

Agency/Organization: Hardshell Labs, Inc.

Project Name: Subsidized Predator Management at the BCCE

Project Number: 2013-BOARMAN-1421B

Reporting Period: July – September 2024

Project Contact Name and Information: Jed Arnold, Desert Conservation Program

**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?**

Accomplishments and Progress Toward Reaching Goals:

1. Due to the heat of the summer and corresponding reduction in raven movements and tortoise activities, we did not conduct field work during this quarter.
2. The installed Laser systems (laser, solar panels and charging system, camera, and satellite-based communication device) continued to have unexpected and unexplainable technical problems. Our laser engineer began design and construction of replacement systems.
3. Conducted some additional data management. In October we will complete the process of identifying, recording, and coordinating the entities that own or manage each tower containing a raven next that is being targeted for oiling in Spring 2025. A preliminary meeting is being held on
4. We left in the field the operational PATS unit, which was placed in the field in May, to continue to collect data over the summer or until the batteries died. The remaining PATS units will be deployed in October, once ambient temperature drop into the 80's.
5. Passive TTs will be deployed in October as well the active PATS units. We will also continue performing the raven surveys.
6. We have begun the design if larger 3-d printed tortoise to test them for delivery of a conditioned taste emetic against coyotes, kit foxes, and perhaps feral domestic dogs, as well as bobcats and mountain lions..

QUESTION 2: What, if any, problems were encountered? Briefly describe those problems and the manner in which they were dealt.

1. We continued to have to have unanticipated technical difficulties with the laser systems that were deployed. The lasers were installed and operable by the end of April, but they continued to shut down and failed to reset on their own. We suspect the problem is with the intense heat during the recent heat waves exposing the lasers to higher ambient temperatures than they have experienced previously and were designed to withstand. The lasers are being completely redesigned and rebuilt and are expected to be ready for successful deployment by December 2024. In the meantime, our CEO and Laser Engineer will be onsite on 9 & 10 October to make one last effort to troubleshoot and repair the problem in the field. The new and improved system should be installed and deployed by the end of November.

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.

1. See item 1 in the previous section.

QUESTION 4: What is the calculated percent of work completed?

We estimate we have completed approximately 23% of the project (5/23 project months)

QUESTION 5: Do you foresee any upcoming problems with future project activities? If so, how do you propose to overcome those problems?

There should be no problem deploying the PATS and TTs in the Fall. While we anticipate that our laser problems will be solved we will compensate for any continued problems with them by using an onsite operator wielding a handheld laser.

QUESTION 6: Is there anything else you want to tell the DCP about this project?

None at this time.

QUESTION 7: What was produced during the reporting period?

1. This Quarterly Report (D07).
2. The Data Deliverable (D08).