



**SKY
ISLAND
ALLIANCE**

protecting your Sky Islands
for 25 years

RESTORING CONNECTIONS

Summer 2016 | Volume 19 Issue 1



Spotlight on Mexico

Roadkill on Mexico's Hwy 2 4
Rancho rockwork..... 7
Sister Parks..... 8 - 9

Also in this issue

Director's field notes..... 2
Volunteer impact..... 10
Pine flycatcher and climate change 12
Meet new staff..... 14

Buscando artículos en Español?

Lee nuestro blog a www.skyislandalliance.org/calendar/news/

Erasing Boundaries

Making our mark in Northern Mexico's Sky Islands

by Carianne Campbell and Sergio Avila-Villegas

Sky Island Alliance's commitment to binational collaboration with partners in Mexico has been important since our founding in 1991. Ten years ago we made it official with the creation of the Northern Mexico Conservation Program and the addition of Sergio Avila-Villegas to the SIA staff from 2006 – 2015. The early years of our Mexico program focused primarily on conservation and documentation of large cats, like the charismatic jaguar.

Over time we expanded our emphasis to comprehensive documentation of the biodiversity of Mexican Sky Islands.

Continue reading on p. 4

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Cover photo: Members of our Alianza Mariposa Monarca joined Sergia Avila and Gary Paul Nabhan in Monte Mojino Reserve in Alamos, Sonora, for a Monarch and Milkweed Conservation workshop, March 2016



C. Treadway

Director's Field Notes

As Sky Island Alliance celebrates our 25th anniversary, I'm honored to be celebrating my own 10-year anniversary at Sky Island Alliance by taking the reins as Executive Director. This milestone—for the organization and for me—provides a great time to reminisce, take stock of our accomplishments, and consider what we are capable of achieving in the coming years.

I first got to know Sky Island Alliance nearly 13 years ago as a volunteer on a work weekend to close and rehabilitate roads in Las Cienegas National Conservation Area. I was a college sophomore, still clinging to delusions of becoming a doctor but starting to realize I wanted a career where I could be amongst trees, under blue skies, and surrounded by nature.

After just one volunteer trip with Sky Island Alliance, I was hooked.

The approach of using scientific information to advocate for connected open spaces, water for natural areas, and an abundance of wildlife was exactly how I wanted to use my scientific degree—science in the service of change.

It was during a summer monitoring endangered southwestern willow flycatchers on the Lower San Pedro River that I became fully immersed in the incredible biological diversity of the Sky Islands. I saw gray hawks soaring, tropical kingbirds tending a nest, a gopher snake raiding red-winged black bird nests, a bobcat slinking through the rain on a quiet monsoon-filled morning, and a very wet badger conducting badger business on a flooded path adjacent to the muddy, monsoon swollen river. My time on the river strengthened my resolve to pursue work that combined field work with advocacy, and most importantly where I can be a voice for the amazing creatures and rivers that cannot speak for themselves.

In 2007, I finally landed a staff position with Sky Island Alliance documenting biological diversity, advocating for the closure of roads damaging fragile habitat, identifying critical places to protect habitat and pathways for wildlife, surveying and restoring springs ecosystems, and responding to drastic and rapid climate change in proactive ways.

Sky Island Alliance's reach is broad and our influence throughout the region continues to grow. I'm honored and privileged to continue down the winding and sometimes rocky path of conserving these unique Sky Islands and the waters and wildlife of this stunning region.

We face many challenges in the coming decades—human development and climate change among the greatest—but there is also great hope to be found in the diversity of species and ecosystems in the Sky Island Region and in the communities working hard to preserve it.

I hope you enjoy this issue of *Restoring Connections* that explores issues that know no borders and highlights our work in Mexico. We also revisit some past highlights from our newsletter with reprinted articles and excerpts. I look forward to working with you to ensure wildlife and ecosystems have the space they need to respond to the coming changes, that there are quiet places in this land where we can rejuvenate, and that wild places stay wild.

Sincerely,

Louise Misztal, Executive Director



In Summer 2015, Louise Misztal traveled from her desert home in Tucson to South Australia and the Northern Territory to learn about responses to rapid and extreme impacts from climate change. This is an excerpt from the blog she kept on her journey, Springs Down Under.

Waterfalls and Extreme Heat

by Louise Misztal

originally posted on July 19, 2015

We spent our last day in the Top End on a swim tour of Litchfield National Park. Known for its specky waterfalls and plunge pools, the park attracts 260,000 visitors per year (quite a lot for Australia). On our way to Litchfield, we stopped at Berry Springs Nature Park. What an amazing site. The park consists of several discreet springs, many of which feed into Berry Creek.

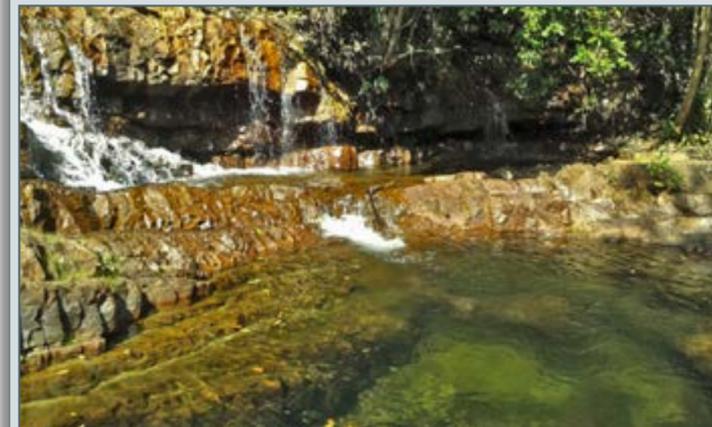
Berry Springs is a popular recreational swimming spot in the dry season. (Wet season flooding keeps people out for a few months a year due in part to the dangers of crocs moving in.) During the dry season the area is managed to keep crocs out.



The springs and creeks combine to form beautiful deep and large swimming holes with riverine habitat in between.

We moseyed on to Litchfield National Park via the back road, sans bitumen (pavement), and popped out at Cascade Falls, where we took a little hike to a recommended plunge pool at the end.

I thought this beauty was our destination, but then we turned the bend...



We'd been hearing the occasional fruit bat squabble while sitting around the campfire at Humpty Doo, and went to great lengths climbing through the bush after dark to try and spot one. We finally managed to see one in the headlamp while it munched on some tree fruit. When we arrived at Wangi Falls and started walking up a path leading through remnant monsoon rainforest, we quickly realized that we were surrounded by noisy, restless bats, hundreds of them, maybe even thousands, or as they say around here, heaps and heaps! It was a cacophony you can listen to [in the blog].

Litchfield is home to the black flying fox (or fruit bat) and the little red flying fox. These critters made the news in 2014 when record heat in Queensland killed 45,500 flying foxes in one day. In Beaudesert temperatures hit a stunning 44.6 C (112 F). Unfortunately, the threat of extreme heat and further population decline for these mammals is growing. In addition to being ridiculously cute, they play an important role in pollination of trees and seed dispersal.



Wikimedia Commons

According to the Intergovernmental Panel on Climate Change's 2012 Special Report on Extremes, "it is "very likely" that the number of warm days has increased since the 1950s, and it is "virtually certain" that the frequency and magnitude of extreme heat events will increase through this century."

The Litchfield Park management plan highlights the importance of water-dependent ecosystems of regional significance. It turns out many of the beautiful falls we visited, including Wangi, are spring fed: "There are numerous springs located on the top of the Tabletop landform which provide a continuous source of water for locations such as Buley Rockholes, Florence Falls, Tolmer Falls, Wangi Falls and Tjaetaba Falls. It is important to protect these springs from any developments that may impact the flow or lead to pollution of the waterways."

The Park has worked to ensure that developments on the Tabletop do not pollute or otherwise negatively impact the springs. Unfortunately, it does not have anything to say about climate change or considerations for the park's water resources and species, given climate projections for the Top End. For now, accommodating tourism appears to be the highest priority.

The biodiversity of Litchfield National Park will face many challenges in the coming years due to increased visitor use, planned development of park facilities, increased access to remote swimming holes and extreme weather events driven by climate change.

Litchfield had a hint of Disney-like surrealism to it, but what a fantastic way to bid adieu to the Top End—swimming in the cool, clear waters in the heart of some really big dreaming, a place of such cultural and ecological power and beauty that it is at risk of being loved to death.

You can read Louise's complete Springs Down Under blog at <https://springsdownunder.wordpress.com>

Making our mark

Continued from cover

From 2009–2014, Dr. Tom Van Devender led the Madrean Archipelago Biodiversity Assessment (MABA) Program at Sky Island Alliance—a visionary project to document the distribution of all plants and animals in the Sky Island region of northeastern Sonora and the adjacent state of Chihuahua. Scientists of many disciplines from the U.S. and Mexico participated in MABA expeditions, leading to a catalog of tens of thousands of observations in the online MABA database at www.madrean.org.

We have always been committed to working closely with local communities and developing personal relationships

with conservation-minded ranchers and Mexican officials, which continues to strengthen our work today. We have reaped many tangible rewards from this work, including lasting protection for special places like the Sierra Huerfana and Rancho el Aribabi. Join us in celebrating our cross-border efforts to document tragic roadkill (below), restore ranchlands (p. 7), and build strong relationships with Sister Parks (pp. 8–9). **We look forward to many more adventures in learning and restoration in Mexico—and wherever our work leads us—for decades to come!**

"I think among the highest achievements of the Northern Mexico program in its first 10 years are the real connections established between people on both sides of the border. Nature has no borders, neither does our work to address and mitigate the effects of climate change, monitor trans-border wildlife corridors, and restore creeks and arroyos for the benefit of natural and human communities."

I expect the next 10 years to be filled with positive stories of conservation action, of people working together, and of young biologists following their passion. These results already prove that Sky Island Alliance had the right idea initiating work across the border and developing a positive conservation dialog between our two countries."

~ Sergio Avilla-Villegas, Research Scientist, Arizona-Sonora Desert Museum

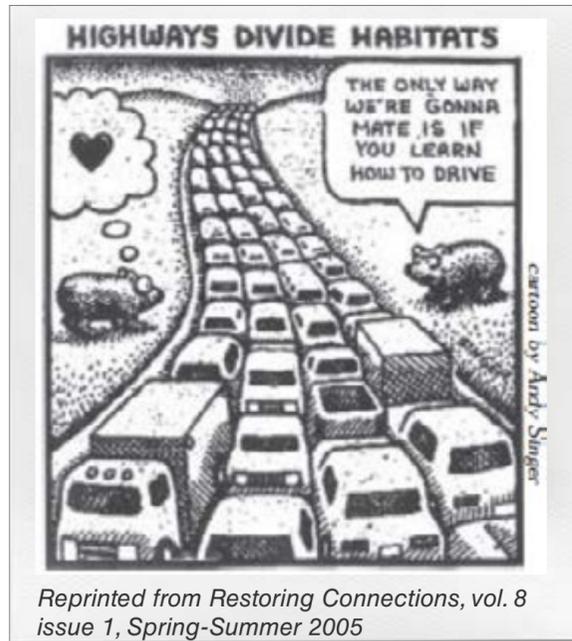


Documenting roadkill on Mexico's Highway 2

by Mirna Manteca

Roadkill surveys are not fun. It is heart wrenching to see a playful coyote, reclusive badger, or majestic barn owl lifeless on the side of the road. I would be lying if I said I've never shed a tear while recording these observations. On the other hand, every carcass we find is valuable data, providing a basis to promote safe corridors for wildlife—a key part of my work at Sky Island Alliance.

Beginning in January 2016, we expanded our roadkill surveys to Carretera Federal 2, which runs through northern Mexico near the international border with the United States. Since 2010, the Secretariat of Communication and Transport (SCT), the Mexican transportation authority, has been working to widen three sections of the highway. The roadway teems with heavy, semi-truck traffic, nearly 24/7, posing a serious threat to wildlife.



Reprinted from *Restoring Connections*, vol. 8 issue 1, Spring-Summer 2005

Excerpt from Restoring landscape connectivity where ecological and transportation corridors intersect—and sometimes collide

by Janice Przybyl

Reprinted from *Restoring Connections*, vol. 8 issue 1, Spring-Summer 2005

What would you think if you saw 139 adults emerging from three yellow school buses stopped by the side of a high speed highway? This was the sight encountered by motorists on April 12 as they traveled Highway 260 outside of Payson, Arizona. Nope, we were not the roadside clean-up crew. Had we large plastic bags in hand you might have been right, but we were toting cameras and notebooks, listening intently to our group leaders and taking photographs of bridges and culverts. We were a diverse bunch of planners, engineers, and biologists from resource and transportation agencies, municipalities, counties, non-profits, and foundations based throughout the Western U.S. and Canada. We gathered for the Rockies Wildlife Crossing Field Course to share information about restoring landscape connectivity through wildlife crossings.

...
To reduce the incidence of wildlife vehicle collisions and maintain landscape permeability for wildlife movement, ADOT incorporated 11 wildlife underpasses, six bridges, and ungulate-proof fencing. The unique aspect of this highway project is that as information about elk usage is gathered at completed bridges, adjustments are made to improve permeability at the next site down the road. Using video surveillance equipment both in the passageways and on the road above, Norris

Dodd and Jeff Gagnon from AZFGD monitor not only elk presence but also elk behavior in response to traffic volume and noise. A burst of noise and movement from a single vehicle can inhibit an elk from entering a structure more than steady vehicular activity does.

The primary species of concern is elk, but monitoring data from cameras and track sets record other species using the culverts and bridge passageways. Engineering considerations were also discussed. The mountainous landscape from Payson to the Mogollon Rim offers deep drainages that make it easier to design and construct wide, high bridges with natural cover through the passageways. As construction on HWY 260 moves eastward and over the Mogollon Rim, the terrain becomes flatter, hence more challenging to include wildlife-friendly culverts. Maybe this is where a land-bridge over the highway will be appropriate?

Although the workshop concentrated on roads and highways, humans are a population on the move and we move more than vehicles over roads. We move power through power lines and pipelines. We move water through canals and irrigation ditches. We move goods over rail lines. We move words and information over telephone and fiber optic lines. We are covering the landscape with systems and infrastructures that contribute to habitat fragmentation and diminish landscape permeability for wildlife and ecological processes. It became apparent during the workshop, that scientific information on the use and effectiveness of wildlife crossing structures is becoming more readily available. The next step is to incorporate this knowledge into the culture of transportation and planning departments so that wildlife movement and ecological considerations become fundamental pieces of the entire planning process—from the blueprint and budget stage through continued monitoring of effectiveness after construction.

You can keep up-to-date with our project observations at www.inaturalist.org/projects/sky-island-nature-watch.

Voluntarios sin Fronteras: Volunteer Cross-Pollination in the Sky Islands

by Sergio Avila

Reprinted from *Restoring Connections*, vol. 15 issue 2, Summer 2012

Here at Sky Island Alliance we work to protect and restore the native species and habitats of the Sky Island region. Our work focuses on an ecological region that hosts a high diversity of species, habitats and their interactions which have evolved over millions of years. The goals of our programs are based on the premise that plants, animals, and the ecological and evolutionary processes that link them exist within natural boundaries such as species' distribution, elevation and temperature ranges, or transition zones between vegetation types like desert grasslands and oak woodlands.

Over the past two centuries, the natural ecology of the borderlands at the US and Mexico has been profoundly altered by a myriad of human interactions within and across these two countries. The straight, arbitrary line—with its political, cultural and socioeconomic consequences—is not reflective of natural processes, divides ecosystems and watersheds, and keeps us in constant search for creative ways to preserve the complex biological and physical interactions. In addition, the introduction of non-native species, unsustainable use of natural resources, blocks to wildlife movement paths, and an expansive human population, have dramatically altered the landscape and the biodiversity of the region. More than ever, species survival depends on connectivity of habitats in patterns established before the political border. Thus, we strive to maintain and improve the natural historic conditions of the land, and mitigate and adapt to new conditions like the changing climate.

Historically, SIA and its volunteers concentrated their work north of the political line that divides our region. Working mostly on public lands of Arizona and New Mexico, by collaborating with agencies and participating in public processes, SIA organized and led volunteers on surveys and protection of roadless areas, wildlife monitoring and restoration of native habitats, designation of Wilderness areas and

other actions for the benefit of species like leopard frogs, Mexican gray wolves and migratory birds. In our 20 years as an organization, volunteers have put an effort equivalent to over 50 years of field work in just the United States!

Today, our work south of that political line has improved, our relationships strengthened, and our accomplishments multiplied, using ingenuity and creative collaboration to overcome challenging circumstances in the conservation of trans-boundary environments. Without a doubt, the involvement and active participation of our volunteers is invaluable in achieving our mission across the region.

In February, we camped in northern Sonora's Sierra La Esmeralda with a group that included eight volunteers, both new and returning, from Arizona. Located 10 miles straight south of Peña Blanca Lake in Arizona, Sierra La Esmeralda is a mountainous area that stretches across the border, a place where trogons and five-striped sparrows find rest on their way to Sycamore Canyon and the Pajarita Wilderness. We hiked along drainages surveying stands of willow, cottonwood, ash, and sycamore trees. We stayed in Rancho La Esmeralda, a privately owned property with a large Hacienda-style bunkhouse, swimming pool and other amenities, all powered by solar energy. For some of the volunteers from Arizona, it was their first time in Mexico.

Similarly, on a watershed restoration weekend in Aravaipa Canyon in Arizona, we welcomed eleven new volunteers from Sonora. Led by instructors Van Clothier from Stream Dynamics Inc., and Mark Haberstick and Stace Walker from The Nature Conservancy, students and professors from the Instituto Tecnológico Superior de Cananea, a state technical college, learned about and helped with habitat restoration by building erosion control structures, planting close to 100 willow and desert hackberry saplings, and clearing overgrown mesquites. This was the first time a group of volunteers

from Mexico came to the U.S. to participate on a field weekend with Sky Island Alliance!

The intentions of both field weekends were to monitor and restore the natural conditions of the land and its inhabitants, to teach progressive techniques which can easily be replicated, and to provide an experience of natural areas that made it difficult to remember which the side of the border was which. By joining forces on a common goal, both trips also accomplished a tenuous, less visible goal: to bring people together, share ideas, exchange thoughts and put hands to work, shoulder-to-shoulder in a fun way.

I recall a field trip to Sonora in 2005 when a then-vegetarian volunteer from Alaska tried some tacos de carne asada and said: "I feel bad for real vegetarians." I also remember taking a journalist to Sonora who, after walking along the Río Cocóspera for a while, said: "I don't even remember what country I'm in!" These experiences highlight the fact that, in spite of the political boundaries, volunteers enjoy natural 'borders'—curvy lines of a creek running along a canyon or a set of tracks left in the dirt. The political border is certainly there, it is real and it won't go anywhere—we still use our passports, get searched when crossing through that horrible metal wall, and speak a different language depending on which side we live.

Elegant trogons, black bears, and monarch butterflies carry no passports when moving through the region, but they know full well where to find water, food or mates, and the routes to reach them. Their boundaries are those irregular patches of habitat contained within temperature and elevation ranges, where sycamore trees and manzanitas stand. Similarly, the work of our volunteers has no borders. Regardless of country, their continuous efforts—planting saplings, controlling erosion, tracking wildlife, rain or freeze—is making a huge difference... in so many ways.

Sky Island Alliance volunteers rockin' it in Mexico!

by Bryon Lichtenhan

Over the last 10 years, our work in Mexico has encompassed a wide array of projects. Recently, we embarked on one of our most engaging undertakings in partnership with the Instituto Tecnológico Superior de Cananea (ITSC), funded by the US Fish and Wildlife Service. Through our work with ITSC, we are improving watersheds and engaging local communities in new ways of thinking about conservation and restoration issues specific to the region.

Our on-the-ground work included two important restoration workshops at the Rancho San José del Carrizo in Bacoachi, Sonora in March and April of 2016. This ranch totals 10,000 acres of privately owned land managed as a sustainable cattle ranch and eco-tourism operation. SIA first visited this ranch as part of our springs assessment work with the Springs Stewardship Institute in 2014 to monitor springs on the property, including one right next to the main hacienda. We found the ranch to be a wonderful example of private stewardship of the land, supporting an impressive diversity of wildlife and habitat types, including native grasslands, perennial streams, springs, and oak/juniper woodlands. Needless to say, we were eager for this opportunity to deepen our connection with the landowners and make the ranch an even more beautiful and resilient place.

However, we were not the only ones to get excited about this special place right on the Río Sonora corridor. We found (yet again) that there is a lot of interest and enthusiasm in Mexico for practical, on-the-ground restoration knowledge. What we planned as "two workshops for 20 – 30 students" quickly expanded into two full weekends of restoration work, attracting more than 120 students and instructors from ITSC, Universidad de la Sierra in Moctezuma, and the local schools.

During our six days working in Bacoachi we installed dozens of erosion control structures, including trincheras, rock rundowns, and Zuni bowls ranging in size from small to huge! In addition, we planted a large stand of willow poles to increase habitat for migratory birds and pollinators near a stock pond. We were able to mitigate erosion problems at one of the most important springs on the ranch, ensuring that it remains a healthy resource for the variety of plants and animals that make use of it.

Our time in Mexico was hardly all labor. As so often happens when working south of the border, the high spirits of the participants and palpable feeling of community energized all our time in the field—and our time in camp truly was a party, with carne asada on the grill, music, singing, and dancing that lasted long into the night!

We also enjoyed the chance to talk with workshop participants about the broader issues facing the Sky Island Region during downtime throughout the workshops. Additionally, we were able to explore one canyon on the property with a perennial stream (perhaps a site for future restoration work) and another canyon system farther away from the ranch that was full of rock art and artifacts from local indigenous cultures.

It is always so inspiring to hear from students that they couldn't wait to bring the restoration techniques and knowledge they were learning back to the land in their own communities and ranches. By the end, our volunteer participants had dedicated 2,445 hours of work helping to create a healthier, more resilient landscape in Sonora.

What we planned as "two workshops for 20 – 30 students" quickly expanded into two full weekends of restoration work with 120+ students and instructors.



More than 120 local students, teachers, and community members turned out to help with the project.



Break time for one of the volunteers!



SIA volunteers help construct a trinchera to arrest erosion.

The importance of sisterhood—for our parks!

by Mirna Manteca

It's late February, the very last day of our 2015 Sister Parks gathering. I'm standing at the edge of one of the lookout points at Coronado National Monument. Laughter, chatter, and the click of pictures taken at my back. I'm looking down at the U.S.–Mexico border wall. From this distance, it's merely an unnaturally straight dark line cutting through the landscape—through the grasslands and through the San Pedro River, the living vein of the region. I look towards the horizon and catch sight of a blue mountain range in the distance. Over there is the Ajos-Bavispe National Forest Reserve and Wildlife Refuge in Sonora, Mexico. I'm standing in an American park looking straight at a Mexican Protected Natural Area. This is the moment when the importance of Sky Island Alliance's Sister Parks project truly sinks in. This is the moment when it starts to feel like this dark line dividing the landscape means little in the greater sense of things. The people who work to protect the resources and land they care about should not be divided by fences, but instead, should come together to join forces and cross political borders to protect our land.

The Sister Parks project originated in 2014 through a binational wildlife monitoring collaboration between the National Park Service in the U.S. and the Sonoran Joint Venture and the National Commission of Natural Protected Areas (CONANP) in Mexico. Although the main objective remains the sharing and analyzing of regional wildlife monitoring data, the project has slowly evolved. We are now expanding our project objectives to include springs assessment trainings, pollinator monitoring, and outreach and education activities.

The first year of our Sister Parks project began with only three Mexican parks and three U.S. parks coming together to strengthen relationships in Parque Nacional Constitución de 1857 in Northern Baja. **Today we are delighted to have eight Mexican parks and reserves and six U.S. parks, for a marvelous total of 14 participating parks in northwestern Mexico and the southwestern United States.**

Why Sister Parks?

Parks on both sides of the border monitor species with wildlife cameras. However, when data isn't shared, it limits our potential for achieving shared conservation goals. By facilitating data transfer and standardizing data management protocols, we can

analyze data at a regional scale to create a more complete picture of the issues faced by wildlife.

Our 14 sister parks share and protect a rich biological diversity, including sensitive mammal species such as large cats, black bears, and Neotropical species like javelina and coati. In addition to this shared biodiversity, the parks share similar threats to conservation—and similar goals. Wildlife habitat along both sides of the border is faces increasing threats due to climate

change, human population growth, habitat fragmentation, and the combination of illegal activity along the border and heightened border security.

Through this project we are bringing together the people behind each park to develop a strong international partnership to

address these issues and develop a holistic strategy to confront common difficulties.

Whether we like it or not, these are hard times for the lands and the species we seek to protect. Conservation has all the hard questions and no easy answers. And aside from challenging environmental issues, parks on both sides of the border are facing tough economic times. In the last year, CONANP has suffered severe cuts to their budget and personnel, which has had serious impacts on work at the parks and reserves, leaving them in a much more vulnerable state. Now, more than ever, collaborative initiatives like this one are needed to bring together people working towards a common goal. We are more powerful and effective united than we are divided.

Looking forward

I'm excited for our 2016 Sister Park gathering that is just around the corner. This year we'll be meeting in El Pinacate y Gran Desierto de Altar Biosphere Reserve in Sonora, Mexico, to discuss expanding our sister park relationships, dive in a little deeper on environmental education, and explore new, creative ways to collaborate across borders. We will also be welcoming our three newest participating parks: Casa Grande Ruins National Monument, Organ Pipe National Monument, and Tumacácori National Historical Park!

Saludos a todos nuestros parques hermanos!



Excerpt from **Treasure of the Sierra Madre: Species Richness in the Madrean Archipelago**

by Tom Van Devender

Reprinted from *Restoring Connections*, vol. 12 issue 2, Summer 2009

In 2002, my wife Ana Lilia Reina and I were part of a project with teachers and local residents to study migratory pollinators and the plants they visit in northern Sonora. We discovered that even common plants were poorly collected within 100 km of the Arizona border. This was followed by a series of projects to search for rare cacti and shrubs — every trip was filled with range extensions and new state records! Although biotic inventories actually began with the U.S.-Mexico boundary survey (1848–1853) more than 150 years ago, la frontera in Sonora was mostly forgotten as botanists flew through to the tropical forests near Álamos in southern Sonora or to the stark beauty of the Sonoran Desert in northeastern Sonora.

The Madrean Archipelago is a region of diverse wonderful landscapes and mixtures of plants and animals.

Continued on p. 10

Our sister parks

- 1 Saguaro National Park
- 2 Coronado National Memorial
- 3 Chiricahua National Monument
- 4 Casa Grande Ruins National Monument
- 5 Organ Pipe National Monument
- 6 Tumacácori National Historic Park
- 7 Reserva Forestal Nacional y Refugio de Fauna Silvestre Ajos Bavispe
- 8 Parque Nacional Constitución de 1857
- 9 Parque Nacional Sierra de San Pedro Mártir
- 10 Reserva de la Biósfera El Pinacate y Gran Desierto de Altar
- 11 Reserva de la Biósfera Sierra La Laguna
- 12 Área de Protección de Flora y Fauna Sierra de Álamos Rio Cuchujaqui
- 13 NCI Reserva Monte Mojino
- 14 Área Natural Protegida Bosque La Primavera (Guadalajara, Jalisco)

Volunteers double our impact

by Carianne Campbell

This year Sky Island Alliance celebrates our 25th anniversary, and looking back on all we have accomplished it is clear that we wouldn't be where we are without our volunteers. Literally hundreds of volunteers turn out each year to expand our ability to preserve, protect, and restore the biodiversity of the Sky Island Region.

Our talented volunteer pool includes citizen scientists, students, retirees, home gardeners, avid outdoor adventurers, seasoned conservationists, and first-timers. They help us with everything from removing invasive species and planting natives to building erosion-control structures and wildlife tracking.

SIA volunteers contribute over 10,000 hours of their time each year—equivalent to about 10 additional full-time staff members—doubling our capacity!

In recent years, we have expanded our volunteer field opportunities to include weekday offerings, weekend camping trips, and day trips closer to Tucson. Many of our field activities require no experience and are family-friendly. We especially enjoy sharing the wonders of the Sky Islands with youngsters. For those looking to make more of a commitment, we offer opportunities to be trained as one of our citizen scientists for wildlife tracking or springs assessments. Volunteering with Sky Island Alliance is a great way to explore the region.

Not interested in outdoor work? We often need help with office-based projects and local community outreach events too. Jefferson Carter, our official poet laureate, can show you the ropes. Jefferson volunteers for a couple hours nearly every weekday, entering data and organizing remote wildlife camera photos. In 2015, he contributed more than 300 hours of his time!

Would you like to be a part of our volunteer corps?

We post new opportunities all the time. Stay up-to-date with our volunteer calendar or sign up to receive our volunteer announcements in your email! Just visit us online at skyislandalliance.org. It's easy!

continued from p. 8 **Treasure of the Sierra Madre** *excerpt*

This area is only the northwestern portion of CI's pine-oak woodland "hotspot," but lowland desert grassland and thornscrub species, and being located in a biogeographical crossroads enrich the biodiversity. Here the New World tropics meet the northern temperate zone, grasslands extend from the Great Plains and Mexican Plateau into southeastern Arizona and northeastern Sonora, and the Sonoran Desert meets the Chihuahuan Desert. The great Río Yaqui drains the northwestern slopes of the Sierra Madre Occidental, and its Río Bavispe tributaries are fingerlike corridors for tropical species to reach southeastern Arizona and southwestern New Mexico.

Only a few biotic inventories in the Sonoran Madrean Archipelago have been published, and specimens are widely dispersed in museum collections in the U.S. and Mexico. The new Madrean Archipelago Biodiversity Assessment (MABA) project at Sky Island Alliance is a visionary new project to compile all historical and future biological records of plant and animals from this region into a database. The records (specimens, observations, and images) in the MABA database will be a virtual natural history museum! The database is well along in the design stages, and with the help of Ed Gilbert at the Arizona State University should be ready for data in September.

The three-year MABA project, with funding by the French-based Veolia Environment Foundation and support from the U.S. National Park Service and the Turner Foundation, began in April and is moving along nicely.



Jefferson Carter is Sky Island Alliance's poet laureate and volunteer extraordinaire.



Volunteers haul away invasive vinca removed from the Aravaipa Canyon.



Volunteer wildlife trackers help a tracker-to-be ID bear tracks.



Volunteers from the University of Arizona shuttle plants across Bear Creek for a revegetation project.

Thanks to our volunteers

by Nancy Zierenberg

Reprinted from Restoring Connections, vol. 10 issue 3, Autumn 2007

Read at the Volunteer Appreciation Party October 13...

Some of our board members couldn't be here today, but as a Board, we have something to say.

In the beginning there were a bunch of us who got together to make a fuss.

We drew lines on maps, discussed wolves and wilderness,

and how we always seemed to have to settle for less and less.

Our bunch was made up of biologists, botanists, ecologists and more.

All were wilderness freaks who were gettin' kind of sore.

We were tired of seeing wild places fragmented and chipped away

so were determined to be bold and have our say.

The proposal that evolved to protect our Sky Islands incorporated good science and we formed an alliance.

At first our growth was slow but we somehow persisted

But it really turned around when a bunch of volunteers assisted!

We laid out a plan to do some ground truthing, checking wildlife sign and doing excess road sleuthing.

The wildlife showed us their movement corridors that helped us determine the buffers from the cores.

It's all documented with techno tools

We have photos and maps, measurements and rules.

We've won partnerships we never could have guessed With the forest service, ADOT, and all the rest.

Put on conferences attended by herds

Made "sky islands" common household words

But it never could have happened without our faithful volunteers

You've built SIA's reputation and shifted its gears

With our primo staff, you've built the best there is,

You're loyal, competent, fun, and gee whiz,

We just want you all to know how grateful we is!

With deep appreciation, from the Sky Island Alliance Board

Pine flycatcher: Harbinger of climate change, ray of hope for adaptation

by Louise Misztal

Five years ago I wrote—in the pages of this very newsletter—about the effects of climate change that were already visible in the Sky Islands and that the region’s ecosystems and species were facing new and more complex challenges as a result. What I wrote then is still true to today.

“[W]arming has contributed to increases in wildfire activity, changes in the timing of species’ lifecycle events, and ecological changes in habitats. To further complicate matters, climate changes are interacting with other stressors such as decades-long drought, human land use, habitat fragmentation, and complex ecosystem interactions to create measurable and sometimes drastic changes in the region.”

Restoring Connections, vol. 14 issue 2, Summer 2011

In my 2011 article, wildfire was at the forefront—with fires raging across the West, including parts of the Sky Island Region. As I write today, climate change is no less pressing. In fact all the evidence points to more rapid warming, increased storm intensity, and greater wildfire risk—but there are also clear and promising signs that species are finding ways to adapt.

Climate change often feels abstract, with the impacts occurring in places we only hear about on the news. But earlier this year, when a female pine flycatcher showed up in the Santa Rita Mountains near Tucson, the local impacts of climate change came into focus.

This was the first sighting in the United States of this small, energetic bird that makes its living hawking insects in forested habitat. This intrepid female, whose traditional range runs from northeastern Mexico through Guatemala, showed up early this summer at Aliso Spring, one of seven Adopt-a-Spring sites monitored by Sky Island Alliance. She spent the month of June building a nest—an unusual investment for a lone individual of a species.

Aliso Spring faces many current and potential threats, not least of which is that it sits in the same groundwater basin that would be severely depleted by the proposed Rosemont Mine. Yet, this little trailblazer of a bird found safe haven here. Sky Island Alliance is proud to have played a part in protecting this important resource. Through our springs inventory, monitoring, and restoration work, we are securing important habitat for the species that need it now—and for those we haven't even considered that might seek sanctuary in the future.



Female pine flycatcher (*Empidonax affinis*) at Aliso Spring
Photo credit: Jennie Duberstein

Spring supported habitats make up a tiny fraction of the regional landscape but provide unique and critical pockets of cool, wet respite for wildlife and plants, giving them a better chance to survive and adapt in an uncertain future.

The U.S.–Mexico border cuts through the heart of the Sky Islands on human maps, but birds, bears, coati, big cats, and all the other amazing residents—and ecosystems—of the region don’t recognize this political boundary.

As I wrote in 2011, Sky Island Alliance is not sitting by idly while habitat disappears and species are threatened. We have worked throughout our history to connect people and habitat—without regard for borders—and this work is more pressing than ever as wildlife and plants shift their ranges farther north and higher in elevation seeking suitable habitat. One of the initiatives we launched in 2011 was Adapting to a Changing Climate in the Sky Island Region. Through that initiative,

“Federal, tribal, state, and county agency personnel; academic and agency researchers; conservation organizations; and private landowners developed key strategies for addressing climate change, including solutions-oriented ways we can work together to ensure that the entire Sky Island Region is adequately protected.”

Restoring Connections, vol. 14 issue 2, Summer 2011

We are building on early results of this initiative in a number of ways: restoring watersheds that have suffered from severe fire to help them transition while providing food and cover

for wildlife; addressing pollinator habitat needs by restoring native flowering plants; mapping and working to protect the most important linkages for wildlife in a changing climate; and eliminating stressors not related to climate, such as harmful roads and invasive species.

In addition, we continue our work to identify and survey more sites like Aliso Spring, collecting data on locations, the amount of water available, seasonal changes to flow, and wildlife and plants present at the site to ensure we focus our restoration efforts at the most important springs.

As climate disruption continues to change our local environments and impact wildlife, one tangible thing we can do

is protect these safe and inviting habitats to give pioneers, like the pine flycatcher, a place to call home when they abandon warmer climes farther south or at lower elevations. This is our duty as citizens of this unique region.

You can help. Contact Conservation Coordinator Samantha Hammer at sami@skyislandalliance.org to join our Adopt-a-Spring program and monitor these magical sites throughout the year—you never know what might turn up! Or join us in the field for a volunteer work day or weekend camping and work trip. To discover opportunities, sign up for our volunteer emails or contact Restoration Director Carianne Campbell at carianne@skyislandalliance.org.

People, Place and History as Mediators of Climate Change

by Julia Fonseca, Environmental Planning Manager, Pima County Office of Conservation Science and Environmental Policy

Reprinted from Restoring Connections, vol. 14 issue 2, Summer 2011

The particularities of place, time and people can magnify or reduce the predicted effects of climate change. Our region can consider these factors in a more nuanced way, to lend greater understanding to predictions and more focus to the potential responses.

History matters

There’s hell to pay for past decades of groundwater pumping. The effects of groundwater pumping on geographically distant sites can take hundreds of years to manifest, even after the pumping ceases. This was brought home to me by work that we commissioned on the effects of the proposed Rosemont mine (see www.pima.gov/cmo/sdcp/reports/d51/rosemont.mine.groundwater.pdf, for an example).

Just because your spring or stream is not surrounded by wells or pumping in your area has ceased does not mean your site will remain unaffected. It may take hundreds of years for the effects to be transmitted. The effects of climate change are added on top. This kind of delayed change is not generally evaluated in permitting process, and there are almost no social or legal mechanisms for dealing with spatially and temporally distant impacts.

People matter

How people respond to climate change is one of the most important factors to consider. In the rural areas, land managers will likely seek greater reliability of flow into stock ponds and springs. As a region, we have a poor inventory of springs and other aquatic resources. Most springs are managed in some way, and many have been boxed or dredged in ways that have compromised their habitat values. An effort focused on inventory, conservation and restoration of spring-fed waters is needed for climatic adaptation,

especially in the Coronado National Forest, where the majority of these sites exist.

Place matters

Variation in habitat resulting from topographic diversity may be essential for persistence of biota in a future changing climate. Our region offers great diversity in topography and therefore microclimates. What is often overlooked is the even greater variation in substrate that we have in the Sky Island region. Soils and other substrates are what mediate changes in climate to the root systems of plants. Coarse-textured soils, caliche layers, clayey B horizons, and fissured bedrock all offer different conditions to plants and animals, independent of slope, aspect, and elevation.

Some substrates have been recognized already as providing important thermal or moisture refugia to plants or animals. Caliche caves for tortoises, talus and other rock piles for snails and herpetofauna, limestone outcrops for a variety of plants. These features are often too small to be captured in model studies, but should be critical resources for protecting species diversity, and included in inventories of resources for land management.

The diversity of rock and soil types should be considered in modeling studies. One U.S. Geological Survey study has already produced a startling understanding of how the particulars of substrate, vegetation and climate interact to affect water supplies. Much of the landscape does not contribute meaningfully to groundwater recharge, and even in the mountains there is huge variation in rates. Some mountain watersheds don’t create much excess runoff. Many of the places that do recharge the aquifer are underlain by Paleozoic limestones. This is the kind of information that can be useful in regional conservation and climatic adaptation strategies. Some places matter more, and for different functions.

VOLUNTEER Opportunities Await

Come explore the Sky Islands with us!

Volunteer opportunities are regularly posted on our website and via our volunteer email announcements.

Sign up Today!

Search upcoming events and sign up for our email newsletter at skyislandalliance.org.



To learn more about **Restoration Day-Trips and Weekend Camping Trips**

Contact Bryon at 520-624-7080 x27 or bryon@skyislandalliance.org



To learn more about **Wildlife Tracking or Camera Monitoring**

Contact Jessica 520-624-7080 x21 or jessica@skyislandalliance.org



To learn more about **Adopt-A-Spring Program**

Contact Sami 520-624-7080 x16 or sami@skyislandalliance.org

To learn more about **Volunteering in Mexico**

Contact Mirna 520-624-7080 x15 or mirna@skyislandalliance.org



Volunteering is for everyone. Pick your style!

Field Guide to



Karilyn
Communications Manager

Welcome Karilyn

It's been a summer of growth at Sky Island Alliance as we welcomed three new staff members, including Karilyn Roach as Communications Manager.

She'll use her passion for community building and promoting connections to our natural environment to present the story of our precious Sky Island landscapes, plants, and critters in a way that will inspire us all.

Karilyn holds an MS in Urban Planning from the University of Arizona and a BA in English Literature from San Francisco State University and has years of experience in nonprofit development and communications. We look forward to seeing our story told through new eyes—beginning with this very newsletter! When she's not working, you'll often spy Karilyn biking around Tucson, enjoying a nice cup of coffee at a local shop, or occasionally dancing in the rain!



Melissa
Development Coordinator

Bienvenue Melissa!

Melissa Mauzy is the newest addition to the Sky Island Alliance staff—but you may have seen her around or spoken to her on the phone already. She's been working on contract with us since the spring, and we were thrilled to lure her into a full-time position as Development Coordinator.

We will benefit greatly from Melissa's fundraising and community outreach skills, recently honed through her involvement with community radio, where she developed *Fathoming Water*, a podcast series that communicates nuanced water policy to the general public. In addition to working on our development team, Melissa will lend her talents to our important water policy program work.

With an MA in Geography, a Graduate Certificate in Water Policy, and a BS in Ecology and Evolutionary Biology, all from the University of Arizona, Melissa brings a lot to our team.

New Staff



Bernardo
Conservation Assistant

¡Bienvenidos a Bernie!

We are thrilled to introduce a new member of our conservation team, Bernardo "Bernie" Murrieta!

Bernie has just moved to Tucson from Hermosillo, Sonora, and will be a critical part of our fieldwork team. You'll find him out in the field on restoration workdays, conducting spring assessments in Sonora, Mexico, and assisting with Spanish translation tasks.

Bernie brings a wide variety of experience to SIA. He holds a Bachelor of Science in Biology from the University of Sonora, has worked as a paramedic for the Mexican Red Cross, and has extracted essential oils from plants to study their antimicrobial properties.



From the entire staff at Sky Island Alliance, we offer a hearty thank you to our founders for having the vision and perseverance to start this great work. Here's to the next 25 years!



Make a gift of support

www.skyislandalliance.org

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Tax ID #86-0796748

Back cover: The Desert Landscape Conservation Cooperative comprises agencies and organizations working together to address climate change and shared conservation priorities that are too big for any one entity to solve alone. Sky Island Alliance is a founding member, and Louise Misztal serves as Vice Chair of the Steering Committee and Principle Investigator to develop a climate-smart landscape conservation design for several pilot areas. This photo was taken at Coyote Spring, one of the few remaining healthy springs in the San Francisco Peaks near Flagstaff, AZ in July 2016.

Photo credit: Tahnee Robertson, Southwest Decision Resources

RESTORING CONNECTIONS



Partnership Spotlight
Desert Landscape Conservation Cooperative



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