



**UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES PROGRAM**

TELEPHONIC INTERVIEW Time (8:54)

DEVILS HOLE PUPFISH (HOST – SARAH LEON WITH PAUL BARRETT)

This transcript was produced from audio provided by FWS Endangered Species Program

P R O C E E D I N G S

(Music plays.)

MS. LEON: This is Sarah Leon for the Fish and Wildlife Service and I'm on the phone today with Paul Barrett, the Recovery Coordinator for the Devils Hole Pupfish in Nevada. Hi, Paul, how are you today?

MR. BARRETT: Good, how are you doing?

MS. LEON: I'm doing well, thanks. I'm hoping you wouldn't mind talking to us about some of the work you're doing with the Devils Hole Pupfish.

MR. BARRETT: Absolutely. I'd be happy to.

MS. LEON: Can you just start off by telling us a little bit about this species?

MR. BARRETT: Sure. The Devils Hole Pupfish is a really unique species. It probably has the smallest range of any vertebrate in the world, at least that we know of, because it exists only in one small body of water in the desert on the Nevada-California border called Devils Hole and it's an adjunct portion of the disjunct portion of Death Valley National Park. So it's managed by the National Park Service. And the hole, itself, is a crack into a carbonate aquifer that runs all the way across Nevada into southern Idaho and western Utah. And the outflow is down at Ash Meadows National Wildlife Refuge which also surrounds Devils Hole Well, Devils Hole, the surface area of it is only about 100 feet long by maybe 30 to 40 feet wide. And the fish only exist in this one hole and we dive down to try and survey them and they really only go down about 80 feet. Think

about it as a vertebrate that has probably 8,000 square feet is the entire range. So it's a really unique species.

MS. LEON: So, can you bring us up to speed on the current status of this species?

MR. BARRETT: Devils Hole Pupfish is one of the original species listed under the Endangered Species Act. It's always been very low in numbers, relatively low. Its highest population ever estimated was probably in the 550 individual range and the fish lives a year or less than a year in the wild. So they have to continually reproduce.

In recent years, there was a population crash to the point where we got down to 38 individuals. That's very frightening for a biologist when you have only 38 individuals of a species that lives less than a year. The exact causes of that crash we're not sure of. The water level has slowly been dropping and this species has a long political and legal history as well. It actually went to the U.S. Supreme Court at one point addressing the federal water rights and the water level in the hole as opposed to groundwater that's occurring right outside of Devils Hole. But it hasn't been a drastic drop that correlates with the population drop.

In about the mid to late '90s, 1996, 1997, it started dropping really precipitously. The population naturally varies over the year. There tend to be a lot of fish in the fall because they've been reproducing all summer. And then they die back in the winter because they just are eating things in the algae in the hole. And in the middle of the winter, there's a six week period where there's not even any light that hits the surface of the pond, not any direct light. And so there aren't many resources there. So the fish tend to die back, the population. That's natural. But they usually have died back to about 200 fish. In this case, they went back to 38 fish. And with a situation like that, there are lots of problems that can occur—just random things. You could have all males or one catastrophic event, one flood could go and wipe out all the fish.

So we're really concerned and we put a pretty strong effort in conjunction with the Nevada Department of Wildlife and the National Park Service, of course, Death Valley National Park, and some other partners into really focusing on the fish because we didn't want to lose it. So as to exactly what caused it, we are still trying to figure that out. It may be a slight rise in water temperature. Maybe it looks like the composition of the algae has changed over time. It went from a green, filamentous alga that a lot of people have heard of called *Spirogyra*. It's a blue-green bacteria almost kind of algae.

There are occasional floods that occur in there and they wash material from the outside in. And that could be important to actually bring those outside nutrients in. We have a gate to protect the public from Devils Hole because people in the past have actually drowned in there and also to protect the fish from the public. And some thoughts are maybe that gate was filtering some things. So we don't really know. It's such a unique environment down there that we're not exactly sure, but we have had some success. And most recently, we have the population back up, not as high as we want, but it's

been increasing for the past three years and it's now our last count, the fall count, was about 125 to 130 fish in there.

MS. LEON: Now, what conservation actions are currently under way and what's proving to be the largest obstacle when working to recover this species?

MR. BARRETT: Well, we have a lot of research going on right now and it's really cutting edge research. We have a fiber optic cable that goes down several hundred feet into Devils Hole under water and reads temperature to the tenth of a degree every ten centimeters trying to see how it changes daily and seasonally.

We have folks looking at the bacterial composition, the algal composition. We're trying to find out which life stage is most restricted. We're doing a little bit of supplemental feeding and we think that helps get the fish over the winter. There's a physiologist doing some work on the fish and he's finding that one of the other unique things about Devils Hole is the temperature year round is 93 degrees. That's really right at the edge of where these fish can persist.

One of the other really difficult problems with Devils Hole Pupfish and it's probably the biggest problem we have is unlike most other Pupfish, they are notoriously difficult to breed and keep alive in captivity. We've tried to do artificial propagation which has been a godsend to other fishes and we've never had much success. In the 30 years people have been working with Devils Hole Pupfish, they've had very little success at breeding them in captivity. So that's something we hope to put more effort into down the line, but right now we thought we're better off letting them breed in Devils Hole where we know they do successfully breed, rather than take them into a hatchery or a laboratory situation where we haven't had great success at breeding them.

MS. LEON: So who are the key recovery partners and how might some of our interested listeners be able to help this species' recovery?

MR. BARRETT: Absolutely. The three main entities that have been working very closely on this is the National Park Service and specifically Death Valley National Park; Nevada Department of Wildlife, which is a state agency. And they have a mandate to manage and protect wildlife resources within the State of Nevada and the Fish and Wildlife Service, because it's listed as an endangered species.

There are lots of other players involved who have been instrumental in helping us: the University of Arizona in Tucson; University of Nevada in Reno; Shark Reef which is a public aquarium based at Mandalay Bay has been wonderful with helping us maintain some hybrid fish.

As for the public, right now, they should stay informed. This is a really unique species and it's something -- it only exists on federal land. And I'd say it's not only a good thing but it's probably necessary for the public to watch us, make sure we're doing things the right way, and to stay informed on it. And hopefully, you know, come back in a couple of

years and find out the fish is at least back to historic levels, and who knows, maybe lucky enough to have some secondary populations established elsewhere at that point.

MS. LEON: Well, great. Thanks, Paul, for taking the time to tell us about the Devils Hole Pupfish. It was a real pleasure having you on today.

MR. BARRETT: Thank you. And I would also encourage the public if they're ever out in southern Nevada to take a little time and go out and visit Devils Hole. It's an amazing place. One little tidbit I didn't mention, earthquakes register at Devils Hole for reasons we don't -- well, I don't quite understand. The tsunami that hit Indonesia at Christmas a couple years ago that caused all the damage sent a four foot wave sloshing back and forth. It also has very small tidal fluctuation daily in Devils Hole. This is a freshwater system. So geologically it's really unique as well as biologically. It's a need place.

MS. LEON: For the U.S. Fish and Wildlife Service, this is Sarah Leon. Thanks for listening.