



## Reproduce to Reintroduce

*New Research on San Marcos Salamanders and Texas Blind Salamanders Underway*



One critical aspect of the Edwards Aquifer Habitat Conservation Plan (EAHCP) research program entails learning how to best capture endangered species from the wild and reproducing them in a refugia lab. That effort is meant to ensure there are plenty of Edwards Aquifer Region endangered animals held in captivity to reintroduce into the wild if a severe drought or other unforeseen disaster happened to wipe out the species now living in the protected habitats.

“We have some experience with

reintroducing the endangered fountain darters and Texas wild rice back into the wild, but we are really at the beginning of generating that body of knowledge about the San Marcos Salamander and Texas Blind Salamander,” said Dr. Lindsay Campbell, a U.S. Fish and Wildlife Service supervisory biologist and point person on the EAHCP refugia program. “This presents interesting challenges in collecting endangered salamanders from the wild and figuring out how best to maintain and reproduce them in the lab.”

Collecting the Texas blind salamanders involves catching them with traps or drift nets over springs. The research team members set traps in two different 30-foot Edwards Aquifer wells about a mile from the San Marcos refugia. After testing various types of traps, they settled on two heavy plastic minnow traps tied together with thread that will not degrade. The team typically works over a two-week period going out three days a week to lower and retrieve traps. They use small bits potato peels and pistachio nuts as bait to draw in the salamanders. San Marcos salamanders are collected by hand using divers at Spring Lake and snorkeling just below Spring Lake dam. Drift nets are employed at the diversion spring in Spring Lake.

“The food we use in the Texas blind salamander traps grows biofilm while it’s in the Edwards well, which then attracts the invertebrates the salamanders feed on,” said Kelsey Anderson, a Fish and Wildlife Service biological science technician working at the San Marcos refugia center. “We only keep one out of three blind salamanders we catch in traps. That is a limit we placed on ourselves in order to be conservative with our preservation efforts. We just don’t know enough about these salamander population numbers to be too aggressive in taking them out of the wild at this point. However, when we collect Texas blinds in a drift net that are shot out an aquifer spring, we take 100 percent of those thinking that they will not survive in the lake or river environment.”

Once the salamanders have been captured and quarantined to ensure their health and the health of other salamanders in the lab, the fun and interesting work begins. The lab is now tagging the salamanders to set a baseline of information from the date they were placed in their new homes. The tagging system is based on colors and helps team members quickly identify males from females and then monitor their growth and habits over time.

Campbell explained that the long-term goal is to have 500 San Marcos Salamanders and 500 Texas Blind Salamanders on hand for reintroduction if that is ever needed. The current reintroduction strategy would be to release 50 individuals per stocking site with the goal of 500 total individuals released and monitored during the first stage of reintroductions.

“One of the things you quickly learn about this research is that there are many details you have to know before you ever get to that point of reintroduction. For example, if we needed those salamanders to be 30 centimeters in length for reintroduction, we need to learn how long it takes for them to grow into that length. Then you take another step back and figure out what the survival rate is of salamanders to that life stage to calculate how many salamanders you would need to hatch to get to the target number of individuals at 30 cm. Then you calculate how many clutches of eggs it would take to get your target number to hatch and how long it would take to produce that many clutches. Another step back informs you about the whole husbandry process. So, really, we’re just beginning to refine this knowledge of our salamanders and put more solid parameters on the estimates from the past.”

The first part of the team’s husbandry research on San Marcos salamanders showed that the males can be very persistent in the pursuit of a female who is ready for the “courtship dance.” Given that new knowledge, they will be placing the males and females together in groups, but will be removing the males after 48 hours to reduce the potential stress on females. The females typically oviposit eggs about a month after mating has occurred, and the team has observed clutches of eggs numbering anywhere from seven to 73 eggs.

“Our team of young scientists are extremely engaged and enthusiastic. We learn new things each day and then have to assemble those bits of information into sound science we can pass on to other researchers and the EAHCP team,” Campbell concluded. “We feel positive that this research will lead us to knowing as much about these endangered species as we do now know about others protected by the EAHCP.”

## Short Takes

### **EAHCP Implementing Committee February Meeting Canceled**

The February 21 Implementing Committee Meeting has been cancelled. The IC will reconvene at their regularly scheduled meeting on March 21st at 10 a.m. at the EAA.

And just a reminder, all Stakeholder and Implementing Committee meetings will now begin at 10 a.m. rather than the previous 9 a.m. start time.

### **Great Texas River Clean Up in San Marcos Scheduled for March 2**

The 2019 Great Texas River Clean Up in San Marcos is Saturday, March 2nd. Registration will begin at 8:30am at your clean up location's headquarters and the clean up will begin at 9 am. Lunch and a free T-shirt will be provided.

T-shirts are available on a first come, first serve basis. If you want your size, make sure to show up early. Please carpool if you can and if you would like to, bring a filled water bottle.

### **Refugia Sneak Peek**

You can get a sneak peak at some of the new tanks in the San Marcos Refugia which will be home to many of the endangered species the EAHCP is designed to protect. [Click here for more info.](#)

### **EAHCP Implementing Committee Meetings to be Held at EAA**

In 2019, all Stakeholder and Implementing Committee meetings will now be held in the EAA Board Room in San Antonio. This move has been made to take advantage of the EAA's larger meeting space and ability to live stream meetings. Those capabilities will help increase program transparency and accessibility. Additionally, packets and presentations will now be distributed using the Granicus system. During this transition, documents will also be made available on the EAHCP website as committee members get adjusted to the new system.