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HEADLINE: ‘A win for the salamanders’: Austin’s 50 year history, future of endangered salamanders in Barton Springs

Four people in thick wetsuits float in only about a foot of water, barely skimming the relatively clear surface of Eliza Springs. In their hands, they hold aquarium nets and turkey basters with the ends cut off to make the openings wider. Around them bobs a homemade basket fashioned out of PVC pipe and a mesh net balanced by slight weights in the corners. Less than 50 feet away, people splash in Barton Springs Pool as they swim in the warm November sun.

The snorkelers carefully flip all the rocks that litter the bottom of the spring. When they see movement, they use the net and basters to gently capture the salamanders that wriggle out of their hiding spots and place them in the basket. Nate Bendik, the conservation programs supervisor for Austin’s Watershed Department, transfers each squirming critter individually into a custom-made acrylic container with a gridded background to snap a picture of with a Nikon camera.

The group will be out two more times over the next week to the gated, concrete pit of the protected springs to repeat the process. Once their surveying is complete, Bendik will cross-reference the over 1,500 photos to remove salamanders that were repeatedly captured and then analyze the images through a complex process that allows him to track the salamanders’ abundance and sizes.

“The salamanders have a unique identification by their patterns, just like every human face is different,” Bendik said. “You go to the airport and they want to scan your face, and it's like, ‘Oh, it's you.’ We're trying to use that type of technology for the salamanders.”

Three species of salamander — the Barton Springs salamander, the Austin blind salamander and the Jollyville Plateau salamander — reside only in the waters of the Edwards Aquifer. In the 1970s, their populations were abundant in the Barton Springs Pool and Eliza Springs, with [local researchers recording](#) population numbers in the “dozens or hundreds.” It wasn’t uncommon to come across one of the creatures while taking a swim.

However, over the next two decades, salamander populations plummeted severely. According to [U.S. Fish and Wildlife Services](#), the use of poor pool maintenance tools, such as high-pressure hoses, hot water and overuse of chemicals like chlorine, made their homes nearly uninhabitable for them. By the mid-1990s, those [same researchers were](#) unable to accurately count the amount of salamanders in the area — some instances they found as many as 150 salamanders, and there were times where there was not a critter to be seen.

The inconsistency led the city to start regular surveys to track the salamanders' abundance and size, which city conservationists like Bendik continue today. Their work also allows them to track trends and pinpoint issues in modern maintenance that are harming the creatures.

“In 2017, (water at) Eliza would come out in (that) concrete bowl, and then it would drain through a pipe — if you were a salamander and you went down that pipe, you're done,” Bendik said. “We ripped the pipe out and put an overlay on the stream there and made it harder for salamanders to get sucked out. In response to that, abundance has trended upward dramatically.”

U.S. Fish and Wildlife Services [officially designated](#) the Barton Springs salamander as endangered in 1997, with the Austin blind salamander receiving the same label [in 2013](#). At this time, the Jollyville Plateau salamander [remains threatened](#) but is not endangered. As Austin continues to expand, straining local water supply and quality, the potential threat for the creatures grows, Bendik said.

In 1992, the Save Our Springs Coalition — now known as the Save Our Springs Alliance — formed to advocate for the preservation of the Barton Springs watershed's integrity in the face of the city's rapid urban development. The group also joined the [initial petition](#) requesting for U.S. Fish and Wildlife Services to label the Barton Springs salamander as “endangered.”

“Different species have different needs and different kinds of threats, but habitat destruction from urban sprawl is a pretty common issue,” Executive Director Bill Bunch said. “That's been compounded now with climate change and increased problems with droughts and floods.”

When the Barton Springs salamander was officially named a year later in 1993, it was given a scientific name that represented local citizens' fight for preservation — *Eurycea sosorum*, with the ‘S-O-S’ of its second name standing for “Save Our Springs.”

Once the city started managing the pool like a nature preserve and rewilded it with aquatic plants that flourished in the pool prior to its mismanagement in the 1970s, it provided a safe place that allowed the salamanders to thrive, Bunch said. Though some land in the watershed is permanently protected and can't be developed, he said runoff pollution from other urban growth like roadway expansions remains a concern.

“Fragmentation and habitat loss is rampant with our basic patterns of suburban sprawl,” Bunch said. “For long-term protection, especially in Texas, (the answer) is that you buy it and you just completely take it out of the development pool.”

Similarly, the Texas Legislature created a groundwater conservation district, the Barton Springs-Edwards Aquifer Conservation District, in 1987 after concerned citizens petitioned for

it. The district — which encompasses south of Barton Springs down to southern San Marcos, including the Edwards and Trinity aquifers — acts as a government-aligned organization managing the area’s groundwater resources.

The district announced at the beginning of October that the area had entered a Stage 3 Exceptional Drought for only the second time in the district’s history. This designation is determined by the water flow at two points, the Lovelady monitor well in South Austin and at Barton Springs. Both are currently at a concerning low, said Shay Hlavaty, the communications and outreach manager of the district.

“We haven’t seen a population decline in the salamanders, but they have to have the water to live,” Hlavaty said. “Our board president at one point said ... that she truly believes if we didn’t have the endangered salamanders in Barton Springs that would require us by U.S. Fish and Wildlife to protect the water, Barton Springs would be dry at this time because we would have consumed too much water.”

The conservation district tracks the flow at Barton Springs and Lovelady through cubic feet per second, with one cubic foot equaling about a beach ball-sized amount of water, Hlavaty said. Right now, Barton Springs is producing about 14 cubic feet of water a second opposed to its November standard of 60. It’s only 4 feet away from entering the next stage of drought, and Lovelady is closer to that designation at only 2.5 feet away. The area has never entered a Stage 4 drought, she said, and reaching that level of aridness would have unknown effects on the salamanders.

“Protecting the salamanders largely means protecting the quality and quantity of water flowing from Barton Springs, which is an issue that is also absolutely critical to the health and prosperity of the human population of Austin as well,” David Hillis, director of the Biodiversity Center at the University of Texas who has helped the city with salamander conservation since the 1980s, wrote in an email. “In this case, a win for the salamanders is a win for the humans as well.”

North America has historically been good at wildlife conservation efforts that overcome a direct issue like pollution, said Paul Crump, a herpetologist with the Texas Parks and Wildlife Department. However, conservation becomes harder for government entities to tackle when it comes to the less concrete complications, such as balancing environmental conservation and urban development. Despite this, he said Austin’s protection of the Barton Springs watershed from development has gone a long way in protecting the creatures, even if it’s not a match to what their environment once looked like.

“People think that the world that they see right now is the world that has always existed when we’re on the back end of about 200 years of pretty significant changes to habitat and therefore

changes to wildlife populations,” Crump said. “What (we’re) seeing today is a highly degraded version of what used to exist.”