Agency/Organization: U.S. Geological Survey, NOROCK
Project Name: Distribution and Threats to the Arizona Toad in Clark County
Project Number: 2023-USGS-2345A
Reporting Period: July 1, 2024 - September 30, 2024
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QUESTION 1:

What did you accomplish during this reporting period? How did these accomplishments help you reach the goal of your project? If relevant, what indicators or benchmarks were used to determine your progress?

During this reporting period, we completed several project milestones including our first quarterly report (D05), submitting data deliverables (D06) and the End of Field Work Meeting (M04). We completed field work for the season in early August and have conducted preliminary data QAQC and summaries. We have also delivered permit reports and project status reports to land managers and to other project partners. eDNA filters have been sent for analysis and we are awaiting results.

The field crew visited 153 potential sites in 2024. We found adequate aquatic habitat to conducted 99 unique visual encounter surveys at 80 different sites, including 30 nocturnal surveys and 69 diurnal surveys.

We encountered 103 adult Woodhouse's Toads at 13 sites, 14 adult Arizona Toads at 3 sites, and 115 adult Red-spotted toads at 15 sites. None of these adult Arizona Toads were found in Clark County. We also encountered unidentified toad tadpoles at 25 sites.

We have collected 91 buccal swabs at 18 sites, including swabs from 67 Woodhouse's Toads, 23 Arizona Toads, and 1 unknown toad (a metamorphosed toadlet with unusual morphology).

We found adequate water to collect eDNA filters at 61 sites and collected a total of 143 filters. The mean volume of water filtered across all sites was 4.8L. The eDNA filters were submitted to laboratory in late August and we expect results before the end of the calendar year.

QUESTION 2:

What, if any, problems were encountered? Briefly describe those problems and the manner in which they were dealt.

We did not encounter any significant problems in this reporting period. Minor adaptations to our data sheet and data entry forms during Q1 allowed for streamlined data entry and preliminary error checking throughout Q2. The biggest challenge thus far has been identification of tadpoles to species, both in the field and in the lab. Consulting with local experts in southwestern toad ID suggests that teeth rows, the typical marker used for tadpole identification, are nearly identical for the toad species in the study area. Despite efforts in counting teeth rows with a dissecting microscope, many of the collected tadpoles remain

unidentified. We have suspicions about ID for many of these specimens but await results from eDNA filters to confirm if these suspicions are reliable and could be applied to future specimen collections.

QUESTION 3:

What, if any, proposed activities were not completed? Briefly describe those activities, the reasons they were not completed and your plans for carrying them out.

All proposed activities for this reporting period have been completed. Field work has been completed and preliminary summary reports have been generated. Additional data QAQC and summaries are underway.

QUESTION 4:

What is the calculated percent of work completed?

We have completed surveys at 80 out of the proposed 100 sites for the 2-year project, or 80%. We planned to conduct surveys at ~50 sites in 2024 and exceeded that goal.

QUESTION 5:

Do you foresee any upcoming problems with future project activities? If so, how do you propose to overcome those problems?

We do not foresee any problems with future project activities. Field work for the year has been completed and we have submitted permit reports as necessary. Preliminary planning for 2025 is underway, including identification of new sites, permit renewal, and framing of a general timeline. Following data QAQC and annual report submission to DCP in Q3, we will take a brief hiatus through the winter, with plans to return to initiate logistics in early 2025. In 2025, we will use eDNA filter results to inform additional site selection, will put additional emphasis on nocturnal surveys to confirm species ID, and will target areas in the study area that have not yet been visited or for which permissions were not obtained in 2024.

QUESTION 6:

Is there anything else you want to tell the DCP about this project?

- eDNA filters have been submitted and will be analyzed for DNA from Arizona Toads, Red-spotted Toads, Woodhouse's Toads, and American Bullfrogs. Results are expected by early in 2025.
- Due to the large number of dry sites we encountered in 2024 and extreme heat in July, we anticipate shifting our field work forward a few weeks in 2025 to better overlap with ephemeral and low-volume sites.
- At several locations in Clark County, we identified toads that had characteristics consistent with potential hybrids between Arizona Toads Woodhouse's Toads.

Hybridization between these two species because of Woodhouse's Toads encroaching into Arizona Toad habitats is one of the concerns that led to the current evaluation of the Arizona Toad for listing under the U. S. Endangered Species Act. We are pursuing additional metrics for understanding the potential extent and threat of hybridization to the species in the study area.

QUESTION 7:

What was produced during the reporting period?

During this reporting period, we have completed/submitted:

- D05 (Quarterly Progress Report) - Submitted to DCP July 3, 2024
- D06 (Data Deliverable) – Submitted to DCP July 3, 2024
- M04 (End of Field Work Meeting)
- Permit Reports – Submitted to permitting agencies