



What Good are Pupfish?

Clay Nelson © 11 April 2021

The following tale has been abridged and brutally edited by me in the interest of time. It is from a chapter in [Elizabeth Kolbert's book "Under a White Sky"](#).

A couple of weeks before the Christmas of 1849, William Lewis Manly climbed to a mountain pass and beheld "the most wonderful picture of grand desolation one could ever see." Manly was standing in what's now southwestern Nevada with an empty stomach and a dry and parched throat." Manly found himself wandering the desert owing to a series of unfortunate decisions. Hoping to reach the gold fields in Northern California they took a detour that led into some of the most inhospitable terrain on the continent.

As the party approached Death Valley Manly's party chanced upon a cavern that contained a pool of warm, clear water. A few of the men plunged in; one recorded in his diary that he had "enjoyed an extremely refreshing bath." Manly peered into the water and noticed something strange. The pool was surrounded by rock and sand. It was miles from any other water body. Yet it was dancing with fish. Decades later he would remember these tiny "minnows," The cavern the forty-niners chanced upon is now known as Devils Hole and the "minnows" as Devils Hole pupfish. Devils Hole pupfish are about an inch long. They are sapphire blue, with intense black eyes and heads that are large for their body size. They're most easily distinguished by an absence; they're missing the pelvic fins that other pupfish possess. How Devils Hole got its pupfish is, as one ecologist has put it, a "beautiful enigma." The cavern is a geological oddity—a portal to a vast, maze-like aquifer that runs far beneath the ground and holds water left over from the Pleistocene. The pool, which is about sixty feet long and eight feet wide, constitutes the pupfishes' entire habitat. This, it's believed, is the smallest range of any vertebrate.

Pupfish are so named because males, wrangling over territory, look a bit like puppies tussling. In the Death Valley area alone, there were at one time eleven species and subspecies of pupfish. One is now extinct, another is believed to be extinct, and the rest are all threatened. The Devils Hole pupfish may well be the rarest fish in the world.

In Manly's day, the cavern would have been hard to spot. Today, it's impossible to miss owing to the ten-foot-tall fence, which is topped with barbed wire. Four times a year they do a census of the fish, which is no small undertaking.

Much like a municipal swimming pool, the pool at Devils Hole has a shallow end and a deep end. The pool's deep end is very deep indeed. According to the Park Service, it descends "over five hundred feet." How much over is a matter of conjecture, since no one has ever touched bottom and lived to tell about it. At the shallow end is a sloping

ledge of limestone, known as “the shelf,” which sits about a foot below the surface of the water. It’s on the shelf that the fish tend to spawn and also where they find the most food. Though the pupfish inhabit only the pool’s upper reaches—they’re rarely seen below seventy-five feet—the vastness of the aquifer has nonetheless shaped them.

“That slate holds the key to the universe,” referring to the slate with the number of fish counted declared one biologist. The grand total for this census: was one hundred and ninety-five. This was sixty more pupfish than had been counted in the previous census, and higher than anyone had dared guess. “If there’s a lot of fish, we all win,” he observed. Altogether, the pupfish at Devils Hole weighed in at about a hundred grams. This is slightly less than the weight of a McDonald’s Filet-O-Fish sandwich.

The biologists celebrated because since Manley discovered the pool Thoreau lamented the extirpation from New England of moose, cougar, beavers, and wolverines: “Is it not a maimed and imperfect nature that I am conversant with?”

Woods that were once thick with wild turkeys were, by the 1860s, all but empty of them. Eastern elk, once plentiful from the Atlantic to the Mississippi, were gone by the 1870s. Passenger pigeons, which formed such immense flocks they blocked the sun, were eliminated around the same time; the last great nesting event—which was also the last great slaughter—took place in 1882. It would have been as easy to count or to estimate the number of leaves in a forest as to calculate the number of buffaloes living at any given time during the history of the species previous to 1870. By 1889 the number of bison living “wild and unprotected” had fallen to fewer than six hundred and fifty.

Already in Palaeolithic times, people had driven plenty of species—woolly mammoths, woolly rhinos, mastodons, and North American camels—into oblivion. Later, as the Polynesians settled the islands of the Pacific, they wiped out creatures like the moa in New Zealand which led to the extinction of the largest eagle in history, the Haast eagle that fed on them. When the Europeans reached the islands of the Indian Ocean, they did in the dodo, the red rail, the Mascarene coot, the Rodrigues solitaire, and the Réunion ibis.

What was different in the nineteenth century was the sheer pace of the violence. If earlier losses had unfolded gradually—so gradually that not even the participants would have been aware of what was going on—the advent of technologies like the railroad and the repeating rifle turned extinction into a readily observable phenomenon. In the United States, and indeed around the world, it became possible to watch creatures vanish in real time. “For one species to mourn the death of another is a new thing under the sun,” Aldo Leopold noted in an essay commemorating the passenger pigeon’s passing. In the twentieth century, the biodiversity crisis, as it eventually came to be known, only sped up. Extinction rates are now hundreds—perhaps thousands—of times higher.

Those who study such things have named this epoch of time as the Anthropocene, the Age of Humans. Our destruction of nature’s ecosystems, including the biggest one of all — earth — and violence against biodiversity is dated to have begun in 1952 in the US and Soviet Union’s vying for nuclear supremacy. In that year the US conducted

eleven nuclear tests above ground, fifty miles from Devil's Hole. Meanwhile, a plume of radioactive water is creeping its way toward the cavern from the Nevada Test Site. In an effort to preserve it an exact replica of the actual pool was constructed. The cost of doing so has been in the millions.

One way to make sense of the biodiversity crisis would simply be to accept it. The history of life has, after all, been punctuated by extinction events, both big and very, very big. The impact that brought an end to the Cretaceous wiped out something like seventy-five percent of all species on earth. No one wept for them, and, eventually, new species evolved to take their place. But for whatever reason—call it biophilia, call it care for God's creation, call it heart-stopping fear—people are reluctant to be the asteroid. And so we've created another class of animals. These are creatures we've pushed to the edge and then yanked back.

There is no exact tally of how many species, like the pupfish, are now conservation-reliant. At a minimum, they number in the thousands. As for the forms of assistance they rely on, these, too, are legion. They include, in addition to supplemental feeding and captive breeding: double-clutching, headstarting, enclosures, exclosures, managed burns, chelation, guided migration, hand-pollination, artificial insemination, predator-avoidance training, and conditioned taste aversion. Every year, this list grows. "Old deeds for old people, and new deeds for new," observed Thoreau.

One of the many who have dedicated their lives to saving the Devil's Hole pupfish is often asked why he spent so much time on such insignificant animals. "What good are pupfish?" they demand. "What good are you?" he responds.
