

Pupfish

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population of native pupfish at the pond, Ross Timmons, topminnow/pupfish coordinator for the Arizona Game and Fish Department's nongame branch, said.

"It gives the students out here the opportunity to actually take part in conservation efforts for a threatened and endangered species. So they can get hands-on experience here," he said.

The desert pupfish is one of 36 species that historically inhabited Arizona's waters prior to European-American settlement, according to <http://www.azgfd.gov>. Desert pupfish historically occupied springs, marshes, cienegas, small, slow-flowing streams and margins and backwaters of slow-moving rivers below 5,200 feet elevation. By the early 1900s, pupfish no longer existed in the wild in Arizona – with the exception of Quitobquito. The desert pupfish was federally listed as endangered in 1986. The Arizona Game and Fish Department is taking steps to increase populations of the fish, according to the website.

"One of the things we're working on is trying to develop a program that uses their pond for their biology or ecology classes and actually where they are going to be helping us manage these populations, doing population estimates," Mr. Timmons said. "For instance, little mark and recapture projects in the classroom that they can actually provide us with the data we need on these populations to monitor and track them. So they'll be partners in the monitoring efforts and the management efforts of this population we are establishing," he said.

"What today is about is an opportunity to actually participate in real conservation by partnering with fish and wildlife service, game and fish and using this as a facility to hold refuge populations of endangered animals," Dr. Andrew Holycross, who teaches introductory biology, said. "This campus – our focus is on the environment and environmental issues and we are particularly keen on native things and being an example of how you can incorporate native landscapes, provide habitat for urban wildlife, participate in conservation efforts like this. So that's our overall focus on the campus. We call ourselves the environmental campus," he said.

The Red Mountain cienega of primarily native plant and animal species was constructed in 2010 and is used for some life-sciences classes, Mr. Holycross said. It has a biofiltered recirculating system of primarily reclaimed water, he said.

"I was one of the people who came up with the concept and helped to design it," he said. "It's environmental-education outreach both for the general public and also we try to use it as an outdoor classroom for some of our courses, environmental biology. We're extending our offering so we can use it more. We're going to be offering some field techniques in biology classes, so a variety of different courses can make use of it."

Patrick Burkhart, MCC provost for the Red Mountain campus, used a bucket to add

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— Ross Timmons

**Topminnow/pupfish coordinator
Arizona Game and Fish Department**

"The whole theme of this place is environment," he said. "We are nestled in a very natural Sonoran-Desert setting and so the whole theme of preserving the environment and preserving wildlife is part of our heritage," he said. "It's certainly a learning experience for students. So it is not simply that we are engaged in a partnership with game and fish and the other partners for preserving an endangered species and having a reserve stock of pupfish, but it's also an opportunity to educate students. So it's a big deal."

The fish were transported to the cienega from the Phoenix Zoo where they were kept in ponds, Mr. Timmons said.

MCC officials know the cienega pond will sustain life because other native fish, longfin dace, which are not endangered, have been kept there for several years, Mr. Holycross said.

"You can find them in like drying-up algal mats in streams and then the floods come and the little suckers are just up and running again, so they are pretty hardy fish overall," he said.

"We wanted to kind of get the system going, make sure it was good for fish, have a fish predator in the system so that when we put the pupfish in things weren't dramatically disrupted," Mr. Holycross said. "To get ready for the pupfish, we are trapping a whole bunch of the longfin dace out and we're going to give those to the Phoenix Zoo who has given us the pupfish. The Phoenix Zoo is going to use the longfin dace to feed endangered Mexican garter snakes and narrow-headed garter snakes, which are both endangered," he said.

Darrell Woolf, a Mesa Community College lab tech and exhibit curator, said he removed 325 to 400 of the longfin dace and placed them in a cooler for the Phoenix Zoo officials to take with them.

"Well, it's finally come off," Mr. Timmons said of the introduction of pupfish into the pond. "They got it built in 2010, we got longfin dace in here... a species that is not listed – in order to get the system up and balanced and ready for pupfish and then we got the paperwork done for the pupfish this year so now it's coming to fruition," he said.

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