Agency/Organization: U.S. Geological Survey

Project Name: Assessing Gila Monster Genetic Diversity

Project Number: 2023-USGS-2315H

Reporting Period: October 1 – December 31, 2025

Project Contact Name and Information:
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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?

Project Accomplishments included:

- Data downloaded from the sequencing facility and backed up on the USGS Hovenweep Supercomputer;
- Data Analysis and Bioinformatics: Quality assessment and filtering steps to select variable loci and call snps;
- This Quarterly Report

We have acquired a total of 288 tissues from Nevada and surrounding localities throughout the species range. Genomic DNA was extracted from each tissue using a Gentra Puregene™ (Qiagen) DNA extraction protocol, and we used a Qubit fluorometer (Life Technologies) to quantify the DNA. For each tissue, we reported the localities where tissue was collected, the total number, and quantity of DNA extracted from each tissue in D05.

SNP libraries were prepared for all samples and sent to the sequencing facility (D05). As of September 30th, we have received raw data back from the sequencing run. This has been downloaded to the USGS supercomputer and to local back-up drives.

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

The US government was closed between October 1st and November 13th, 2025. No work was performed during this period. However, bioinformatics and data analysis have been completed from that point forward, and we do not anticipate a delay in deliverables. 26 samples (9%) failed filtering steps. Fourteen of these were from Clark County. In many cases failure could be caused by poor sample quality (degraded roadkill, museum samples etc.). We will investigate causes (e.g., degraded DNA) and consult previous sequencing results. We will attempt to resequence samples with sufficient quality and quantity of genomic DNA.

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.

We completed bioinformatics steps to assess data quality, align genes, find variable loci and make allele calls. All activities that were planned for this quarter have been completed.

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

We estimate that approximately 75% of the total project is now complete.

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 anticipate any problems.

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

Not at this time.

QUESTION 7: What was produced during the reporting period?

Genomic Sequence Data
Deliverable 07: Quarterly progress report