



**SKY  
ISLAND  
ALLIANCE**  
Protecting our Mountain Islands  
and Desert Seas

# Restoring Connections

Vol. 13 Issue 2 Fall 2010

Newsletter of Sky Island Alliance

## Corridors and Connectivity

**A SKY ISLAND PRIMER PART 2**

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**PSST... VOTE FROG! SEE BACK COVER**

**AND GET YOUR**

**Sky Island  
EXPOSURE**

**ON! SEE PAGE 15 TO LEARN MORE ABOUT AN AMAZING EVENING OF ART, CONSERVATION, FOOD, MUSIC AND CHANCE ON NOVEMBER 11!**



# Through the Director's Lens

by Melanie Emerson, Executive Director

Connectivity. Corridors. Landscape permeability. Fragmentation. Travel management. Wildlife linkages. We use a lot of terms to simply talk about movement, or barriers to movement—to understand how flora and fauna utilize the landscape for individual and metapopulation survival and adaptation, to find mates, to access food and water, to avoid or embrace fire. In this complex and rugged landscape dotted with population centers, highways, border barriers, transmission lines, off-road vehicles...ensuring connectivity (or whichever term you prefer) is key to thriving species and healthy, resilient landscapes. And it is a focus of Sky Island Alliance's work. In this issue of *Restoring Connections* — Corridors and Connectivity — we seek to demystify some of these terms (and introduce new ones!). This is the second in a three-part series to describe our region, beginning with Conservation Biology: A Sky Island Primer, Spring 2010, and concluding with a focus in early Spring 2011 on habitat cores.

Sky Island Alliance has been safeguarding and improving connectivity on the landscape for close to 20 years. Protecting adequate and appropriate space for species is now also a recognized tenet of climate-smart land management. This includes ensuring that climate refugia are incorporated in protected areas and that protected areas function as a network interconnected by corridors. Such a network allows species to move and shift to adjust to changing conditions. With the impending and actual impacts due to climate change, it is a critical time for us to redouble our efforts to protect and restore landscape connectivity. One way we do this, is through Travel Management planning.

You have undoubtedly received our alerts recently, or over the years, with a call to action to influence Travel Management, which is another way of saying the designated road and trail system on public land units (specifically the Coronado National Forest). While this work is not sexy, does not involve charismatic mega-fauna or reap the satisfying result of a Wilderness designation, it is advocacy crucial to ensuring resilient and connected tracts of habitat, protecting them from overuse and authorized use, and assuring that agencies' plans match the limited resources they have available to manage the approved system. It is our collective line of defense against unmitigated fragmentation.

I am exceptionally pleased that Sky Island Alliance now has significantly increased capacity to advocate for reduced road systems on the public lands that we all work tirelessly to protect: I'd like to introduce the newest addition to the Sky Island Alliance staff: Jenny Neeley, SIA's Conservation Policy Director (see Jenny's bio below). Jenny will be working on a whole range of policy and ecosystem defense issues. Two of the ecosystem defense issues that Jenny is currently addressing are propositions placed on the ballot by referral from the Arizona Legislature. SIA's organizational position on Propositions 109 and 301 are to VOTE NO. We urge you to learn about these propositions (see inset, next page), to vote no on both and to share this message with friends and relatives.

After voting no on these props, I also encourage you to say yes to our favorite candidate and VOTE FROG (see back cover) who may be our best bet this election season! Please join me in donating to this campaign to protect our Sky Island riparian resources.

Warmest regards,

## Welcome Jenny!

Jenny joined SIA as our new Conservation Policy Director in August 2010, after receiving her law degree at the University of Arizona. She began her career in conservation in 1997 as a volunteer with the Arizona League of Conservation Voters, and later served as assistant director for the Coalition for Sonoran Desert Protection. In 2001, Jenny began working for Defenders of Wildlife as their southwest representative, where she remained until starting law school in the fall of 2007. Much of Jenny's work has focused on environmental issues in the U.S.-Mexico borderlands, specifically the buildup of security activities and infrastructure along the Arizona-Mexico border, and the ecological impacts of current U.S. border policy. While with Defenders, Jenny co-authored *On the Line: Impacts of Immigration Policy on Wildlife and Habitat in the Arizona Borderlands*, published in January 2006. Her law note also focused on U.S. border policy, specifically examining the constitutionality and policy implications of Sec. 102 of the REAL ID Act, which allows the Secretary of Homeland Security to waive all laws when building infrastructure along the U.S. international border. In addition to her law degree, Jenny holds a masters degree in natural resource policy and an undergraduate degree in photojournalism. She was born in Salt Lake City, Utah, and grew up in Honolulu, Hawaii. In her free time, she enjoys hiking, gardening, yoga, and photography.



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# Connectivity and Metapopulation Ecology

by Trevor Hare, Landscape Restoration Program Manager

For the past 15 years we have been involved in work on landscape connectivity, linking protected areas and ensuring permeability for wildlife movement between them. Large animals need large areas to move through comfortably and efficiently, but we have also come to two realizations: that those connective areas constitute habitat for smaller animals that don't need to move as far or whose movement is measured in generations, and that connectivity inside protected areas also occurs. An interesting ecological concept that emerged in the 1970s is that of metapopulations, or populations of populations. Metapopulations consist of populations that are disjunct from each other because of some sort of spatial barrier. Metapopulation ecology and population connectivity have become increasingly important to the work of Sky Island Alliance and other researchers and applied ecologists working on the conservation of our critically imperiled frog species.

The Sky Island region's native frog species need, as most frog species do, aquatic systems to fulfill basic life history requirements. Aquatic systems in arid lands usually comprise less than 5% of the landscape but account for a large percentage of the ecosystem productivity across the landscape. Research on frog populations discovered that some, ours especially, operate in a metapopulation setting. Populations in canyon streams will go extinct when a catastrophic event such as drought or flooding destroys their habitat, but soon the frogs will repatriate the canyon as habitat conditions recover. Where did the frogs come from? They arrived from some other relatively nearby place, generally referred to as a source population, where habitat conditions either persisted in the face of a catastrophic event or where that event didn't have an impact.

Our native frogs are thought to be able to travel quite amazing distances overland, considering their small size and susceptibility to desiccation, and the hostile arid environment they must move through — sometimes up to five miles. So frog populations are arranged across the landscape, and aquatic systems act as stepping stones from source populations to more ephemeral (short-lived) systems. Sources historically were valley bottom river and wetland complexes and the ephemeral satellite systems usually consisted of small creek, ciénega and spring systems at higher elevations that were more susceptible to catastrophic events. Of course that arrangement all changed with the arrival of Anglo settlers when many lowland aquatic systems were diverted, drained, and drilled. Then the era of arroyo cutting commenced and many more valley bottom and middle elevation systems were lost. Finally the straw that broke the frogs' backs was the arrival of the American bullfrog. This voracious non-native predator was introduced in the 1920s and by the 1980s was prevalent throughout the Sky Island region, acting as a vector for an amphibian fungal disease. And so by the 1980s our native Chiricahua leopard frog — beleaguered by predation and disease — was just barely hanging on, and only in isolated areas.

The combination of the loss of valley bottom source populations, the loss of the aquatic system stepping stones that cross the landscape, and the invasion of the bullfrog, has resulted in the destruction of the metapopulation structure that is so important to our Sky Island frogs. So we are out there all over the place trying to restore the connectivity between populations of our native frogs and to interfere with the metapopulation structure of the bullfrog. We do that by building resilience in natural aquatic systems that native frogs favor and then interrupt the manmade or bullfrog-dominated aquatic systems.

## Two (Indecent) Propositions.

by Jenny Neeley, Conservation Policy Director

### PROPOSITION 109

Prop 109 amends the Arizona constitution to include hunting, fishing and harvesting wildlife as constitutional rights, and gives the Arizona legislature "exclusive" authority over wildlife issues. The Arizona Game and Fish Commission would no longer be able to make management decisions without the explicit consent of politicians, turning the current system of wildlife management in Arizona on its head, and giving science a backseat to politics. It also prohibits voters from using the initiative process to stop inhumane and extreme wildlife killing practices, such as the 1994 voter-approved ban on steel-jawed leghold traps. If prop 301 passes, management of wildlife would no longer be based on scientific expertise, but on partisan politics. Arizonans have long fought against this type of politics-driven wildlife management, and should continue to do so by voting no on prop 109.

### ***VOTE NO ON PROPOSITION 109!***

#### **Prop 109 will:**

Give the Arizona Legislature exclusive authority over Arizona's wildlife

Require the AZ Game & Fish Commission to get the consent of the Legislature before making decisions affecting Arizona's wildlife

Prohibit voters from stopping inhuman and extreme wildlife killing practices through the initiative process

Ensure that politics, rather than science, guide wildlife management decisions

### PROPOSITION 301

Prop 301 is an attempt by the Arizona legislature to raid a voter-protected fund for land conservation and sweep it into the general fund, where the legislature can use it however it wishes. Voters established the Land Conservation Fund in 1998 in order to provide matching funds for communities to acquire State Trust Lands for conservation, including lands that are part of Pima County's Sonoran Desert Conservation Plan. This proposition would hurt both conservation and education, because dollars from the Land Conservation Fund ultimately benefit the State Land Trust, whose primary beneficiary is public education. Voters should vote no on Prop. 301 and protect this fund for conservation, as the voters intended.

### ***VOTE NO ON PROPOSITION 301!***

#### **Prop 301 will:**

Allow the Arizona Legislature to raid the Land Conservation Fund, established by voters specifically for the purpose of conserving State Trust Lands

Undermine community efforts to acquire State Trust Lands for conservation, including lands that are part of the Sonoran Desert Conservation Plan

Hurt education by raiding monies that would otherwise benefit the State Land Trust, whose primary beneficiary is public education

# Protecting Our Mountain Islands and Desert Seas...

Sky Island Alliance's dedicated staff advance the organization's goals every day — in the field with volunteers, around the map table planning strategies, in the office, at the meeting, reaching out to Sky Island residents... you name it. If it's important to the Sky Island region, we are there. We hope you're inspired — let us know!

## **Wildlife Linkages Program** by Jessica Lamberton

It was summer, many years ago, when I first met Janice Przybyl and was re-introduced to the world of tracking wildlife. With her quiet humor and ability to inspire a family of volunteers around her, Janice built a program with the vision of a landscape of interconnected habitats where wildlife, based on their ecological needs, can move easily between Sky Island mountain ranges. For Janice, the Wildlife Linkages Program was about connecting more than landscapes — it was about connecting people to the land and to wildlife. In mid-April, Janice handed me the reins as the Wildlife Linkages Program Coordinator. I couldn't be happier or more honored to walk in her tracks and carry on that vision.

This spring, we conducted the first Sky Island Alliance cross-program biological surveys of their kind with two "BioBlitz" weekends in the Whetstone and Dragoon Mountains, potential Wilderness areas for the Land of Legends Wilderness campaign; we hosted a meeting with federal and state agencies to advocate for ocelot recovery planning in Arizona; and we focused significant time on program development and grant writing.

Even more exciting are some of the new developments you will see this season, including the introduction of new diversified wildlife tracking workshops and training; advanced learning opportunities for tracking volunteers; Sky Island Alliance Wildlife Tracking Certification; the launch of an interactive public access website, called *Critters@*, where volunteers can receive feedback and upload tracking data, wildlife sightings and road kill information; the promotion of national wildlife corridor awareness with our partners at Freedom to Roam Coalition and Patagonia, Inc.; state-wide linkage priority-setting; a new "Adopt a Corridor" project; and the addition of ocelots and ornate box turtles to our list of focal study species.

As a biologist, I feel the need for connected landscapes for our wildlife and wild places — with every urgent call of the spadefoot or thrumming cicada. Through education, science

and advocacy, we will continue to achieve conservation action — to protect and restore the movement and dispersal of native plants and animals and reduce threats and barriers on the landscape.

In the face of increasing threats to our Sky Islands corridors, from new transmission lines, politically charged borderlands, border infrastructure, rapid urbanization, and increasing irresponsible off-road vehicle use, we have a challenge ahead of us. And yet, it was my first day on the job for the Wildlife Linkages Program, a cloudless afternoon on April 12, that I received a call from volunteer Bernice Isaacs and I saw the first image of an ocelot captured on camera, over 40 miles *north* of the border. A sign, and symbol of hope, of what we seek to protect — and what we stand to lose.

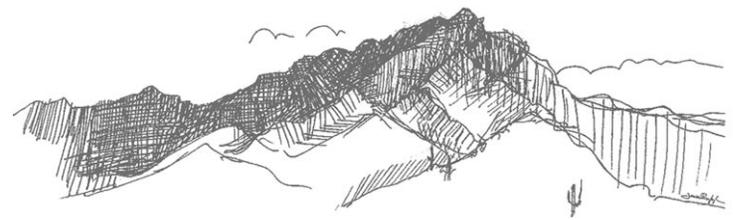
## **Landscape Restoration Program**

by Sarah Williams

Riparian restoration has been the name of the game throughout the spring and summer of this year. Several new faces have joined us in our volunteer field work, many from the Phoenix area. Our continued gratitude goes to the folks at *Volunteers for Outdoor Arizona* for hosting an interactive website that lets SIA (and other non-profits) post volunteer opportunities at no charge. Check it out at [www.voaz.org/](http://www.voaz.org/).

March and April kept us extremely busy as we finalized our plans and implemented the Peloncillo Mountain Ciénega Restoration Project in southwestern New Mexico. Over the course of 21 (windy!) field days, the project team of Sarah and Trevor from SIA and our partners from Stream Dynamics and Dryland Solutions of New Mexico used careful planning, technical expertise and heavy equipment to accomplish the multi-staged implementation plan. Through the removal of several man-made diversions and levees and the construction of large rock structures and earthen dams in the creek channel, the natural hydrological regime of the historic ciénega will return. Additionally, the project will provide enhanced habitat for a large population of the federally-listed (Threatened) Chiricahua leopard frog (*Lithobates chiricahuaensis*).

In May we started a series of field weekends working in cooperation with the Bureau of Land Management and The Nature Conservancy in Aravaipa Canyon. The work aims to heal erosion in the tributaries of the upper watersheds around Aravaipa Creek. Erosion from an un-authorized road has led to head cuts and other disturbances



of a sacaton grassland at the confluence of Turkey Creek and Oak Grove Canyon. In addition we have assisted The Nature Conservancy on their newly acquired Cobra Ranch to install water harvesting structures in degraded Stowe Gulch.

June marked a crucial month for bullfrog control as efforts needed to get underway before the arrival of the summer rains. Volunteers traveled out to the Tumacacori Highlands over the course of two field weekends to work a single dirt stock tank that was estimated to contain over 10,000 bullfrogs, all in the juvenile and tadpole stages. Eradication here was critical because of its proximity to Sycamore Canyon. Daytime seining and nighttime hand-capture methods were employed the first weekend and, although effective, it was apparent that a stronger removal plan was needed. During the second weekend volunteers installed bullfrog-proof fencing around the tank while two large pumps ran to drain the water. This work is a continuation of a successful bullfrog control and native frog conservation project started last year in cooperation with The University of Arizona, US Geological Survey, Buenos Aries National Wildlife Refuge, Arizona Game and Fish Department and the US Forest Service.

## **Madrean Archipelago Biodiversity**

**Assessment** by Tom Van Devender & Marc Trinks

*Despite the summer heat, the MABA Project continues in its exploration of the Sonoran Sky Islands! In early summer, MABA staff and accompanying scientists revisited the Animas Valley and Cuenca Los Ojos properties, and explored the Sierra San Jose and Sierra Chivato ranges near the border. The team also completed the third MABA Expedition to the Sierra La Madera with 38 participants and a wealth of flora and fauna!*

In May, a group of six MABA biologists visited the Cuenca Los Ojos Foundation ranches in northeastern Sonora, Mexico. This trip was an extension of the September 2009 MABA Expedition to the Sierra San Luis to make additional observations in late spring. The temperate grasslands in the Animas Valley were the primary target area, although other habitats were visited on Ranchos El Diablo, Los Ojos, and Puerta Blanca.

**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.**

After nearly a decade without cattle grazing, the habitats and the fauna are recovering very well. In the Animas Valley, two large herds of mule deer — 14 and 22 animals — were seen in very open areas! Dale Turner and Chip Hedgcock captured several interesting lizards in drift fence traps, including Gila spotted whiptail (*Aspidoscelis flagellicauda*) and short-horned lizards (*Phrynosoma hernandesi*). At Rancho El Diablo, a tiny southwestern blackhead snake (*Tantilla hobartsmithi*), a Clark's spiny lizard (*Sceloporus clarkii*), plus two Gila monsters (*Heoderma suspectum*) were photographed! At Rancho Puerta Blanca, an alert coachwhip (*Masticophis flagellum*) was tracked across a dirt road into a mesquite. In the Animas Valley, thousands of large green dragonflies were flying overhead, apparently migrating to the west!

The plants of Cuenca Los Ojos, and especially those in the Animas Valley, are very interesting for Sonora and northwestern Mexico. Several new populations of silky sophora (*Sophora nuttalliana*) were discovered, including one in the Municipio de Naco to the west. Erik Enderson led a nocturnal foray to photograph the stunning flowers of Chihuahuan night-blooming cereus (*Peniocereus greggii* var. *greggii*) on Mesa las Víboras on the old road to Colonia Morelos. Ana Lilia and Tom observed 40-60 species of plants on each of four plant *relevés* (plotless vegetation surveys) in the Animas Valley. They vouchered over 200 species with specimens that will go to herbaria at the Universidad de Sonora and The University of Arizona.

We greatly appreciate Valer and Jho Austin for their support of research activities in this important biological area! As always, we'd like to extend our thanks to the Veolia Environment Foundation ([www.fondation.veolia.com/en/](http://www.fondation.veolia.com/en/)) for making the MABA Project possible!

In August, Tom and Marc recovered from the third major MABA Expedition documenting the unique plants and animals of the region in the *Sierra La Madera* near the town of Moctezuma, Sonora. This was the largest Expedition to date, with 38 participants representing five universities, a research center, CONANP (La Comisión Nacional de Áreas Naturales Protegidas), and SIA staff!

Partners for this expedition were the Universidad de la Sierra (Moctezuma), the Universidad de Sonora (Hermosillo), and the Reserva Forestal Nacional y Refugio de Fauna Silvestre Ajos-Bavispe (Ajos-Bavispe National Forest and Wildlife Reserve), led by Sky Island Alliance. Stay tuned for post-trip reports, photos and details at [www.skyislandalliance.org/maba.htm](http://www.skyislandalliance.org/maba.htm)!

### **Northern Mexico Conservation Program**

*by Sergio Avila*

Still excited from finding our first jaguar photographs in northern Sonora (*see* Restoring Connections, Vol.13, Issue 1, Spring 2010), we have continued and improved our field work in Rancho El Aribabi, successfully snapping photos and discovering tracks and other sign of all four cats. In March, Sergio Avila and volunteers found big-cat kill sites, observing and differentiating the remains to describe how jaguars and puma capture and feed upon their preferred prey (white-tail deer). In April, Melanie Emerson and Sergio led a group of in- and out-of-state volunteers including Scott Lope, Discovery Channel "Hero of the Year 2009," and several zoo keepers and volunteers from facilities in Florida, Texas, Pennsylvania, Colorado, and local SIA volunteers Shiloh Walkosak and Paul Condon. They hiked along canyons, visited the Robles Family, shared with new like-minded friends and checked remote cameras — everyone celebrated new photographs of all *cuatro gatos* (jaguar, ocelot, puma, and bobcat) and enjoyed the first observation of a badger, enjoying the sunset on its burrow. In September, Sarah, Trevor and Marc led a mixed group of SIA volunteers and students from the Border Studies Program at Earlham University, on riparian restoration. This field work served as training for local partners and students, and advanced habitat restoration in the ranch.

This summer we initiated flights along the *frontera* to compile baseline data of the "before-and-after" effects of the border infrastructure, as part our Bring Back the Cats project, and supported by LightHawk ([www.lighthawk.org](http://www.lighthawk.org)). By photographing the border landscape from an aerial perspective, locating types of fencing (pedestrian fence, concrete walls, barbed-wire fence, metal-mesh walls, etc.) and documenting

impacts on the ground (access roads, observation towers, lights, blocked drainages or destroyed vegetation) we will describe threats to wildlife corridors, long-term impacts on protected lands and bi-national watersheds at risk of blocking or diverting water. These effects will be measured on private and public lands (Wildlife Refuges, Wilderness and Riparian Conservation Areas, National Parks, etc.) within the Sky Island region. This is the first phase of a multi-layered project along the border. We thank volunteer pilot Dan Meyer, and Laura Stone of LightHawk for their great organization, expertise and support, and photographers and data collectors Melanie Emerson, Acasia Berry, Sky Jacobs and Paul Condon for making it possible.

### **Conservation Policy Program**

*by Louise Misztal*

We've been making new connections this fall at Sky Island Alliance and not just in the form of wildlife corridors. In September we hosted *Climate Change Adaptation in the Arid Southwest: A Workshop for Land and Resource Managers* in order to talk about what climate change means for the region, and what we should be doing next. Sky Island Alliance co-convened the workshop with a stellar list of partners including EcoAdapt, the Udall Foundation Institute for Environmental Conflict Resolution, The University of Arizona Institute of the Environment and School of Natural Resources and the Environment, the Bureau of Reclamation, the US Fish and Wildlife Service, CLIMAS and Sonoran Joint Venture. The workshop was well attended with diverse representation from over 40 different organizations and agencies including conservation organizations, research institutions, state, federal, county and municipal, agencies and private landowners among others. We had dynamic discussions about how the region and our collective work are vulnerable to climate change and what sorts of strategies we can start to employ.

This workshop, the first in a three-part series Sky Island Alliance is convening a part of our climate change adaptation project, was focused on building a regional network of people and organizations working on land and resource

*continued page 18*



Ocelot documented by a remote camera near the US-Mexico border. ©2010 Sky Island Alliance and El Aribabi.

## BIOLOGICAL CORRIDORS AND LANDSCAPE CONNECTIVITY: The Sky Island Region as Continental Bridge for Wildlife

by Sergio Avila, Jessica Lamberton, and Louise Misztal

### Biological Corridors and Landscape Connectivity 101

Corridors are pathways that allow regular travel, seasonal migration or population dispersal for plants and animals. Wildlife corridors are the “streets and alley ways” that animals follow to find food, water, breeding grounds or mates, and shelter; such streets, for example a river bed or a mountain ridge, connect isolated habitats, like pine-oak forests or permanent water sources. Landscape connectivity is the spatial arrangement of different types of habitats and other elements in the landscape, and the behavioral response of individuals, species or ecological processes to the physical structure of the landscape.

As habitat loss and fragmentation are the highest threats to biodiversity worldwide — leading to the isolation and potential extirpation of populations — the preservation of wildlife corridors moderates negative ecological effects, increasing the connectivity of isolated patches of habitat, also known as *cores*. Historically, people’s lives were interconnected with the movement of wildlife; today, wildlife corridors are vital for the adaptations and survival of wildlife, and to

human traditions and economic activities like wildlife-watching, pollinization of crops, or hunting.

The recent documentation of ocelots and jaguars in the Sky Island region is proof that these wild lands sustain sensitive species; and that some wildlife corridors still allow the free movement of species that have occupied this region historically; their presence is testament of good habitat conditions and healthy prey populations. For jaguars, ocelots, and the vast diversity of wildlife in the region, protected habitat blocks and corridors are essential to their survival.

### Climate change and the importance of preserving regional connectivity

According to Jonathan Overpeck, Director of the University of Arizona Institute of the Environment, who served as a Coordinating Lead Author for the Nobel Prize winning UN Intergovernmental Panel on Climate Change (IPCC), the southwestern United States is currently one of the fastest-warming regions in the world. Parts have warmed more than 2° Fahrenheit relative to average 20th century temperatures.

Disruptions in the amount, timing and intensity of precipitation, combined with increased temperatures and fire events, are already having considerable visible impacts on species and ecological systems in the Sky Island region. Climate change and resulting shifts in natural resources available for ecosystem maintenance and human well-being is the most significant long-term threat facing the Sky Island region. In the face of this enormous amount of change, protecting and managing wildlife corridors and habitat connectivity becomes more important than ever. Habitat connectivity facilitates species movement, gene flow and key ecosystem processes such as pollination and dispersal, all of which contribute to a resilient landscape that is able to adapt and respond to dramatic environmental changes. Corridors and connected networks of reserves will allow species to move with changing conditions, particularly along longitudinal and elevation gradients in the Sky Island region.

### The Wildlife Corridors Conservation Act of 2010

On April 2010, U.S. Representatives Rush Holt of New Jersey, and Jared Polis of Colorado,

## Biological Corridors and Landscape Connectivity

*continued*

introduced the Wildlife Corridors Conservation Act to identify and protect wildlife corridors in the United States. The Wildlife Corridors Conservation Act would create a national wildlife corridors information program within the U.S. Fish and Wildlife Service, establish a Wildlife Corridors Stewardship and Protection Fund to provide grants for the management and protection of essential wildlife corridors, and require the Departments of Agriculture, Interior, and Transportation to consider the preservation of wildlife movement areas in their management plans. This legislation incorporates and builds on the Climate Change Safeguards for Natural Resources Conservation Act, sponsored by U.S. Representative Raul Grijalva of Arizona. This bill should facilitate meaningful cooperative opportunities and communication between states, federal agencies, tribes, industry, and private landowners.

### **Wildlife Corridors Applied: the Recovery of the Ocelot in the Sky Islands**

With the help of our volunteers and using unobtrusive wildlife monitoring techniques, Sky Island Alliance documents wildlife presence and studies their movements across the region. We have documented male and female ocelots since 2007 in northern Mexico, 30 miles south of the international border, and earlier this year we successfully photographed a jaguar in the same area. Also in April, SIA volunteers participating in the Witness for Wildlife program (supported by Patagonia, Inc.) retrieved images of the first live ocelot ever recorded in Arizona; the image had been taken by the remote camera in November 2009. Although politically divided by an international boundary, and the border infrastructure along it, the two areas where we have found ocelots seem to be connected by a wildlife corridor.

According to the U.S. Fish and Wildlife Service's latest Ocelot Recovery Plan published for public comments last September, crucial steps for the recovery of ocelots include protecting prime ocelot habitat in continuous blocks connected by corridors, and determining ocelot population sizes, distribution and status in the northern states of Mexico. The USFWS states that "connectivity among ocelot populations or colonization of new habitats is inhibited by road mortality among dispersing ocelots. Issues associated with border barrier development and patrolling the boundary between the United States and Mexico further exacerbate the isolation



**An ocelot in Arizona! ©2009 Sky Island Alliance**

of Texas and Arizona ocelots from those in Mexico" (USFWS Ocelot Recovery Plan 2010).

The documentation of live ocelots and jaguars, in addition to all wildlife species that occupy this region, is an important component of conservation action: by documenting wildlife species in an area we learn about their presence, their diversity, and their space and temporal preferences — where they move and what time of the day or season they are active. Ocelots move along undisturbed, densely vegetated riparian areas, and hunt mostly at night, likely feeding on cottontail rabbits. These medium-sized tropical cats have long tails and agile bodies, weighing about 20 to 35 pounds. Their tan-brown fur is darkly spotted with distinguishing parallel black stripes on the forehead, neck and shoulder.

Ocelots are listed as endangered on the U.S. Endangered Species list. There are only nine historical records of ocelots in Arizona, dating from fossil records in the Holocene era ten thousand years ago to an ocelot killed on the road in Oracle in 1967. In the United States, ocelots once ranged throughout the southwest from Arizona to Louisiana; now threatened throughout their entire range, ocelots are becoming exceedingly rare. For ocelots, and the vast diversity of other wildlife in the region, protected habitat blocks and wild corridors are essential to their survival.

Clearly, Sky Island Alliance's monitoring of wildlife on both sides of the border and recent documentation of ocelots favor the recovery of a species that highly depends on core habitat and connecting wildlife corridors, either to colonize

new areas, or to establish healthy breeding populations in the Sky Islands. Our work to designate Wilderness in the border counties of Santa Cruz and Cochise in southern Arizona (Tumacacori Highlands and Land of Legends, respectively), in addition to promoting designation of private preserves in northern Sonora, like Rancho El Aribabi, are steps that further the ocelot's recovery goals and engage with a diverse number of stakeholders.

In the face of increasing threats to our Sky Island wild lands, from a changing climate, new transmission lines, politically charged borderlands, border infrastructure, rapid urbanization, and increasing irresponsible off-road vehicle use, we have a challenge ahead of us. And yet, ocelots and jaguars still roam the wild lands of southern Arizona and northern Mexico — a sign, and symbol of hope, of what we seek to protect — and what we stand to lose. Through education, science, and advocacy, we will continue to achieve conservation action — to protect and restore the movement and dispersal of native plants and animals and reduce threats and barriers on the landscape. Your efforts will help make this happen — through volunteer work, membership, and the active support of new wilderness designations in Arizona.

**You can be part of JAGUAR *and* OCELOT conservation efforts in the Sky Island region! Adopt a camera and support on-the-ground research & conservation.**

**INTERESTED?**

Contact Sergio Avila at [sergio@skyislandalliance.org](mailto:sergio@skyislandalliance.org).  
For more information on this project, please visit  
[www.skyislandalliance.org/jaguars.htm](http://www.skyislandalliance.org/jaguars.htm)



Beaver dams. Courtesy Holly Richter.

## THE SAN PEDRO RIVER CORRIDOR: The Magic of Water

by Holly Richter, Ph.D, Upper San Pedro Program Director, The Nature Conservancy

Water is the essence of life. But water takes on an even higher level of importance within our relatively arid landscape in the Southwest. Many rivers in our region have lost their perennial flows due to the combined effects of groundwater pumping, drought, streamflow diversion, and degraded watershed conditions. But the San Pedro still flows year-round, year after year, in approximately half of its 170 mile journey between the mountains in Sonora, Mexico and its confluence with the Gila River to the north.

The San Pedro's waters support an astounding array of biodiversity, and represent one of the largest international neo-tropical migratory corridors in the West, an essential link which is part of a much larger international flyway. Its role is of hemispheric importance, connecting the winter ranges for neotropical bird species in Central and South America with their summer ranges and breeding grounds in North America and Canada.

You don't have to be a scientist to recognize the biological significance of this corridor, or even be able to see. Sounds alone tell the story of how special this place is, and how this corridor differs from the surrounding grasslands and shrublands. The early summer months are punctuated throughout the day by the descending mournful whistles of the gray hawk. Dozens of yellow warblers can be heard repeating their verses all day long. Once the monsoon rains start, the sounds of churning floodwaters, capable of floating large trees like wine corks, are loud enough to wake you up at midnight. As the summer progresses, Woodhouse toads by night and cicadas by day lead the main chorus, until fall surprises us with its return in September. It's then that the sharp whistling sound of duck wings

whirl through misty sunrises. On any given day of any season you can tell if you are near this great corridor by sound alone...travel less than a mile away, in any direction, and the soundscape will completely differ at any time of the year.

Scientists have also made some amazing discoveries about this place. The flocks of migratory birds that depend upon the river for their migration are large enough to appear on radar as they fly, commonly during the night hours. There are no squealing tires, beeping horns, or engine exhaust produced in these rush hour events. Unlike the sounds produced by raucous summer floods, we are seldom aware of these more secretive events.

While the San Pedro is best known for its importance as an avian migratory corridor, it also provides many other important ecosystem services that we infrequently recognize. Contemplate for a moment the complex biological system that thrives below our feet in floodplain soils, in the hypohoreic zone. Where surface water from the river mixes with groundwater flowing out of the larger regional aquifer, an incredibly diverse array of invertebrates thrive underground. Yet relatively little is known about this hidden biodiversity, except that these organisms undoubtedly play a critical role in everything from nutrient cycling to the maintenance of water quality.

And then there is the importance of this river system to connect more localized habitats for resident species in the region. One day along Banning Creek, one of the larger San Pedro tributaries within the Mule Mountains, I saw a small band of Gould turkeys in what looked like a somewhat deliberate march up the creek bed.

Turkeys are not commonly seen in the Mules, as they are in the Huachuca Mountains across the valley. Wildlife biologists tell me that turkeys, like many other species, likely use the mainstem San Pedro, and its tributaries, to move between sky island habitats. I couldn't help but envision how turkeys must interpret the landscape in our watershed. In human terms it may be something like a subway map in a metropolitan area: take the "yellow line" (Ramsey Creek) from the Huachucas to Grand Central Station (the San Pedro), then transfer to the "red line" (Banning Creek) to get up to the Mules....

Floods are among the underlying processes that revitalize the river system. They act as conveyor belts that recharge floodplain aquifers, redistribute nutrient-rich sediment, create new log jams and debris piles, and transport propagules and seeds. Once in awhile they even give the unsuspecting beaver a free ride downstream. A century after beaver were extirpated from the San Pedro, an effort by AZGFD and the BLM to reintroduce beaver back into the riparian corridor was successful. Telemetry indicated that the first animals introduced dispersed widely, some as much as 70 miles, as later their offspring continued to do. Beaver were observed upstream in the Mexico portion of the river basin a few years later. Their movement across the international boundary was a vivid reminder of the need for connectivity across jurisdictional boundaries, even those that divide entire countries.

If the San Pedro River functions as a primary artery through its valley, then the numerous tributary washes that feed it comprise a complex circulatory system reaching throughout the entire

*continued next page*

# MAKING SAFE WILDLIFE CROSSINGS A REALITY

by Kathleen Kennedy, Coalition for Sonoran Desert Protection

Wildlife linkages are a critical component of healthy ecosystems. In southern Arizona, they link the Sky Islands, providing space for wildlife species that need large areas of land for migration and dispersal, while also protecting smaller species that simply require undisturbed desert habitat. The protection and restoration of Arizona's wildlife linkages has become a priority in recent years. As our population grows, more residential and commercial development is built, and our transportation network expands. Due to this growth, our wildlife linkages face destructive fragmentation and habitat loss.

In addition, as the realities of climate change become clearer, intact wildlife linkages will be especially important for Sonoran Desert wildlife. As our climate warms, species will need adequate open space to move between the cooler sky islands and the warmer desert valleys. The amount of riparian habitat, availability of water sources, and overall geographic distribution of ecosystems will likely shift in the years ahead. Wildlife linkages will provide important flexibility and space for species to adapt to our changing environment.

In the last decade, Pima County's wildlife linkages have received increasing attention. In 2001, Pima County incorporated the Conservation Lands System (CLS) into their long-range Comprehensive Land Use Plan. The CLS includes the designation of

## San Pedro River Corridor *continued*

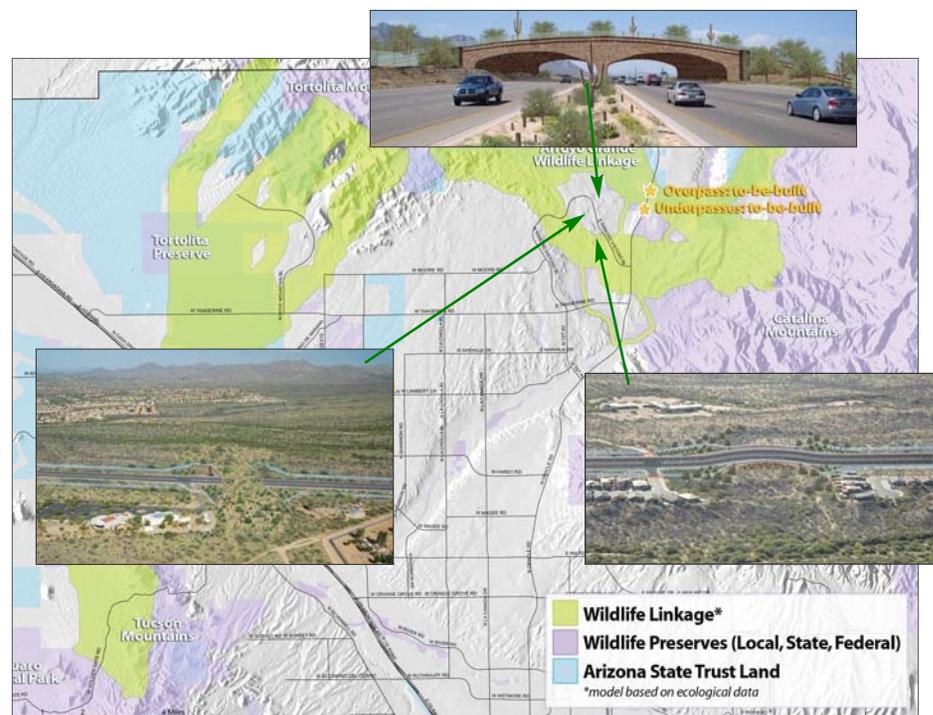
watershed. Ephemeral washes sustain more xeric riparian communities, as different from the mainstem San Pedro's lush forests as they are from the matrix of grasslands and shrublands which they traverse. Altitudinal gradients of several thousand feet extend from the headwaters of surrounding mountain ranges down to the mainstem San Pedro in the central valley, resulting in a diversity of riparian habitats including willow shrublands, sycamore and mixed deciduous forests, to desert willow, mesquite, burrobrush shrublands, and finally cottonwood/willow. But throughout the watershed the riparian road map is always there, that abruptly distinct difference between floodplain and surrounding uplands. And it's a corridor system more evident, and certainly more fascinating, than any metropolitan subway map could ever be. It's the magic work of water at the landscape scale.

six "Critical Landscape Linkages" that link the major mountain ranges surrounding the Tucson metropolitan area. In 2006, voters approved the 20-year Regional Transportation Authority Plan (RTA). As part of the RTA, a discrete spending category for wildlife linkages allocates \$45 million for wildlife linkage-related projects. This money is slowly being dispersed with the oversight of the RTA Wildlife Linkages Working Group, comprised of representatives from local jurisdictions, Arizona Department of Transportation, Arizona Game and Fish Department, Coalition for Sonoran Desert Protection, and Sky Island Alliance.

In December 2009, the largest project to date received RTA funding. \$8.2 million was approved for three wildlife crossings (two underpasses and one overpass) along Oracle Road. These crossings will be built in conjunction with an ADOT road-widening project, where a section of Oracle Road will be expanded from four to six lanes. By integrating these crossings into the on-going ADOT project, significant cost-savings will be realized.

The Oracle Road wildlife crossings are the most recent in a series of successes to preserve the Santa Catalina-Tortolita Mountains wildlife linkage. In 2006, the Coalition for Sonoran Desert Protection (Coalition) collaborated with Oro Valley, Pima County, and the Arizona State Land Department in the design of a 1-kilometer wide wildlife linkage through the 9,000-acre *Arroyo Grande* development just south of the Pima-Pinal County line. Arroyo Grande is currently in the conceptual planning phase and the land is still owned by the State Land Trust. Oro Valley plans to annex the land at some point in the future and remains committed to protecting the important biological resources within the area.

In 2009 and early 2010, the Coalition also helped coordinate the acquisition of important open space parcels adjacent to the wildlife overpass location on Oracle Road. These parcels were purchased by Pima County using money from the 2004 Open Space Bond that was allocated to the Town of Oro Valley. In total, 13 acres were purchased for \$920,000. Given the constraints created by nearby development, the preservation of these parcels is important. They will provide crucial open space to



**Proposed Wildlife Crossing structures on Oracle Rd. north of Tucson. Courtesy Coalition for Sonoran Desert Protection.**

wildlife as they approach the wildlife overpass from both the east and west.

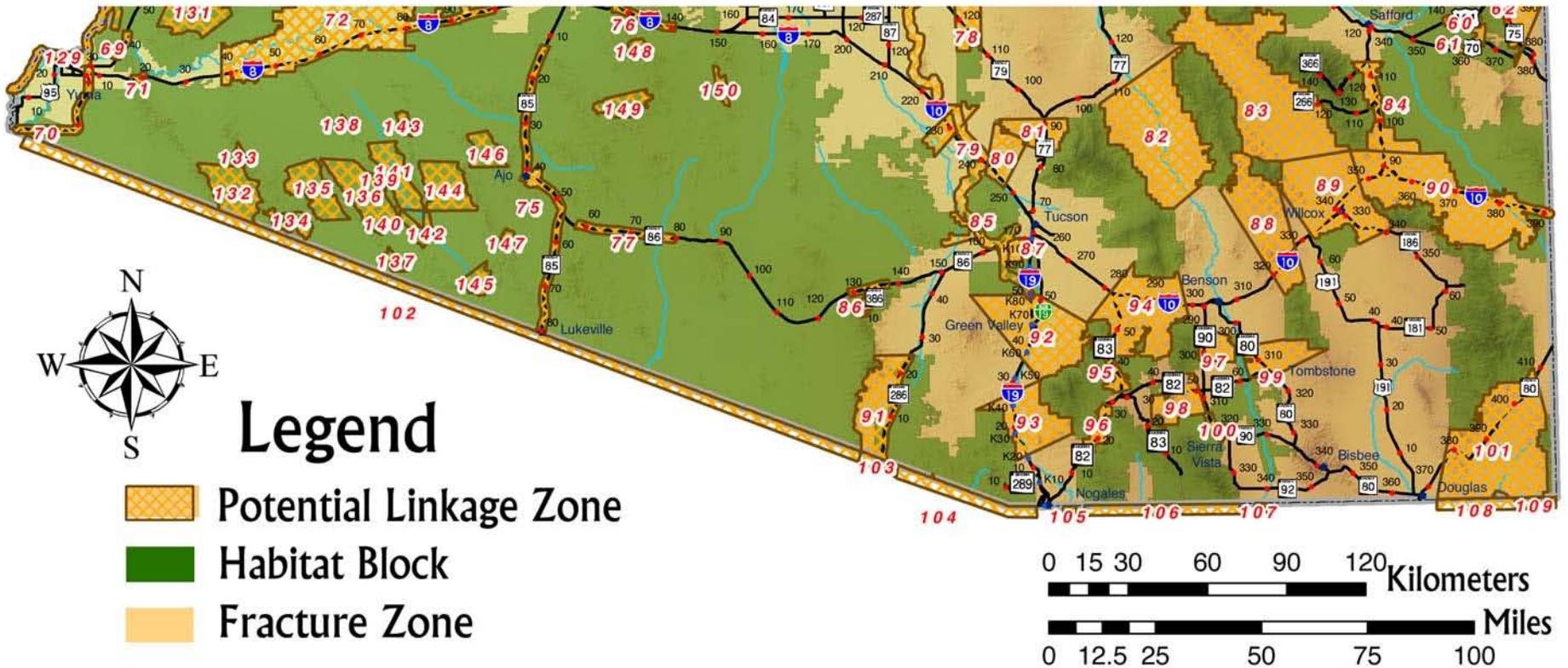
As the Oracle Road crossings project moves forward, the Coalition will remain involved with project implementation. This includes development of a proposal for pre- and post-construction monitoring; continued work with ADOT as they finalize design of the crossings, associated fencing, and placement of infrastructure; working with the U.S. Forest Service and Pima County to limit human access to the crossings; continued public education, especially to adjacent landowners and residents; and completing the Arroyo Grande process through our collaboration with Arizona State Land Department, Town of Oro Valley, and Pima County.

Unfortunately, in the past year ADOT has shown a decreasing interest in addressing wildlife linkages in their projects. In June 2010, ADOT canceled two wildlife crossing projects and tabled three wildlife linkage studies, all of which were primarily financed with federal funds. We are currently awaiting a final agreement between the RTA and ADOT that outlines how RTA funds will be disbursed for the Oracle Road crossings. *[Editor's Note: As we're going to press, it appears that RTA and ADOT have not been able to reach an agreement; stay tuned for more details.]* This agreement is essential for the project to move forward and is time-sensitive due to ADOT's already-moving design and construction schedule.

The Coalition for Sonoran Desert Protection will continue to dedicate resources to the Oracle Road crossings in the years ahead, along with many other wildlife linkages projects in southern Arizona. Sonoran Desert wildlife depend on linkages for their survival; as our human footprint grows, we owe it to them to plan wisely, preserving intact and robust wildlife linkages for generations to come.



# ARIZONA'S WILDLIFE LINKAGES



**Note: Linkage numbers are for identification purposes only. These numbers do not imply priority status.**

From [www.azdot.gov/Highways/OES/AZ\\_WildLife\\_Linkages/assessment.asp](http://www.azdot.gov/Highways/OES/AZ_WildLife_Linkages/assessment.asp)

## DESIGNING WILDLIFE CORRIDORS *by Paul Beier, School of Forestry, Northern Arizona University*

Habitat loss and fragmentation is the number one threat to biodiversity. With increasing human population growth and urbanization, wildlife habitat decreases and becomes fragmented; this can lead to decreased genetic diversity and extinction. Restoring and protecting existing habitat and providing linkages between fragmented areas is becoming critically important to the continued existence of many species. Wildlife habitat corridors allow populations to interact, interbreed, and, as climate changes, to shift their geographic range. Planning, designing, and implementing wildlife corridors can be difficult, and I have spent 20 years trying to improve the scientific basis for corridors.

My experience conserving wildlife corridors began in 1988, when I started a 5-year study of mountain lions in Southern California. My first scientific discovery was grim. Mountain lions were on the road to extinction in every southern California mountain range. As the encirclement of each mountain range became complete, each mountain lion population would wink out, one by one.

I also discovered that it didn't have to end that way. In 1990, mountain lions were still moving between mountain ranges. If they could continue to do so, they could survive in every linked mountain range. More important, by radio-tagging cubs, I learned that these animals would find and use narrow, highly disturbed corridors through urban areas. Imagine how successful a corridor would be if we designed them to facilitate movement by animals. Not just mountain lions,

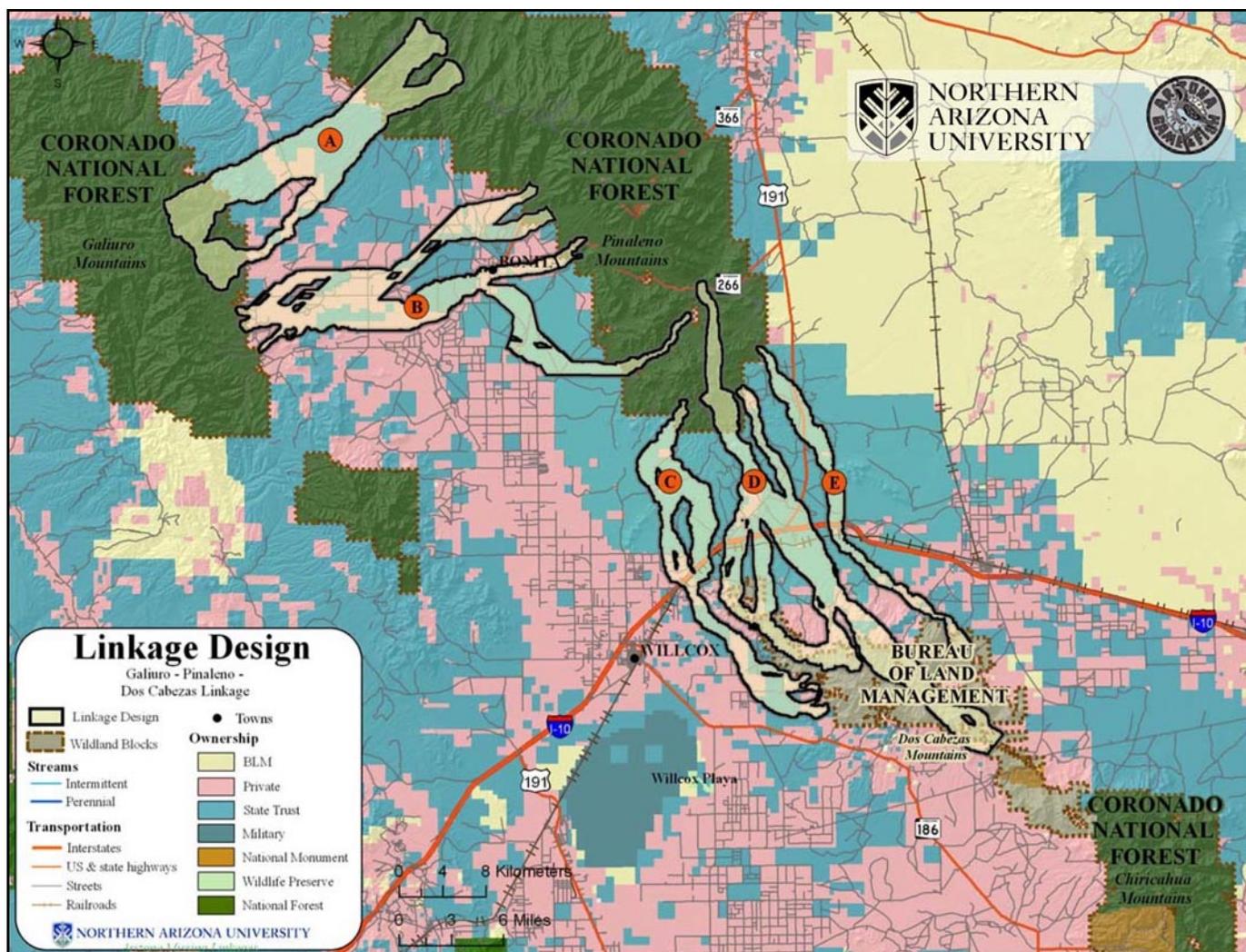
**Wildlife corridors prevent fragmentation and extinction of populations, increase gene flow, and decrease wildlife-vehicle collisions.**

but also badgers, jackrabbits, bighorn sheep, arroyo toads, steelhead trout, and even plants and invertebrates.

To conserve wildlife corridors, managers and conservationists need both broad-scale and fine-scale maps. The broad-scale map serves as a decision-support tool and a concise expression of the desired future landscape. Each fine-scale map prescribes site-specific interventions needed to conserve or restore connectivity in a particular

linkage area. Arizona developed its statewide map (excerpted above), the Arizona Wildlife Linkage Assessment in 2006. Since then, Maricopa, Coconino, and Yavapai counties have started developing broad-scale county maps to recognize corridors too small to be included in the statewide map. This is helpful because counties do almost all land-use planning in Arizona. Once corridors are on the map of a county land-use planner, future development can be made to conform to wildlife needs, rather than leaving the leftovers to wildlife. Even before 2006, Pima County had developed a corridor map as part of its Sonoran Desert Conservation Plan, and Pima County will soon collaborate with Arizona Game and Fish Department to update its corridor map.

Importantly, Arizona Department of Transportation has been a key supporter of developing the statewide and county maps. They use the maps to detect when a project overlaps a corridor. When it does, ADOT contacts Game & Fish early in the planning process, often initiating a fine-scale linkage design. As a result, the engineers go beyond simply mitigation (slowing



The Galiuro-Pinaleno Linkage Design contains two main strands, and the Pinaleno-Dos Cabezas Linkage Design contains three main strands. Multiple strands serve species with diverse habitat needs. The Linkage Design also calls for small culverts on roads in Sulphur Springs Valley.

down the rate at which things get worse) to create highways that are *more* wildlife-friendly than the two-lane road that is being replaced. The huge wildlife underpasses on State Route 260 east of Payson are a great example. Another great example is the wildlife overpass and underpass that will be built on State Route 77 near the Town of Oro Valley (see article, page 8)). Despite recent personnel changes in ADOT, I believe they remain committed to this approach.

As mentioned above, each fine-scale map prescribes site-specific interventions needed to conserve or restore connectivity in a particular corridor. I call each fine-scale map a “linkage design.” I helped develop 16 linkage designs for Arizona ([www.corridordesign.org](http://www.corridordesign.org)), including several in the Sky Island region (the map to right is an example).

Historically, most linkage plans have been developed to serve the movement needs of one or two focal species, typically large carnivores. In contrast, each of our linkage designs serves the needs of at least a dozen focal species, often including plants, invertebrates, amphibians, reptiles, and fish. Corridors designed for multiple species will be close to functioning ecosystems, rather than narrow gauntlets a few animals might use with a bit of luck.

Because of my association with mountain lions, people often assume that I am promoting

“mountain lion corridors.” Mountain lions, bears, jaguars, and large carnivores are important species in corridor design because they are area-sensitive. They also make great flagships for garnering public support. But large carnivores should never be the sole focus of a linkage planning effort.

First, many large carnivores are habitat generalists, and able to move quickly through a long corridor that would never be useful to a habitat specialist such as a tree squirrel. Perhaps more important, successful implementation of a “carnivore corridor” could have a *negative* umbrella effect because conservation investors will become less receptive to subsequent proposals to provide corridors for less charismatic species. Large carnivores best serve biodiversity if they are part of a large group of focal species.

Each linkage design is broad not only in the species it considers, but also in the issues it addresses. Conserving land will not create a functional linkage if major highways are not made permeable, an excellent crossing structure will not create a functional linkage if the adjacent land is urbanized, and an integrated land acquisition-highway mitigation project could be jeopardized by inappropriate practices such as predator control, fencing, or inappropriate artificial night lighting. Our plans address all these issues. Perhaps

**Linkages should be designed to serve many species, not just one or two charismatic species.**

most important, our reports include suggestions to engage human residents as stewards of the linkage.

Dan Majka, now working for The Nature Conservancy in Tucson, was the GIS guru on the Arizona linkage designs. We started with design approaches pioneered by South Coast Wildlands ([www.scwildlands.org](http://www.scwildlands.org)) to develop 11 linkage designs in southern California. Dan refined the tools and packaged them into a user-friendly ArcGIS 9 toolset called CorridorDesigner, and wrote some excellent user manuals. Corridordesign.org now distributes the tools and manuals for free. New procedures in the toolset increase the likelihood that our linkage designs will function during the impending period of climate change.

Earlier this year, I worked for the government of Bhutan, a small, poor nation tucked in the Himalayas between Tibet and India. My task was to help them develop a strategy and specific plans to manage 9% of their land area as corridors connecting their 9 large protected areas, creating a conservation network covering 51% of the country. If Bhutan can implement such an ambitious vision, then certainly California and Arizona, with our far greater wealth and expertise, can do likewise. But it will be a challenge. I look forward to it.



In 2006, Arizona produced a statewide Wildlife Linkage Assessment that provides a vision of a connected landscape, and several county assessments are in progress. These assessments help alert county planners and transportation agencies to wildlife corridors.

These course-scale assessments depict corridors as crude polygons. Fine-scale maps — linkage designs — are needed to provide implementable conservation action plans for these corridor polygons. Several linkage designs have been developed for corridors in the Sky Island ecoregion. Implementing these designs can produce landscapes that are more connected than the landscapes we have today.

# THE SIERRA MADRE OCCIDENTAL AS A BIOLOGICAL CORRIDOR and its Importance in Regional Biodiversity Conservation between the U.S. Southwest and Northwest Mexico

by Jorge Servín, PhD, Universidad Autónoma Metropolitana, Unidad Xochimilco, División de Ciencias Biológicas y de la Salud, Departamento El Hombre y Su Ambiente, Lab. Ecología y Conservación de Fauna Silvestre. Translation to English and adaptation by Sergio Avila and Marc Trinks.

I came to work as a biologist in the Sierra Madre Occidental (Western Sierra Madre) in May 1983 on a very ambitious project, and one which I didn't know at the time how much of my professional life it would demand ... almost 30 years have passed, and still we have yet to achieve the goal that we, a small group of biologists set for ourselves that year... the conservation in the wild of the Mexican grey wolf (*Canis lupus baileyi*) in México. We have not abandoned the goal; we are very close. In reflecting on what we've accomplished throughout these years, in which we have traveled this mountainous region at a slow pace from the U.S. Southwest in Arizona (Huachuca and Peloncillo Mountains and the Blue Range) to Southern Mexico in Chiapas, passing thru Chihuahua, Sonora, Durango, Zacatecas, the Volcanic Mountains of Central México (Eje Neo-Volcánico), the Sierra of Oaxaca, Nudo Mixteco, reaching the Altos of Chiapas... where it is no longer considered the Sierra Madre Occidental. The experience and knowledge gained have been enormous; one of the highlights has been the accumulation of data on the flora and fauna of these mountains, their presence, scarcity, distribution, as well as the ecological and evolutionary processes that have built the landscape that characterizes the Sierra Madre Occidental, with its mountains, canyons, rifts, plains, valleys, rivers, lakes and terrains that form one of the most fascinating regions of North America. I now understand this patient

work has driven my passion for the Sierra Madre Occidental of México and for its protection, conservation and restoration. It is key to preserve its evolutionary processes because they maintain it and will continue delineating future evolutionary processes of the great variety of animals and plants that inhabit this fascinating region.

It is of these last few themes that I'd like to refer in this essay, to the evolutionary processes in the region and reinforce the importance that the Sierra Madre has had, has, and will have as a biological corridor in the past, present and future of regional biodiversity. The mountains that rise up from this chain have functioned as islands and have been used by thousands of species for spatial and temporal refuge in times of critical climatic and geological changes, such as "ice ages" or periods of glaciation that have occurred on the planet and in this region. In the scientific literature these mountain islands are known as *Pleistocene Refuges*, mostly because the fossil record and recent movement patterns and distribution of species in America have been influenced and operated by the presence of the Sierra Madre Mountains. Through these ranges species have moved, and will continue moving from North to South and vice versa during critical climatic periods like glaciations. It is thought this is currently happening with global climate change, where these mountains will

continue serving as refuges for wildlife, and in so doing, not only preserve biodiversity, but also maintain an actively evolving region.

Protecting and conserving the Sierra Madre Occidental's landscapes not only benefits today's species, it also assures that evolutionary processes are maintained and that these mountains continue functioning as refuges for the thousands of species

that constantly move in ecological and geological times from North to South and South to North — a system of biological corridors responsible of maintaining the flux and interchange of plants and animals between the great Nearctic and Neotropical biogeographic regions.

The Sierra Madre Occidental is known for its high proportion of endemic species, as these mountains work as a center of species diversity, a rare characteristic elsewhere in the world. Another particular feature that comes into play in this dynamic of biological corridors is the region's rugged topography which creates varied ecological niches for plants and animals. Examples of the Sierra Madre's biological diversity are plants such as pine and oak trees (*Pinus* spp. and *Quercus* spp.) and some rodents like *Peromyscus* spp. Within this region live endemic species of mammals, birds, gymnosperms and angiosperms. Many of them are legally protected in Mexico and in the United States, as well as internationally by the Convention on International Trade in Endangered Species (CITES).

The forests of the Sierra Madre have a high conservation value, due to the endemic species they host, many of them in danger of extinction. However, the restoration of these species is complex because of their unique ecological niches, as a result of those Pleistocene Refuges.

Based on the ecological and evolutionary importance of the Sierra Madre Occidental as a biological corridor, it is highly necessary to establish joint commitments and public policies between Mexico and the United States, who share this region, to ensure the continued movement of wildlife in all directions in the region. Efforts to restore the species that make up these ecosystems are a strategic investment for the biological conservation of the Sierra Madre, and will increase its importance in the future.



**The Sierra Madre Occidental, a biological corridor that maintains species movements between North and South, as well as connects two major biogeographic areas in the Continent: Nearctic and Neotropical. Map courtesy the author.**





above, from left: **New border meets old border. The crew. Frank pulling wire. The border.** *Courtesy Sarah Williams.*

Below, from top: **Results of a hard day's work. The border near Douglas... taking the long view.** *Courtesy Sarah Williams.*

Inset: **Barbed wire frame.** *Courtesy Meaghan Callahan.*

*Baseline monitoring of environmental impacts — determining the current on-the-ground status of border infrastructure and its construction — is essential for informing policy and decision makers, crafting effective mitigation measures, and planning restoration efforts — including reasoned removal of physical barriers to wildlife habitat connectivity. Of special monitoring concern are federally protected areas, threatened or endangered plant and animal species, and watersheds on both sides of the border. Ultimately, with joy, we work to renew the natural processes which have been interrupted — restoring watersheds, revegetating native landscapes, and reestablishing continental connectivity. The following article appeared on the Summit Hut blog after a crew of employees took advantage of the company's 100 Days of Service volunteer program to help Sky Island Alliance and the BLM pull a now redundant barbed wire fence on the border. Thank you Summit Hut for your ongoing support of the Sky Islands!*

## COILING BARBED WIRE IN DOUGLAS

by Frank Camp, Summit Hut

For a little over a year now, Summit Hut has had a program running called “100 Days of Service”. This program allows staff members to take time out of their work-week to volunteer in the community. Staff members are then compensated, by Summit Hut, for their hours. Over the last year, we have been out in the community counting bullfrogs, leading youth birding trips and doing a saguaro census! We’ve had staff members build trails, pull invasive grass and teach Girl Scouts outdoor skills at the Summit Hut Outdoor Adventure Camp. Most recently a group of six staff members, including myself, joined an effort put forth by the Sky Island Alliance (SIA) and the Bureau of Land Management (BLM) to remove barbed wire fence from the border just east of Douglas.

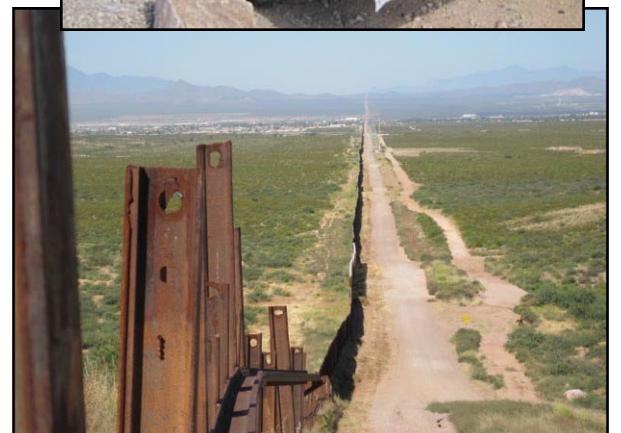
This event was interesting on many fronts: social, political, environmental and personal. When one heads down to the border, one cannot avoid thinking about the political issues going on, but interestingly enough the politics of immigration played a very small role in this adventure. Politically, this was a great partnership between a



government organization, BLM, and an advocacy and service organization, SIA, which worked towards a greater good for all of us. The mission was simple, or so it seemed. Head to the border, a few miles east of Douglas, and remove a seven-strand, barbed-wire ranching fence that was acting as a second barrier for wildlife using this corridor in their migration (the iron vehicle fence being the primary blockade).

As soon as we got to our border marker, we could sense there was something amiss. Just the other side of the vehicle fence there was a bright and shiny, brand-new barbed-wire fence. Apparently the rancher had changed his mind about the agreement to remove the fence and he replaced it instead. This new fence was only a three-strand fence which does alleviate some of the issue, but still poses more of an issue than no fence at all. Without permission to remove the new fence, our task would shift. Our new goal was to clean up as much scrap fence as we could (and tires, trash, clothing...and a car bumper) that all acts as a tangling threat to wildlife.

The entire day spent down there was a tremendous reminder of just how amazing the southern Arizona desert is. The cliffs and rolling



hills were amazing, the vegetation was spectacular, even the giant grasshoppers and their slightly annoying clicking were impressive. It was also a reminder of how human actions (and inactions) contribute to harming this spectacular environment. We spent just about five hours cleaning around 2 miles of border. We collected a trailer full of barbed-wire fence, eight tires, and a pretty good collection of trash, in just two miles! As we returned to Tucson, the crew was in agreement that more work needed to be done, and we wanted to help. Hopefully you want to help too! Keep an eye on the Summit Hut website and Facebook page for future volunteer events you can join us on and check out the Sky Island Alliance for a great organization that is out there all the time doing their part.



# sky island poetry

by rick kempa

Poet Rick Kempa lives in Rock Springs, Wyoming, where he teaches at Western Wyoming College. Despite his distance, he remains an inveterate biker of Arizona wild places:

"I read my first copy of your newsletter last summer, compliments of Dan Schilling, when I was studying in Prescott as part of the Aldo Leopold Institute, and I have kept an electronic eye on it ever since. It's an excellent information source for a worthy and important organization.

"I am a once and future Southwesterner currently living in Rock Springs, Wyoming, where I teach at Western Wyoming College. My hiker's heart, however, belongs to Arizona, particularly the Grand Canyon region. My poems and essays have appeared in numerous journals and anthologies, and a book of my poems, *Keeping the Quiet*, was published in 2008." For more information, please visit [wiki.wyomingauthors.org/Rick+Kempa](http://wiki.wyomingauthors.org/Rick+Kempa).

## Transition Zone

In the morning the mule deer extends its range. There is plenty of room to move around here. Juniper and pinon trees, compact green globes, define themselves not by their reach but by their roots, elaborate networks fanning out. Everything is forthright: wrens scuffling in the red earth, stellar jays carousing on the raspberry, the jackhammer woodpecker, the rattlesnake uncoiling on a rock. Soon the sun will warm its body and anything will be possible.

Slowly, each thing draws its shadow to itself. Edges blur in the white light. The air is a stagnant inland sea through which a fly with difficulty swims. The creek ebbs, the deer huddles in the pinon's shade. Only the raven is abroad, its chortle an abrasion.

Finally, white bleeds yellow. Shafts of light undercut the boughs. A rustle of needles, a creaking limb. The deer snorts and stamps its feet. The woodpecker drills for dinner. Snake eyes focus on the slit where a snout will soon appear. The edges of each blade, rock, tree sharpen. Shadows etched in white light span the distances; everything's connected, a web through which again the mule deer moves.

From the hollows first and then the flats, the colors are extinguished. Pinon and juniper become dark spheres, character reduced to shape. The wind has not just body, but intention, sweeping first one way then another, curling around itself. Perspective shifts, truth becomes a matter of position. Titmice and shrews are afoot and they are ravenous, and the skunk, that glutton, stirs in its burrow.

Only the creek grows more distinct, each riffle announcing itself until there are ten thousand voices. Midstream, a sycamore stands, its pelvis broken, womb scoured by the floods of spring. Its limbs arch every which way, graceless but intact. The sky is breathing its last life into the water; the sycamore is rooted in sky! Its skin, a mottled orange-white, emits a ghostly light.

## Chiricahua

(Apache, "Big Mountain")

Beyond the black-glint  
dive-bomb buzz— the fly

Beyond the heat-slice  
wingflash trill— the swift

Beneath the pressure  
underfoot— the rock

beyond the face-sweat  
cool-caressed— the wind

(It's not so obvious as you think.  
Lizards in their sleep are  
unperturbed by shadow-streams,  
but if you creep too close  
instinct cries *flee!*  
*Here comes a bigger thing!*  
Can you say as much for you?)

The turkey-vulture  
pinnacle-perched  
intently preening underwing  
is more than picturesque.

The fire is more than  
hiss and crack  
eye-captor  
hair-singe stench.

The wren-walk:  
red-ringed eyeballs dart,  
hop-bob, hop-bob,  
each third hop chirps...

The caterpillar's  
hundred-thousand  
pin-pricks on my arm...

More than form  
and color-dance:  
beneath the frame,  
beyond the sense—

I move outside  
(Can I move outside?)

no words

# SKY ISLAND EXPOSURE

AN EVENING OF ART, CONSERVATION, FOOD, MUSIC AND CHANCE!

THURSDAY 11 NOVEMBER 6-9PM ◆ THE LODGE AT VENTANA CANYON

## Supporting Sky Island Alliance

and our work protecting our mountain islands and desert seas

**BUY YOUR TICKETS NOW**

**Patron \$100 ◆ Reception \$25**

[www.skyislandalliance.org/sky-island-exposure.htm](http://www.skyislandalliance.org/sky-island-exposure.htm)

or use the coupon on the back cover



### Sky Island Exposure Art Lottery

100 regional artists have contributed individual works of art in a wide range of media — photography, drawing, painting, sculpture, collage. You purchase a ticket for \$100 with proceeds benefitting SIA. You attend the event and mingle with a cohort of art-appreciating and conservation-minded members of our community, enjoy music, food and drink, and ultimately you select a piece of artwork (order of selection drawn at random) to take home, each piece valued at \$100 or more.

### Sky Island Exposure Music

The evening will be headlined by the addictive, hypnotic and engaging tones of well-known painter/musician, “gypsy troubadour on a stomp box,” Salvador Duran. Salvador Duran is a Mexican-born flamenco guitarist. He can be heard on the title track to the new Iron and Wine/ Calexico CD and has toured with both bands worldwide. A unique talent and a mesmerizing live performer, he comes equipped with his acoustic guitar, wooden stomping box, harmonica and gorgeously resonant voice. In addition, the music of the wonderfully talented Rahe, the UA College of Music students, and Robert Anthony Villa will be featured.

### Sky Island Exposure Reception & Silent Auction

Plan to delight in a savory variety of hors d’oeuvres prepared fresh by The Lodge at Ventana Canyon, and cozy up to the exquisite views at the patio cash bar for a delicious pairing of morsels, spirits and Sky Island reverie! The reception will offer plenty of time to saunter through and familiarize yourself with the art lottery selections and silent auction offerings. Donating artists will join the evening gala, share their perspective, their insight and their ideas on art and on conservation. All reception guests will also be invited to place bids on selected silent auction works from local and regional renowned artists:

**Michael Berman ◆ Rick DeMont ◆ Jack Dykinga ◆ Patricia Frederick**  
**Diana Madaras ◆ Amy Novelli ◆ David Tineo ◆ Gary Williams**



**SKY ISLAND ALLIANCE**  
Protecting our Mountain Islands and Desert Seas

[www.skyislandalliance.org](http://www.skyislandalliance.org)

**THE LODGE**  
AT VENTANA CANYON

## Sky Island Exposure: The Lottery Artists

We recognize that artists are often asked to donate their work to good causes, so this event is designed to honor and support their creative talent, promote their work, and serve their commitment to conserve the precious wildlands and wildlife of the Sky Islands. Their contribution of artwork is a precious gift! Please champion them by attending this event in support of your favorite local artists, check out their website, attend their shows, purchase their art and spread the word! All artists are invited to attend the reception to mingle with you, the patrons and supporters of conservation and art! Get your ticket today!:

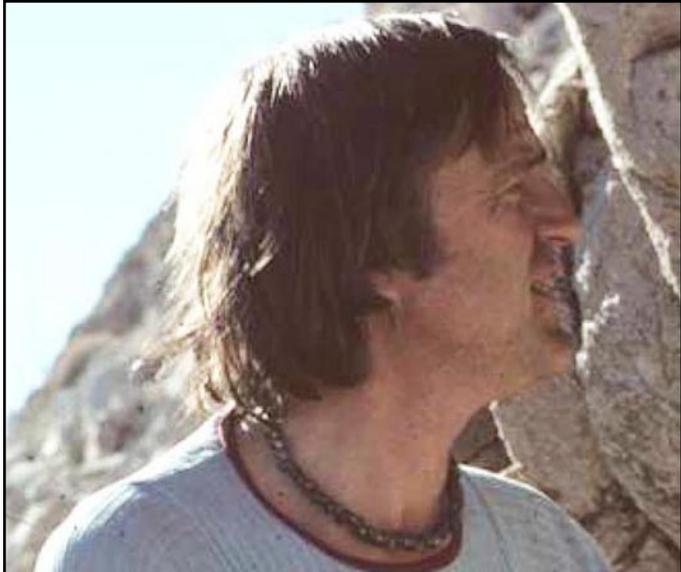
[www.skyislandalliance.org](http://www.skyislandalliance.org)

- |                    |                       |
|--------------------|-----------------------|
| Ellen Abrams       | Judith Kramer         |
| Sofie Albertsen    | Lynn Rae Lowe         |
| Tanya Alvarez      | Joe Marshall          |
| Isabel Amorous     | Dwight Metzger        |
| Junardi Armstrong  | Paul Mirocha          |
| Alexandra Berger   | Catherine Nash        |
| Suzanne Bloomfield | Troy Neiman           |
| Murray Bolesa      | James Nichols         |
| Dennis Caldwell    | Tidbar Ozeri          |
| Lexi Coburn        | Howard Paley          |
| Cooper Colescott   | Alyssa Phiel          |
| Mordecai Colodner  | Connie-Price Johnson  |
| Bhavani Devi       | Carly Quinn           |
| Mary Theresa Dietz | Rebekah Randall       |
| Patricia Dolan     | Martha Rast           |
| Henry El Kaim      | Chris Richards        |
| Arienne Ellis      | Rillito River Project |
| Melanie Emerson    | Lisa Jo Roden         |
| Andra S. Ewton     | Howard Salmon         |
| Jeff Falk          | Amanda Sapir          |
| Betina Fink        | Kay Sather            |
| Elizabeth Frank    | Michael B. Schwartz   |
| Valerie Galloway   | Randy Serraglio       |
| Sylvia Garland     | Stephanie Shank       |
| Niki Glen          | Sandy Siegel          |
| Derentia Grayson   | Ryan Huna Smith       |
| Charles Hedgcock   | Julie Stein           |
| Colleen Hench      | Donna Stephenson      |
| Steve Holmes       | Kay Stephenson        |
| George Hubbard     | Stephen Strom         |
| Michael Hyatt      | Pla Suwatana          |
| Andy Iventosh      | Gary Swimmer          |
| Sky Jacobs         | Wil Taylor            |
| Ciri Johnson       | Tazouz                |
| Beth Jonquil       | Gavin Troy            |
| Bunny & Peter      | Lee Ann Woolery       |
| Kadrich            | Richard Zelens        |
| Patricia Katchur   | Margaret Zinser       |

# The Sky Islands are Far Richer for their Care

*The Sky Island region loses two conservation advocates and friends*

*We are deeply saddened by the passing of Tim Lengerich, a long-time volunteer, friend and uncompromising Sky Island advocate. Tim's steadfast commitment to conservation — and to the Mother that he both celebrated in song and toiled tirelessly to restore and protect — is an inspiration we will celebrate for many years to come. Paul S. Martin passed away on Monday, September 13 at the age of 82. An Emeritus Professor of Geosciences at the University of Arizona, his legacy is founded on his pioneering work in several important areas, and in the work that he inspired in his many students and their students.*



## Paul S. Martin

On Monday, Sept 13th, Paul Schultz Martin died at the age of 82. He was Emeritus Professor of Geosciences, and conducted research in his office in the Desert Laboratory on Tumamoc Hill for 50 years. His legacy is founded on his pioneering work in several important areas, and in the work that he inspired in his many students and their students. He led the investigations in the Pleistocene history and ecological and climatic changes in the southwestern United States, northwestern Mexico, and other arid areas in Australia and South America. He used fossil pollen, plant animal remains in ancient packrat middens and dry caves, and radiocarbon dating to ferret out the 'secrets of the past' that are the 'key to the present'. He was intrigued by the extinctions of late Pleistocene large animals around the world and stimulated vast interest and contentious debate about this great mystery, which has such profound implications into the psyche of our distant ancestors. In the 1980s, he began to follow in the footsteps of Howard Scott Gentry, a botanist who traipsed through the Río Mayo region in the mid-1930s. Paul, his students, and colleagues combed remote areas for new novelties, and published the results in 1998 in the book *Gentry's Rio Mayo Plants*. This book in turn stimulated a decade of intense floristic work in tropical southern Sonora and in the Sierra Madre Occidental that continues today in Sky Island Alliance's Madrean Archipelago Biodiversity Assessment project. Truly an elder in the traditional sense has passed. He lives on in our hearts and mind, and in the knowledge of our region.

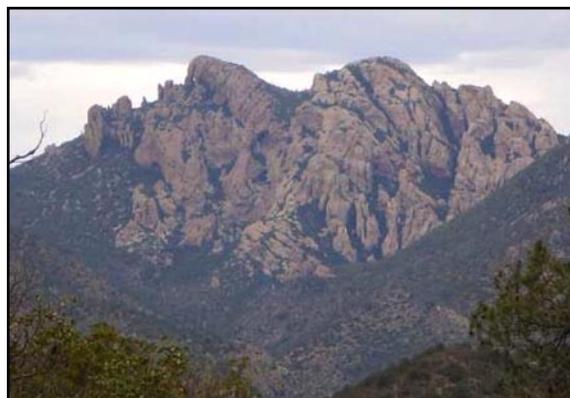
—Tom Van Devender



*Tim helps seine for bullfrogs at an SIA volunteer weekend in the Tumacacori Highlands.*

## Tim Lengerich... a poet for all things wild

the wild country, that's where i play  
in the wild country, day after day  
it's the wild country, true land of the free  
from the tallest mountain to the smallest bee.



*Photo taken by Tim in the Chiricahuas while on a data-gathering hike for Sky Island Alliance.*

may your walks always be pretty  
may the sunset make you smile  
may the hope that comes with loving  
ride within you every mile  
may the breezes at your back  
...ever guide you toward the sun  
may the dawn of each new year  
bring the peace of the passing one  
—tim

## Tumacacori Highlands

— a song from *Art in Wilderness*

VERSE 1:

Tumacacori Highlands  
Jewel of the Sky Islands  
Where the jaguar roars  
And the Sycamore flows  
Below vine snakes sluicing  
Through oak limbs to food and  
The fritillary follows  
The poppies glow  
And at the Atascosas  
Scarlet chuparasos  
Feed hummingbirds dancing  
To and fro

CHORUS:

Oh, take me to where  
A Spotted owl shares  
Her mantra  
With the moon  
To a pocket of peace  
In a world gone mad  
To Tumacacori Highlands  
To Tumacacori Highlands

VERSE 2:

Up in the Highlands  
Tumacacori Highlands  
Where the key to Hell's Gate  
Opens heaven's door  
And starlit nights  
Lend strength to the fight  
For a sacred place  
Where spirits implore  
With songs for your soul  
Of uplifting hope  
Like warm spring thermals  
The vultures soar

CHORUS

© 2005 Tim Lengerich

## Calendar of Events

Please check our website  
for details and updates!

### November 2: Election Day

Vote NO on Propositions 109 and 301

### November 6

Volunteer Appreciation Picnic  
(Location & time TBA)

### November 11

Sky Island Exposure 6–9pm  
Lodge at Ventana Canyon (see page 15)

### November 12-14 & December 4-5

Wildlife Tracking Workshops

### November 13-14

Kartchner Cave Fest

### November 16

An Evening with David Yetman:  
A Benefit for Save the Scenic Santa Ritas  
Madera Clubhouse at Quail Creek in  
Green Valley — for details visit  
[www.scenicantaritas.org](http://www.scenicantaritas.org)

### December 3-5

Chiricahuas Field Weekend

### January 25

Volunteer Meet-Up #3 at Sky Bar

[www.skyislandalliance.org](http://www.skyislandalliance.org)

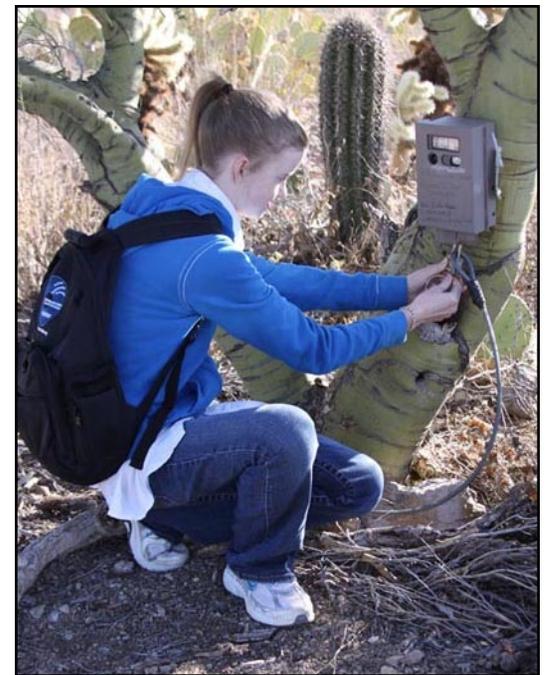
**It's so easy,  
and helps us  
tremendously...**

By donating just \$10 a month, you can turn your yearly \$35 membership contribution into \$120. Or, by donating \$50 every quarter, your yearly contribution would total \$200! There are many different donation options through our giving program. If you are interested, please call Acasia at 520.624.7080 x10 or click on the DONATE NOW button at

[www.skyislandalliance.org](http://www.skyislandalliance.org)

## CELEBRATING TWO YOUNG ECOLOGISTS

Sky Island Alliance sponsored eight awards at the 2010 Southern Arizona Regional Science and Engineering Fair (SARSEF) – and we were encouraged and excited to meet these bright and curious young ecologists! Ben Hunnicut's project Wild Birds showed us a budding new naturalist; Olivia Ortiz and Catherine Waters successfully discovered the best, and most cost effective, method to eradicate buffelgrass; Aaron McCommon followed current events with his project Oil Attack!; Zane Walker inventively used LED lights to answer Why don't birds get shocked when they sit on wire?; Kimberley Pina's project What animals hang out in my wash was a perfect example of remote camera monitoring; and Bethany Giordano discovered the habits of hummingbirds with her project, International House of Sugar. We awarded Meagan Bethel and Lyda Harris first place in the middle school and high school categories, respectively, and are two more students whose inspiring projects tell us that the future of science and inquiry is in good hands!



Meagan Bethel unlocking her remote camera box to retrieve her photo documentation.

### Where the wild things are: A comparative study of the biodiversity of our southwest region — ABSTRACT by Meagan A. Bethel

As human civilization increases and buildings fill in the once empty spaces in our Southwest Region, the protection of native species becomes increasingly important to its survival. More data and increased knowledge could save lives –and not just the human kind. This project used non-obtrusive Remote Sensing Cameras to document the biodiversity of species in three areas in Arizona's Southwest Region in: a Mountain Interior Corridor, next to a heavily used road; an Interior Corridor near a hiking path; and an Edge Corridor near a water source. The exact location of each camera was not disclosed to protect the species being observed. Photo data was collected for approximately two months, in Nov./Dec 2009 and compared to that taken over the same length of time, in May/June of 2009. The null hypotheses that there would be no difference in the type and frequency of species observed, regardless of the geographical location and based on the time of year, were rejected.

Ironically, the least number of animals and species were observed in the location that was the farthest away from both buildings and cars. However, that location was the only one to detect a Mountain Lion in the area. Interestingly, the data showed that the greatest biodiversity was nearest to the camera that was right next to the heavily used roadside. The camera nearest to the water source had the least diversity, and it was mostly larger mammals that were observed, yet it still had the greatest total number of animals recorded. Bobcats were observed at two different locations, however not where the Mountain Lion appeared. Observations of the total number of animals and types of species dropped dramatically from May/June as compared to Nov./December in almost all cases.

The results of this project will hopefully contribute to the research currently being conducted to preserve the biodiversity of our region by University of Arizona Wild Cat Project, and Sky Island Alliance. We must document the presence of our fellow inhabitants, so that we can then protect them.

### Studying microscopic plastic and its relationship to the copepod community in the Sea of Cortez — ABSTRACT by Lyda Harris

Most plastic is thrown away and ultimately ends up in the ocean where it acts as a magnet, binding with toxic chemicals like PCB and DDT. As plastic is transported through the water, it is broken into smaller pieces by solar radiation, pounding surf and weather until the pieces are small enough to be ingested by microorganisms. *Tigriopus*, a native Sea of Cortez copepod, has the potential to ingest multiple types of microscopic plastic found within their natural habitat. In terms of size, *Tigriopus* copepods have been shown to ingest plastic between the sizes of 1.0mm and 1µm, demonstrating the potential to ingest 67% of the plastic found in the San Carlos area (Sea of Cortez). Copepods and zooplankton are the basis of the marine food chain; if they ingest plastic in the wild, then the plastics and toxins it contains could bioaccumulate and biomagnify throughout the marine ecosystem.

## We Need You... to Volunteer!

Sky Island Alliance formed in 1991 when a group of concerned citizens came together to protect the Sky Islands adjacent to Tucson. Wanting to ensure that future generations would have an equal opportunity to enjoy the quiet solitude of a mountain meadow and experience a landscape where native species still roamed, they worked to keep our public lands intact and wild. Today, Sky Island Alliance is still a place where people come 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, much less know what a topographic map is.

**There are always opportunities to rejoice in / restore our Sky Islands!**  
Watch [www.skyislandalliance.org](http://www.skyislandalliance.org) for the latest schedule!

### Join our Landscape Restoration Field Weekends

**Riparian and Recreational Impact Surveys:** Volunteers gather at a base camp and are paired up with 3 to 4 other volunteers, a map, GPS unit, digital camera, and data sheets. The teams are sent out to adjacent areas to walk out a riparian area or road transect. Each team collects photo and geospatial points to document their findings. Depending on the distance to the site, volunteers drive out for the day or camp out.

**Road closures and habitat restoration weekends:** These trips are more physically demanding though there is still a wide variety of tasks to suit different skills and fitness levels. Closures include placement of barriers and signs to block roads; breaking up the road surface behind the closure to allow water to penetrate and seeds to take hold; and planting native vegetation to help bring back the ecological balance to the area and disguise the roads' existence. Eventually natural processes take over and what was once a road becomes unfragmented habitat.

Contact Sarah at 520.624.7080 x23 or [sarah@skyislandalliance.org](mailto:sarah@skyislandalliance.org)

### Adopt a Transect

**Monitoring the presence of mammal species in important intermountain corridors:** This volunteer program involves the largest commitment. After an extensive training in identification and documentation of wildlife sign, volunteers are teamed up with other trained trackers to monitor a transect (tracking route) every six weeks. **Watch [www.skyislandalliance.org](http://www.skyislandalliance.org) or join our eNews list for information on our next tracking workshops!**

Contact Jessica at 520.624.7080 x21 or [jessica@skyislandalliance.org](mailto:jessica@skyislandalliance.org)

### Promote Wilderness

**Wilderness outreach stewards** are needed for any of the following three areas: public presentations, guided hikes and tabling events. Stewards are trained volunteers whose major responsibilities are to help people in the community learn more about Sky Island Alliance and its mission, to better understand and appreciate the importance of Wilderness, and to promote Wilderness for the Tumacacori Highlands. Public presenters and tabling stewards interact with the general public as well as with specific interest groups, such as the faith community and sportsmen's groups. Wilderness hike leaders guide local area hikes and present themed talks on wilderness, sometimes in conjunction with a guest speaker. Schedule is flexible. Stewards will receive a tshirt and free Sky Island Alliance membership. Training and volunteer orientation required.

**Wilderness advocates** are needed to help collect signatures and written letters in support of the Tumacacori Highlands Wilderness bill. Letters and petitions, addressed to Arizona Senators John McCain and Jon Kyl and to your State Representative can be mailed, copied-to, or hand-delivered to Sky Island Alliance. Send your own letter of support, or help us coordinate ways to reach supporters in your community to do the same!

Contact Jessica at 520.624.7080 x21 or [jessica@skyislandalliance.org](mailto:jessica@skyislandalliance.org)

### Make a Difference

**Data entry/analysis and office needs:** The data collected in the field is compiled into a database so that Sky Island can put that hard-earned information to work.

Contact Sarah at 520.624.7080 x23 or [sarah@skyislandalliance.org](mailto:sarah@skyislandalliance.org)

## PROGRAM UPDATES

*continued from page 5*

management. The workshop was a great success and we are pleased to see that the Sky Island region has a very informed, and engaged land and resource management community that is committed to protection resource in the face of climate change. Here at Sky Island Alliance we were inspired by all of the expertise, input and thoughtful participation at the workshop and are excited to take the next step and delve into developing more focused and detailed actions for the region. Over the coming months Sky Island Alliance will be working to implement some of the import next steps identified at this first workshop and to engage our volunteers in "climate smart" projects that will improve land and resource management in the region.

We have also been busy the last couple of months responding to proposed changes to the system of roads and trails on the Coronado National Forest. Travel Management Planning continues to move forward this fall with the Forest Service recently releasing a proposal for road and trail changes in the Tumacacori and Santa Rita Mountains. We have been working with the Forest Service and our conservation partners to identify ecologically harmful roads that should be closed and restored to a natural state, sensitive areas deserving protection from motorized recreation. Travel Management Planning is an opportunity for the Coronado to restore habitat connectivity and to protect quiet on the forest for wildlife and humans alike.

### Wilderness Program *by Jenny Neeley*

We continue to work with our partners building grassroots support for our Land of Legends Wilderness Campaign in Cochise County. We are meeting with local residents, business owners and landowners across southeastern Arizona, giving presentations to local groups, and building relationships throughout the region. The response has been nothing short of amazing, and we are seeing a groundswell of support for Wilderness across the county.

On October 16, we participated in the 20th annual Bisbee 1000 Great Stair Climb, and our deepest thanks and appreciation goes out to our amazing volunteers who stepped up and gathered support to protect the Whetstones, Dragoons, and northern Chiricahuas. Together Jon, Steven, Bob, Madeline, and Ron collected over 600 signatures from Wilderness supporters in a single day!

Over 1,600 people have already expressed their support for the Land of Legends campaign, with many residents already aware of and enthusiastic about the idea of Wilderness in this region. We will continue harnessing that energy in the weeks and months to come, and continue to raise awareness about the importance of Wilderness for healthy ecosystems and economies across southeastern Arizona. To learn more about our Land of Legends campaign, and express your support for Wilderness protection for these remarkable places, please visit: [www.skyislandalliance.org/legends.htm](http://www.skyislandalliance.org/legends.htm).



VOLUNTEERS MAKE IT HAPPEN *by Sarah Williams*

## Bruce Hilpert: For the Future

*Since 1998, volunteers working with Sky Island Alliance have spent more than 50,000 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.*

Some people retire and take up a new hobby. Others play golf. Bruce Hilpert has chosen to spend his extra time volunteering for the environment. Recently retired from his position as Curator of Public Programs at the Arizona State Museum (University of Arizona) where he was in charge of exhibits and education programs, Bruce has been an active addition to the SIA volunteer force. Within the last year, he has donated many hours participating on field weekends, joining on wilderness hikes and helping with set up at outreach events. Although new to SIA's volunteer opportunities, he's no rookie when it comes to supporting our mission—he joined in 2003 after attending an SIA event with a friend back in the 7th street house party days.

As with many of the SIA volunteers, I have become friends with Bruce for common interests outside of the conservation realm. We took time out from sharing stories about surfing and trading music to talk about his volunteer experiences with SIA.

### **SW: What do you enjoy most about volunteering for SIA?**

**BH:** Without a doubt, it is the people that I enjoy the most. The staff is great and I am always assured that I will meet an interesting mix of bright, committed people from a variety of backgrounds and lots of interesting stories and experiences. What could be better than doing good work for a good cause and meeting lots of great people!

### **SW: Do you have a favorite place in the Sky Island Region?**

**BH:** I have camped all over southern Arizona for more than 40 years and have lots of favorites, but I would have to say the Chiricahuas because my family camped there so often when my daughter was young. More recently, I would say that West Cochise Stronghold, Happy Valley and the Gila Box are some of my recent favorites.

### **SW: How about a favorite story from a volunteer trip?**

**BH:** My favorite story from an SIA trip was the hike to Atascaderas Peak last spring. Rain was predicted for the afternoon so we figured we would be in good shape with a departure at 10am. It was getting chilly by the time we left and sprinkling by the time we crested the ridge about half way up to the peak. We ate lunch in the fire lookout and emerged from the cabin to a full-on snowstorm. By the time we got down to the ridge the wind was coming at us at about 30mph and the snow was blowing horizontally. We were all soaked and freezing, but we were loving it! Just goes to show you that Arizona weather can be unpredictable. That was one hike I will not forget!

### **SW: What are some of your other interests?**

**BH:** I would say that archaeology, history and architectural history are my three favorite fields. I read a lot of history and politics. I volunteer as a Site Steward to monitor and help preserve archaeological sites in southern Arizona and also volunteer at Center for Desert Archaeology doing arch survey. I also organize a volunteer group that cleans up the Rillito River channel and serve as president of my Neighborhood Association.

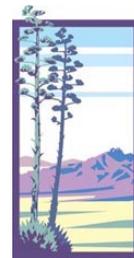
### **SW: Why is volunteering and supporting Sky Island Alliance important to you?**

**BH:** I have lived in southern Arizona since 1965 and love the diverse environment and being outdoors in it. A few years ago it occurred to me that I could have a lot more impact with my charitable giving by supporting smaller local non-profits rather than joining a lot of national groups. While I still do the latter, I have increased my support and participation in SIA, among others, to fulfill this commitment.

As I reflect upon the changes in the sky islands that I have seen in my short lifetime, I am shocked. The devastating fires in recent years, caused by human attempts to “manage” the environment, show us how quickly these delicate and



fragile bio-systems can be disrupted and destroyed. I would like to think that my future grandchildren might be able to see this incredible example of the wonders of nature. Sky Island Alliance is committed to this vision and I want to support it.



**SKY ISLAND ALLIANCE**  
Protecting our Mountain Islands and Desert Seas

# Join us!

Join or renew here OR through our secure website:

[www.skyislandalliance.org](http://www.skyislandalliance.org)

If you received this newsletter and it's time to renew your membership, please send in your check or renew quickly online! If you are reading a friend's newsletter, consider joining us. We rely on members for our basic operations. Contributions are tax-deductible; we are a 501(c)(3) non-profit organization.

Basic membership is only \$35, but if you add a little to that, here's a sampling of what your dollars can do: **\$50** will help us survey 30 miles of roads... **\$100** will close one mile of road... **\$500** will support one remote camera...

**Fill this out, or donate online. It's quick, easy and safe!**

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\$35    \$50    \$75    \$100    Other \$\_\_\_\_\_

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\*usually the last 3-4 digits on the back of the card by the signature panel

Card billing zip code if different: \_\_\_\_\_



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THURSDAY 11 NOVEMBER 6-9PM ♦ THE LODGE AT VENTANA CANYON

Just tell us how many tickets and how you'd like to purchase them:

**PATRON tickets at \$100 =**

**RECEPTION tickets at \$25 =**

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Phone & email: \_\_\_\_\_

My check is enclosed **OR**  Please bill \$ \_\_\_\_\_ to my:  MasterCard  Visa  American Express

Card No.: \_\_\_\_\_ Exp. Date: \_\_\_\_\_ Security Code: \_\_\_\_\_

Send this coupon with payment to Sky Island Alliance, PO Box 41165, Tucson AZ 85717

OR purchase your tickets online at [www.skyislandalliance.org](http://www.skyislandalliance.org).  
 You can also call us with questions or to buy tickets: **520.624.7080**.

**tickets today!**

**VOTE FROG:  
 Better hop to it!**

**This could be your most important, effective vote this election season!**

*A vote and a chance to make a difference in the lives of native critters that call the riparian habitats of the Sky Island region their home.*

**Donate today to register your vote for healthy riparian habitats!**

**[www.skyislandalliance.org/votefrog.htm](http://www.skyislandalliance.org/votefrog.htm)**

