

Agencies attempting to collect Devils Hole pupfish eggs

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AMARGOSA VALLEY, Nev. — As part of a plan to aid in the recovery of the endangered Devils Hole pupfish, biologists are launching a study to determine if it is possible to establish a population of the species in captivity by collecting and moving eggs to an aquarium. The agencies responsible for the pupfish and its natural habitat in Devils Hole placed egg-laying mats in the hole in an attempt to successfully collect eggs. Scientists hope the eggs will hatch and grow to adulthood in the aquarium — eventually reproducing to establish a captive population.

The spring population survey, taken on April 6-7, 2013, estimated there were 35 adult pupfish in Devils Hole; the lowest number ever recorded. The pupfish are officially counted twice per year in the spring and fall. The egg recovery study follows several actions taken by the cooperating agencies immediately after the April population count in an effort to improve conditions for the pupfish.

The approach is experimental and scientists acknowledge it may be difficult to harvest eggs and raise the fish to adulthood in captivity. However, agency scientists believe it is critical to attempt the experiment now, because the population of pupfish in Devils Hole is at an all-time low. The situation is compounded by the fact that Devils Hole pupfish are a short-lived species, with a life span of approximately one-year in Devils Hole. Additionally, they can experience a 40-60 percent mortality rate during the winter months.

“We are working against the clock now to establish a second population,” said Ted Koch, Nevada State Supervisor with the U.S Fish and Wildlife Service. “Successfully collecting eggs is a first step toward producing a captive population that could offset the mortality we know we’ll see in Devils Hole this winter.”

Biologists will employ new techniques recently developed using hybrid Devils Hole pupfish at the University of Arizona to increase the chances for success. Some of these techniques include treating the eggs to inhibit fungus growth and eliminate bacterial pathogens. They also intend to improve environmental conditions in the aquarium over those in Devils Hole by slightly lowering water temperature and increasing dissolved oxygen levels.

“These fish already live at or near their physiological limits in an extremely harsh environment,” said U.S Fish and Wildlife Service Biologist Lee Simons. “We believe that by improving environmental conditions slightly we can increase our chances for success.”

Simons added that the combination of these measures has been shown to double the hatch rate of eggs and significantly improve survival and lifespan of the hybrid Devils Hole pupfish.

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A second population of Devils Hole pupfish will also allow scientists to conduct critical research to support conservation and recovery efforts for the species. Another goal is to be able to return some of the fish back to Devils Hole to augment the existing wild population, should that ever become necessary.

The Devils Hole pupfish is one of the world's rarest fishes, spending most of its life in the top 80 feet of a cavern in the Mojave Desert that is many hundreds of feet deep. Devils Hole, with its 93 degree waters, is located next to the Ash Meadows National Wildlife Refuge but is managed by the National Park Service as part of Death Valley National Park. The National Park Service, U.S. Fish and Wildlife Service, and Nevada Department of Wildlife cooperate to manage the Devils Hole environment, including its pupfish. Devils Hole is one of the harshest and smallest natural ranges known for any vertebrate (fish, amphibian, reptile, bird, or mammal). Devils Hole has always been an extreme environment, with water temperatures and dissolved oxygen concentrations near their lethal limits for fish. It is believed the fish has survived and adapted to these harsh conditions for thousands of years.

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