

FIELD NOTES

FOR MEMBERS OF THE NATURE CONSERVANCY IN ARIZONA

Grace, Power, Speed and Looks

Essay from Ralph Walcott's
new book, *The Life of the
San Pedro River*

FALL 2020

INSIDE

*On Leadership:
Pat Graham*

*Remembering
Celeste Andresen*

The Nature
Conservancy 

Protecting nature. Preserving life.



FIELD NOTES

Published by The Nature Conservancy in Arizona, for our members and friends.

Field Notes welcomes comments and questions. Please send to the editor, Tana Kappel, at tkappel@tnc.org or 520-547-3432.

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THIS PAGE TOP TO BOTTOM Pat Graham and Dan Stellar at the Grand Canyon © Courtesy of Dan Stellar; Pat and Gail Graham © Courtesy of the Grahams; Dan Stellar, his wife Erica and son Eli © Courtesy of Dan Stellar
INSET TOP Pat Graham © Erika Nortemann/TNC

Our Phoenix office has moved. Here is the new address:
Phoenix Conservation Center
1819 E. Morten Ave #100
Phoenix, AZ 85020

Dear Friends:

This has been a tumultuous year. A pandemic, wildfires, the economy and social unrest. We closed our offices in March and asked our staff to work remotely. They responded with resilience, creativity and patience. I am proud of having led this team for more than 19 years.

Now I am looking ahead to change of my own. I will be retiring as state director at the end of November. I want to express my appreciation to all of you — our board of trustees, our volunteers, our supporters and our members. You have inspired us to go beyond what we thought possible, to tackle challenges that once seemed out of reach.

You trusted us when all we had was a vision and a promise. We honored your trust by taking your investment of time and resources, and creating a legacy. We took risks and tested innovative solutions – sometimes successfully, sometimes not. When we fell, we fell forward. We learned and adapted. Together we protected and restored lands and waters for all the creatures that call them home. We connected people with nature.

We did it while honoring our shared values of integrity, collaboration, sound science and respect for diversity and community.

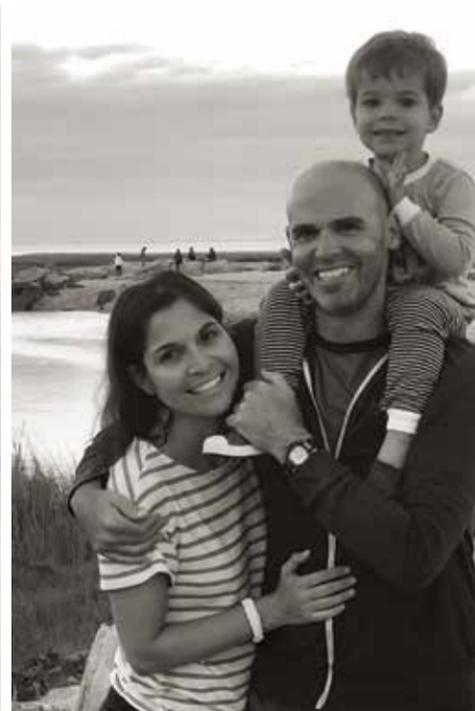
This has truly been a wonderful journey. My role will change and I will have more time for children, grandchildren and friends. However, I will stay active in these causes.

We are united by nature, awed by its power and beauty, and calmed in its presence. Let's celebrate the joy we find in nature and the legacy we are leaving for future generations.

Our work is important. However, if we are to draw others to this journey, we also have to offer hope. Hope is not a state of mind, it is something we create every day with our hands and our hearts.

The Nature Conservancy is about creating hope. Our children and grandchildren are counting on it.

Patrick Graham, State Director



Dan Stellar Takes Over as State Director

Just over four years ago, Dan Stellar moved to Arizona to join The Nature Conservancy as deputy state director. This December, following a highly competitive search, he will take the helm as state director for Arizona.

“Working for The Nature Conservancy has been the highlight of my career,” he said. “When I came to Arizona, I fell in love with the state, the wide-open landscapes, our incredible biodiversity and, of course, the people.”

As deputy state director, Dan oversaw the majority of the chapter’s conservation programs and served as a key member of the leadership team, working closely with Pat Graham. During Dan’s tenure as deputy, the Conservancy achieved important conservation successes across its forest, water and lands programs. Dan strived to lead this conservation work in a collaborative manner based on TNC’s core values. His leadership approach emphasizes organizational culture and the belief that how we work is as important as the work we do.

“Pat has been a true mentor and guide to me. I look forward to building on his legacy going forward,” said Dan.

Dan grew up near Boston and some of his formative experiences were hiking and camping in the mountains of northern New England. Dan has lived in several locations across the West. His passion for conservation was ignited when he lived in Alaska for several years. Inspired by his experiences in Alaska, he went on to get a graduate degree in environmental policy from Columbia University.

With his more than 17 years experience in the nonprofit and conservation sectors, Dan is particularly inspired by TNC’s emphasis on finding solutions that benefit both people and nature. Dan has a global perspective, having been involved in conservation in India, Brazil and Mali. He is a certified Project Management Professional and a graduate of the Nonprofit Leadership Institute. He also holds a certificate in Executive Leadership from Cornell University.

“The next few years will be full of changes and opportunities,” he said. “I am incredibly inspired by the generosity and support of TNC’s members and donors. With their support, I am confident that the chapter is well positioned to build on its successes and to make an even greater impact in Arizona in the years ahead.”

Dan looks forward to getting to know the chapter’s members and will be hosting several virtual open houses and other events after he becomes the state director on November 30th. Please be on the lookout for invitations and event information in December.



Conservation Leadership: 19 Years of Lessons Learned

Pat Graham, state director of the Arizona chapter of The Nature Conservancy, is leaving that role this November 30 after 19 years at the helm. His tenure began in 2001, a few months before the fateful events of 9/11. He leaves after a tumultuous year of a global pandemic. Here in his own words are some highlights of what happened in between.



Desert Rivers

I arrived in Arizona in early July 2001. The blazing heat had eased as a monsoon storm followed me from Wickiup to Wickenburg. I saw a sign for the Hassayampa River Preserve, so I hit the brakes. I introduced myself to the preserve manager, Mike Rigney, and together we walked to the river. As the storm passed, the temperature started to rise. The area was alive with wildlife. Mike said, “[the river] has really come up.” I looked down at the Hassayampa and it looked to be about three feet wide and three inches deep. Two days earlier I had been fishing on Montana’s big, fast-moving Blackfoot River of “A River Runs Through It” fame. I had to ask, “How big was it before?”

Lesson Learned: Desert rivers often flow underground yet support streamside forests critical to most birds and wildlife.

San Pedro River

Later that July, knowledgeable people told me the San Pedro River was dying. I drove out to meet with Holly Richter [TNC’s San Pedro River program director]. While walking along the riverbank she said she was frustrated that her science and reports were having little effect, and that people in the community had formed solid opinions.

She had come up with the idea of getting people out on the river together to map which sections were wet and which were dry. She purposely grouped people who didn’t see eye to eye. Mapping the river has occurred every year since 1999, supported by hundreds



of volunteers, many of whom map the river every year.

At the time, the Conservancy in Arizona was strapped for cash and facing significant layoffs. Holly and I hoped to convince the leaders of the U.S. Army’s Fort Huachuca to provide Defense Department funding for her to continue her work.

We arrived for the meeting only days after 9/11. When we got to the Fort there were armed personnel at every gate. No entry. Tensions were high.



Despite the chaos, the people from the Fort came out to meet us. Over lunch, they told us they were so impressed by Holly’s work bringing people together to solve problems, they committed to funding Holly’s work with the Upper San Pedro Partnership’s technical committee for four years.

Holly began collaborating with the Fort, Cochise County and other members of the partnership in an effort to reduce water demand, mainly by protecting land near the river and reducing groundwater pumping. Progress was made, yet over the years it became clear more needed to be done. Federal funds were running out. The Bureau of Land Management sued the state. The coalition began to fracture.

Holly continued her collaborative work and helped found the Cochise Conservation and Recharge Network which continues to implement innovative ways of replenishing the flows of the San Pedro River. What once divided the community now brought it together. (See San Pedro story, page 18.)

Lesson Learned: Strive to build bridges between people who see the world differently.

Managing Our Forests

The late ‘90s began a multi-year period of drought. In the summer of 2002, the Rodeo-Chedeski fire burned almost 470,000 acres in four days. It was the largest forest fire in Arizona at the time. Again, tensions were high.

That was also the year the *Washington Post* took aim at the Conservancy, calling us the Big Green Machine in part because we worked with large corporations. There was talk of hearings in the Senate Finance Committee. The TNC world office called and asked me to meet with Arizona Senator Jon Kyl, a member of that committee. I’d never met the Senator, so I asked a former TNC board chair who was a law partner with Senator Kyl to join me. I assured Senator Kyl about the honorable work of the Conservancy, but then I used the opportunity to discuss forest management. We spent 45 minutes in his office much to the chagrin of his scheduler. He told me, “It all comes down to trust and economics.” While I didn’t understand it fully at the time, he was right.

Arizona is home to part of the largest contiguous ponderosa pine forest in the world. Like many forests in the West, these forests — overgrown due to years of fire suppression — are at high risk of catastrophic fire.

In 2015, after six years of intense negotiations between forest stakeholders, including the Conservancy, the largest thinning project in the history of the Forest Service passed a major legal hurdle. The first phase of the Four Forest Restoration Project was to cover 500,000 acres.

We first developed an economic model for thinning small diameter trees. It became clear under the approved plan that the cost of thinning and removing the biomass was too expensive. The Forest Service knew their approach, which included painting each tree to be cut, was too slow and costly.

“Rob Marshall [TNC Arizona’s former Forest Lead] and his team began to develop technology that would allow mechanical thinning without painting trees and monitoring while the trees were being harvested. This new technology was the beginning of modernizing forest practices, yet change wasn’t happening fast enough.

We took two big risks. We negotiated with the U.S. Forest Service for the Conservancy to thin up to 20,000 acres working with our partner Campbell Global. This allowed us to work together to learn and adopt practices that were faster, less costly and more ecologically sound. We also took a second risk. The only sawmill in the area was on the verge of closing. We bought their timber contracts and provided the trees to the mill in hopes of getting paid back. The mill eventually folded despite our best efforts. I still feel it was a risk worth taking.

Our forest effort — which we call the Future Forest Project — is aimed at designing a healthy forest using new practices that would attract industry to invest in Arizona. The technology platform the Conservancy developed has caught the attention of the U.S. Forest Service in Washington DC, and the Conservancy is working on an agreement to develop the technology for broader use across the nation.

Lesson Learned: Stay focused on the purpose, be flexible in approach and design solutions that work at the scale of the problem.



Working with Ranchers

I’ve had the honor of working with a group of ranchers who have set the bar high for collaboration: the Malpai Borderlands Group. The group formed in 1993 after the Conservancy purchased the 321,000-acre Gray Ranch in southwestern New Mexico, and re-sold it with a voluntary conservation agreement to the Animas Foundation for ranching. This marked a change in the Conservancy’s conservation strategy, which typically had been to sell land to the government. We’ve supported the Malpai group in their efforts to forge conservation

agreements with ranchers willing to forego development in exchange for compensation. We helped get approval from the Federal government to allow the Malpai group to use controlled burns to restore the grasslands. This work has ushered in an era of cooperation where once there was only conflict.

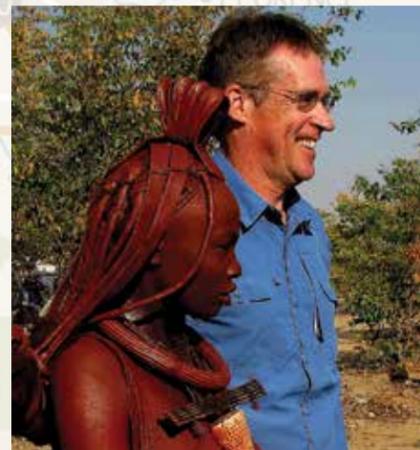
Lesson Learned: It is important for people to feel in control of their future and for us to help those who want to preserve their way of life in a way that works with nature.

Growth and Development

During the 2000s, Arizona was losing an acre of Sonoran Desert an hour to development and people were concerned. The Conservancy had been involved in trying to modernize state trust land laws and was wrestling with how to effect positive change.

TNC developed a program called Growing by Design. Conservancy science staff studied what land could be developed with the least amount of damage to nature. We recognized we could help steer infrastructure like roads, power lines and growth to more suitable areas and protect the most ecologically important lands.

Lesson Learned: It’s not about if we grow, it’s about how we grow.



Around the World

The Nature Conservancy works on six continents and in more than 70 countries. In 2009, I went to Africa on a six-month fellowship to work in Namibia. The country is arid, like Arizona except for the zebras, elephants, lions and black rhinos. As magical as the wildlife were to see, it was the people who left the deepest impression on me.



I was there to help with a plan to connect two national parks: Etosha and Skeleton Coast. After Namibia’s independence in 1990, work had begun to bring back wildlife decimated by 20 years of war.

The Himba, Herrero and Damara people are herders of goats and cows. Usually young boys tend the herds, armed only with staffs. For these people, lions, elephants, cheetah and other predators are a threat to their lives and livelihoods. Conservancies were set up for revenue sharing with the tourist lodges, game hunters and camping areas. The Conservancies would decide how to use the money.

These funds also pay for game guards, often only a few dollars a day. The guards educate people about the benefits of wildlife and help resolve problems. The Conservancies are



very successful at preventing poaching. While I was there, a black rhino was released into one of the Conservancies – the first time in years a rhino had been released outside of the fenced parks. It was a very proud day for all involved.

Lesson Learned: Give local communities a stake in how their wildlife resources are managed.



THIS PAGE CLOCKWISE Leopard in Namibia © Pat Graham/TNC; Endangered black rhino © Pat Graham/TNC; Lion cub © Pat Graham/TNC; Game guards, unarmed, educate local residents. © Pat Graham/TNC; Pat Graham in Namibia with a Himba woman © Courtesy Pat Graham

Verde River

For much of my first decade, the Conservancy worked to conserve the headwaters of the Verde River near Prescott. Conflicts over groundwater pumping led the parties to enter into litigation. That was not an environment where the Conservancy does its best work.

Conflicts were also growing in the Verde River valley. This 35-mile stretch of river has 40 irrigation diversions. Environmentalists were blaming farmers for the declining river flows, and communities were blaming each other. Upstream water users feared downstream users would take their water away. There was frustration and anger.



The Verde River was too important to give up on. I met with a program director for a major foundation for two days and worked through every detail of our plan. In the end she looked me in the eye and said she didn't think our plan would work. I could offer no guarantees. I asked her to give us a chance.



Soon after, the Conservancy hired Kim Schonek to lead the Verde program. She began to build relationships with farmers and communities and look for ways to meet their needs in a river friendly, voluntary way. They put in automated headgates to make it safer and easier for farmers to manage their irrigation water. They put in a new diversion headgate that prevented flooding and debris build-up in the ditch. Both efforts reduced the amount of water diverted from the river.

To do more to save the river, we needed a sustainable source of funding. The Conservancy's model around the world is to create water funds, where downstream cities invest in water conservation upstream. In the fall of 2016, we asked Mayor Stanton of Phoenix and Mayor German from Camp Verde to host a water summit sponsored by The Nature Conservancy. For the first time, representatives from 14 communities that depend on the Verde River came together to talk about their shared future. It led to the creation of Arizona's first water fund: the Salt and Verde Alliance.

Over the years, we protected several miles of river from development. However, we needed an approach that would help farmers farm in a more river friendly way. We worked with the Hauser family to try growing barley, a low-water-use, cool season crop. The barley grew well, but it was expensive

and the market for feed barley was not going to cover the farmer's cost to grow it.

Working with a local conservationist and entrepreneur, Chip Norton from Camp Verde, we helped finance Arizona's first malt house — Sinagua Malt — to add value to the barley and sell to craft brew houses that could market their beer as river-friendly. This was another first for the Conservancy requiring approval from the CEO's office to invest in this public-benefit corporation.

Lesson Learned: We are not protecting nature from people; we are conserving nature for people. If people cannot see the value, they will not support nature. Be willing to take risks.



Urban Health

In 2014, Phoenix was selected as one of ten cities to be part of the Conservancy's North America Cities Program. Phoenix is among the hottest cities in North America. Underserved communities here experience some of the worst air pollution and hottest temperatures.

Nature can play an important role in the lives of people in cities. Solutions can be as simple as strategic planting of trees. Planting enough of the right trees in the right locations can reduce heat, improve air quality and reduce overall energy demand.

In Phoenix, we began working with local communities to understand what they needed, not tell them what we thought they needed. As part of our effort to map areas with the highest temperatures, we learned the place to start was along travel routes where people walk to school, the store and bus stops.

The Conservancy's role in our urban program is not to buy land or plant trees. Rather it is to help create conditions for communities to be successful. Our Urban Heat Leadership Academy trains community leaders to be effective advocates for action in their communities. COVID-19 disrupted the session planned for last spring, but it inspired us to develop an on-line version so we can provide the information virtually.

Lesson Learned: Create conditions for success: Support local people and partners by providing skills, knowledge and resources to create healthier communities.



Funding Nature Conservation

Over the past two decades the Arizona chapter has completed three fundraising campaigns raising over \$140 million from generous donors to protect lands and waters and tackle big challenges. The Ranchland Protection Fund, created in 2000, was a revolving loan from Bennett Dorrance that supported the protection of almost 75,000

acres valued at over \$78.5 million. This fund allowed the Conservancy to act quickly to protect land. Ginger Giovale created an endowment that launched the Center for Science and Public Policy. In 2019 the endowment evolved into the Fund for Innovation in Science, Policy and Practice.

Lesson Learned: A strong board of trustees helped create a vision for two major campaigns that enabled us to take action at a scale large enough to make a difference.

Tackling the Climate Challenge

In the fall of 2018, a battle brewed over a ballot measure to put higher renewable energy standards in the state constitution. Although it went down to defeat, I felt it was time to change the conversation and develop a plan that worked for Arizona.

Natural gas is driving coal out and renewable energy is getting more affordable. Car manufacturers see electric vehicles as the future. Many companies looking to do business in Arizona want to be powered by clean energy. The public is becoming more aware of the impacts of climate change.

While many leaders thought the time was right to develop a plan, no one was ready to lead. It was one of those moments when it felt like every lesson I had learned up to that point prepared me to say, "if not us, then who?"

Momentum is building. SRP has developed a sustainability plan that includes a commitment to be 90-percent clean energy by 2050. APS has committed to be 100-percent clean energy by 2050, and TEP has committed to further their ambitious clean energy goals.



In urban areas, transportation is the largest source of emissions and a major contributor to air pollution that threatens human health and puts at risk hundreds of millions of dollars in lost economic opportunity.

These are complex challenges that no one entity can solve alone. We are bringing together businesses, cities, public interest groups, faith-based groups and others to develop a framework for clean energy, clean air and a healthy economy. We call this effort Arizona Thrives.

Much like the industrial age transformed our agrarian economy, this change to a cleaner economy is inevitable. Will we act fast enough? Or are we going to react or have someone else decide for us? The choice is ours and the time is now.

— Pat Graham

CONSERVATION CHAMPION

Our own Pat Graham has received the Desert Botanical Garden Conservation Award, which honors the conservation champions and innovators of Arizona. The Botanical Garden announced the award during its 4th annual virtual Conservation Celebration November 19. The award recognizes exceptional conservation leadership, achievements and innovations.

REMEMBERING

Celeste ANDRESEN

1959 - 2020

Friend and Colleague

Last March, before the corona virus began to upend the fabric of our lives, I spent a beautiful morning at the 7B Ranch, near the southern Arizona town of Mammoth. I was there to document Celeste Andresen's work with partners to plant milkweed to attract monarch butterflies. They envisioned a monarch waystation along the lower San Pedro River.

As I drove up to the 7B trailhead, Celeste was there waiting in her truck, smiling. First order of business was to photograph Celeste at the gate of the trailhead she had developed.

"Do I look okay?" she asked. What she meant was, "Should I wear this for the photos?"

"Yes, of course," I said. "You look like a model preserve manager."



Celeste always looked more than okay. Several years earlier, I was seeking people to hike in Aravaipa Canyon for a Nature Conservancy magazine feature about best preserves in the country to hike. The magazine had hired a photographer. I enlisted the photogenic Celeste, who lived in the area around San Manuel, an old mining town. She and I spent a beautiful morning as hiking models wading through Aravaipa Creek on the west end of the canyon.

Of course, the best photos are of Celeste — the slim, outdoorsy gal equipped with binocs, a great hat, her long dark hair. She epitomized the calming comfort that being in nature provided.

Back at the 7B, Celeste took me on a tour. First up, the Lucy's warbler nest house site within the mesquite bosque. Celeste had worked with Tucson Audubon to erect various sizes and orientations of nest boxes to see which would be selected by a warbler couple. One of the houses was occupied.

"We'll need to be quiet here so we don't disturb the nestlings," she said, as I was taking video footage.

Next we drove to the milkweed plots. On the way, Celeste put on the brakes upon seeing a dead gopher snake in the road. From the back of her truck she pulled out a "snake catcher" and moved the dead snake to the grassy side of the road. Turns out, some people like to cannibalize snake parts for jewelry. Celeste didn't want that to happen to this critter.

Spend any time with Celeste at the 7B and you'll understand her deep feelings for this place and all its inhabitants.

We arrived at the milkweed plots. On first glance, they didn't look like much. A bunch of wire cages with seemingly nothing growing in them. Wrong!

I followed Celeste — taking video with my iPhone — as she peeked down inside one of the wire cages. "Oh wow," she said. "It's alive; looks like it's doing well."

She made the rounds and found more milkweed growing up from their roots. They had overwintered and would survive.



"I'm so excited. Wow. It's so good to see that they're coming up," she said.

She wasn't just happy for the monarchs she hoped would come. "The Tribal Monitors will be so happy."

She had worked with Tonto National Forest Tribal Monitors and Westland Resources to set up the milkweed plots at the ranch, owned by Resolution Copper and managed by Celeste for the Conservancy. Milkweed, the sole food source of monarchs, has been declining significantly across North America.

From that outing we gathered photos and video and featured Celeste and Gail Morris of Southwest Monarch Study as part of a virtual program in August about monarchs and pollinators. The program, produced for TNC's Women in Conservation group, was our first step into the virtual world of trying to bring nature to people stuck in their homes. Several women in the group knew and liked Celeste who had guided them on a previous Aravaipa Canyon outing.

THIS PAGE CLOCKWISE Celeste Andresen at the 7B Ranch trailhead © Gitanjali S. Bodner/TNC; Lucy's warbler © Mick Thompson; Tana Kappel and Celeste Andresen at Aravaipa Canyon west © Justin Bailie; Monarch on milkweed © Terrie Day/TNC; Monarch Waystation sign at the 7B Ranch © Tana Kappel/TNC

Celeste was poised, knowledgeable and game to try something new. I was looking forward to working with her on other Nature Conservancy projects.

Alas, that wonderful morning at the 7B was the last time I would spend with Celeste. Her life came to an abrupt end Friday, September 18 in New Jersey, where she was working with her siblings to settle the estate of her parents, who had both passed away this year. She was jogging and a driver under the influence hit and killed her. Her husband Jim said she died quickly and didn't suffer.

Whenever I see a monarch butterfly, a Lucy's warbler or a gopher snake, I will always think of her, her caring regard for nature, her smiling countenance, her calming presence.

— Tana Kappel



In Celeste's HONOR The Nature Conservancy plans to plant a milkweed garden at the TNC campus in Tucson. For more information about the garden, please contact Tana Kappel at tkappel@tnc.org. If you'd like to make a gift in Celeste's honor, please contact Cheryl Marino at cmarino@tnc.org or call 520-547-3425.



The Green Season BY CELESTE ANDRESEN

Editor's note: Celeste wrote this piece — a beautiful tribute to our desert monsoon — in August 2014. This year the monsoon was practically nonexistent, but her words bring us the beauty of this unique and lovely time of year.

The rain returned to the desert the first few days of July. This is the season that brings much anticipation of approaching storms and the arrival of rain, and disappointment when it doesn't fall, as it moves off in faraway lightning strikes and the soft rumble of receding thunder.

This year the rains brought the Sonoran and Chihuahuan deserts much relief from a sustained drought. We desert dwellers easily forgive the previous long absence of rain when we are finally awash in a humid verdant sunset shining through dense rainfall, or a sultry morning glowing with red sunrise and the happy sounds of birds calling and singing from dripping trees. Although the drought is far from over, we revel in the return of moisture to our parched skin and land.

Along the lower San Pedro River, the long, blonde mesquite beans have dropped into the dank duff of the mesquite bosque floor. The creosote bushes of the uplands have been rinsed to a glossy sheen, releasing their rain scent into the cooling air atop mesas. The ocotillo arms are wearing their wooly greens, topped with orange spikelets. Elderberry trees grow new leaves, extending inches seemingly overnight, and monsoon wildflowers pepper the landscape in unexpected color.

The river flows, this artery of the valley. The scents of warm river mud and decaying leaves are in sharp contrast to the fresh fragrances of grasses and shoots of long-dormant forbs and shrubs. Dusty trails become mucky storybooks, where one can follow the

meandering footprints of frogs, lizards, birds, mammals and sometimes the sinuous belly track of a snake.

Of course, this is prickly pear season in the lower San Pedro River valley which means hot-pink icy drinks in glasses dripping with condensation served at festivals throughout the region. It's also the season of hatch chilies, peaches, tomatoes, almost apples and pears. It's the season of farmers' markets, street fairs, outdoor music, pool parties and bare feet.

These summer monsoon days we celebrate, and yet we begin to look forward to the shorter days and cooler temperatures that Fall brings. We look forward to the desert's next season, and the surprises that new season will deliver.

Fire Fuels Life on the Edge



In Arizona, shooting flames lit up the June night sky over Tucson as the Bighorn Fire burned through 120,000 acres in the Santa Catalina Mountains. Residents were put on evacuation alert, as the fire, fueled by invasive buffelgrass and windy 105-degree days, engulfed iconic saguaros. Birds and animals that could flee, fled. Desert bighorn sheep moved into foothill communities to find safety and water.

When the Bighorn Fire was finally contained on July 23, no lives or homes had been lost. In fact, nature seems to be the winner, and in particular, one of the region's most habitat sensitive denizens: Desert bighorn sheep.

Desert bighorns live on the edge of steep, craggy mountains, their cloven hoofs allowing them to zigzag up and down cliff faces with ease. To get to food and water, they need to leave the safety of the steep terrain, which makes them vulnerable to predators.

Fire can help remove the shrubs and other places for mountain lions, coyotes and other potential predators to hide.

"We're optimistic that the fire had a beneficial impact on the habitat," said Rana Tucker, regional game specialist for the Arizona Game and Fish Department. She said the fire burned hot and eliminated shrubs

and trees on the northern end of craggy Pusch Ridge, making this ideal sheep habitat even more ideal for the estimated 70 bighorns in the Catalinas.

In other areas, the fire "burned slow and didn't kill the trees and shrubs, but it probably still helped improve the habitat," she said.

The Sky Islands evolved with natural fire, historically burning at intervals of 5 to 10 years. During the last 130 years, intensive livestock grazing and fire suppression have resulted in less grass and more trees and shrubs than were historically present.

That change has not been good for desert bighorns. Bighorns depend on their excellent eyesight to evade mountain lions and coyotes. Their survival depends on their ability to move to food and water without sacrificing security.



Their numbers have significantly declined across the southwestern United States, mainly due to disease and habitat fragmentation caused by human development, including highways and communities.

Wildlife managers have tried to address these threats by relocating sub-groups of bighorns from areas where their populations have remained steady. In recent years, the Arizona Game and Fish Department relocated bighorns from thriving populations in the Silver Bell Mountains to the Catalinas, where herds once lived, and to the Muleshoe and Aravaipa ecosystems to supplement small populations there.

Fire spurs connectivity

For these efforts to be successful, a healthy habitat is critical. Shrub-free corridors established through fire have the potential to connect bighorn populations, which would help strengthen their genetics.

Over the last two decades, The Nature Conservancy, the U.S. Forest Service and the Bureau of Land Management have conducted prescribed burns in the wild and rugged Galiuro Mountain ecosystem, which is the most remote area of Arizona outside of the Grand Canyon.

Through the Galiuro Firescape program, TNC and the Forest Service aim to treat about 137,000 acres, using prescribed and natural fire. “About 50,000 acres are left to be treated as part of Firescape. We should be able to accomplish that with two large burns,” said Bob Rogers, the Conservancy’s stewardship director.

In addition, this summer, a lightning-caused fire on the remote south rim of Aravaipa Canyon was allowed to keep burning. Letting that fire burn for resource benefit is a milestone for the partnership agreement between TNC and BLM, said Rogers.

“We’ve seen firsthand that fire-treated areas open connectivity corridors for wildlife,” he said. “We’re hoping that the two herds of bighorns in the Galiuro Mountains will use these corridors to reconnect.”

And now, though unplanned, the Bighorn Fire may have created an opportunity for the Catalina bighorns to wander eastward to the Rincon Mountains or northeast to the Galiuros, where they could reconnect with the bighorns there.

Rams, in particular, tend to travel widely. In the late 1980s, when native bighorn sheep (as opposed to the more recently introduced sheep) still occupied the Catalinas, a collared ram released in the Galiuro Mountains later showed up with the other sheep on Pusch Ridge in the Catalinas. The ram had traveled about 80 miles through forest, riparian areas and desert.

More recently, in July of 2016, a collared ram from Redfield Canyon in the Galiuros made his way to the Rincon Mountains.



“Wildlife in the Catalinas will now benefit from being a close neighbor to the Galiuros, which are mostly public and protected private lands that have been cooperatively managed for wildlife benefit,” said Rogers.

Much of the funding for habitat improvement through fire — as well as efforts to translocate and monitor bighorns — has come through the Arizona Habitat Partnership Committee. The Arizona Desert Bighorn Sheep Society raises funds for the committee by auctioning off Arizona Game and Fish Commission big game hunting tags.

“The conservation work being done in the Catalinas and Galiuros would not be possible without the support and contributions from all these conservation partners,” said Rogers.

Fire is nature’s way of revitalizing our lands. All to the benefit of the iconic creatures who live life on the edge: desert bighorns.

— Tana Kappel

THIS PAGE LEFT TO RIGHT Galiuro Mountains © Amy Zimmermann; A baby bighorn sheep climbs red rock © Joshua Pelta-Heller/TNC Photo Contest 2019 OPPOSITE PAGE TOP TO BOTTOM Bighorn sheep © iStockphoto; Desert bighorn sheep © AGFD File Photo



DID YOU KNOW?

Bighorn Sheep: Living on the Edge

EWE GROUPS: Related female bighorns form “ewe groups,” of about 8 to 10 animals. Females produce one lamb per year.

POSTURE & SCENT: Young bighorns learn their habitat use patterns from older animals. Body posture and scent play important roles in social communication.

DRINKING: Bighorns can go for extended periods without drinking. Walking on canyon floors or coming down from a mountain to a flowing river are some of the most dangerous ventures for bighorns.

CLIMBING: Cloven hooves with straight edges give them the grace to climb up steep mountain ranges.

FOOD: A complex digestive system allows them to absorb nutrients from tough desert plants, such as mesquite and catclaw.

MOVING TOWARD CLIMATE RESILIENCE



As the Earth warms, nature is adapting. Plants and animals are seeking new places to live as their old homes have become less suitable.

Scientists working with The Nature Conservancy have been working to identify networks of connected lands — “natural highways” and climate-resilient neighborhoods — that allow plants and animals the opportunity to move around to find suitable habitat.

The Conservancy is now using what they call a Resilient and Connected Mapping Tool to develop plans that can help nature thrive on a national scale.

“This work marks a paradigm shift in how we think about large landscape conservation,” said Andrew Bowman, president of the Land Trust Alliance.

For more information, go to nature.org and search for Natural Highways and Neighborhoods.



Persistence & Partnership: Saving the

San Pedro River

THIS PAGE LEFT TO RIGHT San Pedro River © Robert Granzow; A Coues whitetail deer © Mark Godfrey/TNC; A young osprey learns to take off in flight © Kathryn Schierling/TNC Photo Contest 2019 OPPOSITE PAGE TOP TO BOTTOM Chiricahua leopard frog © Mark Godfrey/TNC; Lower San Pedro River © Tana Kappel/TNC; Coati near the the San Pedro River © Ralph Waldt

In the '90s, many pundits had written off the San Pedro River. After all, this river was barely a stream, nothing like the rushing waters of much larger rivers of the western United States. And some of the stretches of river were drying up.

It is a remote desert river. But therein lies its uniqueness. If you're a bird migrating through the Arizona-Mexico desert, this river, with its impressive overstory of cottonwood, willows and mesquite, is a lifeline. Few other rivers in North America are as important as the San Pedro for birds and wildlife.

When Holly Richter came to this area as The Nature Conservancy's San Pedro program manager, she resolved to connect people to this unique river. She knew it wouldn't be easy. As a hydrologist, Holly had

experience working on other western rivers with The Nature Conservancy: the much larger Yampa and San Miguel rivers in Colorado, and the mostly underground Hassayampa in Arizona.

"How can people support saving the San Pedro if they've never visited it or spent time getting to know it?"

Her strategy was to bring people to the river, to involve them in citizen science: to spread out and map the flows of the river.

That was more than 22 years ago. Every year since then, people have fanned out along the 300 miles of river and its tributaries, armed with GPS units, to map the wet and dry reaches—from the river's headwaters in the mountains of Sonora, Mexico, to where it meets the Gila River near Winkelman, Arizona.



One of those volunteers, Ted Mouras, is a wet-dry mapping regular. “I’ve learned how hardy and amazing this river is. It’s where the Sonoran Desert meets the Chihuahuan Desert, and the Rocky Mountains meets the Sierra Madre, and that means an intersection of unique birds and wildlife from all those places.”

This year, in spite of challenges posed by the COVID-19 pandemic, Mouras turned out in mid-June to help map the river along with more than 80 volunteers.

Mapping has determined there is water in about one-third of the river during the driest time of the year. Most of the wet reaches are in the southern half of the river in Arizona, in the San Pedro Riparian National Conservation Area, designated by Congress in 1988. The conservation area includes about 43 miles of the river as it flows north from Mexico. Many factors influence why this area has the longest persistent flows, including how much water runs off the nearby mountain ranges, like the Huachuca Mountains.

What Holly envisioned as connecting citizens to the river has yielded something even more tangible. Science.

Science that looks at the current status of the river’s flows and how it’s changing over time. Science that looks at the underground flows that feed the river. Science that determines where surface water and storm runoff most contribute to the surface flows of the river. Science that points to the best approaches for protecting and improving the flows of the river.



That recognition that collaborative science could not only better define the challenges, but also identify real solutions to benefit water supplies began to gain momentum. In 1998, Holly became one of the founding members of the Upper San Pedro Partnership, a consortium of 21 agencies and organizations that worked with scientists to develop innovative new methods in groundwater science.

“We identified the most important lands where reducing pumping or replenishing groundwater would help the river the most,” she said.

The Conservancy later bought more than 5,000 acres in these sensitive areas along the river using funding from the U.S. Army and Fort Huachuca.

Reducing pumping is just one part of the “three-legged stool” that Holly said is needed to safeguard regional water supplies and protect the San Pedro. Also needed is to put water back in — replenishing the groundwater that feeds the river.

That required engineering and hydrological expertise, hence a smaller sub-group of the Upper San Pedro Partnership was formed: the Cochise Conservation and Recharge Network. This group began designing recharge facilities on the land TNC had purchased. These new recharge project sites were subsequently transferred to Cochise County for long-term management.



The plan was for recharge facilities that used two sources of water—stormwater runoff and reclaimed effluent. Hence two more legs of the stool needed to meet the water needs of both people and nature. And, like the building blocks of the numerous scientific studies developed over the past 20 years, the recharge projects began to come online, one after another, to form a regional network of projects.

The Environmental Operations Park, operated by the City of Sierra Vista, had been treating and recharging effluent since 2002, and as the first large recharge project out of the gate, served as a “proof of concept” project for the larger regional network that is now under development. The EOP replenishes the aquifer with about 2700 acre-feet per year, according to Sharon Flissar, public works director for the City of Sierra Vista. (An acre-foot is water about one-foot deep spreading over an acre, which is about the size of a football field.)

The Palominas recharge facility was built by Cochise County in 2014, as a combination flood control and recharge project adjacent to an elementary school, where flooding had been a problem. Today, it captures and conveys floodwaters to a series of basins being tested to determine how to most effectively get stormwater into the ground before it is lost to evaporation. This facility is informing the future design of an even larger stormwater project at Coyote Wash, which receives more urban runoff than any other tributary to the San Pedro, since it is downstream from the center of Sierra Vista.

Less than a mile away from the Palominas facility, high-volume pumping was retired. Groundwater levels have rebounded in response, and private wells have also benefitted.

Closer to the Mexico border on the large San Jose Ranch, another recharge facility was constructed on Horseshoe Draw, where erosion was a problem. This facility also provides multiple benefits to the river and its watershed: It reduces sediment delivered to the river and increases groundwater recharge. In 2019, it recharged more than 54 million gallons of water.

The three-legged stool of reduced pumping, and replenishment with both stormwater and treated effluent, has increased water supplies for local communities and the San Pedro. But to sustain the flows of the upper San Pedro at or above 2003 levels, through 2075, three more recharge projects will need to be constructed. The Conservancy and its partners are pursuing these remaining projects.

Of course, climate change is a significant wild card, and difficult for even our best scientists to accurately predict. Management of this river, and regional water resources that support it and local communities, will have to adapt to these changes.

“The need for both persistence and partnership has never been greater,” said Richter.

In honor of the native peoples who once lived and grew crops along the San Pedro, as well as current residents and the wildlife who rely on it, we strive to keep this river a living river abundant with life.

— Tana Kappel



Arizona Heroes Award



Nature Conservancy staff and volunteers recently received a certificate of special congressional recognition from the U.S. House of Representatives “in recognition of your steadfast efforts in support of the annual wet/dry mapping the San Pedro River and its tributaries.”

U.S. Representative Ann Kirkpatrick of Arizona’s second congressional district presented the award during the Conservancy’s Field Notes Live online presentation about the San Pedro River.

Legacy Corner

With tax deadlines delayed this year, many individuals are taking time now to do their planning.

Giving directly to public charities has additional incentives in 2020, and the higher deduction limits can even include cash funded charitable gift annuities. The CARES Act is allowing charitable deductions of up to 100 percent of a person’s adjusted gross income this year only, and excludes the increased limits for gifts to personal family foundations and donor advised funds.

Here are some ways to take advantage of the opportunity:

- Some individuals will be doubling up on contributions and letting their favorite charities know that they might skip a year and not make gifts in 2021.
- Others are considering selling assets (real estate, business, investments) this year and giving away some of their proceeds with direct gifts to charity since it can offset the higher income or capital gains realized.
- For those individuals who want additional income in retirement, charitable gift annuities funded with cash are available.

To learn more or to speak with a TNC regional gift strategist, contact Mark Ryan at mdryan@tnc.org.



TOP TO BOTTOM Riparian area along the San Pedro River © Tana Kappel/TNC; Cathedral Rock near Sedona, Arizona © iStockphoto

The Life of the San Pedro River

If any of you know Ralph Walcott, you know what an incredible naturalist he is.

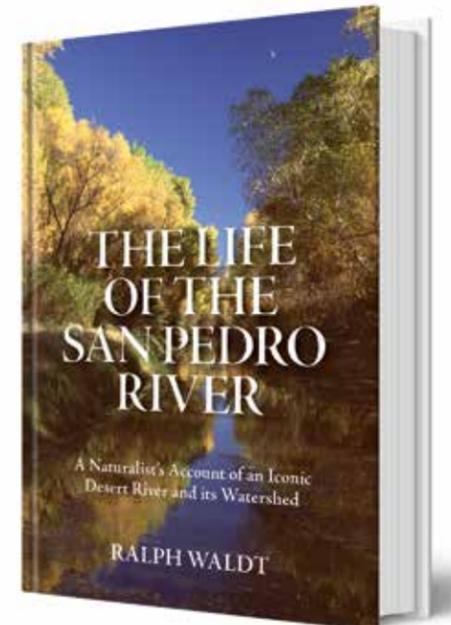
I first got to know Ralph in Montana, when he was a naturalist at The Nature Conservancy’s Pine Butte Guest Ranch. He was beloved by the many guests who came to visit this remote and beautiful place along the Rocky Mountain Front, where grizzly bears come out on the prairie. From his many experiences hiking and wandering in this stunning region, he wrote a book called the “Crown of the Continent,” a beautiful coffee table book with stunning photography, many of Ralph’s own photos.

When I arrived in southern Arizona, I learned Ralph had moved south and was living near the San Pedro River. In 2009, I was lucky to be in his group doing wet-dry mapping of the San Pedro, which the Conservancy organizes every June. His eye for nature was amazing. He spotted bear tracks in the sand and beaver sign along the riverbanks. He spotted a gray hawk overhead. He would name the birds from their songs.

He could read nature like a book, and deftly explain the web of nature.

So, naturally, he has written another book, “The Life of the San Pedro River.” And I for one, can’t wait to read it. It’s available on Amazon and at Barnes and Noble, or you can get deluxe editions through Ralph’s website: <https://waldt.square.site>. You can also read his blog at RalphWalcott.com.

— Tana Kappel



Grace, Power, Speed, and Looks Essay from “The Life of the San Pedro River”



Hidden in the night like a drop of ink in a pool of oil, it slips across the international border undetected, as silent as a mouse on velvet. Starlight streams into its wide-open pupils, bouncing off a unique layer of cells deep within the eyes that enhance night vision, the tapetum lucidum. Reflected light exits the creature’s eyes as a yellow-green glow visible to others of its kind, rendering its nocturnal presence in an almost preternatural way.

Walking on a quartet of broad, furred paws, the animal rarely places a single step without prior thought given to its exact landing spot. Like all of its kind, this creature depends upon skill and exceptional stealth to secure its food. It gazes intently ahead as it moves, studying the terrain. Guided by a pair of huge, lucent eyes and an exquisite sense of touch in its feet, the animal sets its front paws down on precisely chosen, quiet landing places. Evolution has crafted this creature so well that its walking gait ensures that the hind feet will fall into the front tracks, resulting in a nearly soundless passage. It ducks under overhanging acacia, cholla, and scrub mesquites as it weaves its way northward through a wild stretch of desert into a land it has never known, into America.

— Ralph Walcott

TOP TO BOTTOM Jaguar © Fernando Constantino MartÁnez Belmar /TNC Photo Contest 2019

*New address



CLOCKWISE Madrone berries at Ramsey Canyon Preserve © Nancy Docherty; Juvenile foxes wait for their mother's return. © Vic Rincon/TNC Photo Contest 2019; Agave plant © iStockphoto; Ocelot © Cláudia Brasileiro Martins de Agostinho /TNC Photo Contest 2019

GIFTS —OF— NATURE

Your support has helped us to ensure people and nature prosper and thrive, together. Because of you, Arizona and our world will be better for generations to come.

