



# The Flow

March 2015

Friends of the Santa Cruz River Newsletter

## President's Message: Complex Issues in need of Long-term Solutions

By Scott Vandervoet

As I reflect on the past few months of activities and issues addressed by FOSCR, the thought that most often comes through is the complexity and diversity of factors affecting the health of the upper Santa Cruz River. Some of the aspects that frame our issues include the binational course of the river, the use of the shallow aquifer along the course of the river for both human use and agricultural supply, urban wastewater treatment, as well as the effect of runoff from intense precipitation events.

I was impressed and heartened

to see the turnout at a recent trash clean-up along the Anza Trail near Tubac. Trash debris had collected in a wide swath along the flood plain of the river, overlapping sections of the trail, and obviously apparent to any visitor. Large collections, primarily of plastic items, had also congregated up against vegetation creating, what colloquially are referred to as "bottle dams". The pure volume of the refuse was (and continues to be) overwhelming. Nearly 100 individuals volunteered the better part of their Saturday morning on February 21st to collect and remove trash from this section of the river. It was a concrete task with a tangible outcome that

was appreciated by all.

Yet, the factors that lead to these types of local issues tend to be much less concrete or tangible. Where does so much trash come

from? How does it tend to accumulate between Rio Rico and Tubac? Why can't there be long term effort to reduce the trash build-up?

Trash accumulation downstream from Rio Rico tends to be a consequence both of cultural practices as well as seasonal flood flows in the river. Inadequate sanitation services in the city of Nogales, Sonora may be a source for some of the refuse that makes its way downstream, but there are also items that may originate from north of the border, such as tires and appliances.

Haphazard urban development in Nogales, Sonora and inadequate runoff conveyance in Nogales, Arizona has accentuated flooding within the entire Nogales Wash drainage, affecting both sides of the border. The force and velocity of runoff the urban areas collects trash that normally wouldn't immediately end up in the actual Nogales Wash, which carries it into the Santa Cruz River.

Climate change analysts suggest that regional weather patterns will evolve to exhibit less frequent, but more intense rainfall- which does not bode well for situation related to trash along the river and the condition of the riparian



Concrete slabs damaged and pulled from the Nogales Wash during the September 2014 storm. Nogales International Photo by Manuel C. Coppola.



# Well Water Testing Results Shared

FOSCR was awarded an Environmental Justice Small Grant in October 2011 to investigate the quality of drinking water from private wells within 1-mile of the Santa Cruz River. A total of 88 samples from 22 different homes were collected from June 2013 through August 2014. The study attempted to analyze the well water samples for

total coliforms, *Escherichia coli*, arsenic, cadmium, chromium, copper, lead, mercury, and nitrate.

Results from summer 2013 revealed that some wells have arsenic levels above the Environmental Protection Agency's Maximum Contaminant Level (MCL 0.01 mg/l). Nitrate has also been detected in levels above the MCL (10 mg/l).

*E. coli* was not detected in any wells during the first dry season collection; however, in the second collection, which occur during monsoon season, *E. coli* was detected in 9/22 wells with a range of 1 to 25

CFU/100ml for detectable samples.

Drinking water from these wells may result in exposure to *E. coli*, nitrate and arsenic exceeding municipal drinking water standards.

Results of the study were shared by Yoshira Ornelas, principle investigator, at an open house at the Tubac Community Center on December 4, 2014, which brought in about 50 interested community members.

FOSCR recommends that well water be tested to ensure that the exposure to possible contaminants is within acceptable municipal drinking water standards.

## FRIENDS OF THE SANTA CRUZ RIVER

### Board of Directors

President: Scott Vandervoet

Secretary: Lah-May Bremer

Treasurer: Sherry Sass

Other Board Members:

Ben Lomeli

Marty Jakle

Cynthia Shoemaker

Blue Evening Star

*The Flow* is published by Friends of the Santa Cruz River (FOSCR), a nonprofit, volunteer organization dedicated to insuring the continued flow of the Santa Cruz River, the life-sustaining quality of its waters, and the protection of the riparian biological community that it supports.

© 2015 *The Flow* is published as often as we can get enough articles, time, and energy together to produce an issue. Illustrations by Joel Floyd. Photos by credited photographers.

Opinions expressed in guest articles are those of the author's and not necessarily those of FOSCR.

Please direct correspondence to:

FOSCR

P.O. Box 4275

Tubac, AZ 85646

E-mail: [friendsofsantacruzriver@gmail.com](mailto:friendsofsantacruzriver@gmail.com)

### Complex issues, cont.

habitat. At the same time, Nogales, Sonora continues to grow, and Nogales, Arizona has made it clear that they are unable to unilaterally address the issue of storm water conveyance through the Nogales Wash, due to costs and permissions associated with any sort of potential expansion or re-alignment of the channel.

So then the question follows—what is FOSCR doing to deal with these various issues? Board Member Ben Lomeli is a member of the International Boundary and Water Commission's Citizen Advisory Board, which meets regularly in southern Arizona to address local issues—among which the Nogales Wash drainage and International Outfall Interceptor (binational sewage line) are a priority. FOSCR Board Members have been participating in new discussions to re-activate the Asociación de Reforestación de Ambos Nogales (ARAN) which translates as the binational Nogales Reforestation Association. This net-

work aims to increase ecological and livelihood sustainability, particularly in relation to water use and control. Board members have also been active in local events such as Santa Cruz River Research Days, which celebrates its 7th year this coming March, as well as our own Celebrate the River, to be held May 8, 2015.

There are a wide variety of issues affecting the health of the Santa Cruz River and the associated riparian ecosystem. To insure the continued viability of the riparian corridor as a space that provides support to local economies and communities, as well as everything from migratory birds and migratory birders to the flowing water that is such a rare joy in our region, it is important to strive to understand, and improve upon the various root causes affecting the overall vitality of the watershed. We encourage FOSCR members to attend our monthly board meetings (3rd Thursdays of each month) and participate in our discussions regarding these various topics.

# Holding the Fort at the Border

Blue Evening Star  
FOSCR Board Member since 2010

In order to gather material on the contributions made by Friends of the Santa Cruz River to protecting Arizona's waters, I decided to peruse the back issues of the group's newsletter *The Flow*. The very first newsletter is dated July 1991 and announces the formation of the group (nicknamed FOSCR) whose purpose started out being: to guarantee instream flow and to improve water quality in the Upper Santa Cruz River Valley.

In 1991 the stretch of the Santa Cruz River adopted by the group started at the "new headwaters" — The Nogales International Wastewater Treatment Plant (NIWTP) — and ran downstream (but North!) to Amado where the surface water takes a dive down to deeper groundwater. The river supported then (and still supports now) a thriving riparian system as well as a rare stretch of Cottonwood – Willow Gallery Forest, which is host to multitudes of wildlife.

The Santa Cruz River was a very different river in 1991 from that of today. It was polluted by unknown quantities of sewage, toxic chemicals from industry, and garbage brought North by flooding — complications which could only be addressed effectively by people on both sides of the border.

Initially FOSCR was busy educating about alternatives to chemical wastewater treatment such as constructive wetlands and generally getting the word out that this is one awesome little river.

In 1992, what I consider to be the backbone of FOSCR was born. Dubbed RiverWatch, FOSCR set up a monitoring program in which volunteers (with financial and technical support from AZ DEQ) check water quality, physical/chemical character-

istics and flow monthly, using field equipment as well as sending samples for lab analysis. With only a few small gaps, this monthly check of the river's status has been ongoing since its beginning, and has created the most comprehensive database on the upper Santa Cruz River in existence. In addition to RiverWatch the articles in THE FLOW document community trash collecting projects every year as well as a steady stream of environmental educational experiences that have been consistently geared to connect the youth of the region to their



**Kudos to Birdie Stabel & Nick Bleser who are our RiverWatch champions!**

watershed and their river.

Things really became exciting in 2000 when the RiverWatch results were clearly documenting increases in ammonia, nitrate, and nitrite levels at all sites which were affecting native fish populations and human health. The ammonia is a product of sewage so the challenge was to convince the EPA that the NIWTP, which discharged effluent that made up the majority of the river's flow into the river's channel, was in need of upgrading. A lawsuit was filed by the Sierra Club and other groups against the NIWTP owners and the U. S. Environmental Protection Agency because of the continuing poor quality of the effluent generated by the NIWTP, which

violated the terms of its discharge permit. While the lawsuit worked its way through courts, FOSCR chose to continue its years-long work with the City of Nogales and the International Boundary and Water Commission (IBWC), which co-ran the NIWTP, as well as the EPA, to develop a more effective sewage treatment strategy and garner support for an upgrade to the plant.

In November of 2008 I participated in my first annual Fish Survey with students from the BioRegional Activism Class of the Global Community Communications Schools for Teens & Children at Avalon Organic Gardens & EcoVillage. I was new to the area and was appalled to find only bloodworms and mosquito fish in the oxygen-starved waters of the smelly and cloudy Santa Cruz River. Our class again attended the Fish Survey (hosted yearly by the Sonoran Institute and FOSCR) in November 2009 and we were so pleased to discover clean water, native Longfin Dace and an abundance of aquatic invertebrates as a result of the upgrade of the

NIWTP earlier in the year. Our class has participated every year in the annual fish surveys and have seen the restoration of the waters and the life they sustain.

Another exciting episode happened in 2010 when RiverWatch began to document recurring spikes of cadmium in the river! With the diligent work of Hans Huth (of AZ DEQ) the source in Sonora, Mexico of the cadmium was located and stopped.

It is impossible to give fair tribute to the many accomplishments of Friends of the Santa Cruz River in a short article. Suffice it to say that Sherry Sass and her band of merry river lovers have gone above and beyond the call of duty to



# PATAGONIA MINING UPDATES

by Patagonia Area Resource Alliance

## Regal Resources

The U.S. Forest Service temporarily put the brakes on an environmentally hazardous mining exploration project in the Patagonia Mountains that it previously approved in August 2014. The Forest Service's decision follows a similar move by the U.S. Fish and Wildlife Service, which had originally given the project the green light in August and then withdrew its approval in December. The agency decisions to withdraw their approvals of the Canadian mining company Regal Resources' "Sunnyside Project" are based on the project's potential violation of multiple environmental laws. The mineral drilling project is located on the Coronado National Forest near Alum Gulch in the Patagonia Mountains and 6 miles south of the town of Patagonia, Arizona.

In October, the Patagonia Area Resource Alliance and Defenders of Wildlife filed a lawsuit claiming the federal agencies' approvals of the Sunnyside Project violated environmental laws and posed a threat to endangered species and the safety

### Holding the Fort, con't.

protect their little stretch of Arizona's waters.

The FOSCR story lives on. We have recently given the FOSCR website a complete makeover where anyone can explore the past and the present ways that we are endeavoring to be friends of the river. Please visit [friendsofsantacruzriver.org](http://friendsofsantacruzriver.org) and learn more about us.

of drinking water for local residents.

"Sunnyside could have been a disaster not only for our region's unique wildlife, but also for the residents living directly downstream and the municipal watershed of the town of Patagonia," said Wendy Russell of the Patagonia Area Resource Alliance. "Projects like Sunnyside use and abuse a tremendous amount of the local water supply and create



Gooch Goodwin collects a water sample from the abandoned Lead Queen mine. Photo by Mariana Dale

long-term destruction of wildlife habitat. The people and wildlife of our national forests deserve more, and the agencies know that."

## Wildcat Silver

Wildcat Silver is reporting to its investors the discovery of a new mineral deposit on their patented (privately-owned) mining claims. They are currently drilling 4-5 more exploratory holes on their private land. Wildcat Silver now plans to develop an underground mine in addition to an open pit silver mine.

The new drilling is being funded through a "private placement" of C\$2 million by Wildcat Chairman and CEO Richard Warke. Warke was also Executive Chairman of Augusta Re-

sources before Rosemont was sold to HudBay Minerals.

Wildcat Silver does not have Forest Service approval for their 46-hole Hermosa mineral drilling proposal on the Coronado National Forest in the Harshaw and Corral Canyon areas of the Patagonia Mountains. The estimated release of the Hermosa Environmental Assessment (EA) and Draft Decision has been pushed back to July 2015. The EA release will trigger a 45 day Objection Period. If you have commented on the Hermosa project, you will be able to participate in the objection process.

## Hermosa Mine Report

The Patagonia Area Resource Alliance released a peer-reviewed report with Earthworks that outlines the Wildcat Silver Hermosa mine's risks of water consumption and perpetual water pollution to the Pata-

gonia area, "Hermosa Mine Proposal: Potential Impacts to Patagonia's Water Supply."

The Hermosa open pit silver mine proposed inside Patagonia, Arizona's Municipal Supply Watershed could deplete the town's drinking water and perpetually contaminate area groundwater with acid mine drainage. Reviewed by a USGS scientist, the report also concludes that drinking water wells of surrounding residents are also threatened.

"A mine that threatens our town's drinking water is a mine that shouldn't be built," said Wendy Russell of the Patagonia Area Resource Alliance. She continued, "In Arizona, water is more precious than silver, and especially so after more than a decade of drought."



Proposed by Canadian exploration company Wildcat Silver – a company with no experience operating a mine – Hermosa is proposed at a time when Patagonia is already concerned with dropping groundwater levels and increasing concern about future water supplies.

The 4,000 foot wide and 1,500 foot deep Hermosa silver and manganese open pit mine would consume 670 million to 1.2 billion gallons of groundwater per year – up to 53 times the amount of water the town uses today — to run the mine within the upper reaches of Harshaw Creek, a portion of Patagonia's Municipal Supply Watershed. This water consumption will lower the recharge rates for the aquifer on which the town depends, and is also likely to produce acidic runoff, requiring ongoing treatment in perpetuity.

The mine, as proposed to investors, is within the Coronado National Forest and subject to the 1872 Mining Law. Federal land managers interpret the 1872 Mining Law to require them to permit mines, no matter if the land is better used for other purposes – like protecting a town's drinking water supply watershed.

The report also evaluates the nature of groundwater depletion that is likely under the proposed mine plan, characterizes the impacts of such, and also analyses other known adverse impacts, such as air pollution, endangered species, and other cumulative impacts.

The report, including an executive summary, can be found at: [patagoniaalliance.org/report-hermosa-mine](http://patagoniaalliance.org/report-hermosa-mine)

### Mining Legacy

This February, the Southwestern

Regional Office of the US Forest Service issued an Action Memo for "Time Critical" clean up of the abandoned Lead Queen mine in the Patagonia Mountains on the Coronado National Forest, approximately 6 miles south of the town of Patagonia, Arizona.

Members of the Patagonia Area Resource Alliance discovered the abandoned mine over-flowing with toxic, orange sludge into a tributary of Harshaw Creek last September. PARA documented the spill and notified authorities. The Harshaw Creek tributary eventually flows into the Town of Patagonia, Sonoita Creek and Patagonia Lake.

As the land owners of the Lead Queen mine, the Forest Service was issued two Notice of Violations from the Arizona Department of Environ-



**Toxic, orange sludge from abandoned Lead Queen mine site. Photo by Gooch Goodwin.**

mental Quality: "Addition of a pollutant to navigable waters from a point source without a permit," and "Discharge of storm water associated with an industrial activity without a permit."

Test results showed off-the-chart concentrations of lead and arsenic in water, soil and waste rock samples at the Lead Queen site. High concentrations of zinc, copper and aluminum

were also found. All of these heavy metals are listed as "hazardous substances" and can cause serious – or even deadly – health issues. The red-orange color of the sludge was due to extreme concentrations of iron.

The USFS document stated the clean up aims to reduce potential exposure of the hazardous heavy metals to "human populations, animals or the food chain."

"This is a good start, but I've seen many more abandoned mines in the Patagonia Mountains that also need to be cleaned up. The mining industry has a well-earned reputation for just walking away from mines when they're done." Gooch Goodwin, native Patagonian and PARA board member.

The Forest Service document also acknowledges that the "Patagonia Mountains have high levels of biodiversity and are home to a variety of species protected under the Endangered Species Act including jaguar, ocelot, lesser long-nosed bat, Mexican spotted owl, western yellow-billed cuckoo, Sonora tiger salamander, and the northern Mexican gartersnake."

It additionally states, "the area is best-known and most popular places for birding in the U.S. Bird enthusiasts come from

all over the world to catch a glimpse of more than 300 species of birds, including many Neotropical species that migrate, nest, and live in this unique habitat."

Clean up of the five acre site is expected to start Spring 2015 and be completed before the coming monsoon season to avoid erosion and flushing of heavy metals further downstream.

# Combined Efforts Clear Trash

Participants (final count was 96!) from several groups, including FOSCR, Anza Trail Coalition, Arizona Department of Environmental Quality, Barrio residents, the Green Valley hiking club, Tumaacacori National Park, and Sherry Sass's environmental biology class joined efforts and cleaned up the trash and bottle dams along the Anza Trail in the Tubac area.

The end result was a cleaner environment, one full 20 yard dumpster that was hauled off, a second dumpster waiting to be filled, and a third dumpster that will need to be loaded with tires.

Thanks so much to everyone who made this possible and

worked their tails off.



The proof is in the piles!! Thanks for the great clean-up!

## NOT TO BE MISSED TIDBITS!!

### Santa Cruz River Research Days

Santa Cruz River Research Days is a venue for learning about research and conservation efforts that pertain to the natural and cultural resources along the Santa Cruz River. This annual event aims to trigger new research questions, promote networking, catalyze new collaborative projects, and foster awareness of each other's research and conservation efforts.

Research Days happens on Thursday, March 26, 2015 from 9:00am - 5:00pm and Friday, March 27, 2015 from 9:00am - 5:00 pm. The event is being held at Pima Community College, Desert Vista Campus - Ocotillo Room; 5901 S. Calle Santa Cruz; Tucson.

This event is free and all are welcome. To RSVP or to view more information about this annual event,

visit: <http://tiny.cc/sccrrd>

### Upgraded FOSCR Website

If you've visited the FOSCR website recently, you may have noticed an upgrade. FOSCR recently upgraded its website. A new updated logo is coming soon as well! FOSCR's website can be found at [www.friendsofsantacruz.org](http://www.friendsofsantacruz.org).

### Support FOSCR through Amazon.com

The AmazonSmile program ([smile.amazon.com](http://smile.amazon.com)) is a simple and automatic way for you to support FOSCR every time you shop at Amazon at no cost to you. When you select Friends of the Santa Cruz River as the organization you want to donate to, everytime you shop at **smile.amazon.com**, Amazon will donate a portion of the purchase price of eligible purchases to FOSCR.

### Thoughts on Interrelatedness

"All things are interrelated and interdependent; nothing exists in isolation. The entire universe is one ecosystem, similar to a spider web — if one part is touched, the entire net shimmers. As a result of interrelatedness and interdependency, every expression of energy, including our thoughts and intentions, ultimately touches and affects everything else." ~ Carl Sagan



"All things are connected, like the blood which unites one family.

All things are connected.

Whatever befalls the earth befalls the sons of the earth.

Man did not weave the web of life, he is merely a strand in it.

Whatever he does to the web, he does to himself."

- Chief Seattle, 1854

# Support the Friends of the Santa Cruz River

Thanks to all who appreciate the efforts of FOSCR by becoming a member or renewing your membership.

Become a member or renew your membership by filling out and mailing the membership/donation form below or use PayPal. PayPal can be accessed by visiting our website at [friendsofsantacruzriver.org](http://friendsofsantacruzriver.org). With a

couple of clicks you can select your level of support and pay with your credit card. Using PayPal allows you to donate annually—reminding you when it’s time to renew your contribution. You can also offer a one-time donation—or donate as often as you like.

Thanks for helping us replenish our financial aquifer!

## FRIENDS OF THE SANTA CRUZ RIVER

### Membership/Donation Form

*Joining for the first time? GREAT!*

*Already a member? Want to Renew your membership?*

*Inspired to Donate?*

Date \_\_\_\_\_ New \_\_\_ Renewal \_\_\_ Donation \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone # \_\_\_\_\_

E-mail \_\_\_\_\_

*Have you received “A Rambler’s Guide to the Santa Cruz River?” (Free with membership!) Yes \_\_\_ No \_\_\_*

\_\_\_\$5 Student Membership \_\_\_\$15 Single Membership

\_\_\_\$25 Family Membership \_\_\_\$50 Supporting Member

\_\_\_\$100 Sustaining Member \_\_\_\$500 Life Member \_\_\_ \$ Other: \_\_\_\_\_ (Amount)

\_\_\_Please contact me for volunteering opportunities.

**Please enclose a check made out to FOSCR**

**P.O. Box 4275, Tubac, AZ 85646**

Would you be interested in supporting efforts of other organizations on issues that FOSCR believes are important to the health of the river and the life that depends on it? If so, check the box below and we will forward you action items that you may choose to respond to.

Yes, please send me links to take action!



Friends of the Santa Cruz River  
P.O. Box 4275, Tubac, AZ 85646



Javalina

**MONITORING • ADVOCACY • EDUCATION • PARTNERSHIPS**



Bird Totems--Mexacoytl Academy class project and winners of the 2014 Art Contest