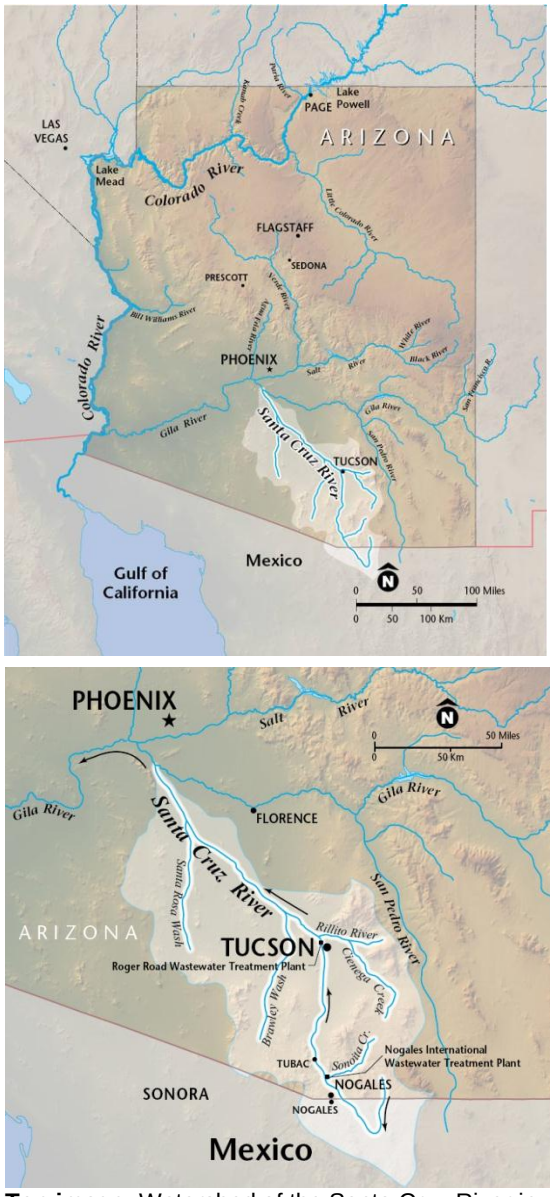
Celebrating Arizona's Rivers

Each month during Arizona's centennial year, we will profile a different river in celebration of the state's precious natural resources. From the mighty Colorado to the smallest ephemeral streams, these waterways have supported Arizona's people and places for thousands of years. With good stewardship and thoughtful planning, they will continue to flow into Arizona's next 100 years.

June 2012: The Santa Cruz River

Perhaps more than any other Arizona river, the Santa Cruz River transcends boundaries. It crosses the international border with Mexico twice, and traverses landscapes ranging from wild cienegas (marshes) to the urban downtown of Arizona's second-largest city. It flows above and below ground, crossing the boundary of the Earth's surface in response to changing conditions. And although it is highly imperiled, the preservation of the river's remaining resources has motivated people with diverse priorities to transcend their differences in order to protect and restore the Santa Cruz.

The Santa Cruz has supported people in southern Arizona and northern Mexico since 11,000 B.C., when Paleoindian peoples traveled the Santa Cruz Valley hunting for mammoths. From this early culture through the present day, travelers and settlers including indigenous peoples, Spanish missionaries, Mexican farmers, and the burgeoning populations of contemporary cities have been drawn to the lush banks of the Santa Cruz.



Top image: Watershed of the Santa Cruz River in relation to other Arizona rivers. **Bottom image:** Detail of the Santa Cruz River watershed.

Geography. The 210-mile Santa Cruz originates in the San Rafael Valley of southeastern Arizona, where it flows south through one of the last remaining expanses of a unique grassland ecosystem interspersed with oak woodlands. By the time it crosses into Mexico, 15 miles south of its headwaters, the river supports abundant streamside vegetation surrounded by mesquite *bosques* (forests).

In Mexico, the Santa Cruz makes a 25 mile U-turn through Sonora and returns to the U.S. just east of the cities of Nogales, Sonora, and Nogales, Arizona. As the river approaches the border it is transformed into an ever-diminishing creek until it disappears altogether, the result of groundwater pumping that has dropped the water table and thus dried the river's surface flow. Just north of the border, the river's year-round flow and cottonwood-willow forest return due to an inflow of treated wastewater (effluent) from the Nogales International Wastewater Treatment Plant. Downstream, near the community of Rio Rico, the Santa Cruz is joined by Sonoita Creek, one of its largest tributaries. The Santa Cruz remains lush and green as it flows 15 miles north to Tubac, approximately parallel to Interstate 19.

North of Tubac, geologic formations cause the river to flow entirely underground as it proceeds toward Tucson. Before extensive groundwater pumping began in this region, the hidden river emerged in many places in the form of springs, cienegas, and surface flows. One such area of year-round flow was at the base of Sentinel Peak

The Santa Cruz River near its headwaters in the San Rafael Valley. Photo courtesy AZ Department of Water Resources.

("A Mountain") near downtown Tucson. Today, due to groundwater pumping, the springs and cienegas are dry and the river flows through downtown Tucson only during storms.

Two wastewater treatment plants in the Tucson area create year-round flow in the Lower Santa Cruz, providing habitat for birds and other wildlife. The river is joined in Tucson by the (usually dry) Rillito River, which connects to Cienega Creek, one of the last natural flowing creeks in the region. From Marana to its confluence with the Gila River, the Santa Cruz is generally dry.

Ecology. The Santa Cruz flows through three distinct biomes and is surrounded by mountains known as "Sky Islands," where wide ranges in elevation result in enormous biodiversity. The river's north-south orientation forms an important flyway for migratory birds and bats, and its lush vegetation, in contrast to the surrounding desert, allows some subtropical species to extend their ranges north from Mexico into Arizona. Examples of the many important species in the watershed include:

- 15 endangered species, including the Pima pineapple cactus, Gila topminnow, and lesser long-nosed bat.
- Jaguars and ocelots, which have been spotted by people and remote cameras. Efforts are underway to monitor and protect habitat for these endangered cats on both sides of the border.

Use.

- In Sonora, irrigation supports farming and ranching.
- Sand and gravel mines are common in and along the riverbed in Mexico and the U.S.
- Cities and towns throughout the watershed rely on groundwater – which is hydrologically connected to the river – for municipal, agricultural, and industrial uses.

What You Can Do For Arizona's Rivers

- Join a local watershed group
- Participate in restoration, monitoring, or advocacy activities
- Visit our organizations' websites for information and action alerts
- Enjoy an Arizona river—and tell your state legislator about it

Threats to the Santa Cruz include:

- Groundwater pumping throughout the watershed, which lowers water tables, threatens surface flows, dries springs, and destroys native vegetation and habitat. Since 1900 the water table in central Tucson has dropped over 250 feet.
- Urban encroachment along the river's course through Tucson, resulting in straightening and stabilization of river banks to prevent erosion. This process disrupts natural flood patterns and dries the surrounding floodplain, greatly reducing vegetation and associated habitat.
- The potential for reduced flows if effluent is no longer released into the river channel. Currently, out of the river's 181 miles in the U.S., 32 are supported by effluent flows and only 6 have year-round natural flows.

Diverse efforts to restore and protect the Santa Cruz include promotion of water harvesting and other practices to reduce groundwater pumping, community conservation programs in Mexico, monitoring of water quality and river health, habitat and stream restoration projects, and Pima County's Sonoran Desert Conservation Plan, which guides urban development away from sensitive river ecosystems and restores river habitat.

EDF Environmental Defense Fund — Finding the ways that work

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Grand Canyon Trust

Sonoran Institute

Western Resource Advocates

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