762	$345,981	$540,084	$540,975	**$2,084,266**	**$1,902,801**	**$3,987,068**
NDOT	$0	$112,941	$2,531	$3,135	$8,525	$0	$0	$3,768	**$118,607**	**$12,293**	**$130,900**
INTEREST	($35,074)	$195,590	$419,700	$385,361	$480,689	$613,169	$795,131	$471,497	**$965,577**	**$2,360,486**	**$3,326,063**
TOTAL	**$654,010**	**$862,569**	**$1,809,764**	**$1,724,610**	**$1,130,067**	**$1,461,739**	**$1,716,982**	**$1,447,963**	**$5,050,952**	**$5,756,751**	**$10,807,703**
TOTAL EXCL. INTEREST	**$689,084**	**$666,979**	**$1,390,064**	**$1,339,249**	**$649,377**	**$848,571**	**$921,851**	**$976,466**	**$4,085,375**	**$3,396,265**	**$7,481,640**

SECTION 7 REVENUES GENERATED

Clark County	
Desert Conservation Program	
Section 7 Revenues Generated Per Month	
Month	Amount
Jul-99	$2,342.13
Aug-99	$25,117.14
Sep-99	$18,182.22
Oct-99	$176,324.59
Nov-99	$631,627.39
Dec-99	$164,847.21
Subtotal for 1999	**$1,018,440.68**
Month	Amount
Jan-00	$350,546.80
Feb-00	$19,508.36
Mar-00	$38,342.70
Apr-00	$21,543.92
May-00	$74,323.18
Jun-00	$41,577.56
Jul-00	$25,476.75
Aug-00	$33,351.82
Sep-00	$51,314.93
Oct-00	$18,401.14
Nov-00	$8,350.95
Dec-00	$46,133.87
Subtotal for 2000	**$728,871.98**
Month	Amount
Jan-01	$7,727.10
Feb-01	$151,027.38
Mar-01	$296,169.54
Apr-01	$53,445.21
May-01	$71,553.21
Jun-01	$7,767.26
Subtotal for 2001	**$587,689.70**
Total Revenues Generated for 1999-2001 Biennium	**$2,335,002.36**

CLARK COUNTY DESERT CONSERVATION PROGRAM ADMINISTRATIVE EXPENSES

ACCT	CATEGORY	July 99 - Sept 99	Oct 99 - Dec 99	Jan 00 - Mar 00	Apr 00 - Jun 00	July 00 - Sept 00	Oct 00 - Dec 00	Jan 01 - Mar 01	Apr 01 - Jun 01	SUB-TOTAL FY 2000	SUB-TOTAL FY 2001	TOTAL BIEN 1999-2001
5000/6000	SALARIES & BENEFITS	43288.46	49411.18	42312.66	50727.99	39336.64	51402.05	46165.45	54405	185740.29	191309.14	377049.43
7010	OFFICE SUPPLIES	8.47	208.82	231.28	36.37	212.6	473.35	292.88	1234	484.94	2212.83	2697.77
7020	GROCERIES	0	447.95	-10	788.68	389.25	-310.95	0	27	1226.63	105.3	1331.93
7030	OPERATING SUPPLIES	0	652.78	0	1034.86	683.35	734.54	0	719	1687.64	2136.89	3824.53
7060	SMALL EQUIPMENT	360	857.4	0	9.99	226.8	0	0	3939	1227.39	4165.8	5393.19
7110	AUTO	66.14	472.97	190.72	1339.38	70	570.67	105	112	2069.21	857.67	2926.88
7120	EQUIP./FACIL. RENTAL	0	0	795	0	250	213.51	595	1687	795	2745.51	3540.51
7140	PHONE	2.54	565.5	306.97	2655.1	-10.94	796.57	588.73	-15	3530.11	1359.36	4889.47
7210	PROFESSIONAL SERV.	757156.74	546724.01	400716.24	1375729.5	264192.93	801041.67	876730.17	1348164.8	3080326.4	3290129.6	6370456.01
7250	POSTAGE	75.38	207.32	892	423.82	317.09	663.22	94.17	6343	1598.52	7417.48	9016
7260-70	TRAVEL & TRAINING	2805.29	2677.53	1185.93	774.58	859.21	573.26	4385.74	7366	7443.33	13184.21	20627.54
7280&7360	PRINTING & ADVERTISING	271.55	13313.1	17690.83	10987.17	15365.65	41696.69	16137.62	108938	42262.65	182137.96	224400.61
7310	DUES, SUBSCRIPTIONS, PUB.	0	20	70	70	0	267	271	580	160	1118	1278
7330	FEES, LICENSES, PERMITS	0	0	0	2052	44	150	-50	144	2052	288	2340
7340	REFUNDS	5918	275	0	5942	3316.8	10112	412.5	62052	12135	75893.3	88028.3
8000	CAPITAL (Land & Fencing.)	86688	171680.78	83650	118600	0	50500	1149	359566	460618.78	411215	871833.78
	TOTAL	**$896,640.57**	**$787,514.34**	**$548,031.63**	**$1,571,171.4**	**$325,253.38**	**$958,883.58**	**$946,877.26**	**$1,955,261.8**	**$3,803,357.9**	**$4,186,276**	**$7,989,633.95**

PROFESSIONAL SERVICES SECTION 10 EXPENDITURES

	MSHCP CONTRACT/PO AMT	July 99 - Sep-99	Oct 99 - Dec-99	Jan 00 - Mar-00	Apr 00 - Jun-00	July 00 - Sep-00	Oct 00 - Dec-00	Jan 01 - Mar-01	Apr 01 - Jun-01	SUB-TOTAL FY 2000	SUB-TOTAL FY 2001	TOTAL BIEN 1999-2001
AGENCY												
AHERN	$5,180	$1,673	$807	$228	$455	$0	$18	$0	$0	$3,162	$18	$3,180
BERT, DAVID	$6,000	$0	$0	$0	$0	$0	$0	$0	$5,900	$0	$5,900	$5,900
BLM	$974,750	$0	$177,500	$0	$383,438	$0	$0	$0	$100,000	$560,938	$100,000	$660,938
BOONE, J	$3,000	$0	$0	$0	$0	$0	$0	$2,819	$0	$0	$2,819	$2,819
BUDD-FALEN	$93,000	$22,331	$5,157	$10,766	$2,577	$4,792	$7,433	$19,445	$2,076	$40,831	$33,746	$74,576
BUSCHELMAN, M.	$42,770	$0	$0	$0	$0	$0	$0	$3,584	$21,223	$0	$24,807	$24,807
CATERING		$0	$0	$0	$0	$818	$2,619	$921	$958	$0	$5,316	$5,316
CC FUND EXP		$3,314	$4,701	$6,708	$6,147	$6,874	$7,054	$7,318	$3,585	$20,870	$24,830	$45,700
CC PARKS & REC	$115,000	$0	$0	$0	$0	$0	$0	$115,000	$0	$0	$115,000	$115,000
CONS. FUND	$122,300	$0	$0	$21,600	$17,510	$24,548	$0	$19,700	$0	$39,110	$44,248	$83,358
CREATHBAUM	$96,942	$0	$0	$11,405	$17,108	$17,108	$17,108	$34,215	$0	$28,513	$68,430	$96,943
GBBO	$130,500	$17,450	$0	$20,000	$0	$20,000	$0	$22,550	$10,500	$37,450	$53,050	$130,500*
HIATT, H	$5,000	$0	$0	$0	$0	$0	$0	$0	$2,250	$0	$2,250	$2,250
HDR ENG.		$0	$0	$0	$0	$0	$0	$0	$1,520	$0	$1,520	$1,520
KLVX	$70,000	$0	$0	$21,000	$0	$0	$0	$0	$0	$21,000	$0	$21,000
KNPR	$84,500	$12,000	$0	$36,000	$0	$14,000	$0	$18,000	$4,500	$48,000	$36,500	$84,500
LVSP	$50,000	$0	$0	$0	$0	$0	$0	$0	$50,000	$0	$0	$50,000
LVVWD	$45,000	$0	$0	$0	$0	$0	$21,416	$0	$0	$0	$21,416	$42,197.47**
MATTESON MEDIA	$18,000	$0	$0	$0	$0	$0	$0	$15,000	$0	$0	$15,000	$15,000
MTN. VISTA ANIM. HOSP.		$0	$0	$0	$1,600	$0	$0	$0	$0	$1,600	$0	$1,600
MRREIAC	$201,493	$0	$0	$49,024	$50,313	$0	$20,608	$25,395	$56,147	$99,337	$102,150	$201,487
NDF	$475,260	$13,697	$43,691	$10,499	$63,407	$14,749	$21,063	$23,903	$39,995	$131,295	$99,710	$231,005
NDOW	$58,566	$0	$0	$0	$12,000	$0	$0	$0	$0	$12,000	$0	$12,000
NLV ANIM. HOSP.	$20,000	$3,590	$3,500	$800	$1,525	$1,700	$5,618	$0	$1,675	$9,415	$8,993	$18,408
NPS	$834,200	$0	$0	$0	$389,745	$0	$0	$0	$379,245	$389,745	$379,245	$768,990
OFF. IMAGES (FURNITURE)	$856	$0	$875	$0	$0	$0	$0	$0	$0	$875	$0	$875

	MSHCP	July 99 -	Oct 99 -	Jan 00 -	Apr 00 -	July 00 -	Oct 00 -	Jan 01 -	Apr 01 -	SUB-TOTAL	SUB-TOTAL	TOTAL BIEN
	CONTRACT/PO AMT	Sep-99	Dec-99	Mar-00	Jun-00	Sep-00	Dec-00	Mar-01	Jun-01	FY 2000	FY 2001	1999-2001
PAC. AGRI. BUS.	$50,000	$4,506	$5,198	$0	$0	$0	$0	$0	$5,424	$9,705	$5,424	$15,128
PIC	$9,000	$0	$0	$0	$0	$0	$0	$0	$9,000	$0	$9,000	$9,000
RADIO ST. ADV.		$0	$0	$9,001	$0	$0	$0	$0	$0	$9,001	$0	$9,001
RECON	$342,948	$5,037	$174	$0	$14,998	$0	$0	$31,690	$0	$20,209	$31,690	$51,899
RENO TUR-TOISE	$20,000	$10,000	$0	$0	$0	$0	$10,000	$0	$0	$10,000	$10,000	$20,000
SADA	$28,000	$0	$0	$0	$0	$0	$0	$14,000	$14,000	$0	$28,000	$28,000
SELZER		$25,946	$42,066	$46,617	$45,559	$27,564	$41,714	$22,958	$42,861	$160,189	$135,096	$295,285
SNEI	$659,647	$46,648	$77,899	$66,127	$93,296	$46,648	$46,648	$99,859	$182,523	$283,969	$375,678	$659,647
TNC	$166,310	$36,958	$0	$23,155	$30,000	$0	$53,155	$0	$30,000	$90,113	$83,155	$173,268***
TRINKO, M	$52,000	$2,000	$12,000	$1,000	$4,000	$0	$2,000	$0	$0	$19,000	$2,000	$21,000
UNLV	$241,546	$17,780	$11,462	$17,284	$34,308	$11,890	$31,102	$6,849	$23,861	$80,835	$73,701	$154,536
UNR	$541,794	$15,982	$90,695	$49,502	$154,053	$18,856	$63,569	$2,844	$106,205	$310,232	$191,474	$501,706
UNR - AMP	$1,150,000	$0	$50,000	$0	$83,689	$46,576	$280,334	$159,297	$232,347	$133,689	$718,554	$852,244
USDA - WS	$57,400	$28,700	$0	$0	$0	$0	$28,700	$0	$0	$28,700	$28,700	$57,400
USFS	$458,000	$229,000	$0	$0	$0	$0	$0	$229,000	$0	$229,000	$229,000	$274,545****
USGS	$283,202	$0	$0	$0	$0	$2,070	$110,885	$2,385	$30,919	$0	$146,259	$283,202*****
TOTAL		**$757,157**	**$546,724**	**$400,716**	**$1,375,729**	**$264,193**	**$801,042**	**$876,730**	**$1,348,165**	**$3,080,326**	**$3,290,130**	**$6,370,456**

* The GBBO was approved by the IMC for an additional $20,000 in July 2001 and in August 2001 ($40K total).

** The final payment on this contract was made on 8/30/01 for $20,781.36

*** The first quarter payment of $36,958 was for TNC's "Bees of Clark County" project from the 1997-1999 Biennium

**** The USFS returned $183,455 to Clark County in 12/02.

***** The final payment on this contract was made on 8/23/01 for $136,942.78

PUBLIC INFORMATION AND EDUCATION EXPENDITURES

Clark County Desert Conservation Program Public Information and Education Program

Actual Expenditures for Biennium 1999-2001

Allocated Amount $236,115

Children			General Public			Interest Groups		
Stickers	12/01/99	$1,598	**BLM Kiosk/Brochures**	**6/30/01**	**$3,750**	SAM Photo	12/01/99	$20
Patrol Cards	12/01/99	$810	**USFS**	**09/30/99**	**$7,500**	SAM Photo	01/12/00	$70
Mojave Max Stickers	03/01/00	$1,750	**NDOW**	**6/30/01**	**$750**	Monarch Promotions	02/24/00	$405
(KNPR) Mojave Max 2000	04/11/00	$2,000	**MRREIAC**	**4/1/01**	**$4,890**	User Survey Printing	04/30/00	$90
KNPR - Radio Ads.	08/03/00	$14,000	**USFS**	**6/30/01**	**$7,500**	Trinko, events thru 6/00	07/31/00	$5,000
Stickers	10/01/00	$1,598	Gurnee (freeze dried tortoises)	10/06/99	$1,093	Matteson Media Group	08/16/00	$6,104
Patrol Cards	10/01/00	$810	Desert News	12/01/99	$9,563	Matteson Media Group	02/26/01	$3,000
KNPR - Radio Ads.	02/27/01	$18,000	Monarch Promotions	03/03/00	$7,434	Matteson Media Group	03/08/01	$15,000
Camera/Internet Moj Max 2001	03/01/01	$1,500	CC Fair	04/15/00	$50	J. Boone (SAM Editing)	03/22/01	$2,819
(KNPR) Mojave Max 2001	05/01/01	$4,500	EarthFest	04/15/00	$150	GBBO (Bird Atlas)	05/01/01	$20,000
Stickers	05/01/01	$1,598	Hotline & Toll Free Line	06/30/00	$300	GBBO (Bird Atlas)	06/01/01	$20,000
Stickers	05/01/01	$1,598	Monarch Promo.	08/07/00	$946	Trinko, events thru 12/00	12/31/01	$2,000
				09/25/00	$7,675	Tortoise pick-up boxes	02/01/01	$800
			KLVX, Ads. 9/00 - 6/01	10/13/00	$26,000	H. Hiatt	06/01/01	$2,250
			Desert News	11/01/00	$9,563	D. Bert, PSA's	06/15/01	$5,900
			Shoshona South (Press copy)	12/14/00	$197			
			Monarch Promotions	02/15/01	$1,892			
			CC Fair	03/16/01	$645			
				03/20/01	$10,000			
				6/30/01	$7,000			
				06/30/01	$300			
		$49,762			$107,198			$83,458
TOTAL								**$240,418**

*** Bold represents money allocated to specific agencies through IMC process.**

FENCING EXPENDITURES

CLARK COUNTY DESERT CONSERVATION PROGRAM
FENCING EXPENSES
99-01 BIENNIUM (July 1, 1999 - June 30, 2001)

AGENCY	DESCRIPTION		AMOUNT
AHERN	Forklift rental	$	3,180
NDF	Fence construction	$	231,005
OCOTILLO LUMBER	Fencing materials	$	257,139
PIC	Fence construction	$	9,000
PIC	Fence construction	$	15,000
		$	-
		$	-
TOTAL		**$**	**515,324**

SECTION 7 EXPENDITURES

CLARK COUNTY
DESERT CONSERVATION PROGRAM

DATE	*EXPENDITURE*	*DESCRIPTION*	*AMOUNT*	*TOTALS*
06/23/92	Section 7 Refunds	Felderhoff Produc.	$ 3,308.04	
07/09/92	FY 91-92 USFWS	Furniture, Fixtures and Equipment	$ 5,058.00	
07/09/92	FY 91-92 USFWS	Professional Services	$ 17,353.00	
07/22/92	Avid	Operating Supplies	$ 1,168.50	
		SUBTOTAL FY 1991-1992		$ 26,887.54
	Section 7 Refunds		$ -	
08/13/92	National Park Service		$ 62,349.00	
10/06/92	Avid	Small Equipment	$ 2,905.00	
04/08/93	The Nature Conservancy	Buildings	$ 320,625.00	
04/13/93	The Nature Conservancy		$ 60,000.00	
06/11/93	Avid	Small Equipment	$ 165.00	
06/29/93	National Park Service		$ 16,500.00	
		SUBTOTAL FY 1992-1993		$ 462,544.00
	Section 7 Refunds	CLV, LVVWD	$ 905.30	
		SUBTOTAL FY 1993-1994		$ 905.30
	Section 7 Refunds		$ -	
01/05/95	Southern NV Environmental, Inc.		$ 12,500.00	
		SUBTOTAL FY 1994-1995		$ 12,500.00
	Section 7 Refunds		$ -	
07/20/95	R & G Landscaping		$ 14,100.00	

DATE	EXPENDITURE	DESCRIPTION	AMOUNT	TOTALS
08/14/95	Southern NV Environmental, Inc.		$ 5,976.00	
10/16/95	Avid	Operating Supplies	$ 6,268.93	
~~1/1/9/96~~	~~US Dept. of the Interior~~	~~-~~	~~$ 30,000.00~~	
02/13/96	US Dept. of the Interior		$ 52,288.12	
02/29/96	US Dept. of the Interior		$ 30,000.00	
03/14/96	So. Nevada Environmental		$ 18,698.61	
03/22/96	So. Nevada Environmental		$ 4,369.30	
04/19/96	So. Nevada Environmental		$ 15,357.99	
07/03/96	So. Nevada Environmental		$ 12,905.15	
07/24/96	So. Nevada Environmental		$ 7,059.55	
		SUBTOTAL FY 1995-1996		$ 197,023.65
	Section 7 Refunds		$ -	
08/01/96	NPS		$ 30,000.00	
09/25/96	US Dept. of the Interior	reversal of 1/19/96 entry-JV30582	$ (30,000.00)	
10/08/96	BLM		$ 5,000.00	
10/28/96	So. Nevada Environmental		$ 19,661.30	
11/06/96	So. Nevada Environmental		$ 23,157.54	
11/18/96	So. Nevada Environmental		$ 2,000.00	
12/19/96	So. Nevada Environmental		$ 17,074.61	
		SUBTOTAL FY 1996-1997		$ 66,893.45
	Section 7 Refunds		$ -	
08/01/97	So. Nevada Environmental		$ 2,979.77	
09/12/97	BLM		$ 15,000.00	
10/16/97	BLM		$ 219,862.00	
02/24/98	BLM		$ 99,487.00	

DATE	EXPENDITURE	DESCRIPTION	AMOUNT	TOTALS
05/08/98	NPS		$ 42,000.00	
		SUBTOTAL FY 1997-1998		$ 379,328.77
	Section 7 Refunds		$ 9,778.60	
	Fund Expend: Investment Expns		$ 2,136.86	
07/10/98	BLM		$ 64,488.00	
09/23/98	UNR	Immunoassay	$ 43,720.00	
04/19/99	NRS - LMNRA		$ 42,000.00	
05/12/99	BLM		$ 134,488.00	
06/30/99	So. Nevada Environmental		$ 62,535.53	
		SUBTOTAL FY 1998-1999		$ 359,146.99
		TOTAL 1997-1999 BIENNIUM		**$ 738,475.76**
	Section 7 Refunds		$ 3,557.22	
	Fund Expend: Investment Expns		$ 5,547.11	
11/09/99	BLM		$ 15,500.00	
11/09/99	BLM		$ 52,500.00	
11/09/99	BLM		$ 25,500.00	
12/22/99	BLM		$ 2,250.00	
04/03/00	NPS-LMNRA		$ 42,000.00	
04/03/00	NPS-LMNRA		$ 5,250.00	
06/21/00	DOI		$ 246,250.00	
06/21/00	DOI		$ 33,750.00	
		SUBTOTAL FY 1999-2000		$ 432,104.33
	Section 7 Refunds		$ 2,674.31	
	Fund Expend: Investment Expns		$ 6,757.45	
10/31/00	UNR		$ 400,000.00	

DATE	EXPENDITURE	DESCRIPTION	AMOUNT	TOTALS
04/25/01	NPS-LMNRA		$ 47,250.00	
05/04/01	DOI		$ 34,500.00	
06/06/01	NPS-LMNRA	BLM unexpended funds	$ 20,000.00	
08/02/01	So. Nevada Environmental		$ 3,333.33	
		SUBTOTAL FY 2000-2001		$ 514,515.09
	99-01 EXPENSES INCURRED BUT NOT PAID UNTIL 01-02 FY			$ 626,166.59
		TOTAL 1999-2001 BIENNIUM		**$ 1,138,007.37**
	Section 7 Refunds		$ 39,465.19	
	Fund Expend: Investment Expns		$ 10,338.80	
11/13/01	BLM		$ 93,750.00	
11/27/01	USGS		$ 60,000.00	
01/25/02	NPS	P. O. 169421	$ 39,275.00	
01/31/02	NDF	Inv. 4983	$ 2,668.97	
01/31/02	NDF	Inv. 4872	$ 3,553.42	
01/31/02	NDF	Inv. 4856	$ 8,416.60	
01/31/02	NDF	Inv. 4866	$ 10,427.71	
02/14/02	UNR	final billing 99-01 AMP contract	$ 549,500.00	
03/18/02	NDF	Inv. 4990	$ 879.12	
04/04/02	NDF		$ 2,398.30	
04/10/02	USGS		$ 31,310.00	
04/23/02	So. Nevada Environmental		$ 2,244.87	
06/04/02	So. Nevada Environmental		$ 9,683.36	
07/09/02	NPS		$ 19,637.00	
07/09/02	BLM		$ 93,750.00	
	So. Nevada Environmental	correct 2 yrs miscoding (99-01)	$ 76,666.59	

DATE	EXPENDITURE	DESCRIPTION	AMOUNT	TOTALS
	LESS 99-01 EXPENSES INCURRED BUT NOT PAID UNTIL 01-02			$ (626,166.59)
		SUBTOTAL FY 2001-2002		$ 1,053,964.93
		NET SUBTOTAL FY 01-02		$ 427,798.34

Projected Budget for Term of Permit as of 1999-2001 Biennium

BN	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 9	CREDIT FACTOR 10	REM-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*	*$115,458*	*$1,997,415*	*$2,255,809*	*173*	*0.0613*	*$258,394*	**27**	*$9,570*	*$133,423*
	02/03	**$2,005,810**	*$133,423*	*$1,872,387*	*$172,306*	*$2,044,693*	*$2,255,809*	*178*	*0.0920*	*$211,116*	**26**	*$8,120*	*$141,543*
3	**03/04**	**$2,050,000**	*$141,543*	*$1,908,457*	*$234,167*	*$2,142,624*	*$2,142,624*	*183*	*0.1227*	*$0*	**25**	*$0*	*$141,543*
	04/05	**$2,050,000**	*$141,543*	*$1,908,457*	*$281,000*	*$2,189,457*	*$2,189,457*	*187*	*0.1472*	*$0*	**24**	*$0*	*$141,543*
4	**06/07**	**$2,050,000**	*$141,543*	*$1,908,457*	*$327,833*	*$2,236,291*	*$2,236,291*	*191*	*0.1718*	*$0*	**23**	*$0*	*$141,543*
	07/08	**$2,050,000**	*$141,543*	*$1,908,457*	*$374,666*	*$2,283,124*	*$2,283,124*	*195*	*0.1963*	*$0*	**22**	*$0*	*$141,543*
5	**08/09**	**$2,050,000**	*$141,543*	*$1,908,457*	*$421,500*	*$2,329,957*	*$2,329,957*	*199*	*0.2209*	*$0*	**21**	*$0*	*$141,543*
	09/10	**$2,050,000**	*$141,543*	*$1,908,457*	*$468,333*	*$2,376,790*	*$2,376,790*	*203*	*0.2454*	*$0*	**20**	*$0*	*$141,543*
6	**10/11**	**$2,050,000**	*$141,543*	*$1,908,457*	*$515,166*	*$2,423,624*	*$2,423,624*	*207*	*0.2699*	*$0*	**19**	*$0*	*$141,543*
	11/12	**$2,050,000**	*$141,543*	*$1,908,457*	*$562,000*	*$2,470,457*	*$2,470,457*	*211*	*0.2945*	*$0*	**18**	*$0*	*$141,543*
7	**12/13**	**$2,050,000**	*$141,543*	*$1,908,457*	*$608,833*	*$2,517,290*	*$2,517,290*	*215*	*0.3190*	*$0*	**17**	*$0*	*$141,543*
	13/14	**$2,050,000**	*$141,543*	*$1,908,457*	*$655,666*	*$2,564,124*	*$2,564,124*	*219*	*0.3436*	*$0*	**16**	*$0*	*$141,543*
8	**14/15**	**$2,050,000**	*$141,543*	*$1,908,457*	*$702,500*	*$2,610,957*	*$2,610,957*	*223*	*0.3681*	*$0*	**15**	*$0*	*$141,543*
	15/16	**$2,050,000**	*$141,543*	*$1,908,457*	*$749,333*	*$2,657,790*	*$2,657,790*	*227*	*0.3926*	*$0*	**14**	*$0*	*$141,543*
9	**16/17**	**$2,050,000**	*$141,543*	*$1,908,457*	*$796,166*	*$2,704,624*	*$2,704,624*	*231*	*0.4172*	*$0*	**13**	*$0*	*$141,543*
	17/18	**$2,050,000**	*$141,543*	*$1,908,457*	*$843,000*	*$2,751,457*	*$2,751,457*	*235*	*0.4417*	*$0*	**12**	*$0*	*$141,543*
10	**18/19**	**$2,050,000**	*$141,543*	*$1,908,457*	*$889,833*	*$2,798,290*	*$2,798,290*	*239*	*0.4663*	*$0*	**11**	*$0*	*$141,543*
	19/20	**$2,050,000**	*$141,543*	*$1,908,457*	*$936,666*	*$2,845,124*	*$2,845,124*	*243*	*0.4908*	*$0*	**10**	*$0*	*$141,543*
11	**20/21**	**$2,050,000**	*$141,543*	*$1,908,457*	*$983,500*	*$2,891,957*	*$2,891,957*	*247*	*0.5153*	*$0*	**9**	*$0*	*$141,543*
	21/22	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,030,333*	*$2,938,790*	*$2,938,790*	*251*	*0.5399*	*$0*	**8**	*$0*	*$141,543*
12	**22/23**	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,077,166*	*$2,985,624*	*$2,985,624*	*255*	*0.5644*	*$0*	**7**	*$0*	*$141,543*
	23/24	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,123,999*	*$3,032,457*	*$3,032,457*	*259*	*0.5890*	*$0*	**6**	*$0*	*$141,543*
13	**24/25**	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,170,833*	*$3,079,290*	*$3,079,290*	*263*	*0.6135*	*$0*	**5**	*$0*	*$141,543*
	25/26	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,217,666*	*$3,126,123*	*$3,126,123*	*267*	*0.6380*	*$0*	**4**	*$0*	*$141,543*
14	**26/27**	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,264,499*	*$3,172,957*	*$3,172,957*	*271*	*0.6626*	*$0*	**3**	*$0*	*$141,543*
	27/28	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,311,333*	*$3,219,790*	*$3,219,790*	*275*	*0.6871*	*$0*	**2**	*$0*	*$141,543*
15	**28/29**	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,358,166*	*$3,266,623*	*$3,266,623*	*279*	*0.7117*	*$0*	**1**	*$0*	*$141,543*
	29/30	**$2,050,000**	*$141,543*	*$1,908,457*	*$1,404,999*	*$3,313,457*	*$3,313,457*	*283*	*0.7362*	*$0*	**0**	*$0*	*$0*

bold = Actual *script = Estimated*

BIENNIAL TORTOISE REPORT

INTRODUCTION

This report is adapted from a report prepared by Southern Nevada Environmental, Inc. (SNEI) that outlines 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 pick-up service with a comprehensive call log and database. The hotline and pick-up service is operated 365 days a year from 6:00 AM to 6:00 PM. The holding facility responsibilities of the DTTHF include a conducting a disease-screening program, collecting and tagging tortoises, keeping a comprehensive database of all incoming and outgoing tortoises, caring for and feeding tortoises, and constructing and maintaining pens. 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 1997 SNEI has been contracted by Clark County to operate and maintain the DTCC. SNEI has maintained the DTCC and its more than 200 tortoises throughout the 1997-1999 and 1999-2001 biennia. SNEI's responsibilities include taking care of the BLM tortoises, maintaining the DTCC main building, landscaping, maintaining the research pens, irrigation system, and well system, receiving salvaged plants from contractors, and caring for and watering salvaged plants. SNEI biologists' duties also include assisting, organizing, and monitoring other maintenance work and repairs performed by the Bureau of Land Management (BLM) and various contractors hired by BLM.

Since February 1997 SNEI has been contracted by Clark County to prepare for release of release-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, tagging, notching, recording measurements, transporting tortoises to predetermined releases 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 data. SNEI prepares and submits monthly comprehensive reports of translocation activities to Clark County and the IMC.

CLARK COUNTY DESERT TORTOISE TRANSFER AND HOLDING FACILITY SUMMARY

Incoming tortoises for the 1999-2001 biennium totaled 2,682 compared to 2,697 in the 1997-1999 biennium, 1,568 in the 1995-1997 biennium, and 1,131 in the 1993-1995 biennium. In the last four years, the number of incoming tortoises has stabilized at slightly fewer than 2,700 tortoises per biennium. The majority of tortoises collected by the hotline and pick-up service were of unknown origin. Only one of the tortoises entering the DTTHF was picked up as a result of voluntary Section 10 compliance for the 1999-2001 biennium. Seven tortoises were received from Section 7 clearances and all as a result of the Las Vegas Beltway project.

The age class breakdown for incoming tortoises is 38 percent adult (1,029), seven percent sub-adult (179), 18 percent juvenile (473), and 37 percent hatchlings and yearlings (994). The most significant observation 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.

Few tortoises are collected in the winter months (3 percent) between November 1 and February 28. Large numbers of tortoises are collected in spring, summer and fall (97 percent) between March 1 and October 31. Peak collection months include April, May, June, August, September, and October.

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). In analyzing all types of incoming tortoises lumped together, the DTTHF received about five males to every four females. On a percentage basis, 21 percent were female, 27 percent were male, and 52 percent were unknown sex.

Since October 1996, SNEI has been receiving unwanted pet desert tortoises as directed by the IMC. Of the 2,562 tortoises picked up by the hotline service in the 1999-2001 biennium, 1,056 (41 percent) were pets given up by their owner. Often pet owners give up multiple pet tortoises. It is not unusual to receive more than 20 tortoises from a single pet owner due to progeny inadvertently generated when owners keep male and female tortoises together.

Only one tortoise was received from an optional Section 10 clearance in the 1999-2001 biennium. This number is down significantly from the 416 wild tortoises collected during the 1993-1995 biennium when Section 10 clearances on private lands were mandatory. In 1997-1999, a total of 79 tortoises came from voluntary clearances compared to only 11 in 1996-1997. In 1995-1996 there were 21 tortoises from voluntary clearances and 65 from mandatory clearances. It is assumed that wild tortoises not collected by concerned citizens and turned into the hotline or kept as pets are killed via incidental take. If the rate of development of desert tortoise habitat is a constant, SNEI conservatively estimates the number of wild tortoises killed annually via incidental take at 200 - 300.

Only seven wild tortoises were received from formal Section 7 clearances in the subject biennium. All of these individuals came from the Las Vegas Beltway project. During the

1997-1999 biennium, 42 wild Section 7 tortoises were received, with 39 of the tortoises received from the Las Vegas Beltway project.

In the 1999-2001 biennium, 106 progeny were found in pens at the DTTHF compared to only ten progeny found in the 1997-1999 biennium. This increase can be attributed to adult females being kept at the DTTHF during the egg-laying season both in 1999 and 2000. Since early 1993 SNEI has implemented procedures to reduce the number of progeny generated at the DTTHF. Adult females being held for researchers to select study animals and a delay in the release program could have resulted in the increase in progeny at the DTTHF.

SNEI has implemented a series of protocols to identify non-desert tortoise hotline callers prior to pick-up in order to deal only with desert tortoises. Despite these procedures, there are some callers who cannot determine what they have and there are callers who lie about having desert tortoise so the pick-up service will respond. These non-desert tortoise pick-ups consist mostly of a variety of species of North American box turtles (*Terrepene ssp.*) (30 percent), red-eared sliders (*Trachemys scripta elegans*) (20 percent) and Russian tortoises (*Testudo horsfielii*) (11 percent). SNEI has established several outlets for the incoming non-desert tortoises. Tortoises leave the DTTHF by being translocated, taken for research, adopted, returned to pet owners, death, and euthanasia. In the 1999-2001 biennium, 34 percent were translocated, 26 percent were transferred to USFWS-approved research projects, two percent were adopted, one percent returned to owners, 13 percent died of various causes, and 22 percent were euthanized.

There were 59 adoptions in the subject biennium. Of these, the Tortoise Group adopted 18 animals and the Reno Tur-Toise Club (RTC) adopted 41. This relatively low number of adoptions in the 1999-2001 biennium is due mostly to a decrease in demand for tortoises as pets. UNR and USGS received 624 tortoises in April and May of 2000 for a USFWS-approved density research project at the DTCC. Only 32 escaped pets were returned to their owners in the 1999-2001 biennium.

During the biennium, 284 tortoises died of unknown causes. Of these, hatchlings and yearlings comprised 88 percent, five percent were juveniles, one percent was sub-adults, and six percent were adults. The main cause of death among hatchlings, yearlings and juveniles is believed to be the week of unseasonably warm weather followed by a severe cold snap in winter 2001.

In the 1999-2001 biennium, 48 tortoises were declared missing. Of the missing tortoises, 45 were hatchlings and yearlings and three were juveniles. Predation by ravens, coyotes, kit foxes, wood rats, red racers, fire ants, owls, raptors, and roadrunners is believed to be the primary source of the missing hatchlings and juveniles. Direct predation by wood rats, red racers, fire ants, and common ravens has been observed and documented at the DTCC. Two instances of predation on hatchling tortoises by wood rats were documented in the DTTHF pens in summer 2001.

A veterinarian euthanized 34 tortoises that were collected and had grievous injuries. Three tortoises were either dead upon pick-up or died en route to the veterinarian. Being hit by motor vehicles or attacked by dogs or cats was the cause of almost all of injuries.

In the 1999-2001 biennium, there were 49 tortoises collected with extreme malnutrition or other medical problems that required euthanasia. The improper care or neglect of pet tortoises caused most of these cases. Three tortoises at the DTTHF died due to accidentally getting turned over in the sun.

SNEI continued to ELISA test all incoming visually asymptomatic tortoises for URTD. Positive or suspect ELISA tests for URTD caused 438 tortoises to be euthanized and about 42 animals with obvious visual symptoms of URTD were euthanized without receiving the URTD test. Approximately 24 percent of incoming tortoises tested positive or suspect and were euthanized. Approximately 76 percent tested negative and were placed into holding to be made available for research, translocation, and adoption.

The ELISA data collected supports the theory that the older a tortoise is, the more likely it is to have been exposed to URTD and to elicit a positive or suspect ELISA result. ELISA results by age class reflect that 38 percent of adults, 24 percent of sub-adults, 15 percent of juveniles and ten percent of hatchlings and yearlings test positive or suspect. Male tortoises (36 percent) have a slightly higher frequency of positive and suspect results than female tortoises (34 percent). Known pet tortoises entering the DTTHF have a lower-than-average rate of ELISA positive and suspect test results than do tortoises of unknown origin. Presumed wild tortoises have a slightly higher rate of ELISA positive and suspect adults, a slightly lower rate of ELISA positive and suspect sub-adults, and an average rate of ELISA positive and suspect juveniles, yearlings, and hatchlings. The vast majority of presumed wild tortoises have been collected in the Las Vegas Valley. Wild tortoises from other locations in Clark County have had different results. Field samples taken at the LSTS prior to translocation in 1996 were 97 percent negative and three percent suspect with no positive results.

SNEI biologists have noticed a significant difference in the number of symptomatic tortoises being found in holding pens at the DTTHF since the implementation of ELISA testing. Prior to implementing ELISA testing of all incoming tortoises, SNEI biologists would regularly find symptomatic tortoises in holding pens. Since the implementation of ELISA testing, SNEI biologists have found less than six symptomatic tortoises in holding pens annually. Most ELISA positive and suspect tortoises are euthanized and disposed of in accordance with USFWS instructions. A subset of approximately 30 known wild tortoises with positive ELISA results is being kept by direction of the USFWS to be study animals for upcoming disease related research projects. These animals are valuable to the research efforts and are kept in accordance with USFWS disease control protocols.

DESERT TORTOISE CONSERVATION CENTER SUMMARY

SNEI has been contracted by Clark County to operate and maintain the Desert Tortoise Conservation Center (DTCC) since July 1997. SNEI has successfully maintained the DTCC and its more than 200 tortoises during the 1997-1999 and 1999-2001 biennia.

During the subject biennium, SNEI biologists cared for 110 adult and 20 yearling BLM tortoises that were not involved in research projects. Biologists also cared for 125 Smithsonian Institute (SI) research animals that were not in research projects. SNEI also cared for 45 adults and 89 hatchling tortoises for Dr. David Rostal and his URTD-related research project at the DTCC. SNEI biologists also assembled and cared for approximately 120 ELISA-positive and URTD-symptomatic tortoises in spring and summer 2001 for a UNR URTD transmission related research project.

The DTCC suffered from several major breaks in four-inch irrigation water lines as well as serious problems with the water well that supplies water for the entire facility. With the irrigation and well systems at the DTCC aging, these problems are ongoing. SNEI biologists have repaired multiple breaks in the four-inch water lines. SNEI biologists assisted the BLM in installing a solar-powered irrigation clock that controls valves to the DTCC pens. SNEI replaced two trailer doors and a stairway on the BLM trailer.

In the 1999-2001 biennium, increased rodent populations resulted in damage to the pump house and the trailer. Additionally, evidence of predation by wood rats on hatchling tortoises in the DTTHF holding pens was documented. In June 2001, Darren Williams of the Department of Agriculture's Animal Damage Control Division conducted a pest inspection of the DTCC. In fall 2001, with approval from the BLM and at Darren Williams' suggestion, SNEI contracted with Terminix to implement a zinc phosphate baiting program. Williams recommended a zinc phosphate baiting program because it does not pose a secondary poisoning threat to other animals coming in contact with the poisoned rodents. Use of the BLM trailer was halted due to unhealthful conditions caused by excess rat and mouse excrement. SNEI biologists, using respirators, hand tools, and a Clorox solution, cleaned the pump house. The pump house is still in useable condition and will be able to be maintained with the implementation of the baiting program. No other building as the DTCC appeared to be in jeopardy of infestation.

TRANSLOCATION STUDY

One of SNEI's ongoing projects is to prepare release-qualified tortoises for release to the LSTS as part of the Translocation Study. In total, SNEI has released over 3,000 desert tortoises from holding pens at the DTTHF and DTTC. The translocation program began with releases in spring 1997 at three sites in Southern Nevada. These three release sites are the Bird Springs Valley, Lake Mead National Recreation Area, and the Large Scale Translocation Site (LSTS).

No tortoises were released in Bird Springs Valley study area during the 1999-2001 biennium. The total number of tortoises transferred from the DTTHF and released in the Bird Springs Valley study area is 76.

No tortoises were released in the Lake Mead study area during the 1999-2001 biennium. The total number of tortoises transferred from the DTTHF and released in the Lake Mead study area is 30.

SNEI released 779 tortoises at the LSTS during the subject biennium as part of the ongoing Desert Tortoise Translocation Study. In October 2000, SNEI released 165 tortoises. The remaining 614 tortoises for the 1999-2001 biennium were released in April 2001. No tortoises were released in fall 1999 or spring 2000 due to permitting difficulties. This stall in the translocation program was partially responsible for the increased number of hatchlings generated at the DTTHF during the biennium.

CONCLUSIONS AND RECOMMENDATIONS

In the last four years, the 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 and were collected by the hotline and pick-up service. The current procedures in place for dealing with incoming tortoises have been developed over the last nine years and are functioning very well. The following paragraphs will discuss the conclusions and recommendations for each category of incoming tortoise.

Accepting unwanted pet desert tortoises solves some of the problems faced by Clark County, the USFWS, BLM, Red Rocks National Conservation Area, NDOW, National Park Service's Lake Mead National Recreation Area, Tortoise Group, and other agencies and entities associated with the MSHCP. This service provides a legal and easy outlet for pet owners who either no longer want their pet(s) or can no longer care for them. This program is important to reduce the number of tortoises that are "disposed of" by well-meaning, but uninformed, members of the public. SNEI concludes that the benefits of accepting unwanted pet desert tortoises are consistent with the goals and objectives of the MSHCP. This program gives the IMC, USFWS, and Clark County control over the disposition of these unwanted pet tortoises. SNEI strongly recommends the hotline and pick-up service continue to deal proactively with the problem of unwanted pet desert tortoises and continue to implement this program.

The implementation of the Desert Conservation Plan and subsequent MSHCP and the accompanying optional tortoise surveys and removals on private lands has resulted in a drastic reduction of wild Section 10 clearance tortoises entering the DTTHF. Only one 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. The Las Vegas Valley's wild desert tortoises are a valuable resource that could be used to help recover diminished populations throughout southern Nevada. The decision to implement optional clearances on private lands in Clark County was a pre-Translocation Study decision. As more is learned about disease transmission and translocation, the value of these wild tortoises may be more fully recognized.

In the 1999-2001 biennium, 106 progeny were found at the DTTHF. This increase over the previous biennium can be attributed to greater numbers of adult females being kept at the

DTTHF during the egg-laying season in both 1999 and 2000. To reduce the number of progeny at the DTTHF, females are kept separate from males. The progeny that did result were probably from female desert tortoises being fertilized prior to entering the DTTHF. SNEI recommends the continuation of annual spring translocation prior to egg-laying season with a priority of releasing as many qualified adult females as possible from the DTTHF. SNEI further recommends keeping as few adult females slated for adoption or research as possible during the egg-laying season. This effort will require cooperation from SNEI, Clark County, UNR, USGS, and USFWS to insure translocation permits are secured and that tortoises are transferred to research pens prior to May 1 each year.

SNEI has implemented a series of protocols to identify non-desert tortoise hotline callers prior to pick-up in order to deal only with non-desert tortoise pick-ups that cannot be screened out prior to pick-up response. The benefits of implementing these non-desert tortoise-handling protocols are consistent with the goals and objectives of the MSHCP. Dealing with these unavoidable non-desert tortoises in a proactive manner allows SNEI to field calls that would inevitably be forwarded to Clark County, USFWS, BLM, NDOW, and Tortoise Group without such a service.

The current procedures for dealing with outgoing tortoises have been developed over the last nine years and are functioning very well. Desert tortoise adoption has become less of a priority since the implementation of the translocation program in spring 1997. SNEI recommends continuing to provide USFWS-authorized adoption entities with qualified tortoises. The adoption programs promote desert tortoise awareness and are valuable outlet for excess tortoises at the DTTHF. Adoption procedures, like those of the Tortoise Group's that minimize hatchling production, should be promoted.

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 pet tortoises to worried owners at minimal cost, supplies the owner with information on proper care and feeding of tortoises, and reduces the DTHHF's husbandry and translocation costs. SNEI recommends continuing this service.

Providing desert tortoises to USFWS-approved research projects is an ongoing priority. Providing researchers with quality research animals is essential and is consistent with the goals and objectives of the MSHCP. SNEI recommends continuing to make the provision of research animals to USFWS-approved research projects a top priority.

In the 1999-2001 biennium, 284 tortoises died of unknown causes. Approximately 88 percent of the 284 tortoises were hatchlings and yearlings. 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. Indoor hatchlings are easy to care for and require very little time.

There were 48 tortoises declared missing in the 1999-2001 biennium. A few of these missing tortoises are believed to have escaped or been misplaced. However, the majority is believed

to have been lost to predation. SNEI recommends continuing the Terminix rodent control program. SNEI biologists will also continue to construct and maintain predator-proof pens to minimize losses to predators and will keep an eye on missing tortoise numbers.

Over 400 tortoises were humanely euthanized and disposed of by licensed veterinarians during the biennium. The majority of tortoises euthanized had produced a positive or suspect ELISA result indicating they had been exposed to URTD. SNEI recommends continuing to implement the current USFWS protocols and procedures for dealing with ELISA-positive and suspect tortoises, extremely malnourished tortoises, injured tortoises, and those showing signs of URTD. The ELISA test performed on tortoises entering the DTTHF is very important to minimize the transmission of URTD to healthy tortoises. SNEI biologists have noticed a significant difference in the number of URTD-symptomatic tortoises being found in holding pens at the DTTHF. SNEI strongly recommends continuing the ELISA testing of incoming tortoises. Without ELISA testing, SNEI risks spreading URTD to tortoises in holding at the DTTHF and could no longer qualify tortoises for translocation or adoption.

The DTCC is aging and no longer has the appropriate facilities for the volume of research being conducted there. The DTCC lacks office, laboratory, storage, and climate-controlled tortoise holding space. In summer 2001, the BLM, SNEI, Clark County, USFWS, and UNR met at the DTCC to discuss the construction and possible PLMA funding of a new building. 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 potential PLMA funding to construct a new building at the DTCC.

SNEI recommends the removal and disposal of the BLM trailer. BLM is currently taking action to have the trailer removed. SNEI also recommends continuing the Terminix zinc phosphate baiting program to help control wood rat and other rodent populations at the DTCC. SNEI also recommends assessing the need for holding potential research animals at the DTCC. If there are research projects on the horizon that need wild adult tortoises, then SNEI should continue to store them at the DTCC.

Translocation provides a necessary outlet for the hundreds of ELISA-negative tortoises collected and turned into the DTTHF. Today, the translocation effort is focused primarily on releasing DTTHF tortoises in holding that qualify for translocation. With approximately 1,350 incoming DTTHF tortoises annually, approximately 900 tortoises must be translocated or transferred to research annually to make space for incoming tortoises. Modified handling protocols have greatly reduced the cost of translocation. SNEI came in under budget in the 1999-2001 biennium at less than only $25,000 of a $120,000 budget. In fact, SNEI's cost to prepare and release 779 tortoises in the 1999-2001 biennium was less than $25,000. 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 to four days, establish new burrows and cover sites, and begin to behave like wild tortoises in a relatively short amount of time. Mortality rates of released tortoises have been reported to mirror that of monitored wild populations. SNEI strongly recommends the continuation of the translocation program. SNEI will continue to streamline release procedures to minimize program cost.

CONCLUSION

During the 1999-2001 Clark County MSHCP budget biennium, five basic categories of work were funded including public information and education, fencing, habitat maintenance and restoration, species inventory and monitoring, and research and adaptive management projects. Federal, state, and local agencies, along with private contractors, received Section 10 funding for activities aimed at addressing priorities outlined in the MSHCP. Agencies and contractors that received funds were required to submit annual progress reports on September 1 of every odd year, per Section 2.12.2.6 of the MSHCP. As administrator of the MSHCP and DCP, Clark County is responsible for collecting and accounting for these annual progress reports. This report represents Clark County's best efforts at collecting, summarizing, and documenting the work completed during the subject biennium. The 1999-2001 Biennium Progress Report also reflects the revenues and expenditures of the MSHCP and DCP.

Areas for improvement during the 2001-2003 Biennium include improved contract development, a more aggressive approach to collecting agency and contractor progress reports, a more rigorous evaluation of the content contained in the progress reports, and an even higher level of fiscal accountability by Clark County. These enhancements will be accomplished through better contract administration and improvements in MSHCP participants' responsiveness to requests for quarterly and yearly progress reports and their thorough documentation of project accomplishments, recommendations, and fiscal accountabilities. The effective implementation of the MSHCP database will also be a critical component in the participants' willingness and ability to share project accomplishments and recommendations during the 2001-2003 biennium. The MSHCP Database Working Group should continue to refine data entry procedures and data retention success.

Clark County respectfully submits this report to the Board of County Commissioners and the United States 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.

APPENDIX I

SECTION 7 PROJECTS

Bureau of Land Management – Contract No. 1999-BLM-2

Project Number	Project Description	Section 7 Funding Awarded	Project Status
N/A	Road Maintenance, Signs & Barriers	$15,500	Completed
N/A	Upland Restoration	$274,000	Completed
N/A	Survey Land Disturbance in Desert Tortoise Habitat for Clark County	$86,000	Completed
N/A	Mormon Mesa horse & burro removal	$52,500	Completed
		$428,000	**Actually Paid: $95,750**

National Park Service

Project Number	Project Description	Section 7 Funding Awarded	Project Status
N/A	Burro Removal	$42,000	Completed
N/A	Road Designation & Rehabilitation	$52,500	Completed
		$94,500	**Actually Paid: $114,500***

Southern Nevada Environmental Inc. – 1999-SNEI-1

Project Number	Project Description	Section 7 Funding Awarded	Project Status
1999-SNEI-1-A	Desert Tortoise Conservation Center	$80,000	Completed
N/A	Translocation Blood Study & ELISA Testing	$10,695	Completed
		$90,695	**Actually Paid: $3,333.33**

University of Nevada, Reno – Contract No. 1999-BRRC-1

Project Number	Project Description	Section 7 Funding Awarded	Project Status
1999-UNR-1-B	Desert Tortoise Density & Reproductive Monitoring	$400,000	Completed
		$400,000	**Actually Paid: $400,000**

* NPS received an additional $20,000 in Section 7 funding from unspent Section 7 funds originally awarded to the BLM.

ACCOMPLISHMENTS

SECTION 7 PROJECTS

Contractor: BLM

Contract No.: 1999-BLM-2

Project No.: N/A

Project Description: Road Maintenance, Signs & Barriers

Accomplishments: Three heavy-duty interpretive kiosks were purchased for installation in Piute Valley and Sunrise Management Area. Several hundred signs for restoration were designed and purchased for installation in Piute Valley and other areas.

Recommendations: Continue to develop public education projects for the desert tortoise DWMAs. Continue to install signs to achieve management goals.

Financial Funding Summary:

Section 7: $15,500

Contractor: BLM

Contract No.: 1999-BLM-2

Project No.: N/A

Project Description: Upland Restoration

Accomplishments: The restoration team focused most of their efforts in the Eldorado/Piute Valley ACEC. Restoration activities were completed following established guidelines set forth in the 1998 *Reclamation Plan for Critical Tortoise Habitat in the Las Vegas Field Office*. We completed 30 reclamation projects this year in the Eldoardo/Piute Valley ACEC. The projects included 32 roads and 2 dump sites. A total of 37 miles of road were reclaimed of which 30 miles were ripped and 9 miles were intensively planted. The intensive planting involved ripping, contouring and the use of dead and down material as well as rocks and live plants to visually screen the site. In addition to visually screening the site the use of dead and down material (vertical mulch) and rocks create micro-habitats providing shade, trapping seed and moisture which will help speed up recovery. To achieve a natural look only plant species found adjacent to the reclamation site were used for restoration work. DriWater was used on all live plantings to improve success and reduce person hours required to water.

Recommendations: Continue to restore disturbed habitat within critical desert tortoise areas.

Financial Funding Summary:

Section 7: $274,000

Contractor: BLM

Contract No.: 1999-BLM-2

Project No.: N/A

Project Description: Desert Tortoise Habitat GIS

Accomplishments: Under the direction of BLM, the GIS contractor digitally incorporated rights-of-way and other permitted on-the-ground actions in ACECs, using Plat maps and ArcInfo software. Maps were generated using ArcView software. The process included identifying existing projects, approved projects, and proposed projects so that a current status of activities within the ACECs is digitally maintained. This data will also be directly compared to restoration projects so that a net change in surface disturbance within ACECs can be monitored for compliance with the Desert Tortoise Recovery Plan. All maps displayed in the final report (hard copy) were also developed by the GIS contractor, including maps of rights-of-way in the tortoise ACECs.

Recommendations: Continue to digitally capture existing projects within Desert Tortoise ACECs. Once completed, the contractor will continue to update the information as necessary. This position is critical in that it gives the entire BLM staff the ability to track approved projects within these sensitive areas and is very useful for planning. The GIS contractor will work with the Science Advisor to Clark County and share appropriate data themes.

Financial Funding Summary:

Section 7: $86,000

Contractor: BLM

Contract No.: 1999-BLM-2

Project No.: N/A

Project Description: Mormon Mesa Horse & Burro Removal

Accomplishments: The BLM Ely Field Office completed the Caliente MFP Amendment which allowed for the removal of wild horses from the Mormon Mountain and Meadow Valley Herd Management Areas. Twenty-six horses were captured and removed. Additional expenditures were made to purchase panels to water trap any more horses that might move into the area.

Recommendations: A small number of horses, about 10-20, remain in this area. A census will be conducted on estimated numbers (if any) and remaining horses will be removed as soon as practicable.

Financial Funding Summary:

Section 7: $52,500

Contractor: NPS

Contract No.: N/A

Project No.: N/A

Project Description: Burro Removal

Accomplishments: An aggressive program intended to completely eliminate burros from a large portion of the Lake Mead National Recreation area, and reduce densities throughout the rest of the park has been in effect since 1995. During the latest reporting period, which began in 1997 and extended through the first six months of 1999, 206 burros were removed from the park. Of this number, 148 were removed from Nevada (40 from the Eldorado Mtns., 127 from the Gold Butte and 24 from the vicinity of the Muddy Mountains). The Park presently expends over $150,000/ yr. in ONPS funds (National Park Appropriations) on burro management activities. The additional funds provided through Section 7 have helped augment this budget to allow for a more aggressive capture program. As densities decrease, the cost/animal captured increases. Captures in the DWMA and other areas where total elimination of burros is the ultimate goal, are becoming very costly as we approach that goal. During our last capture operation in 1998, in which 28 burros were captured utilizing a net gun, helicopter costs alone exceeded $21,000. Add to this expense the $260/animal handling and adoption fee charged by the BLM, staff time, transportation, and brand inspector costs, and, at least in some cases, the true cost may exceed $1000/animal.

Recommendations: None available

Financial Funding Summary:

Section 7: $42,000

Contractor: NPS

Contract No.: N/A

Project No.: N/A

Project Description: Road Designation and Rehabilitation

Accomplishments: During this biennium, literally thousands of hours were spent by the park's rehabilitation crew, as well as other park staff, to determine and document OHV disturbance in the park. These areas were assessed and geo-referenced using GPS. This information was then downloaded into our GIS system. All projects (unless previously surveyed) must obtain cultural clearance before any ground is disturbed by our rehabilitation crews. Area of disturbance quantified in the Park in Clark County totals, at this time, 136.68 acres with a line disturbance of 455,317 X 8 ft. The following projects were accomplished:

- Recontoured land where Sprint fiberoptics line was installed along Lakeshore Road
- Rehabilitation on 3 roads in Newberry Mountain area (includes road decompaction & seed dispersal).
- Rehabilitation on Southern Nevada Water Authority (SNWA) construction violation (includes planting, recontouring & monitoring).
- Revegetation work on Hemenway Wash.
- Rehabilitation work on ORV violations at Gregg's Landing.
- Work on fenceline at Gold Butte Area
- Assessed all of Lake Mead NRA for ORV damage using GPS system
- Created maps using GIS (ArcView 3.1) to complete assessments for compliance. For disturbances not requiring compliance, rehabilitation work was achieved.

Over 60 maps have been created so far detailing the disturbed areas in the park. An example of one of these maps is included (figure 1). In ArcView, in addition to a view of the map, an evaluation of the disturbance as well as a picture of the area can be observed.

Recommendations: None available

Financial Funding Summary:

Section 7: $52,500

Contractor: SNEI

Contract No.: 1999-SNEI-1

Project No.: 1999-SNEI-1-A

Project Description: Desert Tortoise Conservation Center

Accomplishments: Accomplishments for this project are detailed in the "Biennial Tortoise Report" section of this progress report.

Recommendations: Recommendations are also summarized in the "Biennial Tortoise Report" section of this progress report.

Financial Funding Summary:

Section 7: $80,000

Contractor: SNEI

Contract No.: 1999-SNEI-1

Project No.: N/A

Project Description: Translocation Blood Study & ELISA Testing

Accomplishments: Accomplishments for this project are detailed in the "Biennial Tortoise Report" section of this progress report.

Recommendations: Recommendations are also summarized in the "Biennial Tortoise Report" section of this progress report.

Financial Funding Summary:

Section 7: $10,695

Contractor: University of Nevada, Reno - BRRC

Contract No.: 1999-BRRC-1

Project No.: 1999-BRRC-1-B

Project Description: Desert Tortoise Monitoring

Accomplishments: Tortoise monitoring research was conducted at Piute Valley and the LSTS. Research included serial tests of innovations to distance sampling. This required approximately 400 km of distance sampling of tortoises. Investigators also conducted training for distance sampling for consultants range wide, and assessed Go for all sites in Nevada. Investigators began analysis of a new method for monitoring, which they report may revolutionize tortoise monitoring.

Recommendations: Recommendations are summarized in Appendix II: Executive Summary, March 15 Report to the Implementation and Monitoring Committee (2001-2002).

Financial Funding Summary:

Section 7: $400,000

APPENDIX II

AMP CONTRACTOR MARCH 15TH REPORT, EXECUTIVE SUMMARY

The Executive Summary of the University of Nevada, Reno Biological Resources Research Center's (BRRC) March 15th Report to the Implementation and Monitoring Committee (2001-2002) follows.