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STATE OF NEW MEXICO

DEPARTMENT OF GAME & FISH

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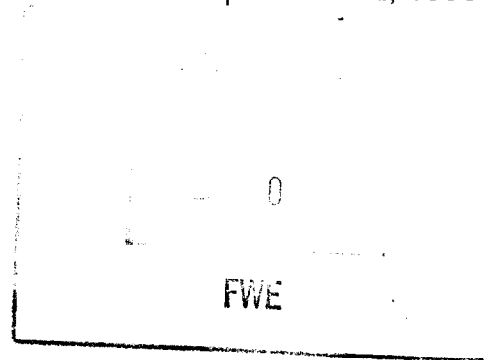
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TO THE COMMISSION
Gerald A. Maracchini

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September 22, 1998

Ms. Nancy Kaufman, Regional Director
U. S. Fish and Wildlife Service
P. O. Box 1306
Albuquerque, New Mexico 87103

Dear Ms. Kaufman:



Enclosed is a performance report for Section 6 grant, E-31-4, "Status of Listed and Category Herpetofauna". This report covers the period of July 1, 1997 through June 30, 1998.

If you need additional information, please contact Roberta Salazar-Henry (505/827-7924) of my staff.

Sincerely,

Jerry A. Maracchini
Director

MLM
Enc.

cc: Jennifer Fowler-Propst (Field Supervisor, USFWS Ecological Services)
Roberta Salazar-Henry (Assistant Director, NMGF)
Andrew Sandoval (Chief, Conservation Services Division, NMGF)
Lisa Evans (Federal Aid Coordinator, NMGF)
Charles Painter (Endangered Species Biologist, NMGF)
Mary Medina (Conservation Services Division Admin. Assistant, NMGF)

PERFORMANCE REPORT

State: New Mexico Project Number E-31-4

Grant Title: Endangered Species

Project Title: Status of Listed and Category Herpetofauna

Contract Period: July 1, 1997 To: June 30, 1998

I. Program Narrative Objective

To obtain, analyze, and report information necessary for determining or monitoring the status and threats to the species of amphibians and reptiles in southwestern New Mexico that are listed by the State of New Mexico as endangered or threatened or as a federal Notice of Review species by the U.S. Fish and Wildlife Service (USFWS).

II. Objectives/Procedures

A. During Segment 4, field work in southwestern New Mexico will be increased and investigations of *Bufo alvarius* will be initiated, contingent upon landowner permission. Populations and habitat of *Thamnophis proximus* at Bitter Lake National Wildlife Refuge will be investigated for the possibility of establishing a long-term study site. The mark-recapture study of *Thamnophis rufipunctatus*, initiated in the San Francisco River during August 1995, will be expanded to include parts of the Gila River and its tributaries. Attempts will be made to visit these study sites at least every other month during the activity season. If appropriate, contractors will be used to carry out the routine field work required at each study site. Principal investigator for these studies will be Charles W. Painter.

The status of *Bufo alvarius* was not investigated during this segment, as it was felt that the very small sample size available would not justify the expense nor provide sufficient life history data to make management decisions. Portal, AZ resident Barney Tomberlin (*pers. comm.*) did not encounter a single individual within the New Mexico

range of this species despite numerous surveys of and near the known breeding sites.

With significant involvement and cooperation of the Bitter Lake National Wildlife Refuge personnel, a long-term mark/recapture study of *Thamnophis proximus* was initiated. Several drift-fence/funnel-trap arrays were constructed on the refuge and all snakes captured were weighed, measured, PIT-tagged, and released at the original capture site.

From early April - late May 1998, at least 45 *T. proximus* were sighted or collected on Bitter Lakes NWR (Fig. 1) by the refuge wildlife staff. Snakes ranged in size from 14-63 mm SVL and weighed 4-48 gr. Juvenile and adult males and females were represented in this sample. Of those snakes captured and measured (n=38), 34% had either stump tails, significant scarring on the body, or were infected by internal parasites indicating heavy predation pressure. One PIT-tagged specimen was taken found in the stomach of a coachwhip, (*Masticophis flagellum*).

Prior to the establishment of the herp arrays for the long-term mark/recapture study, 55 window screen funnel-traps were set on the refuge to determine areas of known populations and areas suitable for long-term study. Between 9-12 September 1997, funnel traps were placed as follows: Hunter Marsh (15) Lost River (14), Bitter Creek (12), Dragonfly Spring (8), and Cattail Canal (6). These traps were monitored throughout the week and *T. proximus* were collected or observed at Bitter Creek (3), Lost River weir (2), and Dragonfly Springs (1) (Fig. 1). On 28 May 1998 a large gravid female *T. proximus* was collected at Sego Springs and another herp array was established at the site. To provide reproductive data on relative clutch mass and neonate morphology, this female was held captive until after parturition. In addition to Bitter Lake NWR, 8 traps were placed in appropriate habitat on the Dexter National Fish Hatchery and monitored from 13-21 September 1997. A single small individual (SVL 170 mm, mass 3 gr) was collected near South Marsh. Although no adults were captured or observed during this trapping period, this individual was likely born during mid summer of the same year, likely indicating reproduction at the site.

Bitter Lakes NWR wildlife staff plan to continue this important mark/recapture study past the completion of this project segment. On the refuge, the only identified anthropogenic threats to this

species are from incidental roadkills. As these snakes are basking or crossing the numerous gravel tour-route roads throughout the refuge they are often unintentionally crushed by vehicular traffic.

Elsewhere in the range in New Mexico, the species is impacted by deliberate killing or by collecting for the herpetocultural trade. Other threats may include water depletion for irrigation or other uses or discharge of pollution into waterways and wetlands.

Due to a combination of time constraints, availability of funds, and private lands issues, the mark/recapture study of *T. rufipunctatus* was not expanded to include portions of the Gila River. Additional presence/absence surveys were conducted, however long-term mark/recapture studies were not initiated. The mark/recapture study on the San Francisco River has provided numerous life history data and should serve as a basis for future management decisions. A detailed study of grazed/ungrazed sites would provide additional valuable information on habitat selection of this peripheral species in New Mexico.

B. Selected historic sites suspected of being occupied by these species will be visited and the species presence/absence will be noted. Established study sites for *T. rufipunctatus* and *Bufo microscaphus* will continue to be monitored.

On 23 July 1997, the Gila River Lower Box just upstream of Virden, a known collecting locality for *T. rufipunctatus* and *B. microscaphus*, was investigated. BLM has removed cattle from the riparian area and the vegetation seems to be responding well. No traps were set, and only a diurnal search was carried out. No *T. rufipunctatus* or *B. microscaphus* were observed although suitable habitat exists and observations of both species is likely with additional effort.

Investigations of the status of *T. rufipunctatus* and *Bufo microscaphus* at the San Francisco Hot Springs long-term study site continued during the periods 21-25 July and 20-24 October 1997. During that time numerous individuals of each species were collected, measured, uniquely marked if appropriate, and released at the point of collection. All of these morphometric data have been entered into a computerized data base and will be further analyzed with preparation of the final report. Morphology and status of these species have not changed with the addition of these data.

The San Francisco Hot Springs long-term study site for these species is no longer available for investigation due to private land owner concerns. NMDGF biologists and professional services contractors have collected data on the status and natural history of *T. rufipunctatus* at this site since summer 1984, with over 400 *T. rufipunctatus* uniquely marked at the site. However, on 4 May 1998 the current landowner denied further access to the area.

A reach of the upper San Francisco River near Alma was investigated for the presence of *T. rufipunctatus* and *B. microscaphus*, and was found to have a significant population of both species. On 29 June 1998, approximately 31 *T. rufipunctatus* were observed or collected here, with juvenile and adult males and females well represented in the sample. Most were basking on or hiding in the canyon rock walls, but several were found in overhanging vegetation or foraging along the bottom of the stream.

Bufo microscaphus was observed breeding and numerous newly metamorphosed toadlets were measured and released; 13 individuals were examined (range = 15-20 mm, avg. SUL = 17.5 mm). One terrestrial individual 17 mm SUL maintained a small tailbud. This area is being investigated for a potential long-term study site.

C Continue to plan additional studies to investigate the status of the higher priority species or subspecies identified on the attached list.

It was decided by USFWS Ecological Services, Albuquerque that the Chiricahua leopard frog, *Rana chiricahuensis*, deserves a higher priority for study than the other Species of Concern on the list attached during previous segments of this project. Therefore, future study plans for this project involve only *R. chiricahuensis*. *Rana chiricahuensis* has been petitioned for listing as Threatened under the ESA. A listing package has been prepared by USFWS Ecological Services Office, Phoenix and is currently at the Solicitor's Office in Washington D.C. Plans for the next project segment include a continuation of efforts to reintroduce *R. chiricahuensis* at various sites within the Mimbres River drainage. Plans are being made to work closely with The Nature Conservancy and private land owners in the Mimbres River valley during select phases of this project segment.

D. Analyze findings from the studies implemented above and prepare a report summarizing the status of and threats to each species studied under Objective A (above).

All data collected during all previous segments of this federal aid project have been computerized and will be made available with preparation of the final segment. Also during the final segment the status of and threats to each species studied during this project will be presented in detail.

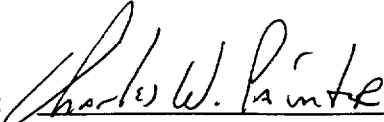
The Colorado River toad, *B. alvarius*, is uncommon in its limited range in southwest New Mexico, with <10 or so narrowly-separated collecting sites known. Little is known about the status of the species in New Mexico where it reaches the extreme eastern boundary of its range. With the exception of a food habits study completed in 1962 (Cole 1962. *Herpetologica* 18(3):172-175.), no in-depth study of the status of *B. alvarius* in New Mexico exist and only incidental collecting localities are reported. Important data needed in New Mexico are habitat usage and population responses to livestock overgrazing, draining of occupied and potential roadside breeding sites, and the herpetocultural trade.

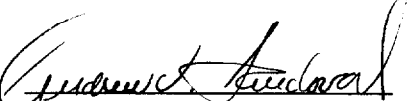
The status of the Arizona toad, *B. microscaphus*, in New Mexico seems relatively secure. This is a toad of the permanent, larger stream and river reaches in southwestern New Mexico. Reproduction and survivorship appears normal and is noted at most sites of suitable habitat. The genetic swamping of *B. microscaphus* through interbreeding with *B. woodhousii* does not appear to be of significant frequency to present a problem in New Mexico as suggested for populations in Arizona. Potential and real threats include habitat degradation through livestock overgrazing, agricultural water diversion, and limited population size and suitable habitat. A breeding chronology is being prepared for *B. microscaphus* in New Mexico through the use of museum specimens and naturally occurring reproductive data collected over the duration of this project.

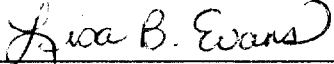
In southwest New Mexico, populations of the narrowhead garter snake, *T. rufipunctatus*, are widely scattered and narrowly confined to specific habitat types. Although the species is abundant at select localities (e.g., San Francisco River at San Francisco Hot Springs, San Francisco River at Alma Box, and Gila River near Middle Box), and much important life history data have been collected at these sites,

these areas represent widely separated metapopulations incapable of genetic exchange due to the unsuitable intervening arid habitat. Potential and real threats to *T. rufipunctatus* include habitat degradation through livestock overgrazing, agricultural water diversion, the introduction, establishment, and control of exotic species including saltcedar (*Tamarix* sp.), bullfrogs (*Rana catesbeiana*), and predatory gamefish (mostly Centrarchidae and Ictaluridae), and limited population size and suitable habitat. Collection of specimens for the herpetocultural trade is known to occur but is generally thought to be insignificant. A detailed life history study of *T. rufipunctatus* in New Mexico is being prepared with data collected over the duration of this project.

In eastern New Mexico, populations of the arid land ribbon snake, *T. proximus*, are widely scattered and narrowly confined to specific habitat types. The species is very little known. The continuing life history study at Bitter Lake NWR represents the only such study ever conducted in New Mexico; other data are only incidental collecting reports. Unless protected by federal land-use mandates, as at Bitter Lake NWR, threats to populations of *T. proximus* include water depletion for irrigation or other uses, discharge of pollution into waterways and wetlands, livestock overgrazing of riparian areas, deliberate killing or collecting for the herpetocultural trade, the introduction, establishment, and control of exotic species including saltcedar (*Tamarix* sp.), bullfrogs (*Rana catesbeiana*), and predatory gamefish (mostly Centrarchidae and Ictaluridae), and limited population size and suitable habitat. Vehicular traffic causes unintentional take as basking and dispersing individuals are crushed on the roadways.

Prepared by: 
Charles W. Painter
Project Biologist

Approved by: 
Andrew V. Sandoval
Chief, Conservation
Services Division

Approved by: 
~~Roberta Salazar-Henry~~
Federal Aid Coordinator

PERFORMANCE REPORT

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Grant Title: Endangered Species

Project Title: Status of Listed and Category Herpetofauna

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Fig 1 *Thamnophis proximus* from Bitter Lake Natl. Wildlife Refuge - Sightings and captures.

Date	Location	PIT TAG NO.	SVL	TAIL	SVL/Tail	MASS	Recap Date	Recap Location	Comments
11-Sep-97	Bitter Crk weir	412D31136F	52	6(s)		4.8			CWP et al.; hand collected; stump tail
11-Sep-97	Dragonfly Springs	412D502849	37	16.5	0.45	2.0			CWP et al.
11-Sep-97	Bitter Crk	412D494032	19	8	0.42	2			CWP et al.; hand collected; basking 1920 h
12-Sep-97	Lost River Pool	na							CWP et al. obs. only
12-Sep-97	Lost River Pool	na							CWP et al. obs. only
12-Sep-97	Lost River Pool	na							CWP et al. obs. only
7-Apr-98	Fire cache	na							sighted by fire crew
13-Apr-98	W end U-5 dike	na							roadkill
14-Apr-98	Rd SE Bitter Lake	4137347610	38	10	0.26	4.6			hand collected
14-Apr-98	Lost River Pool	na							sighted by Warrick
24-Apr-98	NE U-5 trap	413724221E	48	13	0.27	4.8			tail w/ bile mark
25-Apr-98	SW U-3 trap	41374D084D	63	13	0.21	4.8			bump on ft dorsal
27-Apr-98	SW U-3 trap	413730592B	33	10	0.30	4			PIT tag well up on body
27-Apr-98	NW U-6 eggs	na							sighted by B. Larson
28-Apr-98	NE U-5 trap	41366F1E1E	53	16	0.30	2.2			
30-Apr-98	NE U-5 trap	4136625163	20	8	0.40	3	7-May-98	Mid U-3	
30-Apr-98	SW U-3 trap	4137335427	25	9	0.36	4.5			
30-Apr-98	SW U-3 trap	41374C465F	41	18	0.44	2.0	6 May/25 May	Mid U-3/NW U-5	bump on dorsal side
30-Apr-98	SW U-3 trap	4136730D40	43	16	0.42	2.7			
1-May-98	NE U-5 trap	413666035C	30	14	0.47	1.0			escaped in office
1-May-98	Rd SE Bitter Lake	4136696403	41	14	0.34	2.2			basking on rd 1100 hr; escaped in office
1-May-98	Bitter Crk up from flu	na							sighted by Warrick
2-May-98	SW U-3 trap	43166A4784							escaped in office
3-May-98	NE U-5 trap	41364E7C53	25	11	0.44	5			
5-May-98	NE U-5 trap	413668046D	36	17	0.47	1.8			
5-May-98	NE U-5 trap	413657080A	38	17	0.45	1.9			
5-May-98	NE U-5 trap	4136575946	44	17	0.39	2.9			
5-May-98	NW U-6 eggs	na							sighted by B. Larson
6-May-98	Mid U-3 trap	413666035C	22	3(s)		5	10-May-98	SW U-3 trap	stump tail; eaten by coachwhip
6-May-98	NE U-5 trap	413666046D	36	16	0.44	1.6	12 May/17 May	NE U-5 trap/ld U-3 trap	
6-May-98	Mid U-3 trap	413666035C	39	12	0.31	1.5			
8-May-98	NE U-5 trap	413666046D	43	18	0.44	2.0			scarring on dorsal & ventral side
9-May-98	Mid U-3 trap	413666046D	22	9	0.41	4			
10-May-98	NE U-5 trap	413666046D	25	11	0.44	6			
11-May-98	Mid U-3 trap	413666046D	46	2(s)		3.5			stump tail
12-May-98	NE U-5 trap	413666046D	29	13	0.45	9			
12-May-98	NE U-5 trap	413666046D	33	7(s)		1.2			missing small part of tail
13-May-98	NE U-5 trap	413666046D	31	14	0.45	8			
13-May-98	NE U-5 trap	413666046D	37	15	0.41	1.6			
15-May-98	Bitter Crk 1 trap	413666046D	36	18	0.50	1.6			released at Bitter Crk weir
15-May-98	Mid U-3 trap	413666046D	40	3(s)		2.1	19-May-98	Mid U-3	stump tail; regurg 2 G. allinis
19-May-98	SW U-3 trap	413666046D	32	13	0.41	1.0			scarring 1-2 cm above vent
20-May-98	Mid U-3 trap	413666046D	34	14	0.41	1.2			small buldge on ft side 6 cm above vent
21-May-98	Mid U-3 trap	413666046D	14	10	0.71	4			
21-May-98	Mid U-3 trap	413666046D	22	9	0.41	4			
22-May-98	Mid U-3 trap	413666046D	27	12	0.44	5			
22-May-98	Mid U-3 trap	413666046D	42	9(s)		2.7			missing small part of tail
22-May-98	Mid U-3 trap	413666046D	52	21	0.40	4.7			
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species are from incidental roadkills. As these snakes are basking or crossing the numerous gravel tour-route roads throughout the refuge they are often unintentionally crushed by vehicular traffic.

Elsewhere in the range in New Mexico, the species is impacted by deliberate killing or by collecting for the herpetocultural trade. Other threats may include water depletion for irrigation or other uses or discharge of pollution into waterways and wetlands.

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B. Selected historic sites suspected of being occupied by these species will be visited and the species presence/absence will be noted. Established study sites for *T. rufipunctatus* and *Bufo microscaphus* will continue to be monitored.

On 23 July 1997, the Gila River Lower Box just upstream of Virden, a known collecting locality for *T. rufipunctatus* and *B. microscaphus*, was investigated. BLM has removed cattle from the riparian area and the vegetation seems to be responding well. No traps were set, and only a diurnal search was carried out. No *T. rufipunctatus* or *B. microscaphus* were observed although suitable habitat exists and observations of both species is likely with additional effort.

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It was decided by USFWS Ecological Services, Albuquerque that the Chiricahua leopard frog, *Rana chiricahuensis*, deserves a higher priority for study than the other Species of Concern on the list attached during previous segments of this project. Therefore, future study plans for this project involve only *R. chiricahuensis*. *Rana chiricahuensis* has been petitioned for listing as Threatened under the ESA. A listing package has been prepared by USFWS Ecological Services Office, Phoenix and is currently at the Solicitor's Office in Washington D.C. Plans for the next project segment include a continuation of efforts to reintroduce *R. chiricahuensis* at various sites within the Mimbres River drainage. Plans are being made to work closely with The Nature Conservancy and private land owners in the Mimbres River valley during select phases of this project segment.

D. Analyze findings from the studies implemented above and prepare a report summarizing the status of and threats to each species studied under Objective A (above).

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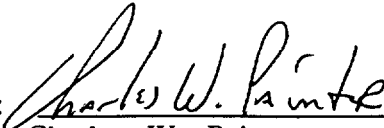
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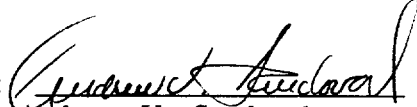
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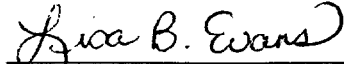
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these areas represent widely separated metapopulations incapable of genetic exchange due to the unsuitable intervening arid habitat. Potential and real threats to *T. rufipunctatus* include habitat degradation through livestock overgrazing, agricultural water diversion, the introduction, establishment, and control of exotic species including saltcedar (*Tamarix* sp.), bullfrogs (*Rana catesbeiana*), and predatory gamefish (mostly Centrarchidae and Ictaluridae), and limited population size and suitable habitat. Collection of specimens for the herpetocultural trade is known to occur but is generally thought to be insignificant. A detailed life history study of *T. rufipunctatus* in New Mexico is being prepared with data collected over the duration of this project.

In eastern New Mexico, populations of the arid land ribbon snake, *T. proximus*, are widely scattered and narrowly confined to specific habitat types. The species is very little known. The continuing life history study at Bitter Lake NWR represents the only such study ever conducted in New Mexico; other data are only incidental collecting reports. Unless protected by federal land-use mandates, as at Bitter Lake NWR, threats to populations of *T. proximus* include water depletion for irrigation or other uses, discharge of pollution into waterways and wetlands, livestock overgrazing of riparian areas, deliberate killing or collecting for the herpetocultural trade, the introduction, establishment, and control of exotic species including saltcedar (*Tamarix* sp.), bullfrogs (*Rana catesbeiana*), and predatory gamefish (mostly Centrarchidae and Ictaluridae), and limited population size and suitable habitat. Vehicular traffic causes unintentional take as basking and dispersing individuals are crushed on the roadways.

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PERFORMANCE REPORT

State: New Mexico Project Number E-31-4

Grant Title: Endangered Species

Project Title: Status of Listed and Category Herpetofauna

Contract Period: July 1, 1997 To: June 30, 1998

I. Program Narrative Objective

To obtain, analyze, and report information necessary for determining or monitoring the status and threats to the species of amphibians and reptiles in southwestern New Mexico that are listed by the State of New Mexico as endangered or threatened or as a federal Notice of Review species by the U.S. Fish and Wildlife Service (USFWS).

II. Objectives/Procedures

A. During Segment 4, field work in southwestern New Mexico will be increased and investigations of *Bufo alvarius* will be initiated, contingent upon landowner permission. Populations and habitat of *Thamnophis proximus* at Bitter Lake National Wildlife Refuge will be investigated for the possibility of establishing a long-term study site. The mark-recapture study of *Thamnophis rufipunctatus*, initiated in the San Francisco River during August 1995, will be expanded to include parts of the Gila River and its tributaries. Attempts will be made to visit these study sites at least every other month during the activity season. If appropriate, contractors will be used to carry out the routine field work required at each study site. Principal investigator for these studies will be Charles W. Painter.

The status of *Bufo alvarius* was not investigated during this segment, as it was felt that the very small sample size available would not justify the expense nor provide sufficient life history data to make management decisions. Portal, AZ resident Barney Tomberlin (*pers. comm.*) did not encounter a single individual within the New Mexico

range of this species despite numerous surveys of and near the known breeding sites.

With significant involvement and cooperation of the Bitter Lake National Wildlife Refuge personnel, a long-term mark/recapture study of *Thamnophis proximus* was initiated. Several drift-fence/funnel-trap arrays were constructed on the refuge and all snakes captured were weighed, measured, PIT-tagged, and released at the original capture site.

From early April - late May 1998, at least 45 *T. proximus* were sighted or collected on Bitter Lakes NWR (Fig. 1) by the refuge wildlife staff. Snakes ranged in size from 14-63 mm SVL and weighed 4-48 gr. Juvenile and adult males and females were represented in this sample. Of those snakes captured and measured (n=38), 34% had either stump tails, significant scarring on the body, or were infected by internal parasites indicating heavy predation pressure. One PIT-tagged specimen was taken found in the stomach of a coachwhip, (*Masticophis flagellum*).

Prior to the establishment of the herp arrays for the long-term mark/recapture study, 55 window screen funnel-traps were set on the refuge to determine areas of known populations and areas suitable for long-term study. Between 9-12 September 1997, funnel traps were placed as follows: Hunter Marsh (15) Lost River (14), Bitter Creek (12), Dragonfly Spring (8), and Cattail Canal (6). These traps were monitored throughout the week and *T. proximus* were collected or observed at Bitter Creek (3), Lost River weir (2), and Dragonfly Springs (1) (Fig. 1). On 28 May 1998 a large gravid female *T. proximus* was collected at Sego Springs and another herp array was established at the site. To provide reproductive data on relative clutch mass and neonate morphology, this female was held captive until after parturition. In addition to Bitter Lake NWR, 8 traps were placed in appropriate habitat on the Dexter National Fish Hatchery and monitored from 13-21 September 1997. A single small individual (SVL 170 mm, mass 3 gr) was collected near South Marsh. Although no adults were captured or observed during this trapping period, this individual was likely born during mid summer of the same year, likely indicating reproduction at the site.

Bitter Lakes NWR wildlife staff plan to continue this important mark/recapture study past the completion of this project segment. On the refuge, the only identified anthropogenic threats to this

Fig 1 *Thamnophis proximus* from Bitter Lake Natl. Wildlife Refuge - sightings and captures.

Date	Location	PIT TAG NO.	SVL	TAIL	SVL/Tail	MASS	Recap Date	Recap Location	Comments
11-Sep-97	Bitter Crk weir	412031136F	52	8(s)		48			CWP et al.; hand collected; stump tail
11-Sep-97	Dragonfly Springs	4120502849	37	16.5	0.45	20			CWP et al.
11-Sep-97	Bitter Crk	4120494032	19	8	0.42	2			CWP et al.; hand collected; basking 1820 h
12-Sep-97	Lost River Pool	na							CWP et al. obs. only
12-Sep-97	Lost River Pool	na							CWP et al. obs. only
12-Sep-97	Lost River Pool	na							CWP et al. obs. only
7-Apr-98	Fire cache	na							sighted by fire crew
13-Apr-98	W end U-5 dike	na							roadkill
14-Apr-98	Rd SE Bitter Lake	4137347810	38	10	0.26	46			hand collected
14-Apr-98	Lost River Pool	na							sighted by Warrick
24-Apr-98	NE U-5 trap	413724221E	48	13	0.27	48			tail w/ bite mark
25-Apr-98	SW U-3 trap	413740084D	63	13	0.21	48			bump on rt dorsal
27-Apr-98	SW U-3 trap	413730592B	33	10	0.30	4			PIT tag well up on body
27-Apr-98	NW U-6 spgs.	na							sighted by B. Larson
28-Apr-98	NE U-5 trap	41366F1E1E	53	18	0.30	22			
30-Apr-98	NE U-5 trap	4136625163	20	8	0.40	3	7-May-98	Mid U-3	
30-Apr-98	SW U-3 trap	4137335427	25	9	0.36	4.5			
30-Apr-98	SW U-3 trap	41374C465F	41	18	0.44	20	6 May/25 May	Mid U-3/NW U-5	bump on dorsal side
30-Apr-98	SW U-3 trap	4138730D40	43	16	0.42	27			
1-May-98	NE U-5 trap	413666035C	30	14	0.47	10			escaped in office
1-May-98	Rd SE Bitter Lake	4136595403	41	14	0.34	22			basking on rd 1100 hr; escaped in office
1-May-98	Bitter Crk up from flu	na							sighted by Warrick
2-May-98	SW U-3 trap	43166A4784							escaped in office
3-May-98	NE U-5 trap	41384E7C53	25	11	0.44	5			
5-May-98	NE U-5 trap	413668046D	36	17	0.47	18			
5-May-98	NE U-5 trap	413657080A	38	17	0.45	19			
5-May-98	NE U-5 trap	4136575946	44	17	0.39	29			
5-May-98	NW U-6 spgs.								sighted by B. Larson
6-May-98	Mid U-3 trap	4136625163	22	3(s)		5	10-May-98	SW U-3 trap	stump tail; eaten by coachwhip
6-May-98	NE U-5 trap	4136625163	36	16	0.44	16	12 May/17 May	NE U-5 trap/d U-3 trap	
6-May-98	Mid U-3 trap	4136625163	39	12	0.31	15			
8-May-98	NE U-5 trap	4136625163	43	19	0.44	20			scarring on dorsal & ventral side
9-May-98	Mid U-3 trap	4136625163	22	9	0.41	4			
10-May-98	NE U-5 trap	4136625163	25	11	0.44	6			
11-May-98	Mid U-3 trap	4136625163	46	2(s)		35			stump tail
12-May-98	NE U-5 trap	4136625163	29	13	0.45	9			
12-May-98	NE U-5 trap	4136625163	33	7(s)		12			missing small part of tail
13-May-98	NE U-5 trap	4136625163	31	14	0.45	8			
13-May-98	NE U-5 trap	4136625163	37	15	0.41	16			
15-May-98	Bitter Crk 1 trap	4136625163	36	18	0.50	16			released at Bitter Crk weir
15-May-98	Mid U-3 trap	4136625163	40	3(s)		21	19-May-98	Mid U-3	stump tail; regurg 2 G. affinis
19-May-98	SW U-3 trap	4136625163	32	13	0.41	10			scarring 1-2 cm above vent
20-May-98	Mid U-3 trap	4136625163	34	14	0.41	12			small buldge on rt side 6 cm above vent
21-May-98	Mid U-3 trap	4136625163	14	10	0.71	4			
21-May-98	Mid U-3 trap	4136625163	22	9	0.41	4			
22-May-98	Mid U-3 trap	4136625163	27	12	0.44	6			
22-May-98	Mid U-3 trap	4136625163	42	9(s)		27			missing small part of tail
22-May-98	Mid U-3 trap	4136625163	52	21	0.40	47			
23-May-98	Mid U-3 trap	4136625163	31	13	0.42	10			
23-May-98	Mid U-3 trap	4136625163	2	36	18	0.42	17		scarring on tail
24-May-98	Mid U-3 trap	4136625163	0	25	6(s)	5			missing small part of tail
26-May-98	Sego Spgs								CWP et al. hand collected large gravid female; Warrick to hold for reproductive data

species are from incidental roadkills. As these snakes are basking or crossing the numerous gravel tour-route roads throughout the refuge they are often unintentionally crushed by vehicular traffic.

Elsewhere in the range in New Mexico, the species is impacted by deliberate killing or by collecting for the herpetocultural trade. Other threats may include water depletion for irrigation or other uses or discharge of pollution into waterways and wetlands.

Due to a combination of time constraints, availability of funds, and private lands issues, the mark/recapture study of *T. rufipunctatus* was not expanded to include portions of the Gila River. Additional presence/absence surveys were conducted, however long-term mark/recapture studies were not initiated. The mark/recapture study on the San Francisco River has provided numerous life history data and should serve as a basis for future management decisions. A detailed study of grazed/ungrazed sites would provide additional valuable information on habitat selection of this peripheral species in New Mexico.

B. Selected historic sites suspected of being occupied by these species will be visited and the species presence/absence will be noted. Established study sites for *T. rufipunctatus* and *Bufo microscaphus* will continue to be monitored.

On 23 July 1997, the Gila River Lower Box just upstream of Virden, a known collecting locality for *T. rufipunctatus* and *B. microscaphus*, was investigated. BLM has removed cattle from the riparian area and the vegetation seems to be responding well. No traps were set, and only a diurnal search was carried out. No *T. rufipunctatus* or *B. microscaphus* were observed although suitable habitat exists and observations of both species is likely with additional effort.

Investigations of the status of *T. rufipunctatus* and *Bufo microscaphus* at the San Francisco Hot Springs long-term study site continued during the periods 21-25 July and 20-24 October 1997. During that time numerous individuals of each species were collected, measured, uniquely marked if appropriate, and released at the point of collection. All of these morphometric data have been entered into a computerized data base and will be further analyzed with preparation of the final report. Morphology and status of these species have not changed with the addition of these data.

The San Francisco Hot Springs long-term study site for these species is no longer available for investigation due to private land owner concerns. NMDGF biologists and professional services contractors have collected data on the status and natural history of *T. rufipunctatus* at this site since summer 1984, with over 400 *T. rufipunctatus* uniquely marked at the site. However, on 4 May 1998 the current landowner denied further access to the area.

A reach of the upper San Francisco River near Alma was investigated for the presence of *T. rufipunctatus* and *B. microscaphus*, and was found to have a significant population of both species. On 29 June 1998, approximately 31 *T. rufipunctatus* were observed or collected here, with juvenile and adult males and females well represented in the sample. Most were basking on or hiding in the canyon rock walls, but several were found in overhanging vegetation or foraging along the bottom of the stream.

Bufo microscaphus was observed breeding and numerous newly metamorphosed toadlets were measured and released; 13 individuals were examined (range = 15-20 mm, avg. SUL = 17.5 mm). One terrestrial individual 17 mm SUL maintained a small tailbud. This area is being investigated for a potential long-term study site.

C Continue to plan additional studies to investigate the status of the higher priority species or subspecies identified on the attached list.

It was decided by USFWS Ecological Services, Albuquerque that the Chiricahua leopard frog, *Rana chiricahuensis*, deserves a higher priority for study than the other Species of Concern on the list attached during previous segments of this project. Therefore, future study plans for this project involve only *R. chiricahuensis*. *Rana chiricahuensis* has been petitioned for listing as Threatened under the ESA. A listing package has been prepared by USFWS Ecological Services Office, Phoenix and is currently at the Solicitor's Office in Washington D.C. Plans for the next project segment include a continuation of efforts to reintroduce *R. chiricahuensis* at various sites within the Mimbres River drainage. Plans are being made to work closely with The Nature Conservancy and private land owners in the Mimbres River valley during select phases of this project segment.

D. Analyze findings from the studies implemented above and prepare a report summarizing the status of and threats to each species studied under Objective A (above).

All data collected during all previous segments of this federal aid project have been computerized and will be made available with preparation of the final segment. Also during the final segment the status of and threats to each species studied during this project will be presented in detail.

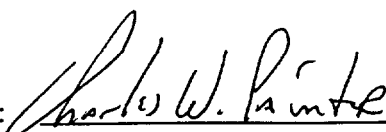
The Colorado River toad, *B. alvarius*, is uncommon in its limited range in southwest New Mexico, with <10 or so narrowly-separated collecting sites known. Little is known about the status of the species in New Mexico where it reaches the extreme eastern boundary of its range. With the exception of a food habits study completed in 1962 (Cole 1962. *Herpetologica* 18(3):172-175.), no in-depth study of the status of *B. alvarius* in New Mexico exist and only incidental collecting localities are reported. Important data needed in New Mexico are habitat usage and population responses to livestock overgrazing, draining of occupied and potential roadside breeding sites, and the herpetocultural trade.

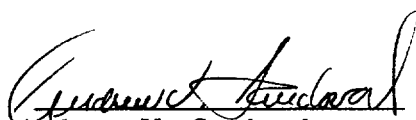
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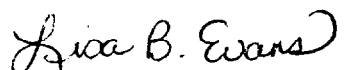
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