

Annual Report  
Survey of Aquatic Macroinvertebrate Diversity at Blue Spring, NM  
Share with Wildlife Contract #09-516-0000-00041

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We proposed a species inventory and population genetic survey of benthic invertebrates found in Blue Spring. Our primary goal is to document the biodiversity present at different levels of biological organization (i.e., genetic diversity and species diversity) in this ecosystem. When combined with our NSF-funded project, the design of this project allows us to place our results in the larger framework of springs throughout the northern Chihuahuan Desert.

We received partial funding for Year 1 (\$8,000 from a request of \$10,988) from Share with Wildlife. Below we list the Scope of Work for the project and then state the progress we have made toward meeting our obligations.

The **Scope of Work** for this project includes:

**1) Sorting and identification of macroinvertebrates from 56 biological samples from Blue.**

Due to an arithmetic error, we misstated the number of samples to be sorted. Instead of 56 samples, we have 72 samples (18 samples per date x 4 dates) to sort.

At this point, we have sorted 65 samples (90% of samples) and made identifications of all invertebrates. We still need to confirm these identifications. All samples remaining to be sorted are from the March 2008 collection.

**2) Population genetic analysis of three taxonomic groups that are common to Blue Spring: *Hyallolella* amphipods, springsnails, and *Girardia* flatworms.**

Based on our sorting of samples and observations at Blue Spring, we have added spiders of the genus *Pardosa* to our list of organisms for genetic analysis.

To date, we have sequenced 12 *Hyallela* from Blue Spring. A preliminary phylogenetic analysis indicates that Blue Spring *Hyallela* are monophyletic and that they are sufficiently different from *Hyallela* from other springs that they are likely an undescribed species endemic to Blue Spring. Note that these results are preliminary and the phylogenetic status of this population may change with further analysis.

We have successfully extracted DNA from flatworms, springsnails, and spiders. We do not anticipate problems perfecting the sequencing methodology and obtaining sequences in the next few months.

### **3) Entry of data into the NSF project database.**

We are still in the process of creating a database to archive benthic macroinvertebrate data collected as part of the proposed project, using information technology resources available at Miami University. We do not anticipate problems entering Blue Spring macroinvertebrate data into the database.

### **4) Submission of reports to NMDGF and NSF.**

In addition to this Annual Report, we have presented data from this research as part of our 2008 Annual Report to the National Science Foundation. We also made an invited presentation at the annual meeting of the North American Benthological Society in Grand Rapids, MI in May 2009.

In summary, we have made significant progress on this progress. This progress is made even more notable because of cuts in funding and delays in the execution of the contract. We do not anticipate any difficulties in completing the project in a timely fashion if we are awarded funding for Year 2.