2017 ZEBRA-TAILED LIZARD MONITORING

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Photograph of a male zebra-tailed lizard on the sand dunes at Diamond Creek, Hualapai Reservation

2017 Hualapai Zebra-tailed Lizard Monitoring – Diamond Creek

- This Project is funded by Reclamation under "Restoration of Extirpated Species to the CRE" as recommended by the "Species of Concern" Group. I think.
- The project started in the spring of 2012, and the current contract extends to 2020.
- Funded by Reclamation's Triennial Work Plan
- The results of this project will be used to verify that the zebra-tail population is or isn't stable in the CRE at Diamond Creek and whether zebra-tails are affected by future HFE's or natural flooding.
- Future translocation should be considered if the population declines or additional genetic diversity is desired/needed.

BACKGROUND

Zebra-tailed lizards are a common Mohave and Sonoran Desert reptile species.

Prior to the 100,000 cfs floods in the Colorado River in Grand Canyon in 1983 and 1984, zebra-tails were a common species on and around the sand dunes at Diamond Creek.

Because of the flooding, raft put-ins and take-out vehicles had to drive over the dunes to launch and take-out.

In the years after the flooding subsided, zebra-tailed lizards could not be found anywhere at Diamond Creek (Larry Stevens, personal communication).

In 2012, BOR funded an effort to translocate zebra-tailed lizards from upper Peach Springs Canyon to Diamond Creek. This effort was led by Dr. Larry Stevens. A total of 12 zebra-tailed lizards (6 males, 6 females) were captured in the spring of 2012 and released at Diamond Creek.

HDCR staff have been funded by BOR since then to annually monitor the zebra-tail lizard population at Diamond Creek and report back to BOR and the GCDAMP.

DIAMOND CREEK, HUALAPAI RESERVATION

An aerial photograph of the Diamond Creek Area at River Mile 226L where zebra-tailed lizards have been monitored from 2012 to 2017.

MALE ZEBRA-TAILED LIZARD

FEMALE ZEBRA-TAILED LIZARD

JUVENILE ZEBRA-TAILED LIZARD

BABY ZEBRA-TAILED LIZARD

METHODS

In 2017, monthly surveys were performed from April through September.

Surveys consist of one or two people walking the entire Diamond Creek area (Dunes, campground, roads and adjacent areas) and all lizards observed are identified by sight, and the location is plotted on an aerial photograph. Each survey takes about one hour.

If it is a zebra-tailed lizard that is sighted, it is recorded by sex and age if possible. The behavior is recorded and the distance to vegetation and vegetation species is recorded.

Back at the office, the data from the field data sheet are typed on a blank data sheet and the lizard locations are typed onto a blank aerial photograph.

After each survey, the typed data sheet and aerial photograph are shared with Marianne Crawford and Larry Stevens.

An annual report is prepared in September/October and provided to BOR and Dr. Stevens.

A presentation is usually given to the TWG, AMWG or at the ARM.

Zebra-tailed Lizard Monitoring Form

Monitor(s):_____Date_____

Start:_____Finish_____

Temperature:_____ RH_____
Wind:_____

1st encounter:
Behavior:_____

Distance to vegetation:_____Vegetation Type_____

2nd encounter:
Behavior:_____

Distance to vegetation:_____Vegetation Type_____

DIAMOND CREEK AERIAL PHOTOGRAPH

Diamond Creek Dunes

Diamond Creek Campground

Figure 9. A photograph of the Diamond Creek Wash on the east side of the dune area at Diamond Creek where many zebra-tailed lizards had been found in the past. The August, 2016 monsoon flood eroded a large channel in the middle of the wash. no zebra-tailed lizards were found here in the post-flood surveys in 2016.

Table 2. Summary of 2016 Diamond Creek zebra-tailed lizard monitoring results.
*average number of zebra-tailed lizards found in pre-flood surveys.
**average number of zebra-tailed lizards found in post-flood surveys.
***The October 27 survey results were not included in calculating the averages.

2016 ZTL SURVEY RESULTS

Date	# of ztl located/ survey	# juveniles	# Babies	Mean dist. To veg. (m)	Vegetation type(s)
April 26, 2016	10	4	0	0.72	Creosote, baccharis
May 26, 2016	8	3	0	1.39	Brittle bush, creosote
June 30, 2016	10	1	0	0.79	Creosote, brittle bush
July 20, 2016	9 9.25*	0	3	0.51	Mesquite, creosote, brittle bush
August 26, 2016	5	0	1	1.02	creosote
September 16, 2016	6 5.5**	0	2	0.78	Creosote, mesquite
October 27, 2016	0	0	0	0	NA
Average***	7.8	1.33	1.0	0.87	

RESULTS

* = LOTS OF FOOT TRAFFIC ** = SECOND MOST EVER OBSERVED

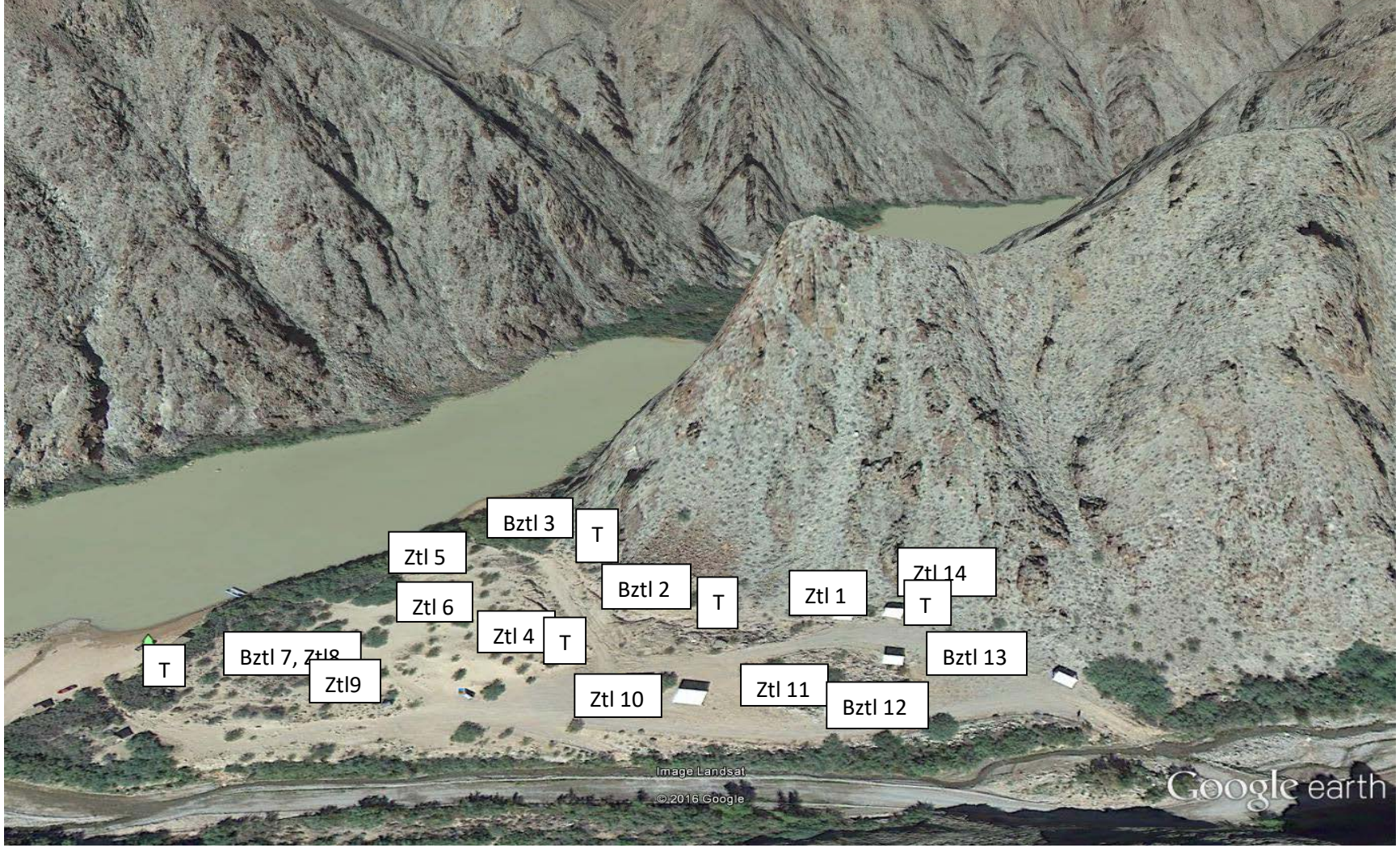
Date	# of ztl located/ survey	# juveniles	# Babies	Mean dist. To veg. (m)	Vegetation type(s)
April 27, 2017	9	1	1	0.61	Creosote, seep willow, mesquite, brittle bush
May 24, 2017	9	1	0	2.45	Creosote, mesquite, brittle bush
June 23, 2017	8	2	0	1.34	Creosote, brittle bush
July 26, 2017	11	0	0	1.95	Creosote, mesquite
August 18, 2017*	7*	1	1	1.57	Creosote, brittle bush
September 15, 2017	14**	0	5	1.61	Creosote, brittle bush, mesquite
Average	9.7	0.83	1.2	1.59	

Table 2. A summary of the results of zebra-tailed lizard surveys from 2012 to 2017.

* Average density of ztl's in creosote scrub habitats is 4.8-6.0 lizards per acre.

YEARLY AVERAGES

Year	Mean # of ZTL located*/ survey 0.81-2.62/acre	Mean # Juveniles	Mean # Babies	Mean distance to vegetation
2012	4.0 0.93/acre*	0.6	0.0	1.2
2013	3.5 0.81/acre*	1.0	0.0	1.3
2014	5.6 1.3/acre*	2.4	0.13 (3 total)	2.0
2015	11.3 2.62/acre*	2.7	1.70 (10 total)	0.9
2016	7.8 1.81/acre*	1.33	1.0 (6 total)	0.87
2017	9.7 2.24/acre*	0.83	1.2 (7 total)	1.59



The results of the September zebra-tail survey

DISCUSSION

After the flood of August, 2016, it appears that the zebra-tailed lizard population rebounded to a population size similar to pre-flood numbers

We will continue to work with Reclamation, Dr. Stevens and others to monitor the Diamond Creek population and undertake future translocations if necessary.

There is great potential for additional ecological and genetic studies of the lizards at Diamond Creek and in Peach Springs Canyon.

- What are the factors affecting survival and reproduction?
- Does habitat quality limit the zebra-tail population at Diamond Creek?
- Do these lizards utilize the riparian habitats at Diamond Creek?
- Are these zebra-tails affected by human visitors? How so?
- What is the survival rate of baby and juvenile zebra-tails?

QUESTIONS?