

Working Together for Riparian Conservation

by Ann Haas

In southeastern Arizona, a Partners for Fish and Wildlife project provides water for cattle grazing while protecting a sensitive riparian area for two endangered species—a fish and a plant—and a springsnail species that is a candidate for listing.

“It’s something we all believe in. We want to hang on to what we’ve got,” said the owner of the ranch, Davis Merwin, about the conservation initiative. “We’re happy that we’ve done it,” he added.

The Partners project is conserving Cottonwood Spring for two endangered species, the Gila topminnow (*Poeciliopsis occidentalis occidentalis*) and Huachuca water umbel (*Lilaeopsis schaffneriana recurva*), along with the Huachuca springsnail (*Pyrgulopsis thompsoni*), a candidate species. “This is an exceptional spot,” said Marty Jakle, Arizona Coordinator for the Partners program, “with two listed species and a candidate species in high-priority

riparian habitat featuring cienegas. The Nature Conservancy was the catalyst in restoring the area by contacting the landowner about our partnership opportunities.”

Cottonwood Spring, situated near the headwaters of Sonoita Creek and the town of Patagonia, Arizona, supports about a mile (1.6 kilometers) of perennial stream habitat. It is home, said Marty Jakle, to “a diverse assemblage of neotropical migratory birds: the yellow-billed cuckoo, Cassin’s kingbird, Bell’s vireo, summer tanager, yellow warbler, yellow-breasted chat, and gray hawk. The spring also supports a healthy riparian plant community.”

“The headwaters population of Gila topminnows is particularly important because of its capability to replenish and restock downstream populations in Sonoita Creek that may ‘wink out’ due to drought, exotic species competition, or other calamities,” added Frank
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Gila topminnows
Photo by John Rinne

What is a “Cienega”? Cienega (“see-en’-ee-ga”) habitats are watered areas surrounded by dry or semi-arid deserts. These oases provide shelter and water to many plants and animals. Many cienegas have developed isolated and unique flora and fauna of their own. Written accounts of the settling of the Southwest are replete with descriptions of travelers relying on these areas and frequently settling along them, as had Native Americans. Today, few cienegas remain undisturbed. Many have been lost, largely due to knowing or unconscious activities of humans, including their livestock-watering practices.



Cienegas, such this one at Buenos Aires National Wildlife Refuge in southern Arizona, provide important riparian and aquatic habitats in an arid region.

Photo by Michael Bender

Gila Topminnow

The endangered Gila topminnow is a small (2-inch, 5-centimeters-long) guppy-like, live-bearing fish. The Gila topminnow historically occurred throughout the Gila River drainage in Arizona, and even into New Mexico and Mexico. The species declined due to exotic fish competition and predation, water diversion, stream channelization, groundwater pumping, and water pollution. The Gila topminnow is found in streams and springs below 4,500 feet (1,350 meters) elevation, primarily in shallow areas with aquatic vegetation and debris for cover.

Although it can live in a variety of water types such as springs, marshes, and streams, the Gila topminnow likes shallow, warm, quiet waters. It feeds primarily on the larvae of insects, including mosquitos, but also on other small aquatic and terrestrial invertebrates. The species can tolerate relatively high water temperatures and low dissolved oxygen. The introduction of the predatory mosquitofish in the 1920's was a significant factor in the decline of the Gila topminnow. Cottonwood Spring is home to one of the remaining natural populations of the Gila topminnow.

The species is being raised at Dexter National Fish Hatchery and Technology Center in New Mexico for reintroduction into many sites in Arizona. Topminnows live about two years. Since its listing in 1967, the Gila topminnow has been reintroduced into more habitat than any other native fish species in the Southwest.

Photos by John Rinne/U.S. Forest Service



Huachuca Water Umbel

The endangered Huachuca water umbel and "bonus" damselfly. A member of the parsley family, the Huachuca water umbel is a wetland species found in cienegas in Sonoran desert scrub habitat, grasslands or oak woodlands, and conifer forests between 4,000 and 6,500 feet (1,210 and 1,970 meters). The plant requires perennial water, a factor in its decline in rare wetlands of the Southwest. Protected by the Endangered Species Act since 1997, the Huachuca water umbel is also protected by the Arizona Native Plant Law and as a Forest Service sensitive species.

Photo by J. Rorabaugh/USFWS



Huachuca Springsnail

The Huachuca springsnail, a candidate for listing under the Endangered Species Act, shown next to a straight pin to give an idea of scale. Loss or degradation of spring and cienega habitat including erosion from overgrazing and timber harvest, drought, mining effluent, altered fire regimes, and water development have contributed to the decline of this tiny aquatic snail in its historic range in Arizona and Mexico in the upper San Pedro River drainage and upper Santa Cruz River drainage. A healthy habitat resulting from relocating livestock will help the species.

Photo by Marty Jakle/USFWS

Baucom of the Arizona Partners program. The headwaters population is a “pure” population, with no nonnative mosquitofish (*Gambusia affinis*) that compete with and prey on the native topminnows.

The objective of this project was to remove grazing animals from the sensitive spring and provide an alternate water source for livestock in the uplands. The challenge was to move cattle across a highway, which meant going through a wetland, under a culvert, and over a rangeland.

“The problem was that once cattle got into the wetland during our Arizona summers, they didn’t want to move,” TNC’s David Harris commented. “The result was black mush, with a negative impact on the plants, snails, and topminnows.” The solution was a “driving lane” for the livestock. Now constructed, the lane provides an effective means for moving livestock from the southwest side of the highway to the northeast side.

“The recovery of the area is remarkable,” David Harris said. “The site has been transformed from a bog to a stream course, heavily vegetated with cottonwoods and willows. It’s become habitat suitable for southwestern willow flycatchers!” he exclaimed, looking ahead to its further potential for endangered species.

The Partners project provided an alternate water supply by installing a solar-powered automated pumping system along the stream, and pumping water to tanks in the adjacent uplands and to a driving lane, so the cattle can drink en route from one pasture to another. The project fenced the riparian corridor, about 20 acres (8 hectares) of cottonwood and willow forest and cienega, to prevent year-round grazing. Both of these important habitats are dwindling in the arid Southwest. The pastures themselves, comprised of thousands of acres, include a diversity of habitat with water sources. After the project was completed, the ranch foreman commented that it used to take

three cowboys to move the cattle through the area and out of the stream, but with the project he needs only one cowboy to do the same job.

Begun in 1993, this Partners project was one of the earliest in Arizona. The recovering habitat has benefitted many species, not just the listed ones. Thanks to this Partners project, an adjacent property-owner also has become a participant in the program.

The project is a cooperative effort among the landowner, the Arizona Chapter of The Nature Conservancy, and the National Resources Conservation Service (a U.S. Department of Agriculture agency that assisted in designing the water-supply system). The Arizona Game and Fish Department and The Nature Conservancy are monitoring the Gila topminnow and Huachuca water umbel populations at the spring. The Arizona State Parks Board participated in surveys that catalogued rare species in the area.

Mr. Merwin is donating 170 (69 ha) acres of the property to the Conservancy’s Patagonia-Sonoita Creek Preserve, which is downstream from Cottonwood Spring. The preserve attracts between 30,000 and 40,000 visitors a year.

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**Solar Panel:
Power in the Desert**
This solar panel powers a pump to move water from Cottonwood Spring to cattle away from the fragile stream bank, providing an important source of energy to make possible relocating the animals and restoring the habitat. Cottonwood Spring is home to the endangered Gila topminnow and Huachuca water umbel.

USFWS photo

