

# CURRENT CONDITIONS

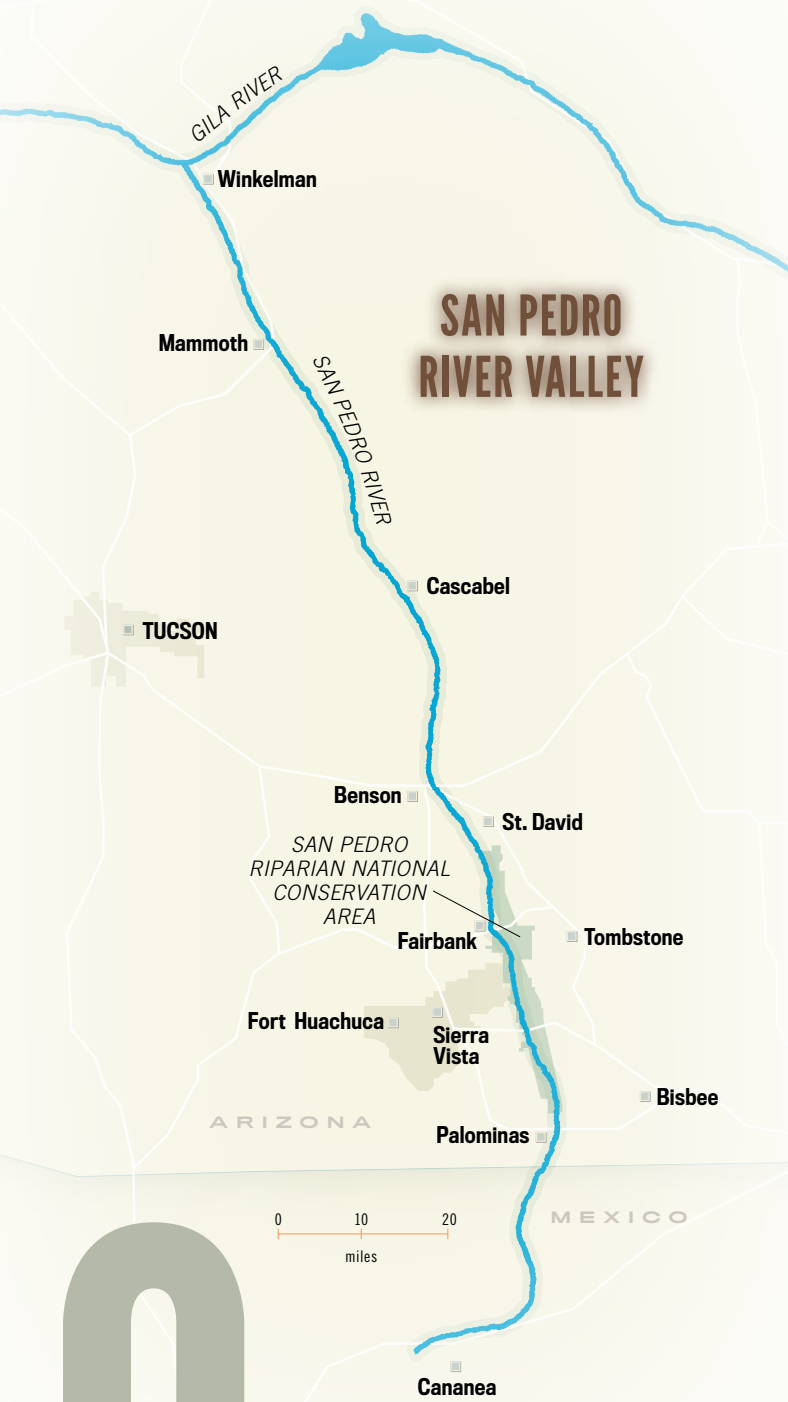
The plight of one of the last undammed rivers in the Southwest has long been recognized. So far, the San Pedro has escaped the fate of Arizona's other great rivers — Salt, Gila, Santa Cruz, Colorado — now dammed, depleted, drying up and desiccated, their once-lush cottonwood and willow forests all but vanished. Will the San Pedro escape such a death? And if it dies, what will die with it?

**BY TERRY GREENE STERLING**

A south-facing aerial view of the San Pedro River, taken north of the ghost town of Fairbank, shows the cottonwood-lined banks where the future of the historic waterway is in peril.

RANDY PRENTICE





MICHAEL NEWHOUSE

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N A WARM WINTER morning, Holly Richter guides her quarter-horse mare down the steep, sandy banks of the San Pedro River, just a few miles north of the U.S./Mexico border. You can tell a lot about a woman by how she handles her horse.

Richter, a 51-year-old river ecologist for The Nature Conservancy, who has devoted much of her professional life to saving the San Pedro River, is a gentle and capable rider. I trail along behind her, mounted atop Huckleberry, a good-hearted blue-roan donkey whose hardy ancestors carried prospectors through the American West. Huckleberry intuitively avoids quicksand and donkey-leg-snapping badger holes, so I relax. A red-tailed hawk soars over the canopy of

giant cottonwood trees. The gentle San Pedro riffs over rocks. In the 16th century, when Spaniards first laid eyes on the San Pedro, it was a different river. It didn't have so many cottonwoods, and floods hadn't sliced and deepened much of the channel. The river was mostly marshier, wetter, wider — perennially flowing through Sacaton grasslands and boggy marshes. Then fur trappers, miners, soldiers, ranchers, farmers and developers came in successive waves, transforming the river and threatening its future.

The plight of one of the Southwest's last undammed rivers has long been recognized. So far, the San Pedro has escaped the fate of Arizona's great rivers — Salt, Gila, Santa Cruz, Colorado — now dammed, depleted and desiccated, their once-lush cottonwood and willow forests all but vanished.

Will the San Pedro escape such a death? And if it dies, what will die with it?

Tied to the San Pedro's survival are the fates of millions of migratory birds that, absent other Arizona rivers, have come to rely on the San Pedro as a stopover or breeding ground.

Also at risk are other harbingers of our own survival — collectively hundreds of species of plants, insects, mammals, reptiles, fish and amphibians. If you travel the length of the San Pedro, from its headwaters in the grasslands of Sonora, Mexico, to its confluence with the Gila River near Winkelman, you might see vermilion flycatchers, yellow-billed cuckoos, summer tanagers, green-tailed towhees, golden eagles, myriad hummingbirds, endangered Southwestern willow flycatchers, threatened native fishes called Gila topminnows, threatened Chiricahua leopard frogs, black bears, beavers, deer, coyotes, javelinas, perhaps even a thirsty jaguar.

The river's rich biodiversity, and its iconic importance to Arizona and the nation, have spurred notable efforts to save it. Formed in 1998, the Upper San Pedro Partnership is a group of stakeholders that includes conservationists, agency officials, government officials and a representative of Fort Huachuca, the Army base adjoining Sierra Vista. The two communities, with their large population bases, have been blamed for significant degradation of the groundwater aquifer beneath Sierra Vista. The partnership has voiced a commitment to reaching a voluntary "sustainable yield" — restoring the upper San Pedro watershed near Sierra Vista so that water supplies meet both human and ecological demands and replenish historic aquifer dewatering. The partnership didn't meet its sustainable-yield deadline of 2011, but it's made progress.

"The fact of the matter is that for a small community, we have done more to protect this water resource than any other place in the state," says Pat Call, the partnership's chairman and a Cochise County supervisor.

But many more conservation efforts are needed, most everyone agrees, and some argue that not enough is being done soon enough. Some conservationists believe that without further restoration of groundwater that is the river's lifeblood, the river will be dead by 2100. Others are optimistic that the needs of the river, and the people who rely on its groundwater supply, can be balanced.

In 1988, the federal government formed the San Pedro Riparian National Conservation Area, a 56,000-acre federal preserve that stretches from the U.S./Mexico border at Palominas to St.

David. In the conservation area, the river sustains about 350 species of birds, 80 species of mammals, 40 species of amphibians and reptiles, and two species of all-but-vanished native fish.

The river within the federal conservation area, managed by the U.S. Bureau of Land Management, runs wet for most of the year. That's due to diverse conservation approaches funded by public and private dollars.

In 1994, the Center for Biological Diversity, a conservation nonprofit, filed the first of many lawsuits against the Department of Defense and Fort Huachuca, forcing a reduction in groundwater usage. "The problem with the San Pedro is it is an extinction in progress," says the center's co-founder, a Flagstaff emergency-room doctor named Robin Silver. "Without aggressive mitigation, the river is history. The rate of withdrawal is exceeding the rate of replenishment."

Without the center's litigation, Silver says, there would be little mitigation of the Upper San Pedro. He understands Fort Huachuca is the key economic engine of Cochise County, but for the river's sake would like to see staffing levels at Fort Huachuca reduced. Humans can choose where to live and work, he notes, but "the San Pedro and the wildlife can't choose where to be."

The town of Sierra Vista does not own a water utility; the utility is relegated to private companies. The town recharges some of its treated effluent near the river, although the actual long-term effect on the river is open to debate.

The pragmatic Nature Conservancy has long partnered with public and private groups to restore the Upper San Pedro. These efforts include the capping of industrial-strength irrigation wells and retirement of irrigated farmlands, and a creative new project: the transportation of storm water and runoff collected from rural residential areas to a recharge site near the river at Palominas. Cochise County and Fort Huachuca partner with The Nature Conservancy for this project.

All of this explains why Richter, the Nature Conservancy river ecologist who lives near the river and loves it dearly, has lent me Huckleberry and guided me to a magical place on the San Pedro that few know about.

"There's got to be hope for the San Pedro," she says.

After wading in the river, our mounts climb a cinnamon-hued riverbank and stop beneath gray-naked limbs of a sprawling 100-year-old cottonwood tree. Richter points to a series of Z-shaped blockades of wood and twigs — beavers have dammed this small stretch of the river, creating a blue-sky-reflecting pool about 100 feet in diameter.

It may seem like just a pond, but it's actually a healthy home for insects, fish, turtles, amphibians and aquatic plants. This pool of life offers a good food source for birds that eat insects or tiny fish. The beaver pond helps sustain the river by retaining water longer in the river channel, helping to store the river's

lifeblood, groundwater, in the stream banks.

More than a century ago, the San Pedro was called Beaver River. The industrious rodents were key to the river's survival — their dams created a healthy, marshy, self-sustaining river that was wide and shallow and surrounded by lush grasslands. But drought, grazing practices, historic woodcutting and beaver slaughter all played a part in the eventual loss of marshes.

In the early 19th century, the popularity of beaver hats prompted mountain-men trappers to slaughter most of the San Pedro beavers. Absent the animals, the river began flooding, carving out a deep channel that was more amenable to cottonwood and willow forests than wetlands. The beavers on the Upper San Pedro today likely hail from a group reintroduced more than a decade ago by the BLM and the Arizona Game and Fish Department.

For thousands of years, this desert stream has ensured the



Rancho Los Fresnos sits amid rolling grasslands of Sonora, Mexico, near the headwaters of the San Pedro River. JACK DYKINGA

survival of human beings. If you hike the well-maintained trails of the conservation area, you'll see historic sites that document the story. It begins about 13,000 years ago when Clovis hunters killed mammoths not far from where we ride. Hohokam Indians, those irrigation experts, farmed near the San Pedro. Next came trappers, followed by a few hardy ranchers and miners who battled the Apaches, followed by an onslaught of ranchers and miners and merchants who were encouraged to settle the area after the Apache Indians were driven out by the post-Civil-War Army. Fort Huachuca bears witness to that historic military presence.

Richard J. Hinton's 1877 *Handbook to Arizona* is a boosterish guidebook of the Arizona Territory; it encourages ranching, mining and development, in keeping with the federal government's wish to settle the land.

"Of Camp Huachuca and vicinity, it is reported that the country is rapidly settling up for miles around the point where the troops are stationed," Hinton wrote. "Here, nature has placed side by side one of the richest valleys and mineral-producing

belts in the Territory, so that miner and farmer may walk hand in hand.”

Here’s where my DNA splices into the San Pedro narrative. My grandfather, “Col.” William Cornell Greene, a poor Quaker boy from Duck Creek, Wisconsin, made his way west and built a fortune ranching and mining in the San Pedro Valley about 120 years ago. (He died more than a century ago, when his son — my father — was a toddler.) A BLM flyer dubs my grandfather a “copper and cattle baron, and grand promoter of the American Southwest, with significant ties to the New York Financial District.” He once dammed the San Pedro. When a rival, Jim Burnett, blew up the dam, the river flooded, killing my aunt and another child. My grandfather shot and killed Burnett near the OK Corral in Tombstone, was acquitted by a local jury, and went on to develop a copper mine in Cananea, Sonora, near the headwaters of the San Pedro.

Up until the 1950s, my progenitors owned ranches on both sides of the border. In the 1940s, the family used commercial pumps to extract river water for their Palominas alfalfa fields. Cattle crossed over from the family’s Mexican ranch. They grazed and rested at Palominas. Then they were herded to Hereford where they were shipped by rail to California. Our old Palominas spread is now part of the conservation area.

Sitting atop Huckleberry, gazing at a river that my own DNA cherished and degraded, I’m happy the beavers are back.

**H**uckleberry is Holly Richter’s donkey and her preferred mount during the annual wet-dry mapping day — a sear day in June when Richter oversees a group of scientists and volunteers armed with GPS devices. To document where water flows in the San Pedro, and where it does not, volunteers trudge over every publicly owned inch of the 173.6-mile river that begins in Mexico and empties into the Gila. What’s more, mappers measure some privately owned stretches of the river and several tributaries in Mexico and Arizona.

In 2011, the last year for which statistics are available, Richter’s team surveyed 134.5 miles of the San Pedro. Forty-four miles contained water. The remainder was dry.

Groundwater is the lifeblood of the San Pedro, but it is more difficult to measure than the surface water of the river itself. Still, you can’t save a river unless you understand the impact of groundwater pumping on river flow. And it’s tricky to measure it, because it moves at a glacial pace. If you pump water from wells a few miles away from the San Pedro’s banks — in the town of Sierra Vista, for instance — you’re still taking water out of the aquifer feeding the San Pedro, but it might take decades for the river to feel the results. The San Pedro’s aquifer is geologically complex and vast. River restoration requires thorough long-term groundwater monitoring to deliver critical data, but long-term public funding for the necessary data collection is uncertain, according to Jim Leenhouts, the associate director of the U.S. Geological Survey’s Arizona Water Science Center.

Today, conservationists must also factor in the effects of an ongoing drought that has diminished rainfall and snowmelt. The drought is likely associated with climate change, most scientists agree.

Juliet Stromberg, a life-sciences professor at Arizona State

University who co-authored a book on the river, remains guardedly optimistic about the San Pedro’s recovery. “We need to do a better job of figuring out how to produce our food and sustain our cities while maintaining riparian forests,” she says. Still, the multiple studies and conservation efforts focused on the San Pedro give her hope. If we shower so much attention on restoring the San Pedro, could we not use it as a role model for restoring our other great rivers?

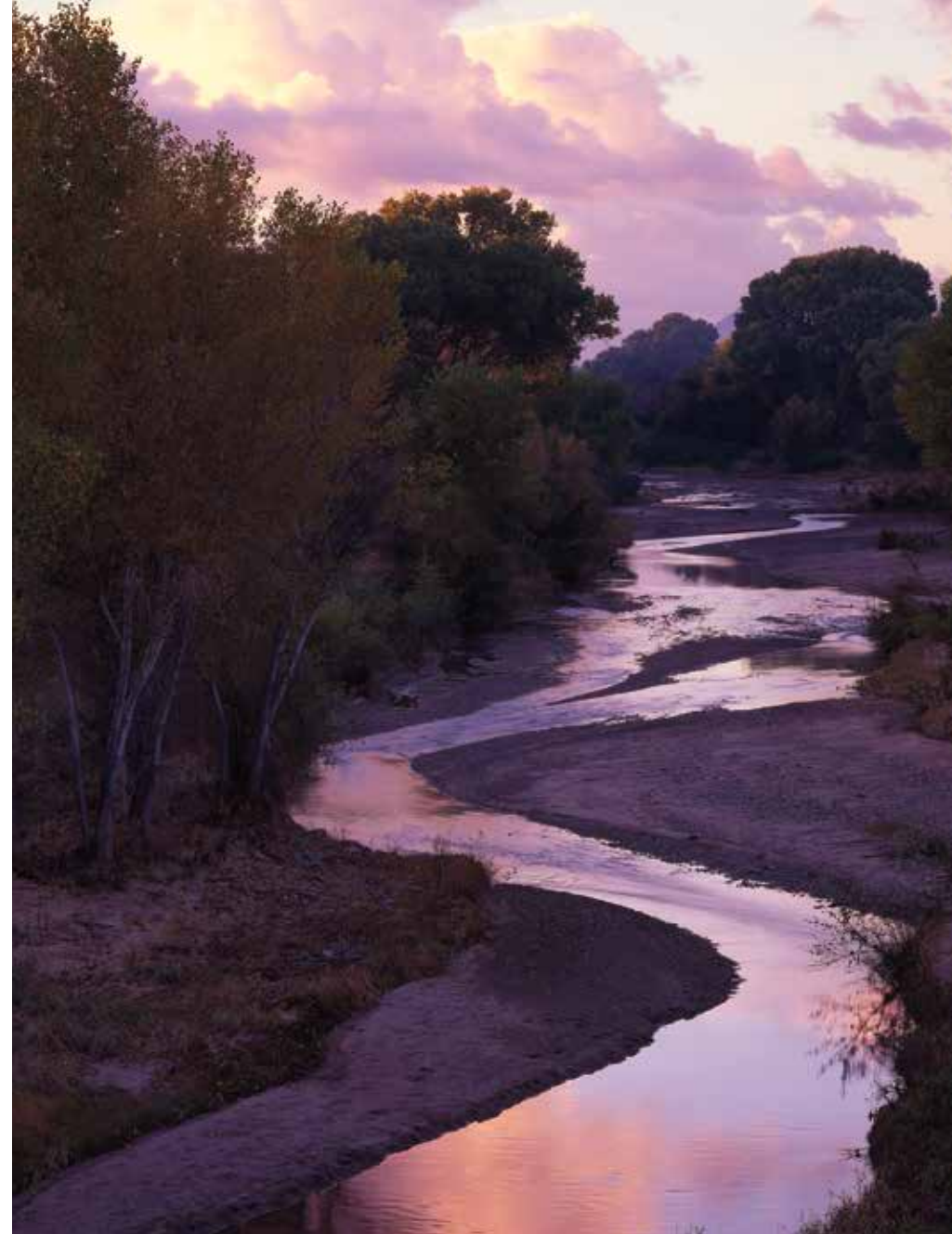
**L**ike Richter, ecologist Jesus Antonio Esquer Robles has devoted much of his professional life to restoring the San Pedro. He has worked for Mexican conservation groups and several years ago signed on as a Nature Conservancy staffer specializing in northern Mexico grasslands conservation. I meet Esquer and Daniel Toyos Martinez, a Mexican conservationist based in Sonora, in Cananea, a little town about 40 miles south of the Arizona border. We meet at “La Casa Greene,” our former family headquarters, a green-and-white mansion now owned by the Mexican government. From the porch, you can eyeball the giant copper mine that my grandfather developed for a brief period, amid much controversy. It is now owned by Grupo México.

The mine is a mixed blessing, just like Fort Huachuca. It is the economic engine that Cananea relies on, but it extracts massive amounts of groundwater from the San Pedro aquifer.

We pass several industrial-sized groundwater extraction wells as we head out of Cananea into a vast grassland where five tributaries converge to form the San Pedro. This sky-island vista consists of mountain ranges jutting up from desert grasslands; it’s a landscape shared by Sonora and Arizona, just like the San Pedro.

The Mexican side is less populated, a network of privately owned cattle ranches and *ejidos*, communal ranches. (I should add that this landscape was owned by my grandfather in the last century.) Mexican conservationists like Toyos, who grew up on an *ejido*, partner with local ranchers to restore grasslands, enrich the San Pedro aquifer beneath, and protect native species like the black-tailed prairie dog. We stop at one busy colony — marked by telltale mounds of coffee-colored dirt, and listen to a sentinel “bark” warnings of our arrival. Prairie dogs are key to grassland (and aquifer) health; their little homes aerate the land and give runoff a pathway to the aquifer. In Arizona, the animals were regarded as a leg-breaking danger to livestock, and slaughtered. Now, the Sonoran government helps Arizona repopulate its black-tailed prairie dog population.

Mexico’s San Pedro headwaters are blessed with intact natural marshes, which explains why The Nature Conservancy helped a Mexican conservation organization acquire the 10,000-



Dawn’s pink light silhouettes cottonwood trees along the San Pedro River.

JACK DYKINGA

and lower stretches. Molly Hanson, a 38-year-old former hot-shot crew firefighter from Washington state, manages many of these projects. After earning a master’s degree in geography, she worked for the Forest Service. Three years ago, she was drawn by The Nature Conservancy’s collaborative approach, and began working on the San Pedro because “this is where the most impact happens.”

On a late-winter morning, we cross the San Pedro’s graffiti-scarred bridge near Benson. The river here is bone dry, its sands carved by all-terrain vehicles. We bear left onto Pomerene Road, driving north past dairy farms and irrigated fields, paralleling the San Pedro. Our first stop is Three Links Farm, a former 2,209-acre cotton and alfalfa farm bordering the river that reportedly pumped 1.1 billion gallons of water out of the aquifer annually.

The Nature Conservancy purchased the land in 2002 and immediately retired the irrigation wells and fields, secured conservation easements on the land to prevent development, and divided the land into five large parcels to sell to private owners. Two have been sold.

There’s a large house on one of the unsold parcels, and from there we walk to the restored river, 2 miles of shallow, clear stream passing through healthy cottonwood and willow forests. The sounds and scents of the river rippling over sand and rocks give testimony to the river’s resilience.

From Three Links, we drive north past the little community of Cascabel, through a forest of healthy saguaros. Hanson points out other conservation projects — a restored marsh, a ranch where water-conserving native grasses feed fat cattle, the largest mesquite forest in the American Southwest, a 6,900-acre river preserve that was once a catfish and pecan farm.

An adventurous midcentury teacher named Eulalia “Sister” Bourne lived near the San Pedro near Mammoth and wrote about her beloved “moody river” on these pages 42 years ago. Then, as now, this is copper-mining country that relies heavily on the San Pedro’s lifeblood — groundwater. Bourne reported the smelter at San Manuel used “five tons of water to every ton of ore, and almost 40,000 tons of ore a day are processed.”

Near Winkelman, we trudge along the San Pedro’s parched rocky streambed, past a tire, a T-shirt and a white sock.

The San Pedro is a dry scar where it empties into the dammed, tamed Gila, at least on this winter day. Surely the drought has a lot to do with its condition, but staring at the pink-gray rocks, I know we all have a hand, either directly or by association, in the condition of Arizona’s rivers. We drink and bathe in water drawn from their aquifers, eat hamburgers and steaks, wear leather shoes, enjoy cars and computers made of minerals mined from the earth, munch vegetables from fields irrigated with their waters, wear clothes manufactured from cotton. If we all work together, can we restore a river that’s given us so much?

My thoughts are interrupted by a breeze that bends coyote willows on the San Pedro’s banks.

They cling to life. **AH**

acre Rancho Los Fresnos in 2005. Here, snowmelt and runoff from Arizona’s Huachuca Mountains feed a pretty stream called Los Fresnos, which meanders through marshes and grassy valleys dotted by oak trees until it joins the San Pedro. Los Fresnos is a nature preserve, an aquifer-restorer and river life-giver, a guest ranch and sustainable-ranching learning center.

Without Los Fresnos, the San Pedro’s prognosis would be more dire, but distant drug wars have caused donors to stop supporting it. Absent adequate funding, the future of this preserve is uncertain.

**T**he San Pedro runs north, from Sonora through the Upper San Pedro Conservation Area, which ends at St. David. From here to its confluence with the Gila, it often runs dry. Irrigation, mining and overgrazing have exacted harsh tolls on the river, which writer Barbara Kingsolver once called a patient saint.

The Nature Conservancy and various public and private partners have 11 separate conservation projects on the middle