

Tarahumara Frog (*Rana tarahumarae*) Release, Monitoring, and Reconnaissance of Nearby Canyons Report: 11-13 October 2005

On the morning of 11 October 2005, Lisa Bucci, Abigail Dinsmore, Suzanne Goforth, Tom Jones, Michael Sredl (AGFD), Jim Rorabaugh, Brian Wooldridge (USFWS), and Tom Skinner (USFS) met up at Tunnel Spring and hiked into Big Casa Blanca Canyon (BCBC).

The objective of this trip was to:

1. Monitor sites where frogs were previously released.
2. Visit nearby areas (e.g. Bear Spring, Walker Canyon, and Lower BCBC) to evaluate habitat and monitor for previously released frogs that may have dispersed from release sites.
3. Assess damage to habitat from the Florida Fire in July and the flood in August.
4. Develop a standardized monitoring protocol and clearly identify the different sites where future monitoring will take place.

In order to complete the above tasks we divided up into 3 groups. Group 1 (Tom S. and Brian) surveyed the vicinity of String of Pools (now referred to as Site 3) and hiked up to Bear Spring to assess habitat in that area and monitor for any frogs that may have dispersed from release sites. Group 2 (Abi, Suzanne, and Tom J.) surveyed the vicinities of the Bathtubs (now referred to as Site 1) and Long and Ledge pools (now referred to as Site 2), released 6 frogs in these areas, and established precise boundaries between the reaches and documented them by marking them with flagging and by taking photo points. Group 3 (Lisa, Jim, and Mike) hiked to Walker Canyon and Lower BCBC to assess habitat and monitor for frogs that may have dispersed. Prior to releasing frogs, we surveyed habitats for frogs from previous releases.

LOWER REACH AND SITE 1

Habitat/Herp Observations (day survey):

On 12 October 2005, Site 1 was surveyed by Abigail, Suzanne, and Tom J. from 0932 to 1100. Water was constant from the upstream boundary of the Lower Reach to Kinosternon Pool (the downstream boundary of the Lower Reach). All pools in the Site 1 had water in them; it was evident in some of the shallower pools that sediment had accumulated in them from the flood in August and all pools were somewhat turbid. Six adult *Hyla arenicolor* were observed throughout Site 1 as well as 10 adult *R. tarahumarae* (4 in Sycamore Pool and 6 directly above Sycamore Pool), and 3 juvenile *R. tarahumarae* (2 in Yucca Pool and 1 just below Yucca Pool). One adult *Kinosternon sonoriense* was observed in Sycamore Pool.

Site Conditions:

Air Temp: 22°C

Water Temp: 12°C

Release Notes:

A total of 6 frogs were released in the lower stretch of Site 1 below Sycamore Pool. Two adult and 1 juvenile *R. tarahumarae* were acclimated in a shady pool for approximately 30 minutes and then released at 1036. Three adult *R. tarahumarae* were acclimated in a pool just below Sycamore Pool for approximately 50 minutes and then released at 1119.

Habitat/Herp Observations (night survey):

On the evening of 12 October 2005, Jim, Tom J., and Mike hiked into Site 1 at 1800. A total of 59 *R. tarahumarae* were observed throughout the site. The group noted that several adults were seen in the larger pools, whereas, the smaller, younger frogs were observed in the smaller pools and riffles. A few *H. arenicolor* were seen during the survey as well.

MIDDLE REACH AND SITE 2

Habitat/Herp Observations:

Site 2 was also surveyed by Abigail, Suzanne, and Tom J. on 12 October, 2005 from 1317-1414. Although there was evidence of high water flows (debris and high water marks), the pools in Site 2 were not as turbid as those in Site 1. One adult *H. arenicolor* was observed, as well as 3 adult *R. tarahumarae* (1 below Long Pool and 2 above Long Pool).

Site Conditions:

Air Temp: 23°C

Water Temp: 16°C

UPPER REACH AND SITE 3

Habitat/Herp Observations:

Site 3 was surveyed by Tom S. and Brian on the afternoon of 11 October 2005. The approximately 200 meter stretch was surveyed from 1500-1535. The water in the flowing stream was clear and slightly more turbid in the 2 deeper pools. Throughout the reach, the main channel(s) and pools were filled in by high sediment flows, likely resulting from run-off associated with the Florida Fire in July. Some ash and burned debris were evident throughout the reach. Only a few pools remained, with the deepest pool measuring approximately 2.5 feet deep. Evidence of heavy flows and flooding was observed throughout. Flood debris was observed above the stream benches, indicating flooding of at least 6-7 feet deep in the area. One adult *H. arenicolor* was observed and no *R. tarahumarae* were observed.

Site Conditions:

Air Temp: 22°C

Water Temp: 13°C

BEAR SPRING

Habitat/Herp Observations:

On the morning of 12 October 2005, Tom S. and Brian hiked farther up BCBC to Bear Spring to observe conditions and potential habitat for *R. tarahumarae*, including any incidental observations of *R. tarahumarae*. No plunge pools deeper than 1 foot were observed. Within approximately 200 meters upstream of String of Pools, the canyon bottom widened out to over 10 meters wide and the stream channel averaged approximately 3-4 meters wide. Steep (near vertical) canyon walls coming up out of the canyon bottom gave way to gently sloping (still somewhat steep) hills up from the canyon bottom. The stream channel was extremely shallow, less than 6 inches deep throughout most of the upper reach of BCBC above String of Pools. The Bear Spring area was located in a side drainage/tributary of BCBC and along the Aqueduct Trail. There was no standing water in the area of Bear Spring. Deergrass and other lush vegetation in the area indicated that the area has previously been a wet site; however, the area was dry at the time of our visit. One adult *H. arenicolor* was observed between String of Pools and Bear

Spring. Ash, burned debris, and sediment flow were not as abundant in the upper portions of BCBC, below Bear Spring to approximately 200 meters above String of Pools. Sedimentation and ash deposition was observed within 200 meters above String of Pools, in the narrow areas of the canyon.

Very light precipitation and heavier cloud cover was observed during the early morning hours of 13 October 2005. During the hike back to Tunnel Spring in Gardner Canyon on 13 October 2005, an adult *Masticophis bilineatus* was observed along the Aqueduct Trail.

LOWER BIG CASA BLANCA CANYON

Habitat/Herp Observations:

On 12 October 2005, Jim, Lisa, and Mike left camp at 0900 to survey lower BCBC and Walker Canyon. The sky was cloudless and there was an occasional wind that rustled leaves on trees. Surveying began just below Kinosternon Pool, the downstream boundary of the Lower Reach (marked "Start" on Figure 1, 0520707E 3503859N, NAD83). In the first part of the canyon, the drainage was wide; it soon narrowed, especially in the area marked "Bathtub Water". During the last leg of the survey, the canyon widened again. Evidence of cattle use was prevalent, particularly below the Walker Canyon confluence. Few belostomatids and a single juvenile (56 mm SUL) *R. tarahumarae* were observed just below the confluence of BCBC and Walker Canyon (marked "BC LBT1" on Figure 1, 0520917E 3502984N, NAD83). In addition, 2 hatchling *K. sonoriense* and 4 *H. arenicolor* were observed. Surveying of lower BCBC ended at 0521053E 3502529N, NAD83 (marked "End" on Figure 1).

Site Conditions:

Air Temp: 21.0°C

Water Temp: 12.5°C

RH: 21%

pH: 8.60

Conductivity: 380 µs

WALKER CANYON

Habitat/Herp Observations:

Walker Canyon was then surveyed from the confluence with BCBC to 0520178E 3503286N, NAD83 (marked "WC UP" on Figure 1). The only substantial pool was at 0520314E 3503234N, NAD83 (marked "WC POOL" on Figure 1). No *R. tarahumarae* adults or larvae were observed.

SIDE CANYON

Following-up on observations made by Kim Clifton on 11 June 2005, they surveyed an "unnamed ephemeral side tributary" of BCBC that comes in from the east (routes marked "Side Canyon" on Figure 1). While some water was found, no *R. tarahumarae* frog habitat or *R. tarahumarae* were found. The "Dam" indicated on Figure 1 in this canyon appeared to have been breached many years ago and did not impound any water. They were unsure if they found the same tributary as Kim, and later communications with Steve Hale confirmed that Clifton's observations had been in BCBC between the Bathtubs and the confluence with this side tributary, rather than in the tributary itself.

Figure 1. Survey route for lower BCBC, Walker Canyon, and a side canyon.



SUMMARY

A total of 16 frogs were observed during a day survey (Table 1) within Sites 1 and 2, and 59 frogs were seen while conducting a night survey (Table 2) in Site 1. No *R. tarahumarae* were observed in Site 3. Previous surveying efforts in Site 3 have also resulted in low numbers of frogs observed or none at all. Time may be better spent surveying Site 1 and 2 more thoroughly than Site 3 during future trips. While adequate numbers of adult and juvenile *R. tarahumarae* were seen, we did not observe any tadpoles. Evidence of high flows (sedimentation in the shallower pools, debris, and ash) suggests that tadpoles may not have survived the flood in August. It is possible that tadpoles were not observed due to the turbidity of the water in some of the deeper pools, however, surveying methods include dip-netting thoroughly and it does not seem likely that tadpoles were missed during our surveying efforts. Although pools within all of the sites were somewhat turbid, impact on the habitat within BCBC was minimal and adult and juvenile frogs appeared unaffected.

With the exception of the pool in Walker Canyon, marked WC Pool on Fig. 1, surrounding canyons and areas outside established reaches in BCBC do not hold enough permanent water to support *R. tarahumarae*. Emphasis of routine monitoring efforts should focus on established habitat in Sites 1-3, although occasional surveying should be conducted in these surrounding areas to monitor habitat quality and possible dispersal of *R. tarahumarae*.

Table 1. *Rana tarahumarae* observations during a day survey at each Site of Big Casa Blanca Canyon, Santa Cruz County, Arizona on 12 October, 2005.

Location	Observed (n)	Life Stage
Site 1 (Lower Reach)		
Sycamore Pool	4	adult
Bathtubs	6	adult
Bathtubs	1	juvenile
Yucca Pool	2	juvenile
Site 2 (Middle Reach)		
Just above Ledge Pool	2	adult
Just below Long Pool	1	adult
Site 3 (Upper Reach)		
	0	
TOTAL	16	

Table 2. *Rana tarahumarae* observations during a night survey at Site 1 of Big Casa Blanca Canyon, Santa Cruz County, Arizona on 12 October, 2005.

Location	Observed (n)	Life Stage
Site 1 (Lower Reach)		
Throughout Site 1	59	Juvenile and adult

The group discussed possible ideas to come up with a standardized monitoring protocol. A monitoring manual will be produced taking into account these ideas and distributed to all TFCT members. The following points were decided by the group:

1. All boundaries of sites and reaches were given new names:

- Lower Reach Boundary
- Site 1 Downstream
- Site 1 Upstream
- Lower Reach/Middle Reach Boundary
- Site 2 Downstream
- Site 2 Upstream
- Middle Reach/Upper Reach Boundary
- Site 3 Downstream
- Site 3 Upstream
- Upper Reach Boundary

The renaming of the boundaries will be further explained in the monitoring manual.

2. Photos of habitat were taken upstream and downstream from each point and are to be used to document boundaries. Color copies of photo points will be included in the monitoring manual. Photo points are marked with flagging which was placed in the appropriate areas by Group 2. During this trip, flagging was placed at all photo points except for Site 3 and the Upper Reach Boundary.

3. Boundaries of sites and reaches will be permanently marked with reflectors set in epoxy.

4. A field data sheet will be developed from the AGFD Riparian Herp VES Survey Form to use specifically during surveys for *R. tarahumarae* in BCBC and surrounding canyons. Certain fields were chosen by the group to include on the data sheet. Collecting data from BCBC on field data

sheets will facilitate the transfer of this information into the AGFD Riparian Herpetofauna Database.

A future trip will be needed to re-label the flags that are currently marking the boundaries, set up the permanent markers, collect UTM's from each point, and to finalize the photo points by addressing Site 3 and the Upper Reach Boundary. Once these tasks are accomplished, the monitoring manual can be completed and distributed for use in the next field season.

