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Endangered Fish Thriving in Santa Cruz River

Recycled Wastewater Vital for Ecosystem Recovery

The endangered Gila topminnow, which returned to the Santa Cruz River after a 10 year absence, now appears to be thriving. The native Arizona species, listed under the Endangered Species Act in 1967, was found last year in the Santa Cruz River near Nogales, Arizona for the first time since 2005. Annual surveys conducted in November confirm that Gila topminnow remain in the river and have likely increased in number.

“At one site I saw a small pool with over two hundred topminnow. We are thrilled to be finding them this numerous since this is a good indicator that their return last year was not a brief blip on the radar,” says Doug Duncan, fish biologist with the U.S. Fish and Wildlife Service.

Surface flows along most of the Santa Cruz River originate from effluent (highly treated wastewater), and have in recent decades been so polluted that no fish of any kind were found for several years. Massive upgrades to the Nogales International Wastewater Treatment Plant beginning in 2009 resulted in the elimination of odor, reduced levels of toxicity for fish, and a breakdown of a clogging layer of algae and microorganisms that kept water from infiltrating into the groundwater table. University of Arizona scientists found that this clogging layer was largely responsible for an eight mile die-off of trees along the Santa Cruz River near Rio Rico in 2005.

After the treatment plant upgrades were completed, scientists and local residents eagerly awaited the fish's return as the water quality in the river began improving. Scientists believe that cleaner water led to the fish’s return. Survey methods do not estimate population numbers, but the ease with which the Gila topminnow were found this year suggests that they are doing very well.

The implications of the endangered topminnow discovery extend far beyond Santa Cruz County, and even beyond Arizona. Many southwestern rivers and streams depend on effluent for continued flows. As water

becomes ever scarcer in the desert southwest, the value of returning wastewater to the ecosystem will only increase.

“Often communities discharge effluent into rivers out of convenience and not with intent to benefit the environment,” says Claire Zugmeyer, ecologist at the Tucson based nonprofit Sonoran Institute, and long-time coordinator of the annual fish survey. “We are now seeing that highly treated wastewater is a vital component to maintaining this region’s living river. With the release of effluent into the Santa Cruz and other rivers, we can create rich oases for both people and wildlife while simultaneously benefiting from functions provided by a healthy river, such as flood control, recharge, and cooling riparian vegetation.”

“We are ecstatic to know the Gila topminnow appear to be thriving again,” says Sherry Sass of the Friends of the Santa Cruz River, an all-volunteer organization at the forefront of river health advocacy. “We have been tracking water quality and river conditions since the early-1990s. The return of this sensitive species speaks volumes about the river’s recovery.”

This year’s survey was conducted by Sonoran Institute, U. S. Fish and Wildlife Service, University of Arizona, National Park Service Tumacácori National Historical Park, National Park Service Sonoran Desert Monitoring Network, and other partners. The partners have been conducting the annual survey since 2008 as a means to track the overall health of the Santa Cruz River. Additional community partners who actively participate in this effort include the Arizona Game and Fish Department, Friends of the Santa Cruz River, United States Geological Survey, and Global Community Communications Schools at Avalon Gardens.

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The **Sonoran Institute**’s mission is to connect people and communities with the natural resources that nourish and sustain them. We work at the nexus of commerce, community, and conservation to help people in the North American West build the communities they want to live in while preserving the values which brought them here. We envision a West where civil dialogue and collaboration are hallmarks of decision making, where people and wildlife live in harmony, and where clean water, air, and energy are assured. For more information, visit www.sonoraninstitute.org.

The **Arizona Game and Fish Department**’s mission is to conserve and protect Arizona’s diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations. The department has trust responsibility for managing more than 800 native wildlife species, the most of any inland state. www.azgfd.gov

Friends of the Santa Cruz River (FOSCR) is a volunteer conservation group dedicated to protecting the upper Santa Cruz River. Our goals are to ensure a continued flow of the river’s surface waters, promote the highest water quality achievable, and to celebrate and restore the riparian ecosystem and diversity of life supported by the river’s waters. www.foscraz.org

The **National Park Service**’s mission is to preserve unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations. For more information about Tumacácori National Historical Park, visit: www.nps.gov/tuma

The mission of the **U.S. Fish and Wildlife Service** is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals, and commitment to public service. Learn about our Arizona work at: www.fws.gov/southwest/es/arizona

The goal of the **Department of Ecology and Evolutionary Biology at The University of Arizona** is to inspire and educate students and to produce world class research about nature and principles underlying ecological and evolutionary processes, the origin and maintenance of biodiversity, and the diversity and dynamics of the world’s natural systems.

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