

Chiricahua Leopard Frog Recovery Update
Recovery Units 1-4
For the SE AZ/SW NM Stakeholders Group Meeting
Southwest Research Station, Arizona
18 February 2010

Number of localities where frogs were observed in 08 or in recent years and were likely still present in RU 1-4 as of October 2008: ~64-67 (includes 12 “Ramsey Cyn” leopard frog sites)

Number of localities where frogs were observed in 09 or in recent years and are likely still present in RU 1 as of December 2009: 36

Number of localities where frogs were observed in 09 or in recent years and are likely still present in RU 2 as of December 2009: 29 (includes 12 Ramsey Cyn leopard frog sites)

Number of localities where frogs were observed in 09 or in recent years and are likely still present in RU 3 as of December 2009: 7

Number of localities where frogs were observed in 09 or in recent years and are likely still present in RU 4 as of December 2009: 9

Total in RUs 1-4 as of December 2009: 81* (includes 12 Ramsey Cyn leopard frog sites)

*Although modest increases are indicated across recovery units, #s of sites actually occupied in 2009 declined by 8 on the eastern slope and bajada of the Santa Rita Mtns due to tanks drying out. However, occupancy and breeding status was better defined in the Pajarito and Atascosa ranges, which resulted in additional occupied sites there. Several reestablishments and augmentations also contributed to increased numbers of sites in 09. Remarkably, in the recent absence of sport fish and bullfrogs, Chiricahua leopard frogs colonized Peña Blanca Lake, likely from Summit Tank, which is 3.14 mi straight line distance away. Leopard frog tadpoles were noted in the Lake, which are either or both *L. chiricahuensis* or *yavapaiensis* (both species have colonized the Lake).

Recovery Plan – The Recovery plan is available at:

<http://www.fws.gov/southwest/es/arizona/CLF.htm>.

Information on the Recovery Program is available at:

http://www.fws.gov/southwest/es/arizona/CLF_Recovery_Home.html

The Chiricahua leopard frog listserv - To subscribe to the list go to:

<https://www.fws.gov/lists/listinfo/chiricahuensis>. Postings can be made by sending an email to: chiricahuensis@lists.fws.gov.

The document “Chiricahua Leopard Frog Criteria for Making Effects Determinations” (useful for section 7 consultations and NEPA compliance) was completed in 2009 and will be available on the Recovery Program Website.

The Chiricahua leopard frog was designated a Spotlight Species for Region 2 of the Fish and Wildlife Service, which may facilitate the funding of recovery actions with USFWS funds. A Spotlight Species Action Plan will be available on the Recovery Website.

The Invasive Species Information Page was updated and a Chiricahua Leopard Frog Information Brochure was completed. Both were distributed on the listserv.

Change in ESA Status for Ramsey Canyon leopard frogs: The Fish and Wildlife Service published a petition finding on 475 Southwestern species on 16 December 2009. The “Ramsey

Canyon leopard frog” was one of the species petitioned. In the finding, the FWS found that the Ramsey Canyon leopard frog has been sunk into the taxon *Lithobates chiricahuensis*, and that all former populations of Ramsey Canyon leopard frog are now listed as threatened under the Endangered Species Act.

General Recovery Activities Needed in SE AZ and SW NM in 09

In general we need help to: 1) monitor extant populations, 2) survey for additional extant populations, 3) survey for habitat; identify potential reestablishment sites, 4) identify and implement habitat improvements and non-native predator control as needed; 5) augment, establish, and reestablish populations and refugia; and 6) continue to search for additional partners, including enrolling interested landowners in the umbrella Safe Harbor Agreements (Malpai and AGFD Statewide) in the area.

These actions need to occur in all Recovery Units to help meet the recovery criteria (e.g. “at least two metapopulations in different drainages plus at least one isolated and robust population in each RU that exhibit long-term persistence and stability”). Recovery units 3 and 4 are in the greatest need of additional work, due to small numbers of populations and metapopulations in those units.

Chiricahua Leopard frog Accomplishments in SE AZ/SW NM in 09

RU 1: Participants: Coronado NF, Arizona Game and Fish Department (AGFD), USFWS (AZ Ecological Services Field Office – AZESFO, and Buenos Aires NWR), University of Arizona/USGS (C. Schwalbe, P. Rosen, and others), David Hall, Sky Island Alliance, Private landowners and ranchers.

Review of 2009:

Buenos Aires NWR/Altar Valley/Arivaca: There are 16 sites (stock tanks) at which Chiricahua leopard frogs have occurred on the refuge in recent years. At least 4-5 of those are breeding sites. Bullfrogs are a continuing threat, and UoA/USGS continues to conduct bullfrog control to maintain the integrity of this metapopulation. In 2009 they worked at tanks on the Santa Margarita Ranch to eliminate bullfrogs there, which is the last place in the Altar Valley bullfrogs are known to occur. As in 2008, frogs were salvaged from State Tank on the BANWR (normally a breeding site with abundant frogs) because the tank was on the verge of drying out. On 8 August 2009, a total of 120 frogs were salvaged, 60 of which went to establish a refugium population at the Chilton Ranch and 60 were taken to Chongo Tank at BANWR. Unknown whether frogs persisted at State Tank.

Sycamore Canyon and vicinity: Bullfrog control continued at Sycamore Canyon. After several years of control activities by UoA/USGS and others, bullfrogs are eliminated or nearly eliminated. Additional follow up is needed in 2010 and reinvasion will continue to be a threat until bullfrogs can be eliminated from nearby localities. Chiricahua leopard frogs were found at new sites around Sycamore Canyon. Funding is expected in 2010 from Dept of Homeland Security for bullfrog control at 5 sites in this region.

Peña Blanca Lake and vicinity: Peña Blanca Lake has long been considered as a source of bullfrogs for the Pajarito/Atascosa area. A project to drain the Lake and remove contaminated sediments presented an opportunity to potentially eliminate bullfrogs from this area. A team has been working the area for two years, and has been (we think) successful in

clearing bullfrogs from the Lake and within 5 miles of the Lake. Both lowland and Chiricahua leopard frogs colonized Peña Blanca Lake in late summer 2009. Chiricahua leopard frogs were found at other new sites in this region, or sites where they had not been found for many years.

Safe Harbor Agreement: Two properties are enrolled in RU 1, one of which is the Chilton Ranch. As noted above, 60 frogs were moved from State Tank at BANWR to the Chilton Ranch refugium in August 2009.

Summary: This recovery unit is at or exceeding the required number of metapopulations and isolated robust populations needed for recovery. If bullfrog control continues to be successful, this recovery unit should be relatively secure in the near future. Although Bd is widely distributed and has been present since at least 1972, the frogs are persisting with the disease.

RU 2: Participants: Coronado NF, AGFD, USFWS (AZ Ecological Services Field Office – AESO), Bureau of Land Management (Las Cienegas), University of Arizona/USGS (P. Rosen and others), Dennis Caldwell, Sky Island Alliance, Ramsey Canyon Leopard Frog Conservation Team, The Nature Conservancy, Arizona-Sonora Desert Museum, Ross Humphreys, and Naturalia.

Review of 2009:

Santa Rita Mountains: At the end of 2008, 15 sites with Chiricahua leopard frogs were known from the eastern slope and bajada, and northern portions of the Santa Rita Mountains; however, only one site (a breeding site) was known in 2007 (Louisiana Gulch). In 2009, most of the ‘new’ sites dried and frogs were absent. Frogs remained at three of those new sites, two of which have been confirmed as breeding locations, making for 3 known breeding sites in the Santa Ritas. The single adult female frog at the Florida Work Station was joined by 12 adult frogs from Box Canyon (salvaged from a drying pool) on 22 June. An 8’ diameter, 718 gallon steel tank has been purchased and will be installed in 2010 to enhance breeding habitat in Florida Canyon. On 6 August 2009, 11 frogs and 26 tadpoles from the ASDM (the last of the captive Louisiana Gulch stock) were released at Greaterville Tank to augment the breeding population there. Several of the sites occupied in 2008 (but not 2009) are located in the proposed Rosemont Copper Mine project area. Discussions have been initiated to determine effects to the species and potential mitigation measures.

Las Cienegas: Chiricahua leopard frogs continue to occur along Empire Gulch (including the in-situ headstarting facility) and at Cinco Ponds. Lowland leopard frogs were found at Road Canyon Tank in the upper reaches of Cienega Creek, a site that was being considered for Chiricahua leopard frogs. A comprehensive local recovery strategy for the frog and other imperiled species in the Las Cienegas region was funded by the National Fish and Wildlife Foundation (NFWF). The grant recipients include The Nature Conservancy and University of Arizona.

East Side of the Huachuca Mountains (“Ramsey Canyon” leopard frogs): Numbers of frogs and breeding activity at the Beatty’s Guest Ranch in Miller Canyon declined in 2009, possibly due to dry conditions. However, this remains the most robust population in RU 2. Some renovation work was conducted at Clark Spring (Miller Cyn), but the site needs additional work before frogs can be introduced. *Bd* related die-offs of frogs that began in 2008 continued at Ramsey Canyon and the Barchas Ranch House and Wild Duck ponds. No egg masses were noted in Ramsey Canyon. At least one adult frog survived overwinter at the Barchas House Pond; however, the populations there and at the Wild Duck Pond are dominated frogs that

metamorphosed in 09. Unknown whether reproduction occurred at the House and Wild Duck ponds, which prior to the 2008 die offs were robust breeding populations. One or more adult frogs are at the Brown Cyn Tinaja, where they have not been seen in years. Three bullfrogs were removed from Carr Barn Pond where small numbers of leopard frogs have persisted, despite *Bd* problems. Sites were investigated along the San Pedro River as possible reestablishment sites.

San Rafael Valley: A Safe Harbor Agreement was established with Ross Humphreys for two pastures in the southeastern portion of his San Rafael Ranch. Pasture 9 Tank, which was frog fenced in 2008, received 3 juvenile and 150 tadpole “Ramsey Canyon” leopard frogs from the Beatty’s Guest Ranch on 13 October 2009.

Scotia Canyon: An aggressive project to restore cienega conditions, dredge out and install a gate on the Peterson Ranch Pond, and eliminate bullfrogs was completed in 2009. On 13 October 2009, 6 metamorph frogs and 238 tadpoles were captured at Beatty’s Guest Ranch and released at Peterson Ranch Pond. The Coronado NF received a Heritage Grant this year for controlling bullfrogs in the Scotia Region. This funding is targeted for follow up on monitoring and eliminating bullfrogs in the 5-mile radius around Scotia Canyon (not including Parker Canyon Lake); however, all Heritage funds have been frozen. Additional funding through the FWS Partners for Fish and Wildlife Program is being sought to convert a bullfrog occupied dirt tank on private lands in lower Sunnyside Canyon to an elevated tank and drinker that will preclude bullfrog use.

Redrock Canyon Renovation: A renovation project to remove non-natives is planned for this canyon. The draft environmental assessment went out for public review in mid-January. A fish barrier was considered, but is not part of the proposed action.

Sonora: A 3-day Amphibian Survey, Monitoring, and Conservation Workshop was held in July 2009 at Rancho Los Fresnos, Sonora, which is owned by Naturalia – a Mexican conservation NGO, and is located in the southern end of the San Rafael Valley. The purpose of the workshop was to build capacity for Mexican biologists, students, and agencies to conduct amphibian work in northwestern Mexico. A similar workshop was held at Los Fresnos in 2008, and amphibian workshops are planned for Los Fresnos and the Northern Jaguar Reserve, Sonora, in 2010. In March 2010, USFWS personnel will work with staff at the Reserva Ajos-Bavispe, Sonora (RU 2), on an amphibian monitoring plan. Funding is still needed to assess population status and pursue recovery opportunities in the Sonora portion of RU 2 (also in the Mexican portions of RUs 1 and 3).

Summary: Recovery is underway in RU2. Metapopulations are more or less established in the Ramsey/Brown area (although serious Bd problems exist there), and the bones of metapopulations exist at Las Cienegas and the northeastern slope of the Santa Rita Mtns. An isolated, robust population exists in Miller Canyon, and with recent reestablishments and restoration projects, there is potential to develop others at Scotia Cyn and Carr Barn Pond (Huachuca Mtns), Pasture 9 Tank (San Rafael Valley), and Florida Cyn (Santa Ritas).

RU 3: Participants: Coronado NF, Bureau of Land Management (Safford), USFWS (AZ Ecological Services Field Office and San Bernardino/Leslie Canyon NWRs), AGFD, Southwest Research Station, New Mexico Department of Game and Fish, Malpai Borderlands Group, Sky Island Alliance, Douglas High School, Magoffin Ranch, Diamond A (aka Gray) Ranch, Barboot and 99 Bar Ranches.

Review of 2009:

Safe Harbor Agreements and Habitat Conservation Plans: Recovery activities on the SHA properties (Malpai Borderlands Group, Magoffin Ranch, Barboot/99 Bar Ranch) were limited to monitoring of existing populations and bullfrog control efforts on the Barboot/99 Bar. The concrete pond at Rosewood Tank was damaged by UDAs and needs repair. No recovery actions for Chiricahua leopard frogs occurred under the Malpai Habitat Conservation Plan.

Douglas High School: A rearing/captive propagation facility (2 ASDM-style units) is ready for tadpoles/frogs; however, we have yet to stock that facility due to limited numbers of frogs/tadpoles at the source site – Leslie Canyon. We may move animals from one of the Magoffin Ranch tanks to Douglas High School in 2010.

Southwest Research Station: The SWRS obtained necessary permits, and on 2 October 2009, 19 tadpoles were captured at Leslie Cyn NWR and transported to SWRS. One additional tadpole was captured and moved to SWRS at a later date. One of the tadpoles has metamorphosed. The tadpoles and frog are currently being held in indoor aquaria. This initial stock will be bred in outdoor, contained facilities, which will be built, likely in part with funds from a FWS Partners for Fish and Wildlife grant. A pond adjacent to Cave Creek on SWRS property is ready to support a wild population of frogs, but animals will remain captive until a SHA and coordination with neighbors can be completed. Additional sites in the Cave Creek/Portal area are being explored to potentially build a metapopulation.

Cloverdale Cienega: Sky Island Alliance, in coordination with the Forest Service and Diamond A Ranch, will be implementing the Cloverdale Cienega restoration project. This project, which includes filling in artificial gullies, repairing headcuts and eroded areas, returning flow to the valley bottom, and removing portions of a levee, should improve habitats for Chiricahua leopard frogs and potentially allow for a metapopulation of frogs in that area. The project is scheduled to be completed in 2010.

Summary: Much work still needs to be done to achieve recovery in RU 3. Few good breeding populations exist and there are uncertainties about presence/absence at some sites in the Peloncillo Mtns. There are likely one or more populations extant in the Sierra San Luis complex in Sonora/Chihuahua, but work is needed to confirm that. We have good potential and momentum for building a metapopulation in the Cave Creek area of the Chiricahuas, including the SWRS. Leslie Cyn NWR has an extant breeding population, which could potentially be part of a metapopulation on SHA ranches to the NE. Two tanks currently support frogs on a ranch east of San Bernardino NWR. Frogs are sometimes found at a series of tanks and a spring in the Peloncillo Mtns, but the best population is in the Cloverdale Creek area in NM. Restoration of the Cloverdale Cienega (NM) is underway, which may allow for a metapopulation there. High Lonesome Well in the Playas Valley (NM) is an isolated, robust population.

RU 4: Participants: Coronado NF, AGFD, Sonja Gasho, Arizona State Land Department, Bureau of Land Management (Safford), USFWS (AZ Ecological Services Field Office)

Review of 2009:

Galiuro Mountains: Frogs were rediscovered by John Windes (AGFD) on 29 October 2007 in the Deer Creek area, and by the end of 2008, frogs were known from five sites. Additional monitoring has revealed 7 sites in the Deer Creek area, four of which have supported breeding. Home Ranch Tank is the key, robust breeding site. Water levels were low in 2009, and several sites dried out, including a series of ponds on a fire agate mine lease on State Lands. On 26 August 2009, 26 frogs were collected from Home Ranch Tank and released at Discovery

Park in Safford. Tadpoles were noted in September. Discussions are underway with the miner and AZ State Land Department to develop a permanent pond and an additional breeding site for frogs. To the north of Deer Creek, potential reestablishment sites were identified in Rattlesnake Canyon and at Powers Garden Spring.

Dragoon Mountains: The robust breeding population of Chiricahua leopard frogs at the Middlemarch adit continues to do well, although no recent evidence of breeding was found in a June reconnaissance trip. Juvenile frogs observed in June at Shaw Tank (reestablished in 2006) indicated successful recruitment; this site has the potential to be a robust breeding population (21 juveniles and 6 adults were observed in June). The 2008 reestablishment at Black Diamond Spring apparently failed. Potential reestablishment sites were evaluated on the northwestern portion of the range. Several sites could potentially support a population, but considerable habitat work would be needed to make most sites suitable.

Summary: Recovery work is underway, but we are a ways from meeting the recovery criteria. Habitats and populations are limited, but where frogs occur, threats appear low. There are only 2 MAs in this area; but recovery work is occurring in both of them (Dragoons and Galiuros). A metapopulation currently exists in the Deer Creek area of the Galiuros and we have the bones for one in the Dragoon Mtns. However, because of limited habitat, it may be a more effective recovery strategy to create a 2nd metapopulation in the Galiuros and manage the current populations in the Dragoons as isolated robust populations.

Major Funding Initiatives and Studies:

Central Arizona Project: Under a biological opinion for the Central Arizona Project (CAP), the Bureau of Reclamation will transfer \$100,000 to the FWS for Chiricahua leopard frog recovery projects. Funds are expected to be transferred in July 2010. In November 2009, the CAP Technical Committee approved 7 projects: 1) Support for Arizona-Sonora Desert Museum captive propagation and headstart program. **Total Project Cost: \$23,236.** 2) Purchase of equipment and gear to conduct field work and disease testing. **Total Project Cost: \$9,326.30.** 3) Development and maintenance of Chiricahua Leopard Frog captive rearing facilities in Arizona, other than at ASDM. **Total Project Cost: \$6,000.** 4) Operational costs for head-starting facilities at New Mexico FWS Office. **Total Project Cost: \$10,000.** 5) Operational costs for Ranarium at the Ladder Ranch. **Total Project Cost: \$14,000.** 6) Refugia in steel rim tanks, New Mexico. **Total Project Cost: \$8,000.** 7) Renovation of priority Chiricahua leopard frog habitats. **Total Project Cost: \$29,437.70**

National Fish and Wildlife Foundation Sky Islands Grasslands Initiative: This is a multi-year, multi-million dollar funding initiative to conserve grasslands and associated imperiled species in southeastern Arizona, southwestern New Mexico, and adjacent portions of Mexico. One project was funded this year that targets Chiricahua leopard frogs and other aquatic species (see discussion of Las Cienegas in RU 2, above). NFWF is taking pre-proposals 1 April and 1 September of each year. Grants require a 1:1 non-federal match.

Department of Homeland Security: As mitigation for vehicle and pedestrian fences on the border and SBInet towers, DHS has committed to funding several Chiricahua leopard frog projects. In the Pajarito-Atascosa Mountain region, they have committed to fund removal of bullfrogs at 5 sites. Funds for this project should come to the FWS in 2010. As part of a multi-million dollar, border-wide mitigation fund, a \$369,000 project has been proposed for predator

removal and disease inventory primarily in the Scotia Canyon region and the Pena Blanca Lake/Sycamore Canyon/Altar Valley complex. This project has yet to be approved and timing of the funding is uncertain.

USGS/FWS Science Support Grant: The research project “Efficacy of using a Bacterial Microbe as a Strategy for Resisting *Batrachochytrium dendrobatidis* infection in the Chiricahua leopard frog (*Rana chiricahuensis*)” was funded. The principle investigators are Michael J. Adams, (PI), Research Ecologist, USGS Forest & Rangeland Ecosystem Science Center, Corvallis, OR; Cecil Schwalbe, PhD (Co-PI), Ecologist and Assistant Professor, USGS SBSC Sonoran Desert Research Station, University of Arizona; and David E. Green, DVM, (Co-PI) Veterinary Pathologist, National Wildlife Health Center, Madison, WI. It is hoped that this ‘probiotics’ study may lead to a treatment for chytridiomycosis that would work for wild populations of frogs.

Range Wide Genetics Study: Melanie Culver at University of Arizona, and her students Hans-Werner Herrmann, Emanuela Mujica, and Tony Dee, assessed the genetic structure within the Chiricahua leopard frog using mtDNA and microsatellite markers extracted from samples from more than 50 sites throughout the range of the species. Based on preliminary results, on a broad scale, mtDNA analyses indicate there is evidence of historical gene flow throughout the species’ range, with the Mogollon Rim representing the historical lineage for the frog, whereas the Mexico/Hidalgo County area may represent a more recently diverging lineage. On a finer scale there are between 9-16 distinct populations, which are localized to one region or drainage. There is no evidence of multiple species within *L. chiricahuensis* and their preliminary findings reinforce previous studies indicating the Ramsey Canyon leopard frog is conspecific with the Chiricahua leopard frog.

Bd Treatments: Based on finding *Bd* positive animals after employing current protocols with benzylnonium chloride, we need to re-evaluate pre-release disease protocols. In the interim, for tadpoles we are now recommending a 5-minute treatment in a 0.01% itraconazole solution each day for 11 consecutive days, as recommended by Nichols and Lamirande (2000 – Froglog 46-1).

Overview of Activities outside the SE AZ/SW NM Region

Outside of the SE AZ/SW NM region, no new landowners have signed onto the AGFD Statewide Safe Harbor Agreement. Survey Training Workshops were held in Young, Arizona and Silver City, New Mexico in 09. Headstarting and captive propagation facilities were active at the ASDM, Phoenix Zoo, Bubbling Ponds Fish Hatchery, AGFD Pinetop Office, and USFWS Ecological Services Office in Albuquerque. The Fort Worth Zoo is also holding 5 Chiricahua leopard frogs salvaged during a 2009 die off at the Carter Ranch in New Mexico. Facilities have been developed at the Ladder Ranch in New Mexico, but are not yet stocked with frogs.

RU 5 - Gentry/Crouch/Cherry Ck – Tonto NF. Frogs are extant at 5 sites, at least 4 of which support breeding. These sites loosely form a metapopulation; however, it is currently lacking a robust breeding population. Sites are being evaluated that could sustain a large, robust breeding population. On 25 June, 2 egg masses were collected from Crouch Creek; 1 was transplanted to Pine Spring and the other to HY Tank. Monitoring and evaluation of sites has continued in this

area. Ellison/Lewis Creek and Vicinity. This area, which had supported frogs intermittently through at least 2006, was targeted for reestablishments in 2009. On 17 July, 82 tadpoles and 90 frogs were released into Lewis Creek, and 82 tadpoles and 118 frogs were released at tributary 4 of Ellison Creek. These animals originated from egg masses collected at Crouch Creek. They were hatched out at the Phoenix Zoo and reared at Bubbling Ponds Fish Hatchery. On 11 September 2009, 443 (295 at Low Tank and 148 at Moore Saddle Tank 2) frogs and 944 tadpoles/recent metamorphs were released at two stock tanks west of Ellison Creek. These animals originated from egg masses collected at Crouch Creek and were reared by the Phoenix Zoo. Buckskin Hills. Last year's reestablishment at Middle Tank is a great success. In September, a minimum of 112 Chiricahua leopard frogs were observed, at least 40 or so of which were adult/subadults. This site is on its way to being a robust breeding population that could serve as a source of animals for reestablishments elsewhere in the Buckskin Hills. On 27 July 2009, 31 frogs were released at Walt's Tank. These were mixed Gentry/Buckskin frogs bred and reared at the Phoenix Zoo. Twelve frogs were observed at Walt's Tank in September. Wedge fences to limit cattle use were completed at 5 tanks. With releases at 8 new sites over the last two years in RU 5, the frog is thought to be present at 13 sites in RU 5, up from 8 last year.

RU 6 - (AZ) – A breeding colony of Three Forks frogs is being maintained at the AGFD Pinetop Office. Progeny from that facility have established at Concho Bill; however, despite multiple years of releases, the frogs are either not persisting at Sierra Blanca Lake or are very difficult to detect. Eight tadpoles and 24 frogs were released to the SHA property near Concho on 29 May. On 21 September 2009, 30 additional Three Forks frogs were introduced to the SHA property near Concho, and a release of 25 frogs was made to augment the Concho Bill site. Other potential release sites have been identified (Unnamed Tank and Spring-Open Draw, Unnamed Pond SW of Open Draw, Prescribed Tank, and Firebox Lake). Frogs are only known to be extant at 1-2 sites in RU6 in AZ. (NM) – Breeding populations of frogs remain at 6 or more sites in NM, one or two of which (Long Mesa Tank and possibly Diamond Creek) are robust populations. There is one additional reestablishment site (2008 reestablishment at Divide Well with stock from Long Mesa Tank), but reproduction has not yet been documented there. *Bd* related die offs at Trick Tank and nearby Carter Property occurred in the fall of 2008, CLF may be extirpated from these sites. 12 subadults removed from Trick Tank in August 2009, 10 lived, 7 of which were placed at the ASDM and 3 at the Fort Worth Zoo. 46 frogs and 3 late stage tadpoles that originated at Diamond Creek and were reared at the NMESO and released at Three Circles Well in October 2009. Frogs cannot enter or exit this contained steel rim tank. Reestablishment at Sheep Basin Tank (2008 release with stock from Long Mesa Tank) deemed unsuccessful.

RU 7 - (AZ) - Limited monitoring occurred in 2009. Four sites (all breeding sites) are known to support frogs in the AZ portion of RU 7. There is potential to build a metapopulation that would include Rattlesnake Pasture Tank, Left and Right Prong of Dix Creek, and Coal Creek, but populations would need to be established between these existing populations. (NM) – The 'dispersal site' noted last year (Blue Creek, Burro Mtns) was confirmed as a breeding site in 2009, with abundant tadpoles, an egg mass, and a few frogs. The creek on BLM lands dries up regularly, suggesting most breeding and recruitment occurs on the private lands upstream. Tadpoles and 2 metamorphs were collected from Blue Creek in 09 and established in a refugium at the Jornada Experimental Range.

RU 8: Sites with breeding populations of frogs in this RU include 4 locales along the Río Mimbres, several localities on the Ladder Ranch, including a strong complex of sites along Seco Creek that form a good metapopulation with at least 7 breeding subpopulations; Ash and Bolton springs east of Hurley, and Alamosa Warm Springs. Ladder Ranch: Funded in part with a FWS Partner's Program grant, 8 outdoor ranariums have been constructed as well as an indoor larval rearing facility, and quarantine capabilities initially for use for CLF but may also be used for other species in need in the future. Cuchillo Negro Warm Springs (Ladder and BLM): Tadpoles were collected from Cuchillo Negro Warm Springs; however, most turned out to be *L. blairi*. One male and one female CLF from the site reared by Jack Barnitz (BLM) were moved to the Fort Worth Zoo. Pitchfork Ranch: Approximately 220 tadpoles, hatched from 3 partial egg masses collected from Moreno Springs, were moved to Patterson Well on the Pitchfork Ranch in April 09. Dead frogs from 2008 release (source was Ash Springs on Chino Mines) at this site noted in Oct 2008. Presumed *Bd* die off and that initial reestablishment was deemed unsuccessful. Alamosa Warm Springs: 28 frogs from Alamosa Warm Springs that were reared at the NMESO now reside in a steel tank at the Jornada Experimental Range as a refugial population.