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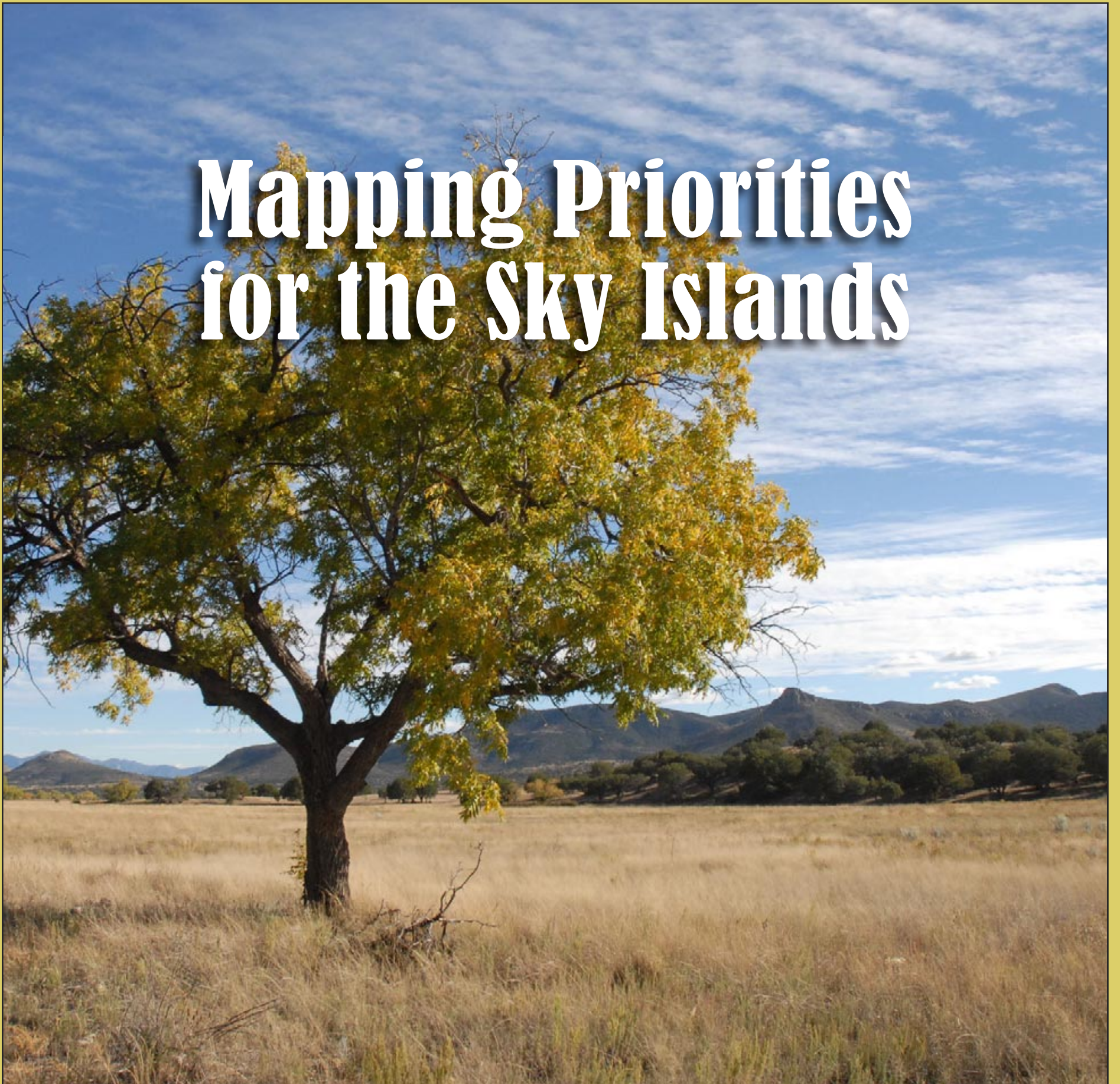
Protecting our Mountain Islands
and Desert Seas

Restoring Connections

Vol. 16 Issue 1 Spring 2013

Newsletter of Sky Island Alliance

Mapping Priorities for the Sky Islands



Our most ambitious landscape restoration project to date (see article page 17), Cloverdale Ciénega and Creek are returning to their natural state and can once again provide key habitat and linkages for species from Chiricahua leopard frogs to jaguars. *Photo courtesy Melanie Emerson*



Through the Director's Lens

by Melanie Emerson, Executive Director

This year, Sky Island Alliance staff and Board of Directors will craft our new multi-year Strategic Plan. Realizing the goals outlined in this Plan is the end game; but it's the process that will provide a critical forum for envisioning and naming the ambitious conservation gains we are seeking, and how we will get there. We go through this process every 4 to 5 years in order

to intensively think together about the most compelling conservation needs in our region and how to affect the greatest change with our modest resources.

We invest the time and expertise of all staff and our entire Board to ensure that the product of this effort is a living plan — one that will truly guide us as we integrate our efforts in protecting core habitat and wildlife linkages, cross-border and northern Mexico conservation, landscape and riparian restoration, climate change adaptation, policy, advocacy and science generation.

We will apply new tools for decision-making and visioning in this year's strategic planning process. One such tool is the analysis and maps derived from the Conservation Priorities project (see pages 10–11), conducted this past year by Sky Island Alliance staff. This region's unique matrix of conservation challenges — high biological diversity, ever-increasing conservation threats, and limited resources — requires spatial consideration as to where the organization should focus its efforts in order to be most effective. To better understand this, Sky Island Alliance* undertook a spatial prioritization process, inviting regional experts to help us map priority areas throughout the region. Louise Misztal, Sky Island Alliance's GIS Specialist and Conservation Policy Program Coordinator, took the lead in answering four critical questions: What are the highest priority (biological value) core habitat areas in our region? What are the highest priority (biological value) wildlife linkages in our region? What areas are in need of and have potential for restoration? In what places do we need to gather new science to better understand species, habitats and systems?

Sky Island Alliance believes in the need for large core protected natural areas that are connected by linkages to ensure long-term viability of wide-ranging species and ecosystem processes. We want to ensure we are taking conservation action in areas of highest priority in order to be as effective as possible with our limited resources.

Based on Sky Island Alliance's core conservation goals, Louise asked regional experts (with collectively hundreds of years of experience in U.S. and Mexican Sky Islands) to identify priority areas for both the protection and restoration of native species and their habitats, as well as for increasing our scientific knowledge of the region. Participants used interactive mapping techniques to draw areas of high priority and to provide information on the values and threats associated with each of those areas. This spatial prioritization approach drew on the knowledge of individuals familiar with the biological and ecological patterns and processes in the region,

and was especially key in collecting specific information from experts who had visited very remote locations for which no information existed in available datasets. The end result? A versatile final product that can be used to inform decisions about where and how to do conservation work, and to some extent, when.

Thus, we are able to focus conservation efforts on areas where there are overlapping priority areas for cores and linkages because they demonstrate biological importance in diverse ways. Other good places to focus attention and resources include areas where high value and high threat overlap: these areas are good candidates for strong conservation action to try and mitigate threats and keep the areas' biological characteristics intact. Areas of high priority that showed low threat level may be good areas to focus longer-term, proactive work

to get protective designations or other special management in place before these areas become threatened.

Additional products of this prioritization effort include mapped areas — of medium, high, and very high priority for cores, linkages, restoration, and science — based on conservation values and threats, as well as an interactive map tool. These products and additional analyses that Louise conducted (as part of her thesis for her Masters in GIS Technology at The University of Arizona... go Louise!) will be a key foundation for Sky Island Alliance's strategic planning process this summer. These tools provide Sky Island Alliance with an opportunity for a more proactive and systematic approach to conservation work; we also will make them publicly available so that anyone interested can view and utilize the outcomes.

While the strategic planning retreat will be a time for staff and Board to think together, our planning will benefit from and be undergirded by the expert opinions of a diversity of scientists from across the region. I look forward to the strategic planning process and the opportunity to incorporate the knowledge and wisdom of so many partners into our vision for the future. Stay on the lookout for news on our new Strategic Plan in early 2014!

** I want to thank all the Sky Island Alliance staff who were personally invested in ensuring this project's success, particularly Louise Misztal and Nick Deyo. I also would like to thank all of our staff, Board members and partners who provided thoughtful and expert input.*

Be a GEM: Give Every Month
Every dollar adds up... more than you know!
Donate just \$10, \$15, or \$20 a month:
Monthly gifts translate into real conservation gains for the Sky Islands.

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To start giving monthly, please call Keri at 520.624.7080 x15 or click on the DONATE NOW button at www.skyislandalliance.org

A Fresh Perspective *by Julie St. John, Editor*

When I got up just before dawn this morning, I could not believe my eyes: snow had congregated in my yard overnight like dustbunnies under my sofa, my four-wing saltbush was keeled over in thespian agony with the unexpected weight, and a beautiful rosy sunrise cast a cotton-candy pink glow on the Catalinas. What a gift!

It really is all about perspective, isn't it? My college friends in Illinois send smirk-filled replies when I send them photos of snow or even of rain. But they don't live here, do they? I was just talking with a dear friend here in Tucson who knows how important these moments are... especially to those of us who spend too much time sitting indoors staring at (or worse, arguing with) a computer screen when we'd rather be outside. She looks outside and says "Mountains... Mountains... Mountains..." It's her mantra... her way of maintaining perspective.

When Sky Island Alliance invited regional experts to help us literally map the areas most essential for our future work (*see Mapping Conservation Priorities, pages 10–11*), it was because we wanted to be incorporate perspectives outside of the organization. With Louise Misztal's subsequent analysis (as part of her Master's Degree in GIS), we now have an amazing tool for Sky Island Alliance's next Strategic Plan.

This issue of *Restoring Connections* also features the perspectives of former Executive Directors David Hodges (*see Sierra San Luis, page 15*) and Matt Skroch (*see Tumacacori Highlands, page 5*), as well as former Landscape Restoration Program Manager Trevor Hare (*see Restoration of Cloverdale,*



It takes two to set a wildlife camera: Linkages volunteer Leslie Sellgren (left) and Wildlife Linkages Program Coordinator Jessica Moreno (right) work on finding the perfect angle for this motion-activated camera. Courtesy Jim Chumbley

page 17), GEM donor/volunteer/former staff Caroline Patrick (*see page 6*), two inspiring volunteers (*see Meagan Bethel, page 18, and Jim Chumbley, page 19*), and Board Treasurer Howard Frederick (*see Ruby, page 5*).

We've also pulled together a variety of perspectives on some of Sky Island landscapes that are rising to the top in terms of priority. In the Tumacacori–Esmeralda–Santa Rita complex (*see map page 7*) we have impressive bullfrog eradication successes (*see page 4*), the call to get the Tumacacori Highlands designated as Wilderness (*see page 5*), and restoration of neotropical bird habitat in northern Mexico (*see page 7*), as

well as Jenny Neeley's report of a new border road west of Nogales (*see page 7*). In the greater Ciénega Creek Watershed (*see map page 12*), we have two stories (*see page 9*) on local fights to prevent the copper mine at Rosemont and a number of hard rock mines in the Patagonia Mountains, our spring assessment project (*see page 12*), and the rapid spread of Lehmann lovegrass (*see page 13*). In the Sierra San Luis complex (*see map and article, page 15*), there are wildlands advocate John Davis' TrekWest (*see page 14*) and Trevor Hare's report on the restoration of Cloverdale Ciénega and Creek (*see page 17*). Last but not least, we have two articles that span the entire Sky Island region — the future of jaguars in the United States (*see page 8*) and the folly of the border wall (*see page 16*).

Protect, connect, restore — no matter which is nearest and dearest to your heart — there have been a lot of important achievements through Sky Island Alliance's twenty-plus years... and there's still so much more we have yet to envision, accomplish, and celebrate. Please join us!



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Adrián Quijada

It's a Frog-Eat-Frog World: Bullfrog Eradication Efforts in Southern Arizona

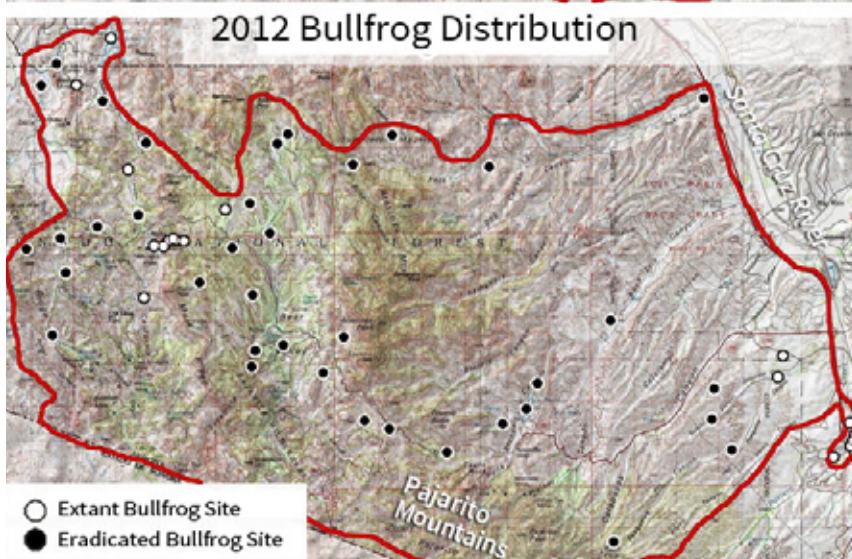
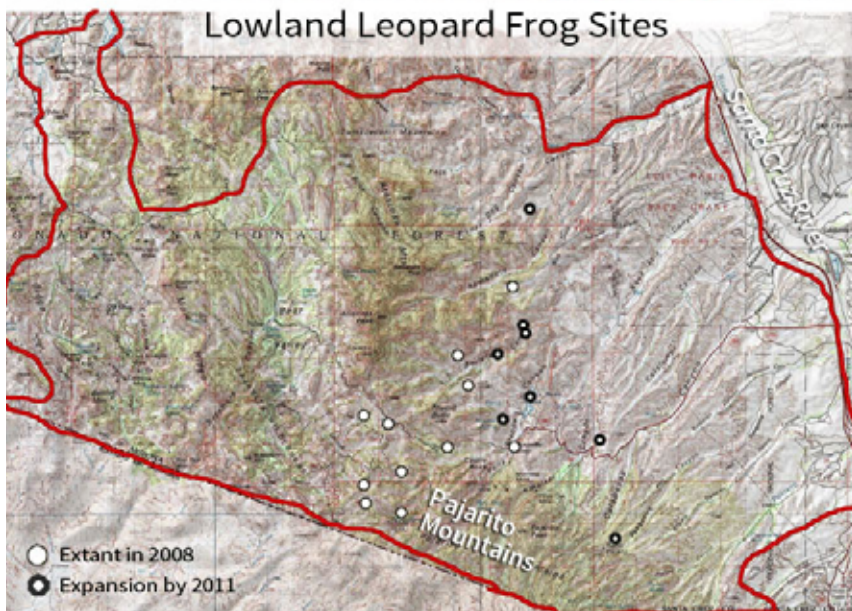
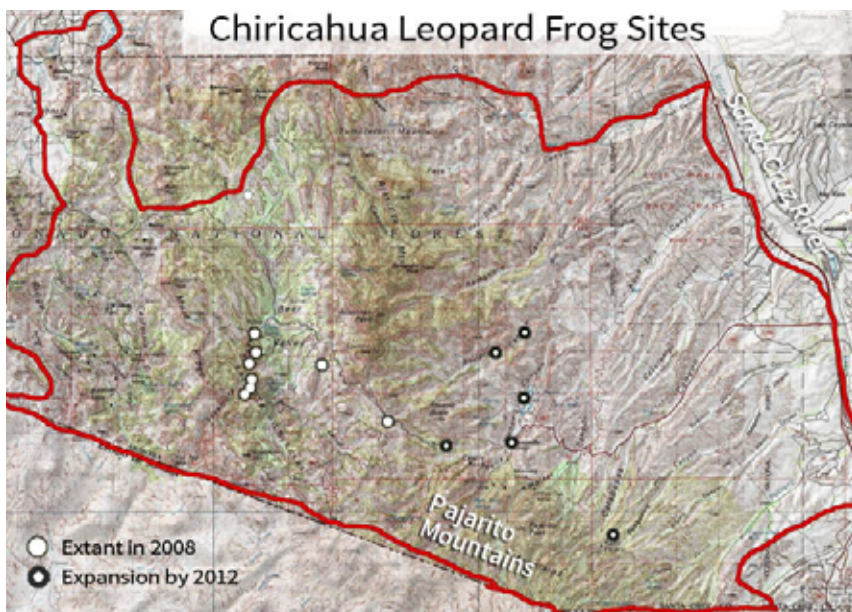
by Christopher Morris, Landscape Restoration Program
Conservation Assistant

Let's just cut to the chase: the bullfrog is an amazing animal. It is incredibly efficient at colonizing aquatic ecosystems nearly everywhere it has been transplanted and the sky is the limit, as many a thwarted biologist could attest. A single, egg-laden (gravid) female has the ability to lay as many as 20,000 eggs annually. If you are a mouse, a bird, a bat; even a turtle or another bullfrog, you'd do well to keep your distance. The capture behavior of this animal conjures up images of a vacuum cleaner; especially if the vacuum cleaner combines small, grasping teeth, the maw of a cargo plane and Popeye forearms to help stuff in the prey (just in case there's a little extra still sticking out). The issue that biologists in Arizona (and many other western states) have with the bullfrog is the havoc it wreaks on the ecological balance of wetlands. Our native animals did not evolve with the bullfrog as a predator — it is originally from the eastern half of North America — and they do not have the ability to hold their own against it.

The Chiricahua leopard frog — found at elevations of 1,000m to 2,700m in Arizona, New Mexico and northern Mexico — is one of those native species. Threats such as habitat loss, disease and the spread of non-native animals like bullfrogs and crayfish have combined to severely limit the distribution of the species, estimated to currently occupy less than 20% of its historical localities. These alarming figures have it listed as *Threatened* under the Endangered Species Act. Here in the Sky Islands, efforts are underway to bolster its numbers via a consortium of stakeholders: Arizona Game and Fish Department, the US Fish and Wildlife Service, The University of Arizona, the Phoenix Zoo and the US Forest Service. Sky Island Alliance has been part of this consortium for more than ten years, and has been most recently focusing in the Pajarito and Atascosa Mountains near Ruby, AZ west of Nogales. By focusing on a larger, landscape-wide eradication model and studying bullfrog dispersal distances, progress is being made. Like clockwork, researchers have found that as waters are cleared of bullfrogs, the native leopard frogs (both Chiricahua and lowland) slowly recolonize those sites.

In 2012, 37 volunteers joined staff on survey and active eradication work near Ruby over the course of 13 field days. All told, we removed an estimated 6,000 bullfrogs from area water sources and will be continuing our efforts in 2013 working closely with biologist David Hall. One of those most interested in finding the deep water hideouts for bullfrogs, Hall has spent many a day since 1998 scouring every backcountry pool, stock tank and pond possible in southern Arizona to add to the understanding of the scope of the invasion. After a fair amount of trial and error, he and his colleagues have a solid grasp of the bullfrog's developmental cycle and are exploiting this knowledge to their advantage. Currently, Eagle Lake is a top priority in eliminating bullfrogs from the region, but large source populations still remain in nearby Arivaca Lake and also at the San Bernardino National Wildlife Refuge. If eradication efforts are successful in getting the populations down to sufficiently low levels through seining, gigging and other removal methods, then pressure from predators like herons, snakes and raccoons might be enough to make them crash, clearing the way for native frogs to rebound. I've seen gray fox, osprey and skunk near Ruby and each one of them is capable of playing their part as well. Considering that the bullfrog can weigh over a pound and a half though, these critters would be wise not to dawdle.

It is heartening to see how our native frogs (top two maps) are rebounding as bullfrogs are eradicated. And as for the bottom map, those black dots are worth a thousand words... and are the result of many volunteer weekends! The photo (left) shows volunteers using nets to remove bullfrogs during a field weekend near Buenos Aires National Wildlife Refuge. Map by David Hall



Cross the Finish Line: Designate Tumacacori Highlands as Wilderness

by Matt Skroch, Senior Associate, The Pew Charitable Trusts

Not long after the first time the famed jaguar, Macho B, stepped out of the shadows and into the view of a trail camera, Sky Island Alliance began devising a strategy to protect the wildlands that were his home. In 2002, we sat around a dining room table west of Amado with landowners and area residents discussing the idea of wilderness protection for the Tumacacori Highlands.

We acknowledged several things at the time; the Highlands were the largest remaining unprotected roadless area in Arizona's national forest lands, these mountains and valleys west of I-19 and south of Arivaca Road hosted the most biologically diverse land in the western U.S., and conservation-minded Congressman Raúl Grijalva had just been elected to Congress and would represent the area. Do the math and the opportunity was obvious, while clear threats prompted swift action. Road inventories showed a troubling trend with fragmentation in the area, particularly in the western portions of the Coronado National Forest which encompassed the proposed wilderness area. Then in 2003, Tucson Electric Power announced their plan to build a high capacity powerline directly through the Tumacacori Highlands, with little if any benefit to the local communities nearby. Local folks — rural folks — didn't support the powerline, nor did most of the business community in the Santa Cruz River Valley despite TEP's scheme to avoid their viewshed by planting the line in the middle of... the proposed wilderness.

The next year went by as the dual strategy played out — defeating the powerline proposal while promoting the much-needed wilderness. Hundreds of local businesses joined the cause. Then-Governor Napolitano threw her support behind the wilderness idea, and former Governor and Secretary of the Interior Bruce Babbitt hiked to Atascosa Lookout to proclaim the importance of preserving this sliver of heaven called the Tumacacori Highlands. Congressman Grijalva called the initiative his top environmental priority as conservationists and concerned citizens worked their butts off to usher the proposal through Congress.

Then the other shoe dropped. Border enforcement and immigration issues blew up in 2004. Almost 500,000 people were apprehended in the Tucson Sector that year, of which the Tumacacori Highlands is a part. Congress was stuck in the mud, as it is now, unable to figure out fact from fiction or act in any rational way, and the Tumacacori Highlands got stuck right along with it. In a Congressional hearing on the wilderness legislation in which I provided testimony,

wilderness opponents showed up with photos of areas strewn with trash and fanciful maps of drug smuggler routes through the area. Despite the photos having been taken somewhere else and the "drug corridors" completely fabricated, the mold had been cast. Wilderness in the Tumacacori Highlands wasn't going anywhere, despite Congressman Grijalva's and his supporters tireless work.

The silver lining? The powerline proposal went nowhere. If one thought designating wilderness was bad for border enforcement, conjure up what a devegetated strip of land with lighted powerline towers and a north-south access road headed straight up from the border would suggest. That, and unlike the proposed wilderness, nobody actually wanted the powerline. TEP walked away. People like Marshall Magruder and Bill and Ellie Kurtz, among many others, deserve recognition for saving the Tumacacori Highlands from that powerline.

Here are the most important points of this story: One, the Tumacacori Highlands are still there. Yes, there's been a few areas impacted over the years from border enforcement and off-road vehicles, but the core of the 85,000-acre area remains intact. It's wild country, and the 2011 Murphy Complex fire treated it well, aside from melting the famed Atascosa Lookout into a ball of metal and ash. Two, with border apprehensions in the Tucson Sector at their lowest point since 1992, the "border issue" should no longer keep a sound proposal like the Tumacacori Highlands hostage. The reality was and remains that wilderness in this magnificent area would not affect border enforcement; and



Wilderness protection for the Tumacacori Highlands will ensure that the rich diversity of plant and animal life in our region will continue to have refuge here.

perhaps now we're beyond the initial phase of hysteria and can see the initiative for what it is — a prudent step in the direction of conserving one of Arizona's most important natural areas.

Today, the Tumacacori Highlands remain the largest unprotected roadless area on Arizona's national forest lands. They still harbor an amazing assemblage of the state's natural heritage. And, Congressman Grijalva still sits in Congress as a representative of the area. Opportunity knocks. Grijalva has not forgotten the merits of the initiative. We haven't forgotten either. The time is near. The time is right. Let's protect the Tumacacori Highlands so that next time a jaguar lopes across that border, its home will be wilderness.

Matt Skroch's seven years with SIA stretched from leading fieldwork to leading the organization.

A Gem in the Tumacacoris by Howard Frederick, SIA Board

Ruby is a mining ghost town 50 miles southwest of Tucson, 4 miles north of the Mexico border, and surrounded by the Coronado National Forest. The area's elevation of 4,200 feet supports both desert plants and range grasses along with mesquite, walnut and oak trees. While rough terrain and low rainfall have not lent themselves to agricultural development over the years, the area's high mineral content has attracted prospectors for centuries.

Today, Ruby is owned by a group of families, including my own, interested in maintaining the remaining buildings, restoring habitat, and making the town available as a recreation destination; its abandoned mine shafts are home to a colony of up to 150,000 Mexican free-tailed bats each May through September. Mountain lion tracks are seen regularly, and in the fall of 2001, there was a documented deer kill by a mountain lion on the sand near the lower lake. Several years ago, there were stories of a Mexican wolf being heard south of Ruby, although this has never been verified. In 2005 however, there were confirmed sightings of Macho B, a jaguar, in mountains east of Ruby and this magnificent cat's presence was documented here several times before his untimely death. In 2009, we started working with biologists and volunteers from Sky Island Alliance to understand in greater detail Ruby's potential as a wildlife refuge. Ruby is listed on the National Register of Historic Places and has established a non-profit entity, the Ruby Mines Restoration Project, for preserving buildings, history, and habitat.

GEMs Help Sky Island Alliance Accomplish More

by Keri Dixon with Caroline Patrick

What's a GEM? It's the new name for our monthly donors — **Sky Island GEMs** (Giving Every Month) — and we look forward to welcoming you to the group. In 2012, 27 members became GEMs — including this issue's featured member — Caroline Patrick. We would like to thank each and every one of you for your commitment to wildlife and wild places.

Monthly giving provides a steady and cost-effective source of income to Sky Island Alliance. Because your monthly donation is processed automatically, you help us reduce our costs—which allows us to spend your dollars directly on protecting wild places and habitat for our native critters and plants!

It's so easy to become a monthly donor — a simple one-time registration with your debit or credit card — either online via www.skyislandalliance.org or by calling Keri at 520.624.7080 x15. **You can change or stop your pledge at any time** — just by contacting us.

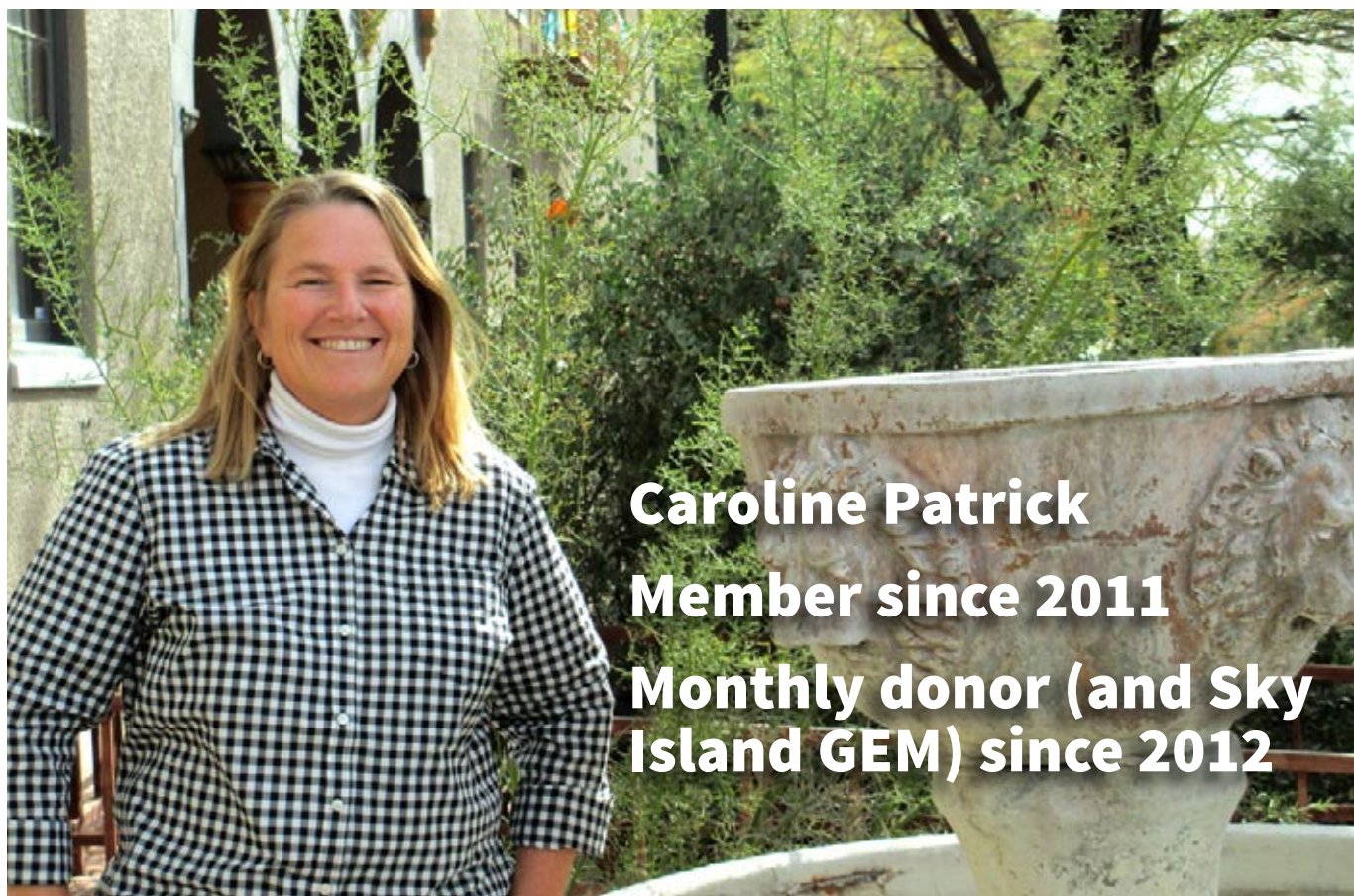
As a Sky Island GEM, your monthly gift works hard:

\$12 A MONTH (40¢ per day) provides critical support for our citizen science efforts, engaging people from all walks of life to learn about and appreciate the natural beauty of our region—and helps build a body of scientific data that will help Sky Island Alliance protect it.

\$30 A MONTH (\$1.00 per day) helps establish protected areas on both private and government-managed public lands. Your gifts help conserve biodiversity and allow large tracts of land for habitat and migration—necessary for everything from plants to top predators—especially in the face of threats like drought and fire.

\$75 A MONTH (\$2.50 per day) protects our regional treasures from land and water grabs, bad mining proposals, wildcat roads and other challenges that we must fight to keep our connected landscapes and wildlife habitat intact.

Thank you, Caroline and ALL our current Sky Island GEMs: We couldn't do it without you!



Caroline Patrick
Member since 2011
Monthly donor (and Sky Island GEM) since 2012

How it all started...

I have lived in Tucson since 1996, and the Sky Islands (although I didn't know that term back then) were a key reason for moving here. I wanted to live and raise my son in a place with beauty and diversity (both ecological and cultural) and southern Arizona has an abundance of both! I've also been a bird lover for many years, and was drawn to the region for the incredible richness of bird watching locations and opportunities.

I became familiar with Sky Island Alliance in 2008 when I started volunteering with the Tucson Audubon Society, which is also housed at The Historic Y. Then the stars seemed to align when I met Melanie Emerson in the Audubon Nature Shop and she told me about a number of ways I might become involved. From there, I have enjoyed a wonderful assortment of associations with Sky Island Alliance, including a 6-month internship while I was completing my Masters in GIS, working with SIA staff to help map the DHS infrastructure along the US/Mexico border.

Picking favorites...

For birding and hiking, there's almost no place I would rather be than along the San Pedro River. However, as far as favorite places in the region go, the Mexican Sky Islands

fascinate me. I joined the Madrean Archipelago Biodiversity Assessment expedition in 2010, visiting the Ciénega Saracachi and Sierra San Antonio. I spent much of the expedition gasping at the astonishing beauty of the area—and I appreciate the important work Sky Island Alliance is doing to protect it.

Staying connected...

There are several things that motivate me to stay engaged. First, I appreciate Sky Island Alliance's focus on protecting where *I* live and the environment *I* cherish. And, philosophically I agree with the organization's missions and actions. Finally, I have gotten to know everyone on staff quite well, and I respect the commitment each person has toward the conservation of this special region. If they are willing to give so much of themselves, the least I can do is contribute my own time and money as often as possible.

About me...

When I am not volunteering for Sky Island Alliance, or at my desk down the hall from them, at Happy Desert GIS Analysis and Environmental Consulting, I enjoy hiking, swimming, and exploring new places. I am also passionate about buffelgrass removal, and organize removal projects 1-2 times each month.

For the Birds – Habitat Restoration in Northern Mexico

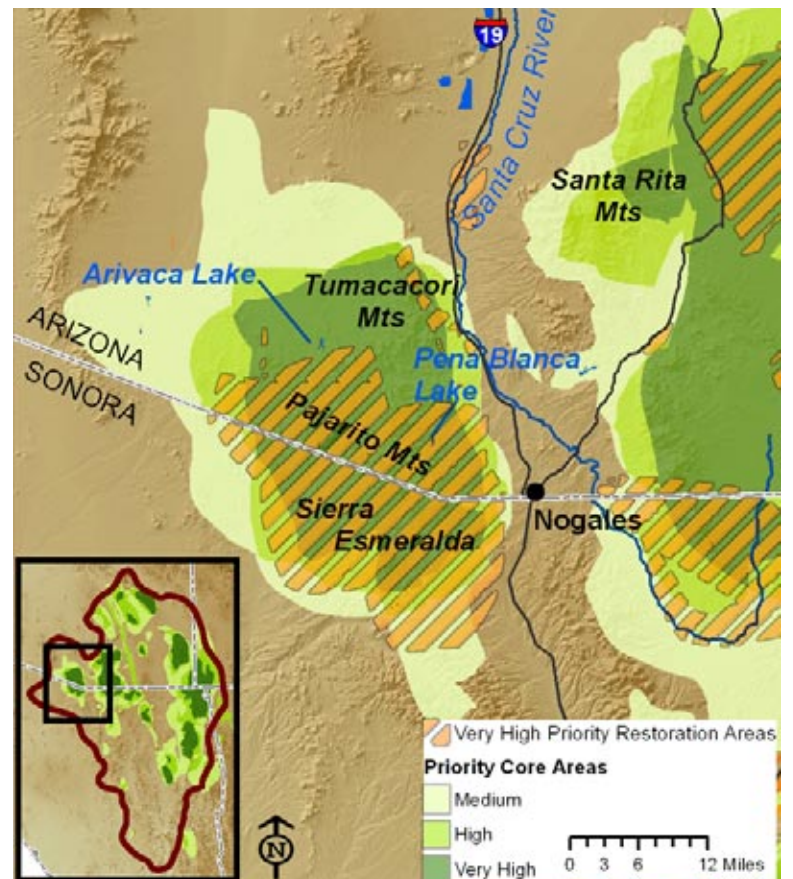
by Sergio Avila, Northern Mexico Conservation Program Manager, and Christopher Morris, Landscape Restoration Program Conservation Assistant

Sky Island Alliance has long worked to protect and restore core habitat, increasing resilience to climate change through the safeguarding of open space and improving wildlife permeability across the region. It is important to remember, however, that our feathered friends of the Sky Islands, some of which migrate thousands of miles twice a year, need a little help now and then too. Fortunately, our proven track record and strong ties south of the border have allowed us to cooperate with the US Fish and Wildlife Service to improve habitat for these long-ranging animals, the Neotropical migratory birds.

Simply put, close to 200 species of birds including various tanagers, warblers and hawks, disperse throughout the U.S. and Canada for the summer months to breed after having spent the winter months in warmer climes where there's less competition for resources. According to the Neotropical Bird Center, "Neotropical migratory birds are Western Hemisphere species in which the **majority** of individuals breeds north of the Tropic of Cancer and winters south of that same latitude." (The Tropic of Cancer, a line of latitude 23 degrees north of the equator, marks the northern extent of the tropics). We're collaborating with Sonoran ranchers to ensure that the birds' overwintering grounds afford them ample protection.

Partnering with the University of Montana on this multi-year neotropical migratory bird habitat restoration project in northern Mexico, Sky Island Alliance works to build erosion-control structures, erect exclusionary fencing for livestock and revegetate banks with native trees along approximately 15 miles of riparian habitat. During this project we collect baseline data on fauna (principally birds), vegetation, and geomorphology before the application of restoration treatments, enabling us to evaluate restoration effectiveness and improve future efforts. Restoration projects like this also allow us to join forces with regional restoration experts in order to train landowners, volunteers, partners, and agency personnel in methods to assess and restore riparian areas.

Our work sites are located in partnering lands throughout northern Sonora including Sierra La Esmeralda and Sierra Cibuta on the western edge of the Sky Island region, the Río Cocóspera-Aribabi at the base of the Sierra Azul, and the Río Santa Cruz area where landowners and *ejidatarios* have close to a decade's experience partnering with conservation groups on restoration and environmental action.



Mapping restoration and core habitat protection priorities in the Tumacacori-Sierra Esmeralda-Santa Rita complex. Map by Louise Misztal

Habitat improvement for riparian ecosystems is not only "for the birds" but for the myriad other species that call this region home. In 2013, we look forward to implementing restoration action on the ground in Sonora and elsewhere with the help of volunteers and landowners, monitoring the effects of these actions on wildlife populations, and including dozens of interested community members from Mexico and the U.S. in the learning process.

Border Road-building Continues under REAL ID Waiver

by Jenny Neeley, Conservation Policy Director & Legal Counsel

The 2005 Real ID Act granted unprecedented power to the Secretary of Homeland Security to unilaterally waive any law in order to build walls, roads, and other infrastructure along the border. Seven years later, the U.S. Department of Homeland Security (DHS) continues to build infrastructure without complying with important laws that protect clean air, clean water, wildlife habitat, historic sites, and religious freedom.

The Obama Administration has not yet invoked any new waivers under the REAL ID Act. However, DHS is currently using an existing waiver issued by the Bush Administration in 2008 to carve a new road north of the border in the Pajaritos west of Nogales. This road is being built outside of requirements of the National Environmental Policy Act, the Wilderness Act, the Endangered Species Act, and over 30 other laws that were permanently waived along the Arizona border in 2008.



New Border Patrol road west of Nogales, Arizona. Courtesy Louise Misztal and Andy Bennett

This construction has proceeded outside of established regulations that, among other things, are specifically designed to protect watersheds, prevent erosion, and ensure other ecological processes function properly, and this will inevitably lead to severe damage that could have otherwise been easily avoided, at great cost to the taxpayers and to the environment.

Despite the unprecedented and sweeping waiver authority granted to DHS in the REAL ID Act, the U.S. Congress has yet to repeal this unnecessary and dangerous power. Sky Island Alliance continues to monitor harmful agency activities and work with affected communities and our Congressional representatives to bring back the rule of law along the border.

Jaguars in America: Current Monitoring Efforts, Protective Designations and Conservation Challenges

by Sergio Avila, Northern Mexico Conservation Program Manager

The Endangered Species Act defines the term “conservation” as “the use of all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.” These methods include developing a long-term, science-based recovery plan, as well as designating habitat considered critical to the recovery of the species.

The U.S. Fish and Wildlife Service (USFWS) has initiated both of these processes for the endangered jaguar, agreeing in January 2010 to develop a science-based jaguar recovery plan, and releasing a proposed critical habitat designation in August 2012. Sky Island Alliance strongly supports these efforts, and we have shared jaguar records collected in Sonora and other relevant data to assist the USFWS.

In 2012, The University of Arizona initiated a study that will provide valuable information for jaguar recovery. The goals of the study are to photograph and identify individual jaguars through the use of remote cameras, collect scat for genetic analyses, and develop a distribution model

in coordination with the Jaguar Recovery Team. The study area encompasses the Sky Island portion of Arizona and New Mexico, extending from the top of the Baboquivari Mountains in southern Arizona to the Animas Mountains in southwestern New Mexico. This three-year study is funded by the USFWS with mitigation funds provided by the U.S. Department of Homeland Security.

The project has yielded early and exciting results, collecting several photographs of a jaguar in the Santa Rita Mountains southeast of Tucson. Similarly, photos of jaguars taken by hunters in the region continue to surface, increasing the number of sightings in the region. Jaguars continue to ignore political borders, recognizing instead healthy habitats, prey populations and safe corridors; Macho B's long life in the borderlands is testament of these habitat characteristics.

Unfortunately, because of the severe, growing and cumulative effects of climate change, maintaining viable and connected habitat in the U.S. is going to become even more important for the northern



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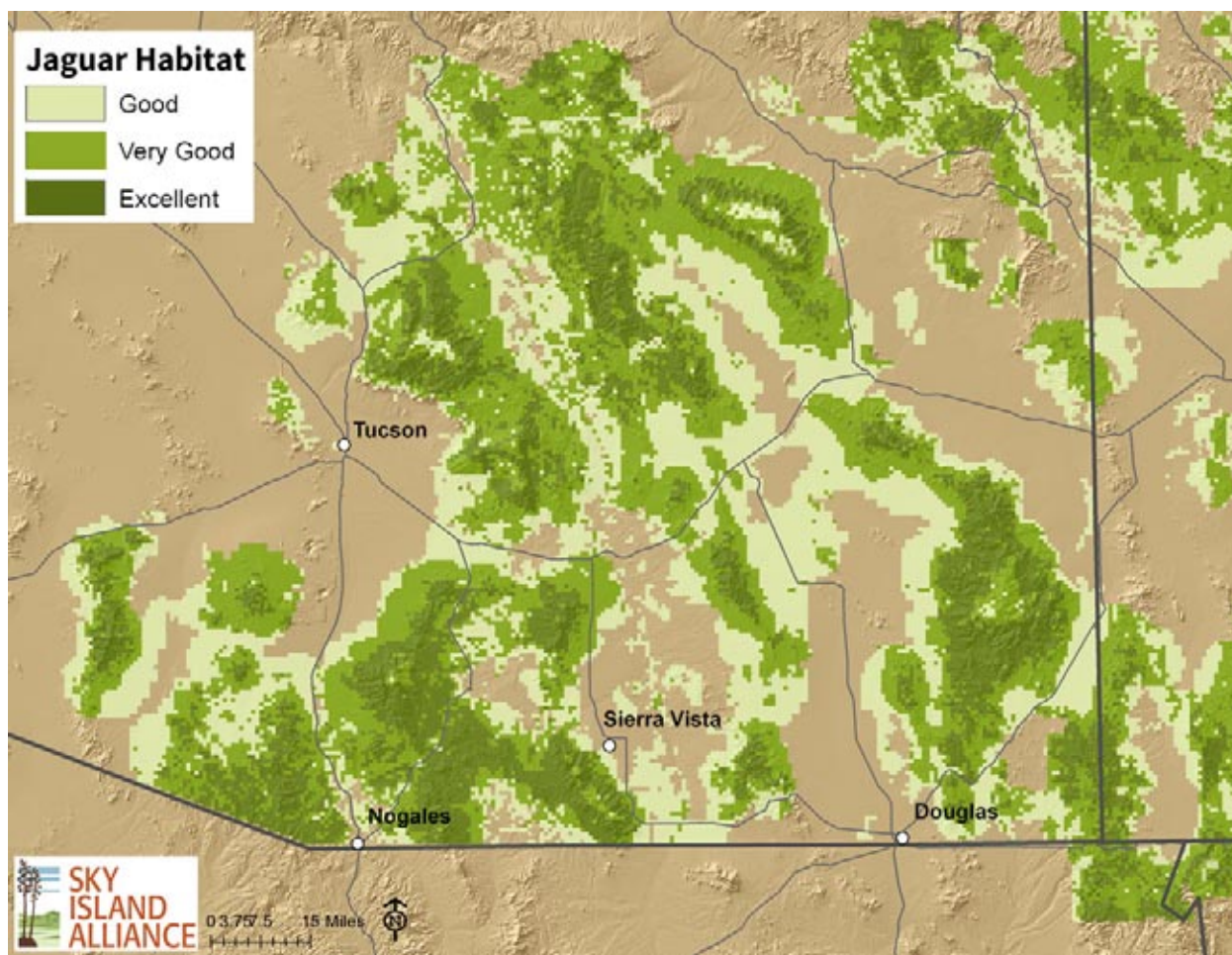
Male jaguar photographed by automatic wildlife cameras in the Santa Rita Mountains on December 31, 2012, as part of a US Fish and Wildlife Service/Department of Homeland Security-funded jaguar and ocelot survey conducted by University of Arizona. One of three photos taken the same night in two different locations. ©USFWS/UA/DHS

jaguar population. The best scientific information clearly points to the need to maintain landscape connectivity and overall resilience to facilitate the migration of native species and expansion of new suitable habitat in order to allow species to adapt to the growing impacts of climate change in this region.

At the same time, extensive buildup of border security infrastructure over the last decade has significantly compromised the cross-border connectivity of the Sky Island landscape. Sadly, much of the damage done by the construction of border infrastructure could have been avoided or minimized simply by complying with existing laws that govern such activities; instead, dozens of federal laws, including the Endangered Species Act, have been permanently waived along the U.S.-Mexico border in order to speed construction of border barriers and roads (see REAL ID Waiver article page 7).

We commend the USFWS for moving forward on jaguar recovery planning informed by the best available science, supporting non-invasive research, and developing a critical habitat proposal. However, in light of the growing impacts of climate change as well as the fact that the USFWS has no say whether connectivity into Mexico is actually maintained for the benefit of the jaguar, the final critical habitat designation must be far more expansive than originally proposed in order to ensure conservation of the species.

There is no doubt that the U.S. portion of the jaguar's habitat is essential to the survival and recovery of the species. SIA has provided the USFWS with specific, science-based recommendations that will greatly improve the proposed critical habitat designation, and we look forward to seeing more results from the UA study, which, if the early results are any indication, will continue to highlight the importance of the Sky Island region in jaguar recovery.



Important Jaguar Habitat in the US portion of the Sky Island Region. Map by Louise Misztal

Patagonia Group Stands up to Hard Rock Mining Proposals

by Wendy Russell, Patagonia Area Resource Alliance (PARA)

Visit the small town of Patagonia near Arizona's southern border and the first thing you'll notice is Red Mountain, the most prominent peak of the Patagonia Mountain range. Red Mountain and the rest of the Patagonia Mountains contain an amazing array of native plant and wildlife species and even more extraordinary landscapes. There's more biodiversity here than in Yellowstone National Park! The town of Patagonia, nestled at the base of the mountains, is the perfect launching-off point for a wide variety of outdoor recreational activities including hiking the Arizona Trail, mountain biking, and world-class bird-watching. The community relies on this eco-tourism as well as the tourists that come to town just to enjoy our locally-owned restaurants, galleries and shops.

Unfortunately, our community and the Patagonia Mountains are immediately threatened by several hard rock mining proposals that would have severe and permanent impacts to this important Sky Island mountain range and the town of Patagonia. The mining claims encompass most of the Patagonia Mountains, including Red Mountain and the Arizona Trail. They even go right up to the southern edge of town. These mining proposals would destroy valuable wildlife habitat and would cut critical wildlife migration corridors. The mining activities would use vast quantities of water. We fear that they would lower the water table, reduce the water available to the town and even dry up private wells resulting in dire impacts to the vegetation, wildlife and townspeople.

In response to these threats, the Patagonia Area Resource Alliance and the community of Patagonia is working with Sky Island Alliance to advocate for the watersheds and natural and cultural resources of the Patagonia Mountains. Through a grant awarded from the outdoor clothing and gear company, Patagonia®, PARA and SIA are organizing training workshops to encourage Patagonia area residents to identify and collect information that highlights the extraordinary biological richness of the Patagonia Mountains. We will use that information to effectively advocate for the protection of this cherished mountain range.

Sky Island Alliance is lending us its expertise in many ways, including training Patagonia-area volunteers to play a key role in inventorying and documenting mammals, birds, bats, plants and more. SIA and PARA will also team with regional experts and other partners to conduct springs assessments, non-invasive wildlife monitoring, and road inventories for a better understanding of our

area's resources. To utilize this information as effectively as possible, PARA will work closely with SIA throughout this project to launch a community-engaged and science-based advocacy campaign. This campaign will empower and build capacity within our community to promote the protection of the Patagonia area and halt current mining proposals.

These efforts will enable the community of Patagonia to effectively respond to the numerous exploratory drilling and mining proposals slated for this fragile area. It will also ensure that we are well-positioned to repel any future proposals by promoting the protection of this special place and



For now it's a fragile peace in the Patagonia Mountains. © Sky Island Alliance

the plants, animals and people who call Patagonia home.

The Patagonia community, PARA and SIA are gearing up to make a difference! With support from Patagonia® Inc, we will protect and preserve our exceptional Patagonia Mountains, the home to diverse wildlife and plant species, extraordinary landscapes and our community of amazing people.



Rosemont Mine is By No Means "Approved"

by Gayle Hartmann, President, Save the Scenic Santa Ritas

At a media event in November 2012, Coronado Forest Supervisor Jim Upchurch said he does not know when he will be issuing a Final Environmental Impact Statement (EIS) for the proposed Rosemont Mine in the Santa Rita Mountains, nor does he know yet if the Forest Service will prepare a Supplemental or new EIS.

Supervisor Upchurch re-emphasized the complexity of the project and said that the Forest still needs more information related to the mine's impacts, including likely impacts to air quality, endangered species, cultural resources, and lighting, as well as the changes made to the mining plan since the Draft EIS was issued in the Fall of 2011.

Importantly, even if the Forest Service issues a Final EIS, the project is by no means "approved." The U.S. Army Corps of Engineers still must analyze the impacts of "dredging and filling" on the watershed of Cienega Creek and Davidson Canyon. These streams are both designated as "Outstanding Waters" by the state of Arizona and as such their water quality cannot be degraded.

Considering that Rosemont proposes to bury 4,000 acres of the eastern slopes of the Santa Rita Mountains under mine tailings and 70-foot high waste piles, the toxic impact on downstream waters seems obvious, making Rosemont's chances of receiving its necessary permit under the Clean Water Act slim at best.

The most exciting news surrounding Rosemont is the release of motion-capture camera photos of at least one endangered jaguar on lands immediately adjacent to the proposed mine (*see previous page for more about the research project that captured these photos*). Under the Endangered Species Act, Rosemont must ensure that the mine will not adversely modify critical habitat for this species. However, the proposed mine sits inside the boundaries of newly proposed jaguar critical habitat, and is located in an area now known to be used by at least one individual jaguar.

It speaks volumes that the mine is the only project planned within jaguar habitat that was specifically called out as problematic by the US Fish and Wildlife Service, and considering the massive and irreversible damage this mine is likely to inflict on jaguar habitat, there is good reason for that.

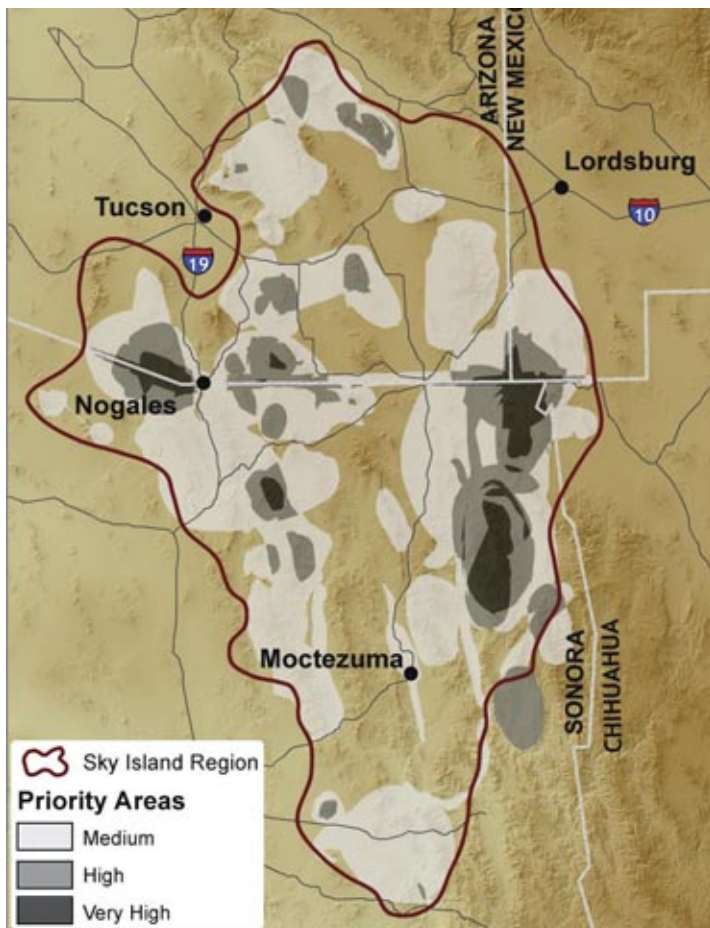
This fight is far from over. Sky Island Alliance continues to work with Save the Scenic Santa Ritas and many others from around the region to oppose this harmful and destructive project, and protect this treasured Sky Island jewel from needless destruction.

Mapping Conservation Priorities in the Sky Island Region

Maps and text by Louise Misztal, Conservation Policy Program Coordinator

Why Prioritize

The Sky Island region encompasses approximately 22 million acres and is recognized as a biological diversity hotspot of global significance. Neither biological diversity nor threats to it are distributed evenly across the landscape, and conservation actions taken in different locations will have different effects on biological diversity and threats. SIA believes in the need for large core protected natural areas that are connected by linkages to ensure long-term viability of wide-ranging species and ecosystem processes. We want to ensure we are taking conservation action in areas of highest priority in order to be as effective as possible with our limited resources.



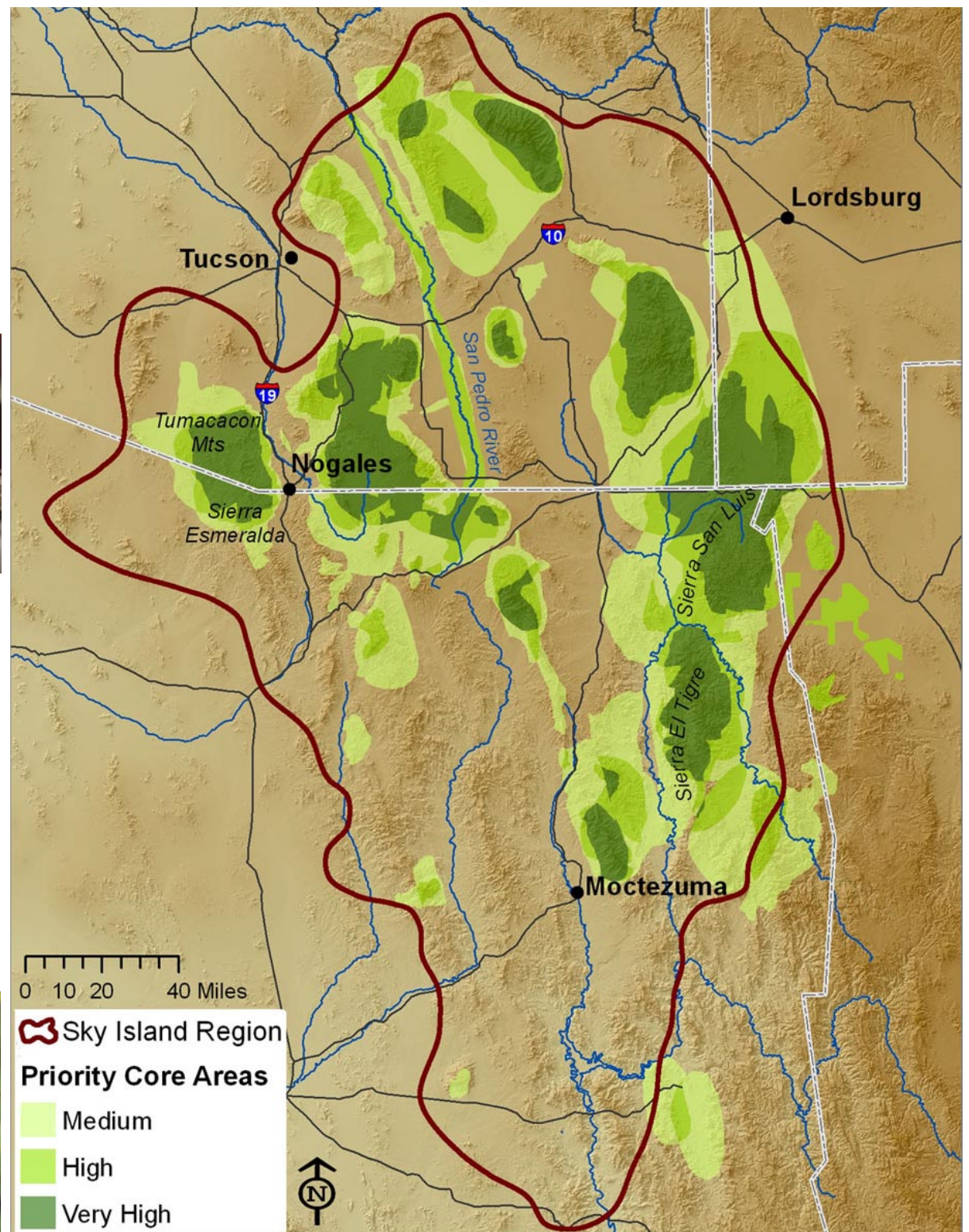
Explore: Priority areas to increase the scientific knowledge of the region and its ecosystems.



A tropical species, the Mexican vine snake is found in heavily forested areas in southern Arizona and throughout Mexico.

Gathering Expert Input

Thirty-one experts in regional biology and ecology from the U.S. and Mexican Sky Islands used interactive mapping techniques to draw areas of high priority and provide information on values and threats associated with each of those areas. The focus was on identifying areas important for Sky Island Alliance to achieve its mission of protecting and restoring native species and their habitats and gathering biological data.



Protect: Priority core areas to protect native species, as well as healthy, diverse and resilient ecosystems and functioning ecological processes.

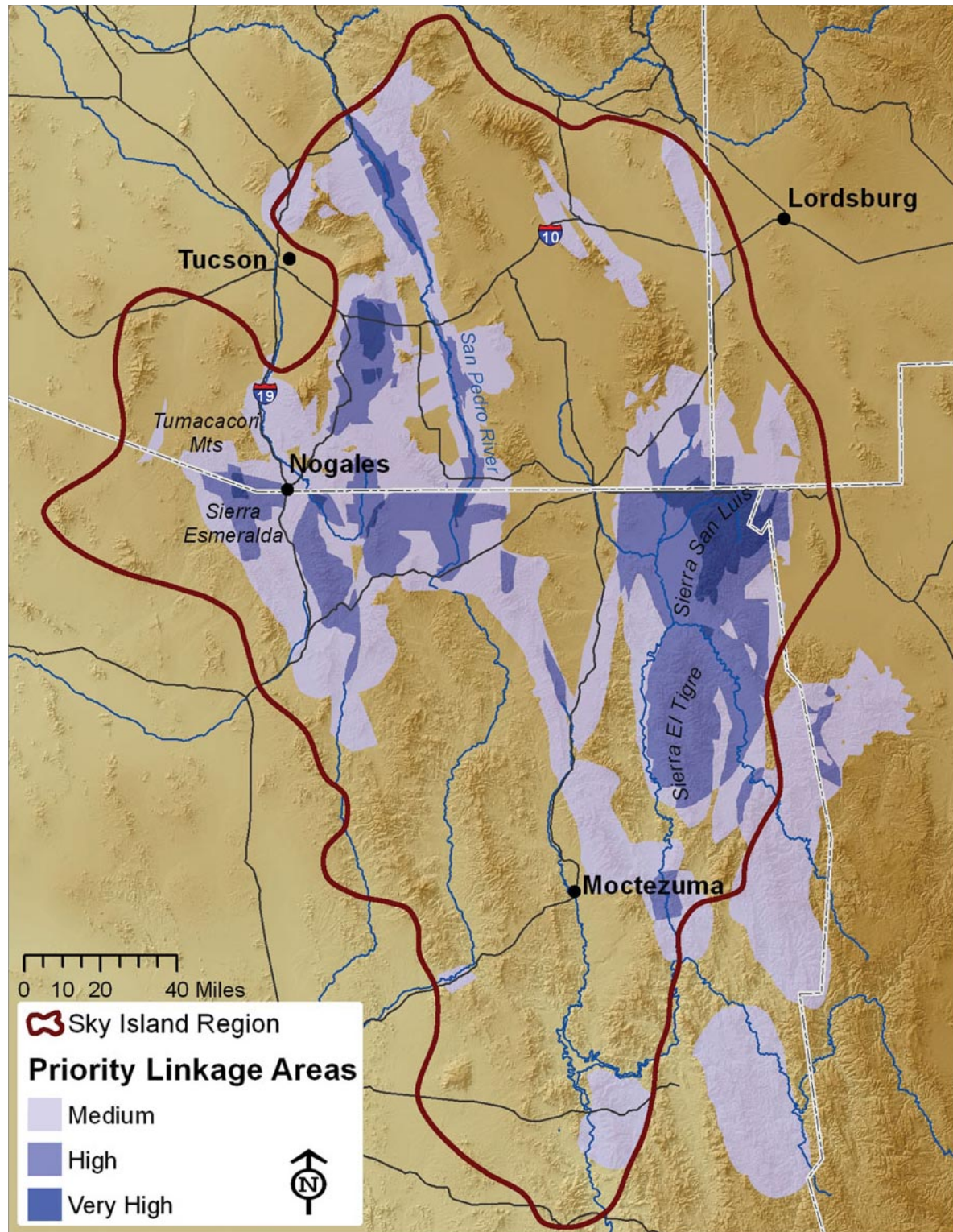
Cardiospermum corindum from Sky Island Alliance's September 2012 MABA trip into the Sierra Aconchi (in the map above, the priority core area due west of Moctezuma). Photo Tom Van Devender



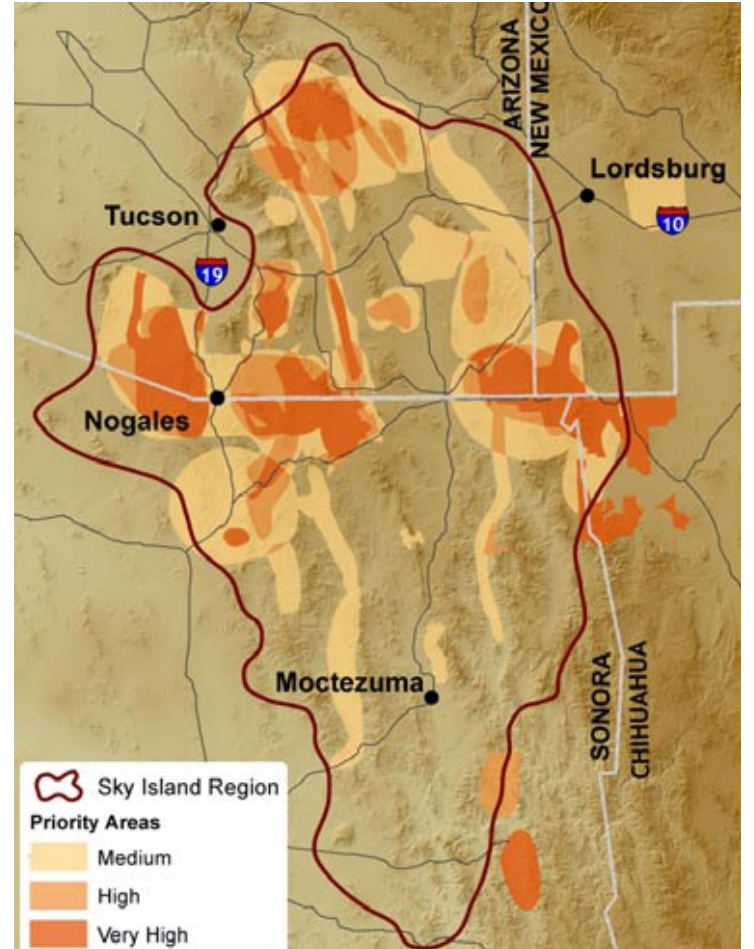
This photo — taken with a motion-activated remote camera — confirmed the location of the northernmost breeding population of ocelots on the continent — the Sierra Azul Mountains of Sonora. © Sky Island Alliance / El Aribabi

Informing Decisions With Maps

Experts' hand-rendered maps were combined in a Geographic Information System to examine overlapping areas and to produce digital maps depicting the range of priority of areas. Maps were produced for cores, linkages, restoration and science. They can be used to inform decisions about where and how SIA takes conservation action. This tool provides Sky Island Alliance with an opportunity for a more proactive and systematic approach to conservation work.



Connect: Priority linkage areas to protect and restore movement and dispersal of native species



Restore: Priority areas to restore native species in core and linkage areas along with healthy, diverse and resilient ecosystems and functioning ecological processes.



Elegant trogon is a resident of the lower levels of semi-arid open woodlands and forests in the Sky Islands of southern Arizona and Mexico. ©Sky Jacobs



Above Alamos Spring. © William Beaver Right Nogales Spring. © Sky Island Alliance

Springs Ecosystems: An Important Priority in the Arid Southwest

by Nick Deyo, Madrean Archipelago Biodiversity Assessment Project Coordinator

Springs — places where groundwater emerges at the surface of the Earth — create very important habitat in the desert. When you think of a spring in southern Arizona, what does it bring to mind? A lush oasis surrounded by an otherwise dry landscape? A swimming hole? Fish, frogs, turtles and rare plants? Or maybe stock tanks and water rights issues? Perhaps you have been hiking, expecting to find a spring, and then were left thirsty when it was not where it was mapped. We have encountered all of these things since April of last year when Sky Island Alliance began our Spring Ecosystem Assessment Project.

Arizona is the nation's second driest state; however, it likely contains more springs than any other. The Spring Stewardship Institute in Flagstaff has counted over 10,000 mapped springs in Arizona. It is difficult to say how many springs there actually are because so little information exists about these rare ecosystems. This lack of information poses a difficult challenge for land managers who are charged with protecting springs — Sky Island Alliance is helping to fill this information gap in southeast Arizona.

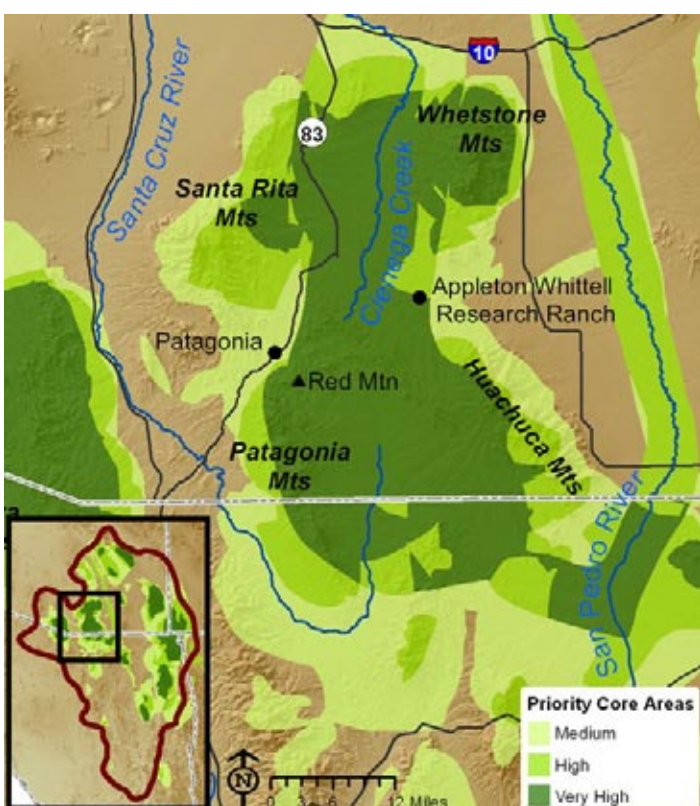
Desert springs are often the only sources of water for wildlife for miles around. Isolated springs tend to be biologically rich, containing rare plants and animals, some of which are found nowhere else. Not only are they valuable for wildlife, springs have been important spiritual and cultural sites for millennia. To native cultures, spanning from the Hopi and Zuni down through the Mayan empire, springs were places of power associated with a mythical plumed water serpent, famously known as the Aztec god Quetzalcoatl. Today, springs continue to figure prominently in O'odham ceremonies (Rea 2008), and are no less important to other people in the Southwest. Springs provide water for livestock, are heavily visited recreation sites, and even supply water for entire towns, Tombstone for example. Because springs sites are so valuable, they are often heavily affected by human activities, overgrazed by cattle, boxed in concrete, overrun with invasive species, and dried out because of groundwater pumping. Since April of 2012, Sky Island Alliance has visited

over 40 springs, documenting critical information on the conservation value and restoration potential of these important habitats.

Not only has our Spring Ecosystem Assessment Project been valuable for conservation, it has also given staff and volunteers the opportunity to visit some truly remote and beautiful places. For example, last December we assessed Nogales Spring in the Whetstones, a spectacular spring composed of deep turquoise pools, thick stands of riparian plants, and extensive limestone deposits forming caves and surreal shapes. On a beautiful monsoon day last April, we visited Alamos Spring near Sonoita, a large complex of pools and shallow cienega habitats, a wetland jewel in the desert. Sycamore Spring, tucked high up in the Huachucas, was assessed last July. There, we saw schools of striped dace and Sonoran mud turtles residing in deep pools shaded by gigantic alligator junipers and Arizona sycamores. Stay tuned to SIA's calendar to learn how to volunteer for more spring assessment opportunities.

References:

- Amadeo M. Rea, "Historic and Prehistoric Ethnobiology of Desert Springs," in *Aridland Springs in North America: Ecology and Conservation*, ed. Lawrence E. Stevens and Vicky J. Meretsky (Tucson: University of Arizona Press and The Sonoran Desert Museum, 2008), 268-278.
- "Arizona Springs," Spring Stewardship Institute, www.springstewardship.org/arizona.html accessed January 19, 2013



Ciénega Creek Watershed. Map by Louise Misztal

Is There Such a Thing as Being Too Successful?

by Linda Kennedy, Ph.D., Director, Appleton-Whittell Research Ranch

Go for a walk in a beautiful native grassland of southeastern Arizona. Kneel down — swing your arms in a circle. How many different species are within that circle? Probably fifteen, maybe thirty different plant species. You may see where insects have foraged. You'll likely find sign of birds and mammals. Now, try the same exercise in a grassland dominated by Lehmann lovegrass, an introduced grass from South Africa. You'll be lucky to find five or ten species of plant and may not find any animal sign. Why is one site so rich in biodiversity and one so poor?

In the 1930s and 1940s an effort was made to improve condition of rangelands in the west — rangelands degraded by overgrazing and drought. A world-wide search was launched to find plants that could handle grazing by domestic livestock, were fire and drought tolerant, and produced significant amounts of biomass and seed. Seed trials were conducted locally to find species that were adapted to our climate. The winner of these seed trials was Lehmann lovegrass, *Eragrostis lehmanniana*. Seed was made widely available for range improvement projects.

Lehmann lovegrass is now one of the most widespread grasses in the semi-arid grasslands of the Sonoita plain and elsewhere in the Southwest — in fact, it is spreading too rapidly for scientists to feel they have accurate, current data. It's an amazing grass — it greens up earlier in the spring

than most native grasses, depleting soil moisture and nutrients. Seeds are abundant and tiny, over 6.5 million per pound! So small that few native seed-eaters use them. When grazed by large herbivores, seeds can pass through the animal intact, ready to germinate. When the seeds germinate, they can mature and produce seed in 3-4 weeks — just like an annual, but Lehmann lovegrass is perennial. Though Lehmann was brought to the U.S. as a range improvement, during most of the year domestic livestock prefer to eat native plants. Few native herbivores, even grasshoppers, eat Lehmann if other plants are available.

If a plant can be said to “like” something, Lehmann lovegrass likes disturbance, but does not require disturbance to spread. Fire, grazing, roads, even drought present opportunities for Lehmann. It was once thought that without livestock Lehmann lovegrass wouldn't spread, but research has shown that even on large native grasslands without cattle Lehmann can gain a foothold and become the dominant species. On the Research Ranch (see map page 12), where cattle have been absent since 1968, some areas of native grassland with 0-1% frequency of Lehmann lovegrass have shifted to 50-60% Lehmann in 5-6 years. Widespread control efforts have been ineffective or cost prohibitive. There are no known biological controls (*i.e.* insects, fungi) available.



Lehmann lovegrass flourishes after the summer rains, 0.8 meters tall, with 41-60% cover. Photo azfirescape.org

And where Lehmann lovegrass goes — native species suffer. Native plants are outcompeted for sun, water, and nutrients. Agave mortality due to fire is higher in a grassland dominated by Lehmann lovegrass because of higher fine fuel loads. Although a few species, such as Botteri's sparrow, can use the plant as a nest site — it must be adjacent to native uplands for foraging. Few small mammals live in grasslands dominated by Lehmann — the seeds are too small to eat.

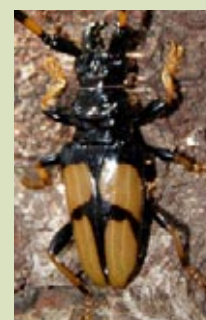
So yes, with 20-20 hindsight — some things can be too successful. What might have happened if our efforts in the 1930s and 1940s had been to reduce stocking rates, rather than to introduce an exotic species into an ecosystem that didn't co-evolve with that species? Are there lessons that we can learn? Perhaps one is that we should be very cautious about bringing in a species to “fix” a problem. Success might not be worth the price!



Exciting Discoveries in the Malpais!

Since 2006, Tom Van Devender and Ana Lilia Reina have been studying the plants of the *malpais* south of Moctezuma (see maps pages 10-11). A basalt cobble plain with open foothills thornscrub covers a huge area easily visible from satellites in space. In the dry season, the dark clay soil is mostly bare, and contracts away from the rocks. During the summer rainy season, the soil turns into a sticky gumbo mud and the spaces between the black rocks are covered with dense and diverse herbs, including disjunct populations of Chihuahuan Desert and Baja California plants. Since 2010, Van Devender and Guy Nesom, a Texas botanist, have described two new species of annual plants from the area (*Glandularia malpaisana* and *Verbena moctezumae*).

In August of 2012, Van Devender and Robert Villa collected a few scorpions late at night with a black light for Dr. Oscar Francke, Curator of the Mexican National Arachnid Collection in Mexico City. He immediately identified two of them as undescribed species, and asked for more specimens!! So in October, Tom and Ana Lilia returned in search of scorpions. Waiting for dark, Tom worked on a plant list and photographed butterflies, Ana Lilia watched birds, and Toby (their dog) catalogued thornscrub odors. They photographed two beetles on the trunk of a Mexican paloverde (*Parkinsonia aculeata*) that had been pushed over along the dirt road. One was a Long-jawed Longhorn Beetle (*Trachyderes mandibularis*), an elegant, widespread beetle with very long antennae ('horns'). The other was a large black and white click beetle. Later Ana Lilia googled Elateridae (the click beetle family) and discovered Paul J. Johnson, a researcher and 'snapper' specialist at the University of South Dakota. Tom emailed him with the image, and he immediately recognized it as *Chalcolepidius approximatus*. The nearest previous locality was in Durango in the Sierra Madre Occidental — 775 km SSE of the *malpais*! He was so excited that he wrote a report of the observation, which was published in the Mexican entomological journal *Dugesiana* in December. This has stimulated his interest in studying Sonoran click beetles. What will be discovered next in the *malpais*?



Wildlands Adventurer Starts 5,000-mile “Trek West” in Sky Islands

Outdoor journey invites citizens to “say yes” to wildlife corridors

by Kim Vacariu, Western Director, Wildlands Network

Wilderness explorer and outdoor adventurer, John Davis, is hiking and biking this month through the Sky Islands on the second leg of “TrekWest 2013,” a long-distance outdoor journey to promote the importance of wildlife corridors in maintaining human and wildlife communities. His big goal: completing a 5,000-mile human-powered expedition from Hermosillo, Sonora, Mexico to Fernie, British Columbia by November 2013.

In 2011, during his similar “TrekEast” adventure, Davis became the first person to continuously hike, bike and paddle 7,500 backcountry miles from the Florida Keys to Quebec’s Gaspé Peninsula. His TrekWest journey will once again find him enduring extreme weather and terrain and spending more than ten months outdoors in the wild. His trail will take him along the spine of the Rocky Mountains, following the “Western Wildway,” a scientifically-mapped North American habitat corridor.

Davis reached southeastern Arizona at the end of February after spending the previous 30 days trekking through northern Mexico’s Sierra Madre Occidental, traveling horseback in a traditional “cabalgata” with partners from Northern Jaguar Project and Naturalia through the Northern Jaguar Reserve, then crossing the sierra into Chihuahua via trails and bike, explaining along the way the need for connected, restored landscapes to locals and officials in Mata Ortiz, Janos and Rancho El Uno. His journey continued through the new wolf reintroduction area near the Sierra San Luis and on to Cajon Bonito and the borderland ranches of Cuenca Los Ojos Foundation. The Mexican portion of the trek culminated in an eye-opening border crossing at Naco, Sonora where a 150-foot banner depicting a traveling jaguar was paraded through the streets. The crossing event drew media attention to the problems posed to wildlife passage by the heavily fortified border wall.

The Sky Islands portion of TrekWest is co-sponsored by Sky Island Alliance, Defenders of Wildlife, and Wildlands Network, all members of the Western Wildway Network, a collaboration of 22 of the West’s most respected conservation organizations — all with a focus on protecting and restoring regional wildlife habitat corridors that, once connected, will represent a continental pathway for wide-ranging wildlife called the Western Wildway.

Often described as a “John Muir meets triathlete,” Davis is a man of conservation passion and what has often been described as extraordinary stamina. “My dream is for a connected and protected

Western Wildway™ — a true lifeline for animals that need safe passage across large landscapes,” says Davis. “If we’re successful, our children will be able to gaze out at our western wildlands, silently observe the elegance of a wolf or smile just knowing the West is still wild in the way nature intended. It all starts with logging onto trekwest.org and signing our pledge saying “yes to wildlife corridors!”

Davis explains the urgency of his mission: “Development, climate change and highways are fragmenting western wildlands and are thus deadly threats to both the landscapes and wildlife cherished by anyone who knows the West.” He hopes to experience firsthand — and share with his virtual followers on Facebook, Twitter and YouTube — the issues that prevent wildlife from going the distances they need to find mates, homes and food.

Trekking a spectacular route through deserts, mountains and grasslands, Davis’ journey will provide a view of the wild as seen through the eyes of the animals that play an irreplaceable role in managing ecosystems and landscapes. Davis will tell the amazing and often heart-wrenching stories of cougars, ocelots, grizzlies, wolves, jaguars and other wildlife in their daily attempts to survive.

But Davis is not all about sharing bad news; he believes finding solutions is the most important component of his adventure. Says the trekker, “I will explore wildlife corridors that can be restored, connected and protected in order to save what we all love — our landscapes, parks and wildlife — into the distant future. And I will introduce the conservation heroes already connecting those landscapes.” He also hopes to expand a growing network of individuals and organizations committed to connecting the West’s best wild places. “By connecting the interests of a diverse base of people who rely on healthy landscapes for their lifestyles, well-being and incomes, creative solutions that keep wildlands functioning can result,” he concludes.

TrekWest is a group adventure in many ways. Supporters will join Davis as co-trekkers along the trail. Event sponsor Wildlands Network and its many regional partner organizations in the



Davis’ journey through the Sky Islands. Courtesy TrekWest

Western Wildway Network, including Sky Island Alliance, also will be supporting his cross-country efforts, assisting him in collecting scientific data, photographing species, and showcasing their habitat protection projects.

Social media followers can access Davis’s observations in real time throughout the journey via daily blog postings, tweets, and other image postings of the sights, sounds, wildlife and people he encounters in the West’s most iconic — and wild — places. In addition, maps of his trek, barrier locations and connectivity projects will be easily accessible from the Wildlands Network-hosted website www.trekwest.org.

To learn more about Davis, visit Island Press at www.islandpress.org to read *Big, Wild and Connected*, his soon-to-be-released e-book depicting the challenges and barriers he faced during his 2011 trek in the East, and the essential eastern landscapes he recommends for urgent connection and protection. Trek followers can also visit Facebook, Twitter and YouTube to join the growing network of people who want to put the “wild” back in the West!



The Sierra San Luis spans two countries, six major biological provinces, and a rich network of core habitats and essential wildlife linkages. *Courtesy Chip Hedgcock*

Sierra San Luis: Biologically Diverse, Immeasurably Essential

by David Hodges, Cuenca Los Ojos Foundation

The Sierra San Luis region spans two countries and is in a unique geographic position that has shaped its rich natural and cultural heritage. The boundaries of six major biological provinces meet here creating one of the most biologically diverse and productive areas in North America. This region is a sanctuary for many rare, threatened and endangered species and is an important corridor for wildlife movement and migration.

Many readers will recognize areas of this complex found in southeastern Arizona and the bootheel of New Mexico. The Peloncillo and Animas Mountains, as well as the Animas and San Bernardino Valleys, and Cloverdale Cienega are

key parts of this larger complex. Much of this ecologic/geographic complex is found in Mexico where the Sierra San Luis is the northernmost range of the Sierra Madre, and contains rich natural communities such as the Cajon Bonito, Pinito, and Pan Duro.

Six otherwise distinct biological provinces overlap and intergrade in this region. Many plant and animal species characteristic of the Rocky Mountains reach their southern extent here, and even more species from Mexico's Sierra Madre reach their northern limit. Although the region lies within the bounds of the Chihuahuan Desert, elements of the Sonoran Desert infiltrate from the west, and some characteristics of the Great Basin and Great Plains appear as well. For example, the Animas Valley, between the Peloncillo Mountains and the Animas Mountains to their east, is a southwestern extension of a Great Plains short-grass prairie community.

Most of the Sierra San Luis is comprised of private lands, commonly in the form of ranches with a few ejidos scattered throughout. The Cuenca Los Ojos Foundation manages more than 100,000 acres here with a management emphasis on conservation and restoration. Rancho Pan Duro, an adjacent property, is managed for conservation as well. All lands of the Sierra San Luis that are located in Chihuahua are a part of a Biosphere Reserve.

A diverse suite of wildlife species are found here, as well as a multitude of native plants. Elevations range from 3,700 feet at the San Bernardino Cienega to almost 8,300 feet at the high point in the Sierra San Luis. In moving up the mountain, one travels through Madrean oak woodlands in the

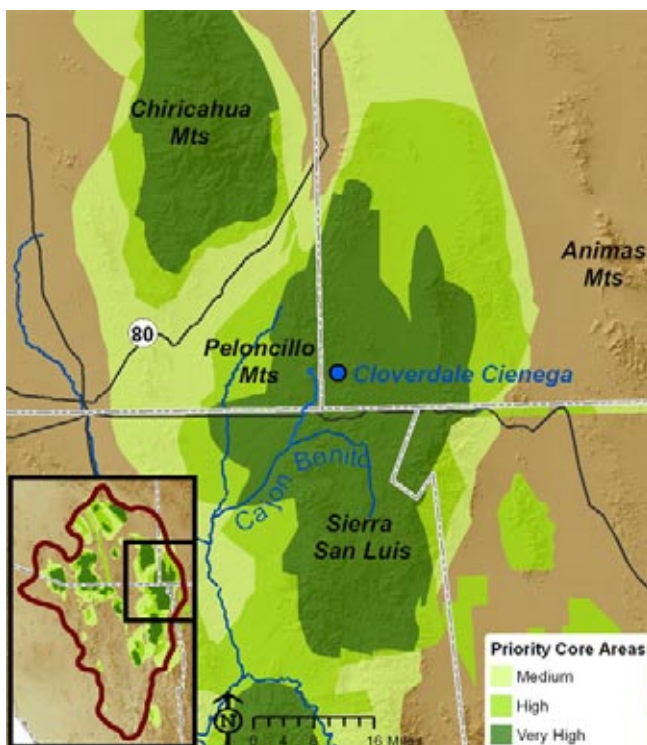
foothills, through mid-elevation grasslands, ending in the pine-oak community found near the summit.

The Sierra San Luis complex contains a number of wetlands and streams, with the most significant being the Cajon Bonita, a perennial stream that is home to ten native fish, Chiricahua leopard frogs, and an abundance of bird species. The Sierra San Luis is also home to jaguars, ocelots, and the Mexican gray wolf, and well as all the species that feed these top-of-the-food-chain predators.

The Cajon Bonito and other streams (Guadalupe, Los Embudos, etc.) found in these mountains are all headwater streams of the Rio San Bernardino, which begins on the northwestern flank of this range.

For the last 13,000 years, this important area has supported a variety of human cultures ranging from people hunting giant ancient mammals to modern-day cattle ranchers. The overlap of distinct cultures for thousands of years has shaped the region's cultural heritage, and influenced the way that its modern inhabitants view and utilize the land. Today, despite human population growth, human development of the landscape, and human use of the land to sustain livelihoods, the Peloncillo region remains an amazingly intact and functioning landscape.

David Hodges worked with Sky Island Alliance as board member and staff for 15 years. He now oversees Science and Research for the Cuenca Los Ojos Foundation.



Sierra San Luis Complex. Map by Louise Misztal

Continental Divide: Wildlife, People and the Border Wall

by Krista Schlyer

The following is an excerpt from a new book exploring the impact of immigration and border policy on the wildlife, ecosystems and people of the US-Mexico borderlands. The book, titled Continental Divide: Wildlife, People and the Border Wall contains photos and text by Krista Schlyer, and was published by Texas A&M University Press in October 2012.

In early spring 2008, two young bison bulls jumped a sagging three-string barbed wire fence separating Chihuahua, Mexico, from New Mexico in the United States. On both sides of the international line lay an unbroken grassland valley scoured almost bare by a prolonged drought, which announced itself meanly on the dusty hides stretched taught over bison bones.

D.H. Lawrence once wrote, he “never saw a wild thing sorry for itself;” and this ragtag band of bison was no exception. They had been eking out an existence in an unforgiving land for almost a century, weathering the seasons of famine and plenty, pursuing one all-consuming preoccupation that prompted their every move: survival.

Bison are creatures of simple needs, requiring only some grass, reliable water, and space to roam; a hardiness that enabled them to migrate by the millions as lords of the vast prairies of North America for millennia before European settlers arrived. But needs are needs and survival is serious business in a landscape now scored by roads, fences, and other obstacles foreign to the natural contours of the prairie.

The haggard bison barely paused in their crossing that day. It was a simple leap over a fence their herd had broken down a hundred times, a known inconvenience encountered during frequent travels between the pond where they had drunk that morning, and a reliable patch of pasture for grazing. The bulls’ herd had found this location dozens of years earlier, and since then had relied on it for the two main staples of its survival. The fact that there was an international boundary between pond and pasture meant nothing to them. They made the jump, and headed off toward dinner.

Meanwhile, a few thousand miles away, a roomful of politicians sat tossing a political rotten tomato called immigration, everyone taking care not to soil their hands, while



Bison on the border. © Krista Schlyer

engineers sketched out rough plans, and construction companies procured concrete and steel, and the United States began to raise its great wall—a wall that if it comes to fruition along the entire 2000-mile border, will divide not only two nations and their people, but an entire continent of creatures like the bison, already taxed to the breaking point by the business of survival.

History is filled with admonitions for the folly of walls, and the earth is littered with crumbling reminders of our endeavors to divide the landscape. Structures made of brick, steel, and concrete do not ultimately solve problems of political and economic origin, and often they create a whole suite of unintended consequences. But chronic economic disparities, historical amnesia and other habitual maladies of humanity persist, and absent the will to make substantive changes, we turn to walls.

This book tells the story of a region at the crossroads of this age-old equation, a largely unknown place at the knees of North America where the United States meets Mexico. Here the presence of both political and natural boundaries creates a unique blend of north and south where the melodies of northern cardinals and tropical green jays float upon the warm South Texas breeze; where the perfume of creosote speaks of the passing of desert rain while high in the mountains, the boughs of Douglas firs cradle winter’s first snow. Here is a landscape that has seen the birth of jaguars, the death of Spanish missionaries, the budding of saguaro cactus, the persecution and dogged endurance of native peoples, and the footsteps of a million migrants recorded in the smoldering sands of the Devil’s Road. Here is a place where Spanish kings abdicated sovereignty to drug lords, one cruel century to the next.

In the borderlands, theories of smart international policy collide with rock hard reality, and the laws of supply and demand tumble violently with forces of poverty and despair. Within this turbid mix, the complex vibrant character and rich history of the borderlands is obscured by a news media preoccupied with violence and criminality, and a politics of sound bites and insincerity carving wedges from the fears of a nation. And, consequently, the scales are tipping toward walling person from person, nation from nation, and a landscape from itself.

This is a book about the US-Mexico border wall and immigration policy, but more importantly it is about the land, wildlife and people that have found themselves at the front lines of a turning point in North American history, confronted with political winds that favor the symbolism of steel and concrete over substantive policy reform. Suddenly divided, they grapple with powerlessness against a government that has, in an unprecedented move, revoked its own laws in a rush to construct a massive but ultimately impotent political symbol through the heart of one of the continent’s richest and rarest ecological and cultural regions.

Continental Divide: Wildlife, People and the Border Wall is available for sale at www.enviro-pic.org, Amazon.com, and for order at your local bookstore.





The Cloverdale landscape, dwelling on its rediscovered relationship with *las lluvias*. © Sky Island Alliance

The Restoration of Cloverdale Ciénega and Creek *by Trevor Hare*

We did it! The protection and restoration of Cloverdale Creek, Spring and Ciénegas has been a passion of mine since I first visited the valley in 2005. And when I met the landowner I knew Sky Island Alliance had to help him protect the amazing ciénegas, the creek and spring, the frogs and gartersnakes, box turtles and mud turtles. Soon we had the landowner, the US Forest Service, the US Fish and Wildlife Service, New Mexico Department of Game and Fish, and New Mexico Environment Department on the ground, walking around with restoration experts and they were interested in our ideas! In 2007, Sky Island Alliance, with the help of Van Clothier and Bill Zeedyk, received funding for the first phase of restoration from then Governor Richardson's New Mexico River Ecosystem Restoration Initiative.

Over the next two-plus years, Sky Island Alliance staff and restoration experts walked up and down the creek and ciénegas with hydrologists, geomorphologists, volunteers, agency personnel, locals, cowboys, the landowner, and biologists of all stripes looking at the place, getting a feel for it, trying to understand what it had once been, what man had done to it, and how to fix it. There were no historic accounts of the creek and wetlands, just accounts of the ranching operations and the lives of the first settlers and their descendants. And there was very little current information on the hydrology, geology, or ecology of the area, so we were flying blind and had many long, involved planning sessions and late-night discussions. Finally in late 2009 we hesitantly decided on a plan and were ready to go.

Over four weeks in early 2010, working in the upper part of the system and using heavy equipment, we removed berms from the dried ciénega surface and used the over 6,000 cubic yards of berm material and over 600 tons of boulders to plug a man-made gully. This effort reconnected the creek system to the dried portion of the ciénega and opened up historic flow patterns throughout the whole ciénega system. While satisfied with our design and initial implementation, we knew there was more work to do — we needed to continue that work downstream along the creek and on the lower ciénegas. We also wanted to witness the effects of our work during the next flood event. Unfortunately the monsoons of 2010, 2011, and 2012 were almost non-existent and we are still waiting for the first big flood to engage our restoration structures. Luckily, a small flood event in December of 2011 did engage the top structure and proved the design works!

In late 2010, Sky Island Alliance received funding for the second phase of the restoration from the National Fish and Wildlife Foundation's Sky Islands Grasslands Initiative. After a year of planning, we implemented phase two of the project over three weeks in early 2012. We removed approximately 300 invasive juniper trees from the lower ciénega surface and used them in erosion control structures along one mile of the adjacent creek. We constructed 48 structures, baffles, and weirs — slowing water down and promoting infiltration — to encourage riparian vegetation growth on the banks and floodplains. Then, in a

second mobilization in late 2012, we removed berms across the bottom of both the upper and lower ciénega and refined one of our designed gully plugs from the phase one work. In addition, we removed another 300-500 invading junipers from a drying portion of the upper ciénega to promote water infiltration and open areas for sedge and rush vegetation expansion.

Yes, we did it! The restoration of Cloverdale Creek and Ciénegas is pretty darn near complete. Over six years of planning, nine weeks of implementation, way more than a hundred miles walked along that five-mile long valley, countless maps and draft plans, two backhoes and three bulldozers, a loader and an excavator to load a six-wheel dump truck, and with lots of love, we did it. Of course there is always more work to be done, from monitoring and management to maintenance and reporting, and while the upper watershed is in excellent shape there are some erosion problems associated with the many dirt tanks that need to be addressed. So here we go again! There are plenty of watersheds, creeks, springs and ciénegas out there that need our help. I have a big list in my back pocket and you will see me out there walking around and paying attention.



Trevor Hare developed and ran Sky Island Alliance's Landscape Restoration Program for 11 years.

Pass it On!

by Meagan Bethel, SIA Volunteer and Citizen Scientist

Meagan Bethel has been a Sky Island Alliance wildlife monitoring volunteer in the field and office since 2009. Very humble of her deserving accolades, she was recognized with numerous awards this year for her data analysis work, including the First Place Young Naturalist Award from the Museum of Natural History and First Place International Eco-Hero Award from Action for Nature. This year she also represented SIA as an Arizona Cardinals Community Quarterback Award winner and has been nominated as one of President Obama's student ambassadors for Science, Technology, Engineering, and Mathematics (STEM) Education. Meagan lives in Tucson, Arizona and is a Sophomore at Tucson High School. She is currently completing her latest regional science fair project, mapping potential Critical Habitat for ocelots in Arizona. — Jessica Moreno



Meagan and Jessica celebrate Meagan being named an Arizona Cardinals Community Quarterback.

As one of the youngest volunteers for Sky Island Alliance, I am frequently asked how I came to care for the other species of our planet. My story is probably not so different than any other of our volunteers. It began with a love of animals.

My earliest memories are of riding on my father's shoulders as he walked through the forests of Mt. Lemmon. Quietly, he would crouch down so that I could peer through the bushes to observe a small animal residing there. Freezing mid-step, he would silently point out a bird winging to its nest of fledglings overhead. I learned to watch and to listen. There are others here. We just have to remember to look and listen for them.

When asked what parents or grandparents can do to encourage caring for other species, my answer may seem a simple one. Take your children outside or to the zoo, frequently, and teach them how to observe. This takes, and teaches, patience. Model how to stay in one place for a bit longer

than a young one may wish. Help them realize what they can learn by staying there "just one more moment." I was lucky I guess. I was practically born and raised in a zoo because of my sister's primate research. But the apes just did not do anything for me. I was a big cat kind of girl from the get-go. While she was wiling away the hours observing her species, I was busy learning all I could about mine. As a kindergartner, my first research project was comparing the behavior of big cats at the zoo. Even today, felids are my favorite field of research. Another seemingly obvious thing that others might do to encourage the love of animals that influenced me, is to own a pet. There is nothing like loving another species intensely to help a young person understand how intelligent and unique each individual being on this planet is.

And finally, parents must model and be insistent about the need for a young person to "do something." I knew I had to volunteer for a cause

other than my own gain early on. My parents allowed me to follow what interested me. They helped me to realize that even though I was young, I could make a difference. My mentors here at Sky Island Alliance build on that, instilling in me the confidence to put myself out there because people might listen to the message from a child when they would not from an adult. As a result, I enjoy hiking through the brush, tracking and maintaining my four adopted cameras in a nearby mountain range. I show my love of animals in an active way, trying to protect them and their habitat.

If you are reading this, it shows that you already care about our planet. Help the next generation care as well. Walk in the forest with your children, teach them to watch and listen to the other species that are there, go to the zoo and adopt a pet. You already love the planet. Now pass it on.



Sky Island Alliance Honors Our Conservation Heroes...

Please Save the Date for this year's Awards event and silent auction fundraiser: Tuesday, April 9th, 5:30-8:00pm, at The Z Mansion, Tucson, AZ. Read about the nominees and purchase your ticket online, or call for availability. www.skyislandalliance.org 520.624.7080 x15



Your Values, Your Legacy: Leaving a Legacy of Conservation in the Sky Islands

Most days, we don't take much time to consider how our everyday actions are creating the legacy we'll someday leave.

If you want to protect the wild places, native animals and plants you treasure, please consider naming Sky Island Alliance in your will or trust. You may not be able to give a major gift today, but even so, today, you can start that conversation with your loved ones. And when the time comes, you can leave a legacy that reflects your individual values and passion for this unique region by leaving a gift to Sky Island Alliance.

We have launched our Legacy Giving program in the last year, and are pleased to know there are more than a handful of members who have already made the decision to include Sky Island Alliance in their plans.

We would be honored and grateful to be notified of your intentions to include Sky Island Alliance in your will or estate. If you have questions, please contact Keri Dixon at 520.624.7080 x15 or we encourage you to seek counsel from a trusted advisor to plan your gift.

Join the Tradition... Volunteer!

Sky Island Alliance formed in 1991 by a group of concerned scientists, conservationists and activists who wanted to keep our public lands intact and wild so that future generations would have an opportunity to enjoy the quiet solitude of a mountain meadow and experience a landscape where native species still roamed. Today, Sky Island Alliance gathers people together to protect our rich natural heritage and restore native species and habitats. New volunteers come out all the time, whether they are seasoned backpackers or have never looked at a topographic map.

We welcome you to join us!

Check our online calendar for the latest volunteer opportunities:
www.skyislandalliance.org/calendar.htm

In the field...

Restore habitat for Neotropical migratory birds and native critters in riparian areas.

Learn **hands-on** water harvesting/erosion control techniques to **improve watershed health**.

Become a citizen naturalist and **learn to track our region's unique wildlife species** as a Wildlife Tracker (four day training required).

Hike and **assess rare springs** throughout southeast Arizona.

Control invasive aquatic species to **protect** native amphibians like the Chiricahua leopard frog.

Inventory your public lands for Wilderness potential.

Explore, camp, and appreciate the Sky Island region on both sides of the border with friends, old and new!

In the office...

Enter and **analyze data** collected in the field so that SIA can put that hard-earned information to work.

Help with mailings, filing and other general office tasks.

Write letters and/or make phone calls to further our advocacy efforts in the region.

Share your expertise in planned or legacy giving.

In the community...

Represent SIA at public events, give presentations to the public and help at SIA outreach events and workshops.

Sign up for our volunteer email list:

www.skyislandalliance.org/volunteer.htm

For more information on volunteering with SIA, contact Sarah, Volunteer & Outreach Coordinator:
sarah@skyislandalliance.org, 520-624-7080 x23

Volunteer Spotlight: Jim Chumbley

by Sarah Williams, Volunteer & Outreach Coordinator

Since 1998, volunteers working with Sky Island Alliance have spent more than 60,000 hours turning their concern for our surrounding environment into tangible, hands-on action. As a grassroots organization, we could not achieve the results we do without the efforts of our dedicated volunteers — the real roots in “grassroots.” The purpose of this column is to celebrate our volunteers and to share a little bit about who they are.

It's hard not to be drawn into the charisma that surrounds Jim Chumbley. With his thick, brushy mustache, and effervescent smile, Jim is a friendly, down-to-earth guy who approaches life, and volunteering, with a 'glass half-full' perspective. Relatively new to Sky Island Alliance, Jim has become a regular and helpful presence around the office, at outreach events and in the field.

Jim signed up to volunteer with Sky Island Alliance after hearing a presentation given by Sergio Avila in August of 2011. He then participated in the fall Wildlife Tracking Workshop where he had a special introductory experience: “Our group was hiking and tracking up a drainage [in the Dragoon Mountains], with the goal of reaching a remote camera and retrieving the images. It was great tracking with a lot of bear and puma sign. At one spot we observed two different sets of puma tracks of very different sizes. We guessed a mother and a cub. When we returned to the museum where we were lodging and looked at the photos, a mother and cub had been photographed! It was truly a “wow” moment for everyone there, including Jessica and Sergio.”

The ability to make a contribution to conservation science is meaningful to Jim. He believes in the power of citizen science and realizes that without the help of volunteers collecting data in the field and assembling it in the office, “SIA's ability to make reasoned arguments on conservation issues would be severely limited.” The fact that volunteering with SIA also involves hiking, camping, and camaraderie with people who help increase Jim's knowledge of the region is an added bonus.

An explorer by nature, Jim relishes the opportunity to travel to individual Sky Island mountain ranges as a volunteer. If he had to pick a favorite range, it would be the Pinaleno Mountains because the “Hudsonian habitat” in the top elevations of Mt. Graham remind him of the work he did in the forests of the Pacific Northwest during much of his young adult life.

At this point in his life, Jim says he is fortunate to not have to be employed so he spends a large amount of his time volunteering, and not just for SIA. He also contributes time and energy to the Tucson Audubon Society, Saguaro National Park, the Santa Catalina Volunteer Patrol, the Sierra Club, and most recently, with the Arizona Game and Fish Department's black-footed ferret (*Mustela nigripes*) reintroduction efforts in northern Arizona.

When he is not wearing his volunteer hat, Chumbley dabbles at writing, is a rabid Seattle Seahawks fan, and spends lots of quality time with his parents. He is the oldest person in his ultimate Frisbee league and an avid bicyclist. Last year, he completed the full 111 miles on his first El Tour de Tucson!

Thank you Jim for all you do at SIA — your enthusiasm is contagious!



Jim's Haikus Greatest Hits Vol. 1

Volunteering

SIA thanked us

But I am grateful for them
For the work they do

Tracking

Dragoons beckoning
Exotic tracks are carrots
Where are you Jaguar

Seeps and Springs

Sonoran Desert
With multiple defenses
Yields secrets with blood

Remote cameras

Setting cameras
To capture wildlife journeys
Eluding our eyes



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Sky Island Alliance is a non-profit membership organization dedicated to the protection and restoration of the rich natural heritage of native species and habitats in the Sky Island region of the southwestern United States and northwestern Mexico. Sky Island Alliance works with volunteers, scientists, land owners, public officials and government agencies to establish protected areas, restore healthy landscapes and promote public appreciation of the region's unique biological diversity.



Red Mountain and the peaceful town of Patagonia are under siege from several hard rock mining proposals (see related article page 9). © Glen E. Goodwin