



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

Restoring Connections

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Newsletter of Sky Island Alliance

Energy

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Sycamore Canyon. Courtesy Melanie Emerson.

Did you know that almost all deciduous trees (except the oak, above) eject their leaves when colder, shorter days tip the balance of energy intake (turning sunlight into food) to energetic efficiency (think of leaves as seasonal employees)? Interested in learning about how natural forms, processes, and ecosystems can teach us how to create healthier and more sustainable human technologies and designs? Visit www.biomimicryinstitute.org.



Through the Director's Lens

by *Melanie Emerson, Executive Director*

SIA staff and board have just completed a new strategic plan. It is a vision for the region and a roadmap for the organization. It is a vision of resilient and protected ecosystems and of organizational proaction, synergy and agility. Beginning in 2009 and over the four-year span of this new strategic plan, you will see the overarching theme of climate change emerge more explicitly in our work and in our programmatic focus. Everything we do — protection of cores and corridors, restoration of key habitat, policy work and advocacy, building a land ethic in the region, and creation of new knowledge through science — helps address the current and impending impacts of climate change.

Our focus on energy in this issue of *Restoring Connections* reflects Sky Island Alliance's commitment to think about energy more broadly and, in the context of our strategic plan, to

proactively address energy siting on and transmission lines through fragile desert lands, protected areas, wildlife corridors and habitat cores. It begins to explore the complexities of renewable energy development and climate change adaptation.

We find ourselves at the nexus of "green" energy development and land/wildlife conservation. We are in a unique place, with equally unique challenges and opportunities. While we have all heard politicians, environmentalists, and businesspeople touting the virtues of and need for green energy development, it is a complex issue. The Obama Administration has made green energy development a priority, moving rapidly on renewable energy development and targeting federal public lands for the siting of renewable energy generation. Federal agencies have recently made inroads to streamline approval processes and identify lands targeted for siting of energy infrastructure. This new push to use public lands for such development has the potential to adversely impact sensitive areas throughout the West if concerned and knowledgeable citizens are not involved.

In addition to the siting of infrastructure for power generation, the necessary transmission of energy from remote areas to metropolitan centers also has the very real potential to negatively impact even larger sections of previously undisturbed natural areas and wildlife corridors. Adding to the complexity is the discussion of where to place transmission lines to bring this energy to population and industrial centers; if new lines are necessary, whether they will, in fact, be transporting renewable energy at all; and grander systemic questions of how dependent on energy we truly need to be. These issues highlight the difficult balance between promoting clean, renewable energy and ensuring that, in the haste to develop these energy sources, we are aware of and engaged in decision making around tradeoffs. This is the political change that I believe Derrick Jensen is compelling us to embrace (see page 14) and it is what SIA has always been about. Please continue to join us on this critical journey.

Join us!

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.



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From the Board President: Strategic Thinking for an Uncertain World

by Dale Turner

There are many ways an organization can respond to difficult times. At Sky Island Alliance, we have chosen to think big, while staying focused on our core values and actions. That may sound like simple platitudes, but in a year when many nonprofit groups are cutting back or shutting down, it constitutes a strong statement of confidence in our work, our staff, and our supporters.

The occasion for discussing our future arose with an update of SIA's Strategic Plan. Staff and board spent several days this May at the lovely Rancho La Esmeralda, Sonora, talking through our hopes, fears, and ideas. Our discussions were informed by what you, our members, told us in response to a survey this spring.

After months of follow-up work, we have finished up the details of a plan that will guide our work for the next three years. We will:

- ❖ Protect and restore native species in core habitat areas; healthy, diverse and resilient ecosystems; and functioning ecological processes in the Sky Island region.
- ❖ Protect and restore the movement and dispersal of native animals and plants, and reduce threats and barriers to landscape permeability.
- ❖ Increase scientific knowledge of the region and its ecosystems and apply it to SIA's conservation goals.
- ❖ Increase public understanding of, and advocacy for conservation in the Sky Island region.
- ❖ Strengthen the capacity of the organization to accomplish its mission and goals.
- ❖ And through all aspects of our work, Sky Island Alliance will *strive to be innovative, anticipate opportunities and challenges, stay ahead of the curve, and set the agenda.*

Lofty words, those, and necessarily vague. But under each goal we've identified a series of strategies that will get us there, along with

detailed metrics that will show our progress. The list is too long to include here, but these include goals like expanding the network of protected areas and improving the management of federal lands. It means closing more roads and monitoring the success of those closures so we can get better at it. It includes using our knowledge of wildlife movement, built in part on all those tracking transects, to protect or restore landscape linkages throughout the region. It also means collecting more data on the distribution of plants and animals, especially in northern Mexico, sharing that information widely, and using it to improve conservation throughout the region.

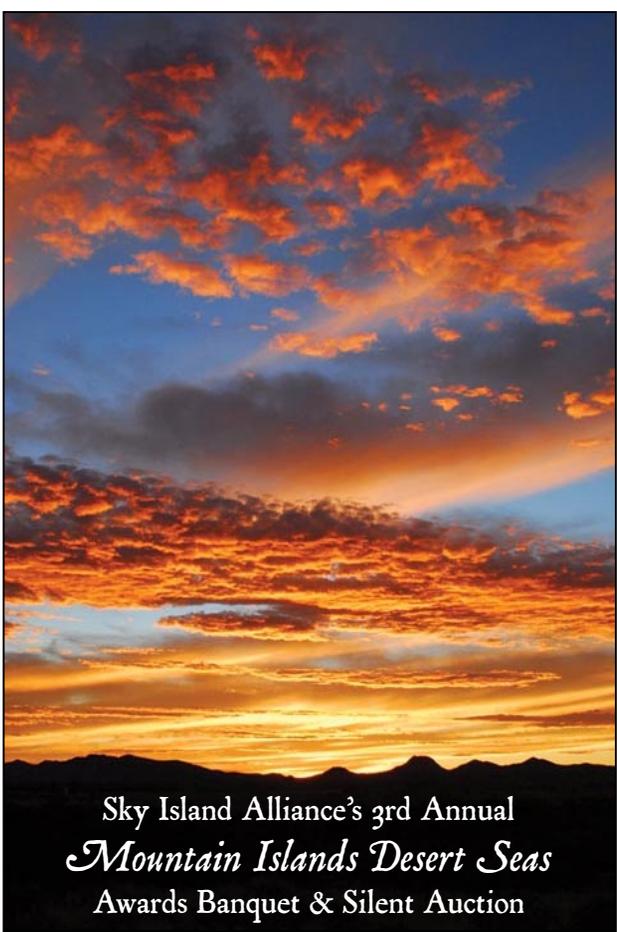
These are familiar themes for SIA, but I have confidence we'll be doing them better, on broader scales, over the next few years. Stick with us for the ride — it should be fun!

Changing of the board

This winter will see several new folks joining the Board of Directors, bringing new energy and ideas to our work. These include:

- ❖ Kevin Dahl, a long-time stalwart of sustainability in the Tucson community and Arizona Program Manager for the National Parks Conservation Association.
- ❖ Patricia Frederick, DVM, a recently-retired large-animal vet, professional artist, and co-owner of the Ruby Mines in Santa Cruz County.
- ❖ Adrian Quijada-Mascareñas, an Adjunct Professor at the University of Arizona whose research is focused on the biogeographical and phylogenetic basis of biological diversification.

At the same time, we note with regret the departure of Brooke Gebow and Chris Roll, as they take their great energy and insights on to new adventures. They've served SIA with distinction, aplomb, and great humor, for which we're very grateful.



Sky Island Alliance's 3rd Annual
Mountain Islands Desert Seas
Awards Banquet & Silent Auction

Thursday, October 22, 5 to 9 pm
The Historic Stillwell House in Downtown Tucson

*We thank everyone who joined us
for a lovely evening honoring:*

Tom Skinner *Agency Leadership AWARD*

Brooklyn Pizza Co. *Business Conservation AWARD*

Seth Hadley *Landowner Stewardship AWARD*

Phil Rosen *Mike Seidman Memorial AWARD*

*and our grateful appreciation
to the following businesses and
individuals for their generosity:*

Bookman's Recycled Entertainment

Summer Celeste

Lorna Condon

Carol Cullen

Kelli Gaither-Banchoff

Borderland Trading Co.

Sadie Hadley

Janet Hare, Lodge at Ventana Canyon

Chip Hedgcock

Paul Hirt and Linda Jakse

Louise Misztal, Mike Quigley & Jessica Lamberton

R. Carlos Nakai

Plaza Liquors

Julie St. John

Dale Turner

Tom Van Devender

Cynthia Wolf, Wild by Nature

Gary Williams

Join us!

Visit us online, become a member, get involved!

www.skyislandalliance.org

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, doing outreach... 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 Janice Przybyl*

Cienega Creek Watershed: As Sky Island Alliance volunteers search for wildlife tracks along the large washes and drainages of Las Cienegas National Conservation Area, they encounter tracks left by a different kind of beast — tire tracks from unauthorized off-road vehicles. Volunteers can attest that the impact from unmanaged recreation on Las Cienegas National Conservation Area has exploded over the last several years. Sky Island Alliance believes this is the greatest short-term threat to the ecological integrity of the Las Cienegas landscape.

With new funding, we've launched a campaign to preserve the ecological values of Las Cienegas. It is a many tiered campaign that involves volunteer effort on the ground, public education and outreach, and advocacy. Our aim is to diminish and mitigate impacts of recreation, especially off-road vehicles (ATVs) and de-emphasize access and road building. This is a cross-program effort here at Sky Island Alliance; the Wildlife Linkages Program is teaming with Trevor Hare and Sarah Williams in Landscape Restoration and with David Hodges in Policy & Planning.

We have committed our wildlife trackers to help in this effort. Along with tracking documentation, volunteers now formally document resource damage from off-road vehicles found on their tracking lines. Many tracking volunteers have already been doing this informally, but now volunteers are provided with a separate data sheet and required to take photographs of specific events or damage. To examine possible impacts to wildlife travel corridors we will combine the tracking data we've amassed over the last seven years with a map overlay of the transportation system and unauthorized wildcat roads.

We are including tracking transects north of Interstate 10 in this effort too. The "missing link" — as this area was once called — is part of the NCA "acquisition district" and is part of the larger Cienega Creek watershed. All pieces of an ecosystem are important, and resource damage

from unauthorized off-road traffic in the Pima County Natural Preserve is also a problem.

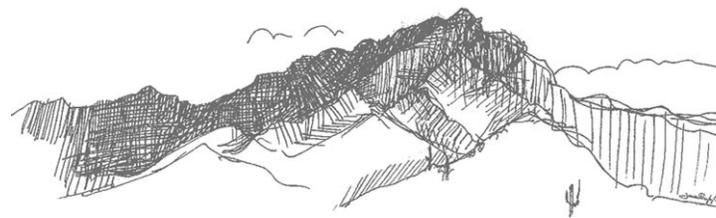
Why is documentation important? Because with documentation that follows a protocol we can provide wildlife managers with the tools to take action. We can publish data. We can influence public opinion and public officials. We can make a conservation difference!

Northern Mexico Conservation Program

by Sergio Avila

This summer, I had the opportunity to "recharge my batteries" for the benefit and advancement of the NMCP, through professional development and a long-awaited vacation period. As a way to improve communication and leadership skills, I was invited to attend a Leadership workshop offered by TREC (Training Resources for the Environmental Community). This two-session series offered the opportunity to share, learn and experience with staff from other conservation groups, national and regional. The trainings were held at Black Range Lodge in Kingston, New Mexico, in the Gila National Forest. In addition, I enjoyed three weeks of vacation in Honolulu, Hawaii. Yes, it was nice, but I missed the land, the cats, and our blooming desert.

Since the inception of MABA as part of this program, new challenges and opportunities have come to our table. In our last issue of *Restoring Connections* we reported on the new staff hired for this project; this time I want to confirm our



first impressions: Tom and Marc make an excellent team, and their skills have come to complement and strengthen SIA's expertise and capacity in the region.

As part of our collaboration at a regional level, SIA participated at a Planning for Conservation Areas workshop led by The Nature Conservancy and BIDA, A.C., as part of the Yaqui River Watershed Coalition, which includes the sky islands of Sonora and high elevation ranges in Chihuahua. Other participants were Naturalia, Mexican federal agencies CONANP and CONAFOR, and the Universidad de Sonora.

Finally, in recent months we captured several photographs of ocelots in northern Sonora — including a female! To help these and other wild cats in the region, we launched our new campaign: **Bring Back the Cats!** Sparked by two donors' generous lead contributions, this effort will contribute to wild feline conservation and research in the region. This campaign will conclude on December 31, 2009. Please help us reach our \$30,000 goal by making a contribution today. Your support will help Bring Back the Cats! Please contact me at Sergio@skyislandalliance.org or 520-624-7080 x16.



Happy mountain lion captured on a remote camera, June 23, 2009.

Wilderness Program *by Mike Quigley*

In past newsletter updates, we've noted the presentations we do, the people we visit, the meetings we have—all the important indoor work that is necessary to influencing the political process and advancing legislation. But there's more: the hikes we lead, the workshops we hold, the weekend trips we take, the fieldwork we do—all the important outdoor work that connects people to their wildlands, gives us the data and experiences we need to be effective advocates, and recharges us for doing all the indoor work.

With volunteers, we conduct the fieldwork necessary for successful Wilderness advocacy: surveying Forest Service roads, determining conditions on the ground, capturing illustrative photographs, checking proposed boundary locations. Sometimes that's a fast trip to a single objective solo or with a small group. Sometimes that's a long weekend with a lot of people. Always, it is an opportunity to breathe fresh air, bump around in the truck, get our boots dusty, and visit the land we're working to protect.

We hike—often our volunteers lead hikes and we go along to talk about Wilderness and the work Sky Island Alliance does. We present workshops—like our recent Wilderness Photography workshop in Sycamore Canyon where people gathered to see the land through lenses wideangle, telephoto, macro, panoramic; and then shared those views with others. We partner with other groups to learn more, share knowledge, and offer new opportunities to our members and supporters—like our recent trip with Bat Conservation International to the old town of Ruby to learn about and see a spectacular sunset outflight of Mexican free-tailed bats—an opportunity to understand more fully the connection of habitat and species, and to experience first-hand what our work is about.

As we continue working to make the Tumacacori Highlands Wilderness a reality, please join us, to get out on the land, to make the world a better place. Information on upcoming events is on the Sky Island Alliance website and page 18.

Policy & Planning Program *by David Hodges*

An issue we have been following closely is the SunZia Southwest Transmission Project, a proposal to build a 460 mile high capacity 500 kilovolt (kV) transmission line (or two parallel lines) across New Mexico and Arizona. SunZia has stated this new powerline would transmit energy produced by primarily renewable resources, which on the surface sounds like a good thing, but when one digs deeper problems begin to emerge.

Many of the proposed routes chosen for this project would negatively impact remote wildlands in a significant way, with massive poles, roads, and relay stations. Among these proposed routes in the Sky Islands is one between the Pinaleno and Santa Teresa Mountains, which would closely parallel Aravaipa Canyon. Another would travel up Sulphur Springs Valley between the Galiuro and Pinaleno Mountains, and another would span the remote San Pedro River corridor between Benson and San Manuel. In New Mexico, areas impacted include the Bosque del Apache National Wildlife Refuge and the Nutt Grasslands.

Equally troubling, though this is touted as an alternative energy project, SunZia cannot or will not tell the public what percentage of non-renewable energy will actually be transmitted over this line if completed, and they are under no mandate to transmit renewable energy after the project is completed. Even more troubling, none of the renewable energy transmitted over this line will replace non-renewable sources. This powerline will be new energy and will facilitate the construction of more houses, which in turn increases our water use, and replaces wildlife and vegetation with buildings, cars, and roads. This does not sound sustainable.

On a closely related note, a recent Department of Interior news release brought word that nine federal agencies had agreed to expedite permitting of power transmission construction on federal lands, and all had signed a Memorandum of Understanding (MOU) committing each of them to do so. The agencies are The Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, Environmental Protection Agency, Council on Environmental Quality, Advisory Council on Historic Preservation, Department of the Interior, and the Federal Energy Regulatory Commission.

According to the news release “Participating Agencies enter into this MOU to expedite the siting and construction of qualified electric transmission infrastructure in the United States.” At first glance, this MOU seems benign; after all, who wouldn't be for streamlining and making a regulatory process more efficient? Unfortunately, history tells us when federal agencies talk about streamlining a process, what usually results is a climate that makes rubberstamping projects, regardless of negative impacts, business-as-usual.

We will continue to track these developments and encourage you to do so as well. BLM had an open public comment period for the SunZIA project that was focused on choosing a final route from

the different proposed routes. The comment period ended November 27, 2009. To view comments SIA submitted with The Wilderness Society and several other partners, go to: www.skyislandaction.org/sunzia.html. For maps and more info on the project, see: www.blm.gov/nm/st/en/prog/more/lands_realty/sunzia_southwest_transmission.html.

Landscape Restoration Program: A sigh of relief for native frogs... *by Sarah Williams*

After a busy spring and summer controlling bullfrog populations in the Tumacacori Highlands and connecting landscapes, it appears that we can chalk one up for native frogs. Follow-up monitoring carried out by volunteers in September and October reported zero presence of bullfrogs in many stock tanks and natural waters that once harbored these non-native amphibians. We did however capture several photos and numerous sightings of native leopard frogs. Look for more opportunities in 2010 to continue our work ensuring protected habitat for our beloved natives!

Back to the grasslands...

In August we launched a new series of work out at Las Ciénegas National Conservation Area (NCA) to analyze recreational impacts on the grasslands under watch by the Bureau of Land Management. Volunteers spent a warm weekend walking roads to gather specific data on erosion, vegetation impacts, and signage in the north end of the Conservation Area. Ongoing information is also being collected by tracking volunteers with transects within the NCA. So far we have documented many off-road tracks in washes and cutting across the grasslands as well as a plethora of dispersed campsites throughout the area.

Ciénega restoration springs forward...

Trevor spent time on the ground in October finalizing the implementation plan for the Cloverdale Cienega restoration project. Working with partners Van Clothier and Craig Sponholtz of New Mexico, we have analyzed current and historical data from the area to determine the most appropriate strategies and actions needed to achieve our conservation vision. Implementation of the large-scale earth-moving is scheduled to begin in spring 2010.

We would like to give props to all of the Summit Hut employees that have chosen to volunteer with SIA this Fall under the company's "100 Days of Service" community outreach program. Thank you!



The Energetic Cost of Species Survival

by Louise Misztal, Conservation Associate and Biologist

These days the topic of energy is likely to conjure up thoughts of solar panels, wind farms, renewable energy sources, Priuses, CFL bulbs, and turning down the thermostat when no one is home. It's not likely to bring to mind corals laying down new skeletons, polar bears hunting for seals, pikas foraging for alpine plants, trout depositing eggs in stream gravel, or piñon pines photosynthesizing, but all of these activities involve energy tradeoffs.

Somewhere back in science class, we were all taught about earth's unique ability to support extensive and varied forms of life. The earth system receives, absorbs, and dissipates energy in such a way that it maintains temperature ranges and a variety of other conditions conducive to sustaining a great diversity of species. Oceans, land surfaces, and the atmosphere absorb and are heated by energy from the sun. The escape of heat from the earth's surfaces back toward space is slowed by greenhouse gases and water vapor in the atmosphere that absorb and reflect some energy back to the earth's surface. Without energy captured by this greenhouse effect, the surface of the earth would be zero degrees Fahrenheit and not a very habitable place. With the exception of small fluctuations due to sunspots, the amount of solar radiation reaching the earth has been fairly constant from year to year and century to century. Human activity has increased concentration of greenhouse gases in the atmosphere and disrupted that long standing dynamic, causing an increase in the amount of energy absorbed by the earth's system and resulting in climate change we are now experiencing. As more outgoing energy is redirected back to earth's surface, the earth's energy budget changes and planetary temperature rises.

The first law of thermodynamics reminds us that energy in a system can neither be created nor destroyed; it can only change forms. Energy comes into the earth system as sunlight, and leaves the earth system as heat. In the case of plants, energy captured from the sun is initially transformed into chemical energy stored in the carbon bonds of carbohydrates. Although the supply of sunlight is in great surplus, the supply of water and nutrients from the soil (and other environmental factors) limits plants' ability to produce food. These limiting factors are especially important here in the arid southwest, and will become even more important as regional temperature and precipitation patterns change. Average annual temperatures in the southwest could rise by 7



October 2002, Jemez Mts. near Los Alamos — in the summer of 2002, piñon (*Pinus edulis*) began dying *en masse* from drought stress and an associated bark beetle outbreak. Courtesy C. D. Allen, USGS.

degrees Fahrenheit during this century, the equivalent of approximately 1 degree every 14 years. Summer temperatures are projected to rise more than winter temperatures, and the number of extremely hot days is projected to increase. This means more prolonged heat waves and tougher growing conditions between monsoonal events (Lenart, 2007).

A massive regional die-off of piñon pine (*Pinus edulis*) in Arizona, New Mexico, Colorado and Utah between 2002 and 2003 is a vivid and tangible example of changes in temperature and moisture availability already affecting species survival. At study sites in all four affected states, this drought was found to have killed 40 to 80 percent of piñon trees. A previous, more severe drought event occurred in the region in the 1950s, but not as many trees died. To see how the droughts differed, researchers compared the four driest consecutive years of the earlier drought, 1953-1956, with those of the recent drought, 2000-2003 and found a key variable. The more recent drought was marked by hotter temperatures and thus identified as a global-change-type of drought (Breshears et al. 2005).

To utilize sunlight's energy to create food, a piñon pine must uptake water and carbon dioxide through transpiration. Transpiration occurs when stomata, pores on the trees' needles, are opened to allow carbon dioxide to enter and water to evaporate, cooling the plant and pulling in new water and nutrients. When faced with a reduction in soil moisture, the trees reduce the amount of water lost through transpiration by progressively closing their stomata. Although this strategy conserves water, it is an energetic tradeoff that results in less uptake of nutrients and water through the roots, and less intake of carbon

dioxide, a necessary nutrient to perform photosynthesis. With no new carbon entering the system, photosynthesis declines rapidly and it eventually becomes impossible for the tree to create any new food for itself (Breshears et al. 2009).

Although piñon pines are adapted to store energy and wait out a drought for months, trees will eventually use up their energy reserves and starve. In the case of the 2000-2003 drought, this dynamic was complicated by the effects of temperature. Drought-stressed trees subjected to elevated-temperatures consumed carbon reserves faster than trees affected only by drought. For piñons to safely maintain their tissues in the face of higher temperatures, they must increase cellular respiration and pay an increased metabolic cost leading to a more rapid exhaustion of energy and carbon reserves.

will not only increase background rates of tree mortality, but will also increase widespread die-off events. Warmer temperatures will make even shorter droughts capable of causing wide-spread die-offs, driving vegetation changes in the region. A recent study conducted at the University of Arizona's Biosphere 2 Lab predicts that if the climate warms by 4 degrees Celsius, piñon die-off will occur at least five times faster even if drought severity remains the same (Adams, 2009). Widespread die-off events, like the one in the southwest, affect ecosystems for decades, changing wildlife habitat and food availability and altering the hydrological cycle, among other effects. Areas where we are used to seeing piñon pines may no longer be inhabited by this species.

Climate change is already having a considerable impact on the world's species and ecosystems. The



In May 2004, less than two years later, an almost complete conversion from pinyon-juniper to juniper woodlands. Courtesy C. D. Allen, USGS.

ability of piñon pine and other species such as pika, polar bear, and coral to cope will depend on physiological energetic tradeoffs. The effects of climate change will not occur in isolation, but in combination with many existing stressors such as habitat fragmentation, habitat destruction, disturbance by humans, altered chemical environment, and altered water quality. Individual organisms must expend energy to survive and to reproduce so that their species survives. With this multitude of stressors already drawing on species' energy reserves, the added stress of climate change may create too great an energetic cost for species to overcome.

Natural resource managers and conservationists are trying to come to grips with such complex climate change impacts and with future projections that include more and larger disruptions. Protecting fish, wildlife, and natural ecosystems in the face of climate change will require new ways of thinking about land management and natural systems. It will require embracing uncertainty and thinking about issues such as ecosystem vulnerabilities and ecosystem resiliency. The current context for management and conservation calls for helping species and natural systems withstand and adapt to new climate conditions. In the face of unprecedented change, protecting core areas and identifying and protecting corridors are more important than ever. We must allow ecological systems the room they need to evolve and adapt to changing conditions. Recognizing this urgent need, natural resource managers and conservationists are accelerating plans and actions for climate change adaptation. Sky Island Alliance is in the mix, working to identify tools, strategies, and information to help land managers meet the challenges of climate change.



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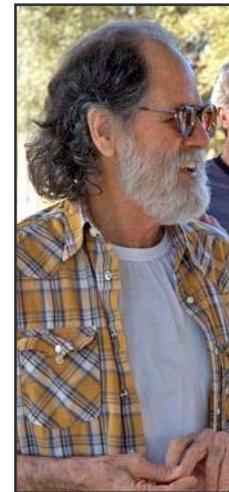
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Volunteer of the Year



This year's Volunteer of the Year, Jefferson Carter, launched his eighth collection of poetry, *My Kind of Animal*, this December with a portion of the proceeds going to benefit Sky Island Alliance. Thanks Jefferson and congratulations!

GRID

I can tell by your outfit
that you are a cowboy.
Not a tourist. Not a hipster
or a roadie. Like you,
I was someone else.
Then I saw the singer
reading the lyrics & I knew
she was faking her orgasm.
Easting 530,550 meters,
northing 2,622,660 meters,
welcome to this high
Sonoran plant community,
this grid of wildcat roads
like exploded chromosomes.
No red arrow marking
your location? Believe me:
you are here.

Jefferson Carter

Jefferson Carter has lived in Tucson since 1954. He graduated from Catalina High School in 1961, received a B.A. in English Literature from Pomona College in 1965, and earned a Ph.D. in English Literature from the University of Arizona in 1972. In 1978, he was hired as a full-time instructor at Pima Community College, the Downtown Campus. In 1988, he was elected Writing Department Chair and coordinator of creative writing classes. He retired from Pima College in 2008.

Jefferson's work has appeared in journals like *The Carolina Quarterly*, *Shenandoah*, and *Barrow Street*. In 1991, he won a Pima/Tucson Arts Council Fellowship. His fourth chapbook, *Tough Love*, won the Riverstone Poetry Press award. *Sentimental Blue*, his seventh chapbook (Chax Press, Tucson), has been nominated for a Pushcart Prize. *My Kind of Animal* is available at www.chax.org.

Renewable Energy by David Hodges, Policy Director

Recently a Department of Interior news release brought word that nine cabinet-level federal agencies had agreed to expedite the permitting of power transmission construction on federal lands, and all had signed a Memorandum of Understanding committing each of them to do so. New lines mean new routes; across the West, there are approximately 10,000 miles of new high-voltage lines being proposed for construction in the next 10 years, according to the Western Electricity Coordinating Council.

If the goal of the Obama administration is to create sustainable/renewable energy sources, more powerlines are a step backwards and rooted in the old way of thinking that brought us to this point.

Even if all of the new lines carried nothing but energy produced by renewable sources (and they won't), this remains large-scale energy production and the environmental impacts are tremendous. According to the Department of Energy, 12,650 miles of new lines nationwide is needed by 2030 to get just 20 percent of our power from wind!

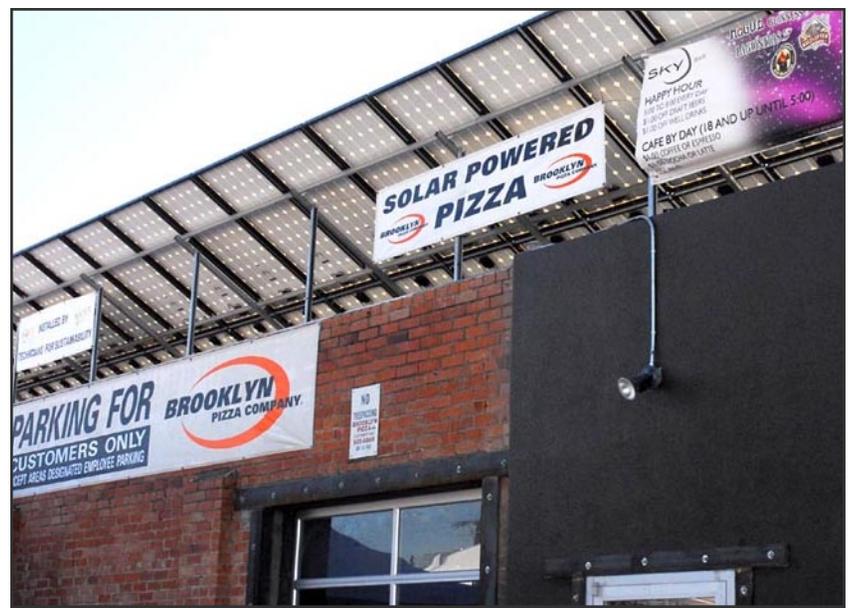
Impacts from renewable energy done in this manner include land fragmentation, frequently in remote areas; the use of large amounts of often scarce water; high levels of mortality to birds and bats from wind generation; high mortality of birds (raptors in particular) from powerlines; massive powerlines that mar natural landscapes while opening up remote areas with roads, poles, and other powerline infrastructure. Compounding these negatives, the use of powerlines for long-distance transfer of energy is inefficient and results in the loss of much electricity along the way, due to resistance.

The future of truly renewal energy will be the production of much of our electricity onsite or in very close proximity to where it is used. Several

entities in Arizona are charting this important course for the future. Here in Tucson, one of the nation's largest solar-powered communities is being developed at Davis Monthan Air Force Base. This project will have six megawatts of solar capacity and produce more than 10 million kilowatt hours annually. The project will include both a 45,000 panel ground-mounted photovoltaic system while 900 residences will have a total of 36,000 panels installed as rooftop solar systems. This project will provide 75 percent of the energy used by residents and could eventually account for 100 percent of resident's electricity use.

In Flagstaff, Arizona Public Service's Doney Park project will turn neighborhoods into power producers. As a part of this project, APS will initially study what improvements are needed on the existing neighborhood grid to run large amounts of photovoltaic electricity through it. Once that has been determined, solar systems will be installed on eight businesses and 200 homes. More important and a key to the success of large scale onsite energy generation, APS would own and maintain the panels while providing a locked-in 20-year rate to homeowners in return for agreeing to allow panels to be sited and maintained on their homes. It is expected that these systems would provide about half the current electricity used by these homeowners.

In California, the city of Palmdale recently made the decision to permit wind generation in business parks and large parking lots which allows these spaces to double as small-scale power plants, which in turn allows many small



The large solar array on the roof of this year's Business Conservation Award recipient, Brooklyn Pizza Company, produces 24,500 kilowatt hours per year.

businesses to save limited dollars that would have gone to their electric bill. The success of this program has Palmdale researching turbines that would be compatible with neighborhoods. Other cities that have recently allowed small wind farms in commercial and business districts include Cleveland and Buffalo.

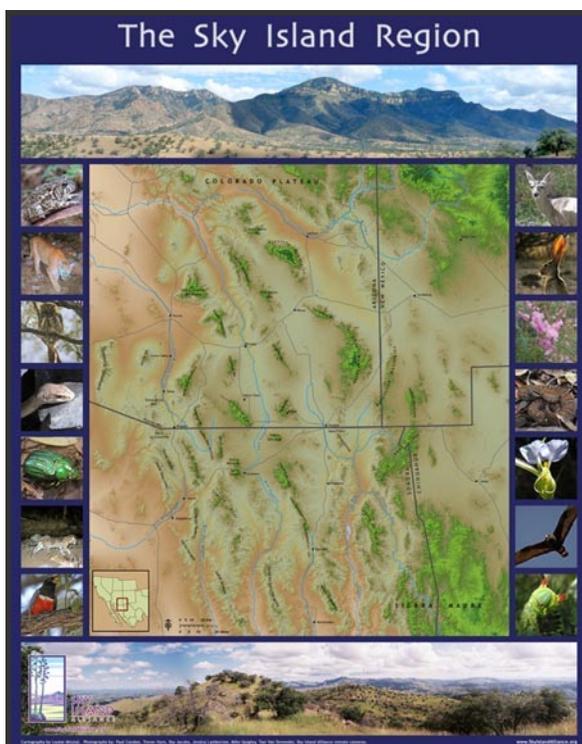
Southern California Edison (SCE) is leading the way in utilizing commercial rooftops for solar electricity generation. In Chino, as much as one million watts of power are being generated on the 458,000-square-foot roof of an industrial building. This is the second of what is expected to be hundreds of installations on unused commercial rooftops in the region. In the near future SCE has plans to install and produce 250 megawatts of solar generating capacity and will also offer long-term contracts to independent solar providers who would install an additional 250 megawatts. Combined, this would represent the largest photovoltaic project ever undertaken and is projected to create as many as 800 new green jobs.

There continues to be progress at the individual and business scales. In 2008, despite a bad economy and lower home values, grid-tied photovoltaic capacity increased 81% over 2007, with solar water heating capacity increasing by 50% during the same period. According to the American Wind Energy Association, 10,000 small turbines were sold to homes, farms and businesses nationwide in 2008. This figure represents a 78% increase over the previous year.

Increased individual use is a positive development and this trend will only accelerate as more and more individuals and businesses recognize the advantages of onsite power generation. But, this is not enough, quickly enough. Despite this rapid increase in individual consumers, these numbers represent a tiny fraction of energy users and will not increase quickly enough to make a difference.

It is essential that the power industry follow the examples of the handful of companies that have a clear vision of the future and recognize we will not be able to generate large amounts of energy from non-renewable sources much longer —

continued next page



The Sky Islands Regional Map is here!

Purchase online is coming soon, but you can be among the first to enjoy this 24" x 30" poster by picking yours up at our office:
738 N. 5th Ave., Suite 201.

It's beautiful. And only \$35. We will also be glad to mail it to you for an additional \$5 to cover postage.

Renewable Energy *continued*

especially with a rapidly expanding global population coupled with the drive by some of the most populous countries in the world, to raise standards of living to those of prosperous western nations.

The scale of transformation to onsite renewal energy production must be much larger than now proposed, and energy companies must accept the need for change now, and participate. Here in Tucson and around Arizona the solution of renewable energy is not large solar facilities on our western deserts or wind farms in New Mexico. Rather than sprawling facilities and energy-wasting powerlines in pristine natural areas, energy companies must begin the process of investing in onsite generation.

The only way this can work quickly at a scale that makes a difference, will be for local energy corporations to own and install alternative energy appropriate for each home and business, while continuing to generate revenue for their stockholders. The advantage to the homeowner would be a fixed rate over a fixed period of time.

A simple initial target that would provide significant positive impacts would be new developments, those same developments that are expected to double our population over the next 35 years. Building renewal energy infrastructure and tying that to the local grid should be required for every new development that is approved, as a condition of approval. This would provide enormous benefit and do so quickly. We do not have the luxury of time and utilizing the existing infrastructure development capacity of energy companies will be the only way to make change happen quickly.

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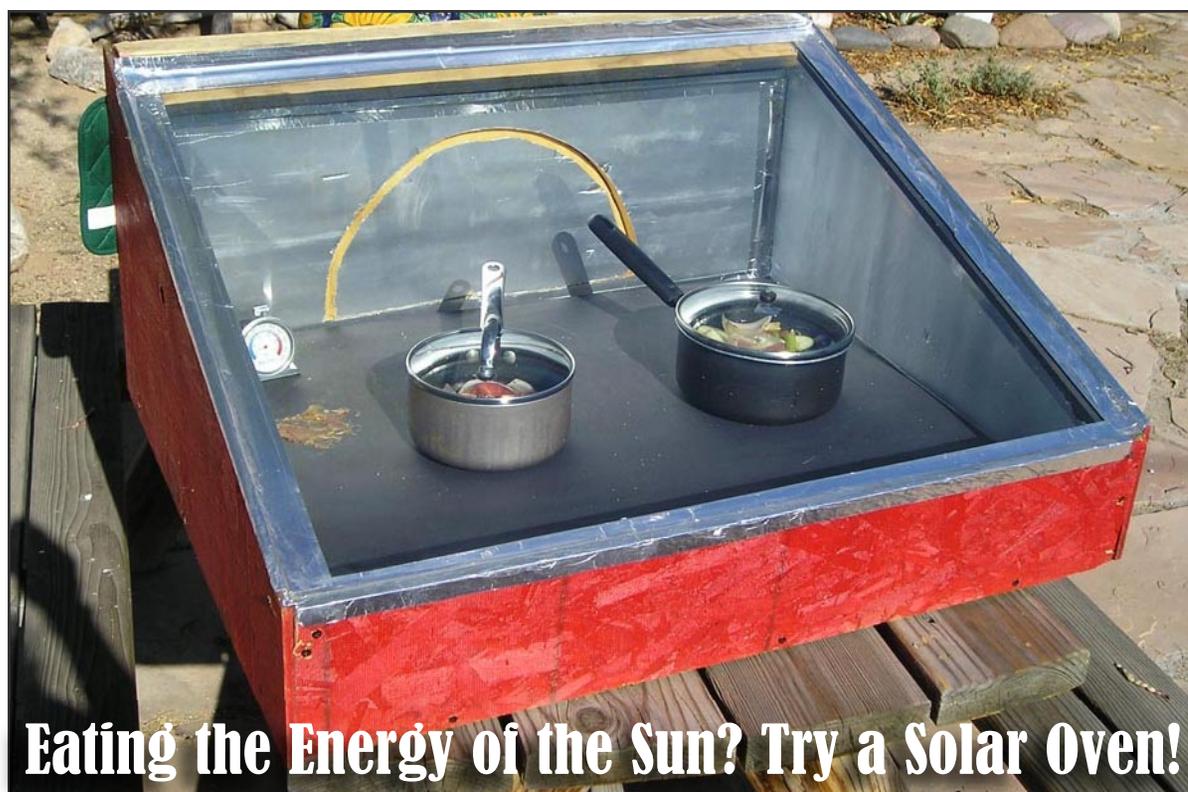
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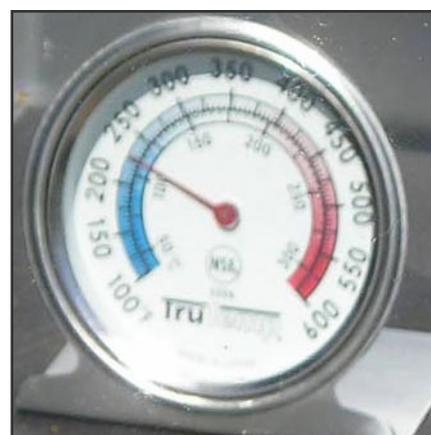
Eating the Energy of the Sun? Try a Solar Oven!

This model is very efficient, but heavy for one person and awkward to move (dimensions: 33" long x 27" deep x 16" high). A smaller box, well-insulated inside, with reflectors to collect and redirect sunlight, would be great for camping trips!

by Sergio Avila

Have you ever wished you got home from work and dinner was ready? Or that there were chocolate chip cookies or warm soup waiting for you after a day outdoors tracking, bird watching or camping? The answer to these and other similar questions might be simple: *try a solar oven!*

Note: 9AM — While I'm writing this, I started cooking one pot of calabacitas (2 chopped squash, 2 tomatoes, a half-onion, 1 can of corn, 1 garlic, salt, pepper, chile serrano) and one pot of black beans (1 cup beans, half-onion, garlic, salt and water) at 225° F. Updates to follow.



Solar ovens or solar cookers are insulated boxes of different materials that trap and concentrate sunlight to convert it into heat. Using dark metal cookware like cast-iron pots with glass lids, the heat slowly cooks the food. Considering the number of days of sunlight year round in Arizona or fire restrictions when camping, this sounds like an easy way of cooking!

Using only the energy of the sun, it's possible to save electricity and gas, and in some cases, prevent the use of wood for fuel. Because food cooks slowly at relatively low temperatures, it retains its flavor and moisture. The use of solar ovens is often promoted in already vulnerable landscapes to prevent desertification and deforestation.

My solar oven (see photos), made with recycled and new materials, consists of a plywood-box lined with insulation and a black metal plate on

the bottom. The box is covered with a piece of 26" x 32" tempered glass (a \$60 ouch!) and has a door in the back to access the pots. I keep a thermometer in the oven and have seen temperatures over 300° F (150° C). Dozens of plans and ideas for solar ovens can be found on the Internet for different types, sizes, materials and skill sets. For a real life experience go to

Tucson's "longest continuously running solar potluck in the world" at Catalina State Park every April.

Update: 1PM — Calabacitas getting soft and spicy; black beans bubbling, but still uncooked.

I have baked muffins ("weird shape, good flavor") and

cookies ("they stick to the metal!?) and cooked rice, beans, lentils and casseroles (including squash, potatoes, broccoli, bell peppers, corn, tomatoes), sometimes mixing in bacon, boiled chicken or fish. One day I made ground-turkey meatloaf, a bit flat so it would cook through: the flavor was good, but it was kind of dry because I left it in too long. There's always a period of trial and error, and with time we develop skills for building ovens and cooking different recipes. These days I'm working on an easy-to-carry oven that's small and light for camping trips. I think it would be fun to have one of those on every Sky Island Alliance field trip — a new recipe and lesson every weekend!

Update: 3PM — I'm having a great early dinner, a mix of calabacitas and black beans in a boiling soup.



Vehicle caravan following a dirt road through the Sierra San Luis grasslands in route to base camp at Rancho El Pinito. *Courtesy Chip Hedgcock.*

Madrean Archipelago Biodiversity Assessment: First Forays into the Field

by Marc Trinks, MABA Project Coordinator



UNISON Student Workshop

The first MABA-related activity occurred in August, as Sky Island Alliance and the Universidad de Sonora organized a workshop for twenty-five Universidad de Sonora (UNISON) biology students. The workshop was designed to stimulate interest in the natural history of northeastern Sonora while providing volunteer opportunities for the students' academic programs and contributing to MABA data collection efforts.

Dr. Tom Van Devender, MABA Project Manager, along with several SIA staff biologists, UNISON scientists

and a Bat Conservation International biologist, gave hands-on demonstrations on various methods used in field biology, offered presentations about the region's ecology, and introduced students to the area's exceptional biological diversity through field studies.

The workshop was hosted by Sr. Carlos Robles, owner of Rancho El Aribabi, located at the base of the Sierra Azul in Sonora, one of the six sky islands to be included in this three-year endeavor. Scientific information collected by the students at this training included new records of the rare Calliope Hummingbird, Sinaloa Wren, and Mexican Garter Snake, as well as list of insects and various plants

that had not been previously registered as occurring on Rancho El Aribabi. Records of plants, amphibians, reptiles, insects, and birds from different parts of the ranch will be entered into the MABA database.



From center left: **Tom Van Devender** fields questions from UNISON students at a field biology workshop led by SIA. **Trevor Hare** leads students on an investigation of restored riparian habitat along the Río Cocóspera as it flows through Rancho El Aribabi. **Sergio Avila** discusses conservation in the region with ejidatarios and ranchers at a MABA kickoff event held at Rancho San Bernardino.



Expedition into the Sierra San Luis

SIA staff, board members, scientists and volunteers spent two weeks on Cuenca Los Ojos Foundation properties in northern Sonora, Mexico, conducting the first of several expeditions as part of the MABA project. The first week was spent working out of Rancho El Pinito in the Sierra San Luis, the second week out of Rancho Puerta Blanca at lower elevation near the Sonora/Arizona border.

The group conducted plant relevés (plotless transects) for vegetation and flora in 11 different areas — a total of ~1000 plant records on Cuenca Los Ojos Foundation conservation lands! Botanists made about 650 numbered plant collections — with duplicates this was about 1800 specimens. The primary sets of specimens will go to the Universidad de Sonora and University of Arizona herbaria, with duplicates to many other collections.

A mustard, a mint, a borage, Mexican hat, and a cucurbit vine appear to be the first Sonoran records of more northerly plants. Canada wildrye and bush croton were found in new areas, but are still only known in Sonora from Cajón Bonito. Quaking aspen was seen on a north-facing talus slope above Cajón del Diablo. This is a widespread high-elevation tree in North America from Alaska south to Chihuahua, but is rare in Sonora. A preliminary analysis of the overall collection suggests that four or five species are new additions to the flora of Sonora!



From top left: **Automeris moth found at Rancho El Pinito in the Sierra San Luis. Photo courtesy Chip Hedgcock. Tom and volunteer biologists in the fascinating process of keying plants.**

Herpetologists diligently searched for amphibians and reptiles for both weeks of the expedition. Highlights were a big female green rat snake at Rancho El Pinito, a prairie rattlesnake, and several short-horned lizards in the Animas Valley grasslands. The western harvest mouse was commonly caught in the drift fence traps in the grasslands.

Entomologists studied the insects and found a number of species that are not (yet) known in Arizona, indicating that their northerly range extends to just south of the border.

Both weeks MABA participants were fortunate to have the support of Cuenca Los Ojos employees who provided help as guides, with logistics, meals, and base camps. *Que buena gente!*

On the Saturday between the two weeks of the expedition, SIA and the Cuenca Los Ojos Foundation hosted a reception for participants, local landowners, *ejido* members, visiting French scientists, and local middle school students, which served as the first MABA outreach event in the area.

A mariachi band from *Ejido 18 de Agosto* performed for the group, and delicious barbacoa y frijoles were enjoyed by all. A plump, mellow black-tailed rattlesnake attended the party showing off her rattles — maybe having smelled the barbacoa. It was a pleasant evening and a successful event.

So, the first MABA expedition was a great success - good fun while documenting biodiversity of plants, insects, herps, birds, and mammals in special areas. Many thanks to Josiah and Valer Austin of Cuenca Los Ojos Foundation for allowing us to conduct this research on their properties, and for their generosity in making available their staff, employees, facilities, and time in making this expedition a success! We would also like to thank the Veolia Foundation for its generous support in making this assessment possible.

On a side note, we have the opportunity to purchase 100 Sherman live traps for small mammal surveys (mainly rodents) that would contribute greatly to our field research with MABA. Is there anyone interested in donating all or part of the amount? Your contribution will further our abilities in

attracting student thesis/doctoral studies of one of the least-known vertebrate groups in the Sky Islands Region, and would be greatly appreciated! The full set can be purchased for \$400. Please contact Marc Trinks at marc@skyislandalliance.org or at 624-7080 x20 if you are interested in assisting.



From left: **Dale Turner holds a Clark's spiny lizard found at Las Cabañas on the first MABA expedition. Green Rat Snake found in Cajón Bonito. Photos courtesy Chip Hedgcock.**





Seventy thousand solar panels are part of a solar photovoltaic array that was built on 140 acres of unused land at Nellis Air Force Base, Nevada, to generate 15 megawatts of solar power for the base. Courtesy Senior Airman Larry E. Reid Jr., USAF.

Conflict and/or Compromise? Large Scale Solar and Land Conservation-Water, Wildlife, and Wire *by Bruce Plenk*

Solar just now is hot, or cool, as you wish. “Little solar” (photovoltaic (PV) panels or solar hot water panels) on your home or business roof or in that parking lot at the strip mall is everybody’s favorite. It creates jobs to install the systems, employs unutilized space, creates secondary positive impacts (shade, reduces global warming, etc) and frequently induces warm fuzzy feelings in all connected to it. Few conflicts arise with little solar. This is how it should be.

“Big solar” is another story. Big conflicts between proposed solar development and land preservation have arisen and are being worked out slowly, begrudgingly, and often with strange bedfellows joining forces for the battle. Three areas have been the focus of the fracas: water usage, since most of the large solar projects are in the arid desert southwest; wildlife, since most of these projects involve large desert areas, often public land with threatened or endangered species; and wire, since power generated in remote areas must get to the city users by means of transmission lines, which need to be routed to avoid issues of their own.

But first, what is big solar? Well, in one variation, it could be little solar grown big! By that I mean acres and acres of solar panels just like the ones on your roof but a huge lot of them. One of the largest of

this type is located at Nellis Air Force Base near Las Vegas-14 megawatts (MW). Probably the largest of this type in Arizona is still the Tucson Electric Power (TEP) solar field at Springerville, approximately 4.6 MW. Most of these large scale PV projects use trackers to increase the electricity output but are otherwise like a house roof system. They use no water but clearly need large amounts of land for large projects, probably on the order of 6-8 acres/MW. And the land must be cleared for the panels, potentially damaging habitat. This type of solar, like all the other large remote systems, needs transmission to move the power to customers in urban areas. Costs average \$.20/kWh and up.

The other systems bear little resemblance to the home panels. The concentrated solar power systems come in at least two varieties: power towers and parabolic troughs. Both involve focusing sunlight on a small area and creating steam which is then used to spin a turbine, much like the process in coal and nuclear plants but without the carbon footprint or the waste problems there. Water usage is substantial, but new dry cooling methods use much less water than traditional water-cooled power plants. Power towers use less water than troughs. The troughs take up about 25% less land. Both would disturb wildlife and

plants and would need transmission connections. Costs range from \$.12/kWh to \$.26/kWh, depending on wet or dry cooling. The cheaper power uses much more water.



There are two other big solar technologies worth mentioning: Stirling engines and concentrating PV. Neither use any water and so have been in the limelight lately. No large scale projects in the US employ either of these systems yet, so it’s a little hard to compare with the other more widespread ones.

Solar developers have all been looking at the same maps that show an area in Southern California, the tip of Nevada, and Northwest Arizona as THE place to locate their plants since there is a lot of sunshine and those are really the only places in the US where concentrating solar works well. And Pres Obama and Interior Secretary Salazar have committed to fast-tracking these big solar projects.

We got an inkling of what this fast tracking might involve with the recently released Draft Environmental Impact Statement (EIS) for the Ivanpah Solar Electric Generating System along the California-Nevada border. This is a three stage 400 MW solar power tower project that basically got tentative approval at the Draft EIS stage. The

analysis concluded that none of the other possibilities (23 alternatives were reviewed) would meet the goals of the project with any less impact on local plants and animals, the views from nearby natural areas, etc.

But the big issue, and this isn't very different than huge wind turbines off of Nantucket, is that there is a price to pay for these huge solar farms. First, views from nearby natural areas will be affected by the view of a large industrial facility near what is now a dry lake bed with ORV tracks. More difficult is the need to relocate at least 25 desert tortoises and fence the project off to prevent their return. Unfortunately a recent removal of tortoises to make way for a big Army project resulted in many tortoise deaths, and at least 15% tortoise deaths are assumed here. Also likely to suffer are a number of rare cacti and flowers. And there is significant water use as well.

In the words of the DEIS, "The Ivanpah Solar Electric Generating System (ISEGS) would have major impacts to the biological resources of the Ivanpah Valley, affecting many sensitive plant and wildlife species and eliminating a broad expanse of relatively undisturbed Mojave Desert habitat..." The project would use over 4,000 acres of desert land. Yet, even with all of this impact, all alternatives were rejected as not meeting the goals of the project (to meet California's renewable portfolio standard) and the no-action alternative was rejected because other power plants would need to be built to meet power needs and renewable requirements and those would have similar or worse impacts. The project was recommended for approval, although with mitigation for the plants and tortoises.

And this one project is just the tip of the big solar iceberg. Over 126 renewable energy projects, mostly big solar, have filed applications with the BLM in California. If all were built, this would cover 567, 974 acres, according to the New York Times. Five of these projects are now on the fast track for approval, including Ivanpah. And many of these projects have special status species issues, including burrowing owls, big horn sheep, flat-tailed horned lizards and a variety of desert plants.

There is clearly not enough water available for all or even many of these plants if they are built using water intensive big solar technology. Even the lower usage Ivanpah plant will use approximately 35,000,000 gallons per year. It seems likely that most of the plants built will need to be those using no water or nearly no water technology such as the Stirling engine or some form of PV.

And then we have the transmission line issues which have been largely unaddressed but now are rising to the forefront as agencies, planners, and solar developers all agree that without a substantial

investment, the energy from the big solar plants will not be usable. The plans for these lines already have prompted litigation to avoid the worst conflicts with undisturbed and protected lands.

For example, the Wilderness Society, Center for Biological Diversity, NPCA and numerous other environmental groups have filed suit to overturn a Bush Administration plan to designate "Wide Energy Corridors" throughout the West. Litigation is also pending over the Sunrise Powerlink, a high voltage line designed to bring power from near the Salton Sea to San Diego and other transmission line projects. The concerns are similar to those voiced against the big solar plants: taking pristine desert land and industrializing it is wrong until all previously developed land that can be used for solar has been utilized, and even then the transmission lines should not further degrade the desert but should be placed alongside roads or tracks that already cross the landscape.

All of this poses a dilemma for those who believe that all solar should be placed on rooftops, parking lots and other developed or industrialized land and no solar should be placed in the desert on undeveloped land. This is a rewrite of a more philosophical battle between local small distributed generation and large scale remote centralized power plants, whether solar, wind or traditional fossil fuels. While there is still disagreement, most in the industry believe that both are necessary to achieve the goals we need to meet to avoid the worst consequences of global warming. Neither is perfect alone; it's more expensive to put solar on a roof than in the desert, and it takes longer to do thousands of small projects rather than one big one, but building solar plants near the loads in the cities saves on transmission costs and provides protection against terrorist attacks or other failures at big power generation facilities. But the large scale desert plants of big solar, particularly if connected to big wind in the Great Plains, will provide the backbone of a coal (and hopefully) nuke free power future.

If we need both big and little solar, what is to become of the desert lands many have worked so hard to preserve and the plants and animals of those big spaces?

A think paper authored by several environmental groups in June, 2009, sets out a framework for this discussion: www.defenders.org/resources/publications/policy_and_legislation/balancing_renewable_energy_development_and_land_conservation_in_a_warming_world.pdf. Here are the key points, which seem like a reasonable compromise on these tough issues: the impacts of renewable energy development should be viewed in the context of the full range of energy projects (lots better than mountaintop removal coal mining or nukes); land that has already been disturbed should

be preferred over undisturbed land (with attention paid to issues of environmental justice); and sensitive and unique lands (especially wilderness) should be avoided for both development and transmission lines.

Where does this leave us? Put up more little solar wherever we can. Develop medium solar on big box stores and similar big roofs and parking lots. And look for the places in the desert southwest where big solar and its associated transmission lines will cause the least damage to the desert and its plant and animal denizens.



Bruce Plenk is the Solar Energy Coordinator for the City of Tucson, funded by a Solar America Cities grant from the U.S. Department of Energy. The views expressed here are personal opinions and not those of the City of Tucson. Contact him at bplenk@igc.org.

EXCERPTED FROM THE *LOS ANGELES TIMES*, 9.18.09:
Solar energy firm drops plan for project in Mojave Desert by Louis Sahagun

Ending a bitter feud in the rush to develop solar farms, BrightSource Energy Inc. on Thursday said it had scrapped a controversial plan to build a renewable energy facility in the eastern Mojave Desert wilderness that Sen. Dianne Feinstein (D-Calif.) wants to transform into a national monument...

Of particular concern was BrightSource's proposal to develop a 5,130-acre solar power plant on a portion of the donated lands known as Broadwell Dry Lake, which lies within Sleeping Beauty Valley. The scenic, near-pristine region near Ludlow is home to a significant herd of bighorn sheep and framed by the Kelso Dunes Wilderness and Bristol Mountains Wilderness on the east and the Cady Mountains Wilderness Study Area on the west...

Scientists continue to catalog plants and reptiles uniquely adapted to the scorched terrain in what remains a biological frontier. For example, botanists recently discovered a species of lupine that features showy purple blossoms in the spring. Biologists are also studying unusually dark lizards that appeared to have genetically adapted to the volcanic terrain...

"This creates an open playing field for the monument to be built," Myers said. "It also could herald a sea change in the solar energy industry in that people will better understand that there are good and bad places to build." ...

articles.latimes.com/2009/sep/18/business/ft-solar18

Forget Shorter Showers: Why personal change does not equal political change

by Derrick Jensen. This article first appeared in the July/August 2009 issue of *Orion Magazine*: www.orionmagazine.org

Would any sane person think dumpster diving would have stopped Hitler, or that composting would have ended slavery or brought about the eight-hour workday, or that chopping wood and carrying water would have gotten people out of Tsarist prisons, or that dancing naked around a fire would have helped put in place the Voting Rights Act of 1957 or the Civil Rights Act of 1964? Then why now, with all the world at stake, do so many people retreat into these entirely personal “solutions”?

Part of the problem is that we’ve been victims of a campaign of systematic misdirection. Consumer culture and the capitalist mindset have taught us to substitute acts of personal consumption (or enlightenment) for organized political resistance. An *Inconvenient Truth* helped raise consciousness about global warming. But did you notice that all of the solutions presented had to do with personal consumption—changing light bulbs, inflating tires, driving half as much—and had nothing to do with shifting power away from corporations, or stopping the growth economy that is destroying the planet? Even if every person in the United States did everything the movie suggested, U.S. carbon emissions would fall by only 22 percent. Scientific consensus is that emissions must be reduced by at least 75 percent worldwide.

Or let’s talk water. We so often hear that the world is running out of water. People are dying from lack of water. Rivers are dewatered from lack of water. Because of this we need to take shorter showers. See the disconnect? Because I take showers, I’m responsible for drawing down aquifers? Well, no. More than 90 percent of the water used by humans is used by agriculture and industry. The remaining 10 percent is split between municipalities and actual living breathing individual humans. Collectively, municipal golf courses use as much water as municipal human beings. People (both human people and fish people) aren’t dying because the world is running out of water. They’re dying because the water is being stolen.

Or let’s talk energy. Kirkpatrick Sale summarized it well: “For the past 15 years the story has been the same every year: individual consumption—residential, by private car, and so on—is never more than about a quarter of all consumption; the vast majority is commercial, industrial, corporate, by agribusiness and government [he forgot military]. So, even if we all took up cycling

and wood stoves it would have a negligible impact on energy use, global warming and atmospheric pollution.”

Or let’s talk waste. In 2005, per-capita municipal waste production (basically everything that’s put out at the curb) in the U.S. was about 1,660 pounds. Let’s say you’re a die-hard simple-living activist, and you reduce this to zero. You recycle everything. You bring cloth bags shopping. You fix your toaster. Your toes poke out of old tennis shoes. You’re not done yet, though. Since municipal waste includes not just residential waste, but also waste from government offices and businesses, you march to those offices, waste reduction pamphlets in hand, and convince them to cut down on their waste enough to eliminate your share of it. Uh, I’ve got some bad news. Municipal waste accounts for only 3 percent of total waste production in the United States.

I want to be clear. I’m not saying we shouldn’t live simply. I live reasonably simply myself, but I don’t pretend that not buying much (or not driving much, or not having kids) is a powerful political act, or that it’s deeply revolutionary. It’s not. Personal change doesn’t equal social change.

So how, then, and especially with all the world at stake, have we come to accept these utterly insufficient responses? I think part of it is that we’re in a double bind. A double bind is where you’re given multiple options, but no matter what option you choose, you lose, and withdrawal is not an option. At this point, it should be pretty easy to recognize that every action involving the industrial economy is destructive (and we shouldn’t pretend that solar photovoltaics, for example, exempt us from this: they still require mining and transportation infrastructures at every point in the production processes; the same can be said for every other so-called green technology). So if we choose option one—if we avidly participate in the industrial economy—we may in the short term think we win because we may accumulate wealth, the marker of “success” in this culture. But we lose, because in doing so we give up our empathy, our animal humanity. And we really lose because industrial civilization is killing the planet, which means everyone loses. If we choose the “alternative” option of living more simply, thus causing less harm, but still not stopping the industrial economy from killing the planet, we may in the short term think we win because we get to feel pure, and we didn’t even have to give up all of our empathy (just enough

to justify not stopping the horrors), but once again we really lose because industrial civilization is still killing the planet, which means everyone still loses. The third option, acting decisively to stop the industrial economy, is very scary for a number of reasons, including but not restricted to the fact that we’d lose some of the luxuries (like electricity) to which we’ve grown accustomed, and the fact that those in power might try to kill us if we seriously impede their ability to exploit the world—none of which alters the fact that it’s a better option than a dead planet. Any option is a better option than a dead planet.

Besides being ineffective at causing the sorts of changes necessary to stop this culture from killing the planet, there are at least four other problems with perceiving simple living as a political act (as opposed to living simply because that’s what you want to do). The first is that it’s predicated on the flawed notion that humans inevitably harm their landbase. Simple living as a political act consists solely of harm reduction, ignoring the fact that humans can help the Earth as well as harm it. We can rehabilitate streams, we can get rid of noxious invasives, we can remove dams, we can disrupt a political system tilted toward the rich as well as an extractive economic system, we can destroy the industrial economy that is destroying the real, physical world.

The second problem—and this is another big one—is that it incorrectly assigns blame to the individual (and most especially to individuals who are particularly powerless) instead of to those who actually wield power in this system and to the system itself. Kirkpatrick Sale again: “The whole individualist what-you-can-do-to-save-the-earth guilt trip is a myth. We, as individuals, are not creating the crises, and we can’t solve them.”

The third problem is that it accepts capitalism’s redefinition of us from citizens to consumers. By accepting this redefinition, we reduce our potential forms of resistance to consuming and not consuming. Citizens have a much wider range of available resistance tactics, including voting, not voting, running for office, pamphleting, boycotting, organizing, lobbying, protesting, and, when a government becomes destructive of life, liberty, and the pursuit of happiness, we have the right to alter or abolish it.

The fourth problem is that the endpoint of the logic behind simple living as a political act is

continued next page

Sky Island Stylin'

by Tim Lengerich

From the comfortable confines of my Toyota Tacoma sleeping cocoon, I hear the first-risers' tinkling of pots and pans. Audible but indecipherable mutterings accompany them. The night's last cacophonous lurchings burst from Trevor's throat, mercifully muffled by his entrenchment in the sleeping bag on his cot.

Elegant trogon's squawk and squabble from above and afar in the abundant oaks and sweeping hillsides. With tunes, whirs and whistles from warblers, hummingbirds and cardinals an avian cocktail of sound swirls pleasantly in our ears. All sounds combine to create a delightful alarm clock for our awakening camp here in the proposed Tumacacori Highlands Wilderness northwest of Nogales.

Slowly, silent forms arise at all points of the compass from their night's nests and stumble, coffee cups in hand, towards the camp cooking area and last evening's fire ring. A few pause to plop into their chairs at the ring and stare at the ashes of the long gone fire.

Forget Shorter Showers *continued*

suicide. If every act within an industrial economy is destructive, and if we want to stop this destruction, and if we are unwilling (or unable) to question (much less destroy) the intellectual, moral, economic, and physical infrastructures that cause every act within an industrial economy to be destructive, then we can easily come to believe that we will cause the least destruction possible if we are dead.

The good news is that there are other options. We can follow the examples of brave activists who lived through the difficult times I mentioned—Nazi Germany, Tsarist Russia, antebellum United States—who did far more than manifest a form of moral purity; they actively opposed the injustices that surrounded them. We can follow the example of those who remembered that the role of an activist is not to navigate systems of oppressive power with as much integrity as possible, but rather to confront and take down those systems.



Derrick Jensen is the author of Endgame, The Culture of Make Believe, and A Language Older than Words. He was named one of Utne Reader's "50 Visionaries Who Are Changing Your World" and won the Eric Hoffer Award in 2008. He writes for Orion, Audubon, and The Sun Magazine, among many others.



It's all in a weekend's work: dispatching bullfrogs in the Tumacacoris.

Someone fumbles forth with the least amount of energy possible to start a meager fire. A fire to barely satisfy through breakfast but not too large to put out safely before we launch on to our fieldwork.

The fieldwork is another Sky Island Alliance sponsored volunteer weekend. One of many such events offered in the course of a year.

Our mission this weekend is to remove bullfrogs from two stock ponds near the west flanks of the Atascosa Mountains. This weekend's fieldwork is coordinated by Sky Island Alliance's Trevor Hare (see "cacophonous lurchings" above) and Sarah Williams (the demure one). One or both of them coordinates every volunteer weekend for the Landscape Restoration Program.

In Arizona and most of the west, the American bullfrog (*Rana catesbeiana*), is a non-indigenous species. That is to say, it doesn't belong here. It belongs in your childhood backyard ponds and riverbanks of Indiana, South Carolina and Arkansas. Their original habitat did not extend west of the Rockies Front Range. But, through human assistance, the bullfrog is here now eating (literally) out of home and hearth the threatened native Chiricahua leopard frog (*Lithobates chiricahuensis*) and other regional leopard frogs.

Today's ponds have no leopard frogs in them. But combined they do have well over a thousand bullfrog tadpoles, adolescents and adults. Other ponds elsewhere in the Sky Island region have thousands inhabiting them.

Now, "to remove bullfrogs" is a somewhat imprecise term; in this case easier to explain than accomplish. There are basically three different methods used to eliminate bullfrogs—seining, gigging and shooting. Probably not an agreeable project for Buddhists or vegetarians but, nevertheless, it is a noble and necessary job done in the name of, for the sake of Mother Nature. Humans have sometimes rendered her crippling blows and it is humans that shall help her heal.

To put the cherry on top, these stock ponds are often polluted with the urine and feces of cows



that use them for drinking. Of course, they smell accordingly. It is into these ponds that volunteers wade (some with seemingly far too much relish and abandon) with seines to capture the bullfrogs. Pulling the seines through the ponds from side to side and end to end produces with each pass a number of frogs and tadpoles which are stored in five gallon buckets. In the course of the day hundreds are captured and humanely dispatched nearby.

Gigging bullfrogs is another approach to capturing the displaced amphibians. A frog gig is typically a wooden shafted, spear-like apparatus with barbed points at the end. At night, from shore or in boats, headlamp wearing and flashlight bearing volunteers daze the frogs with their lights and gig them. Hand nets are sometimes used as well.

Okay, I admit, this kind of weekend may not be for everyone. But, for everyone, the Sky Island Alliance DOES have a weekend!

Whether it be a weekend of monitoring and gathering data for protection of native species; or closing illegal routes created by off-road riders; or inventorying roads for new wilderness proposals, Sky Island Alliance DOES have a weekend for you!

Or bird watching; or photographing; or fieldtrips to Mexico and New Mexico; or tooling around afoot or in a vehicle seeing some of the most beautiful, diverse country in the west, Sky Island Alliance DOES have a weekend for you!

Or monitoring wildlife movements in southern Arizona; or swimming in a creek; or getting that gratifying feeling of giving back; or robust evenings around a campfire with good friends and average food (or vice versa), Sky Island Alliance DOES have a weekend for you!

So, come revisit that part of your spirit that may need refreshing with the feels, the smells, the sights, the sounds of nature. Come out, come work, come play! Come Sky Island Alliance!



We count on Tim Lengerich as one of our core Volunteers Extraordinaire... thanks Tim!

VOLUNTEERS MAKE IT HAPPEN

Keeping the Tracking Workshop on Track

by Janice Przybyl, Wildlife Linkages Program Coordinator

Coffee. Tea. Scones. Eggs. Milk. Butter. Juice. Sandwiches. Potato chips. Cookies. Pizza. Burritos. Soda. Apples. Bananas. Chocolate cake! Oh, and coffee. These are some of the most essential items provided to participants during Sky Island Alliance's yearly tracking workshop. What? Not the track identification cards? Not the tracking rulers? Yep, having good food available keeps the tracking trainees fueled and energized as they tackle the rigors of learning the ins and outs of tracking wildlife. And just as important are the two volunteers who make sure that all breakfasts, lunches, dinners, and snacks are on the table and on time for twenty hungry herbivores and omnivores.

Rich and Joanne Griffiths, who live in Green Valley, have been coming to the tracking workshops since 2003 to do just that: chopping tomatoes, making sandwiches, scrambling eggs, brewing coffee, and guaranteeing that the buffet table is laden with goodies and more. From the first day, when boxes and bags of food arrive and are unloaded, to the final day when the last dish is washed and dried and the floor mopped, Joanne and Rich are a whirl of activity in the kitchen.

Over the years, the tracking workshop has taken place in a variety of different locales from the Environmental Education Center in Brown Canyon, to the Audubon Research Ranch in Elgin, to ranches in Mexico, each with distinctive and sometimes challenging cooking facilities. Joanne and Rich are so good-natured that they adapt to whatever kitchen quirks are thrown their way – a two burner stove (cooking for twenty?), a gas oven that needed to be plugged in (took awhile to figure that one out), no electricity (luckily the stove was gas). It's always an adventure in the food coordination business.

Rich does more than volunteer in the kitchen. He's a tracking volunteer too. Back in 2003, Rich was introduced to Sky Island Alliance during a presentation on the Wildlife Linkages Program given at the Green Valley Library. After hearing how SIA trackers help monitor the presence of wildlife in critical wildlife linkages, Rich signed up for the next training workshop that was held in Gila, New Mexico. After completing the training, Rich was assigned a tracking transect near Green Valley in the wildlife linkage between



Rich and Joanne watch the "tracking games" from the porch of the Brown Canyon Environmental Education Center (Buenos Aires Wildlife Refuge) during the 2008 Tracking Workshop.

the Tumacacori and Santa Rita Mountains. He often helps with other tracking surveys when needed. Yes, Rich does more than just the dishes at the tracking workshop. He now assists with the training, leading a group in the field to demonstrate good tracking techniques and providing tips on how to identify tracks. Rich says what he enjoys most about tracking is discovering a puzzle (track) and solving the puzzle (determining the animal that made the track).

Joanne joined Rich during the second weekend of his training in 2003. She tagged along to enjoy the scenery but started helping in the kitchen almost immediately. Both have enjoyed volunteering at the eight workshops since then. Joanne says it's fun getting to know the participants and to listen in on the presentations on tracking and on the different focal species. Rich enjoys watching the participants' enthusiasm and dedication to a worthy cause. He said, "Near the end of training, I can see they can't wait to get out there and do some tracking."

Retirees, Joanne and Rich settled in Green Valley seven years ago. Prior to that, they lived in Minnesota for 20 years. When asked why Green Valley, they laugh about the lack of minus 30 degree winters. In Minnesota, Rich was a special education teacher working with grades kindergarten to 12. Thinking back, Rich said "The challenge was working with the parents, teachers, and administration — the adults. The students were a lot of fun." Clearly his interest in helping students learn is apparent during the tracking workshop. Joanne was an elementary teacher too, as well as a registered nurse. Now they spend their time square dancing, hiking, swimming, and gardening, Rich is a big player on the local geo-

catching scene and Joanne has become an accomplished pastel artist. Both enjoy the "not working" part of retirement and often take off with their trailer in tow. Initially they owned a cute 13-footer, but it had no bathroom or air conditioner. Their new 17-foot trailer is still cozy, but is now outfitted for better comfort.

Asked what volunteering for Sky Island Alliance means to him, Rich replied, "I enjoy working with the Sky Island Alliance staff and getting out in the environment on the tracking transects and during the workshops. Sky Island Alliance is an organization having a positive effect in the region and I enjoy helping in that goal."

Oh, and about that chocolate cake. That's Joanne's scrumptious confection concoction and contribution to the workshop food supply. Yum!

Thanks, Rich and Joanne! With your dedication and help, the tracking workshops stay on track and run smoothly!



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.

Using Remote Cameras to Inform and Promote Wildlife Conservation

by Sergio Avila, Northern Mexico Conservation Program Coordinator

The use of remote cameras to capture photos of wildlife has increased in wildlife studies, especially to study elusive, rare or cryptic animals. As a research tool, this non-invasive technique does not require capturing or influencing animals' behavior, making remote cameras popular, easy to use and well accepted. Photographs allow researchers to identify species and gender, estimate age, observe family groups, and sometimes assess health status and behavior. However, setting up remote cameras in the field for the purpose of capturing images does not equal "wildlife research." Remote cameras, like radio collars, are mere tools that aid the researcher in the collection of information; and while it's interesting, fun and informative to photograph wildlife, researchers and managers must leverage this information for use in successful conservation actions. In short, we can generate more than an amazing collection of wildlife images.

Common questions from the public on the use of cameras include: "How are the resulting photographs used?" "What do you do with this information?" "Can these analyses be applied to conservation?" The answer to these questions originates in a good project design: a plan that describes the steps to collect, analyze and interpret the information and its intended application for conservation of a species or an area. When photographs demonstrate high species diversity in an area or the continuous presence of a protected species (i.e. Macho B's presence in southern Arizona for 12 years), this information should facilitate the permanent protection of that area.

A variety of research objectives can be addressed by using remote cameras, such as presence or absence of a species. Mark-recapture methods are applied to estimate density or abundance of species that are identified by individual pelage patterns, like jaguars or tigers. Figures 1 and 2 glimpse into the potential presented by a wildlife study using remote cameras, such as our Cuatro Gatos Project. After our initial success in northern Sonora photographing over 25 species of mammals in the Sierra Azul, including ocelots, and the signing of conservation agreements with partnering landowners, we are now working with

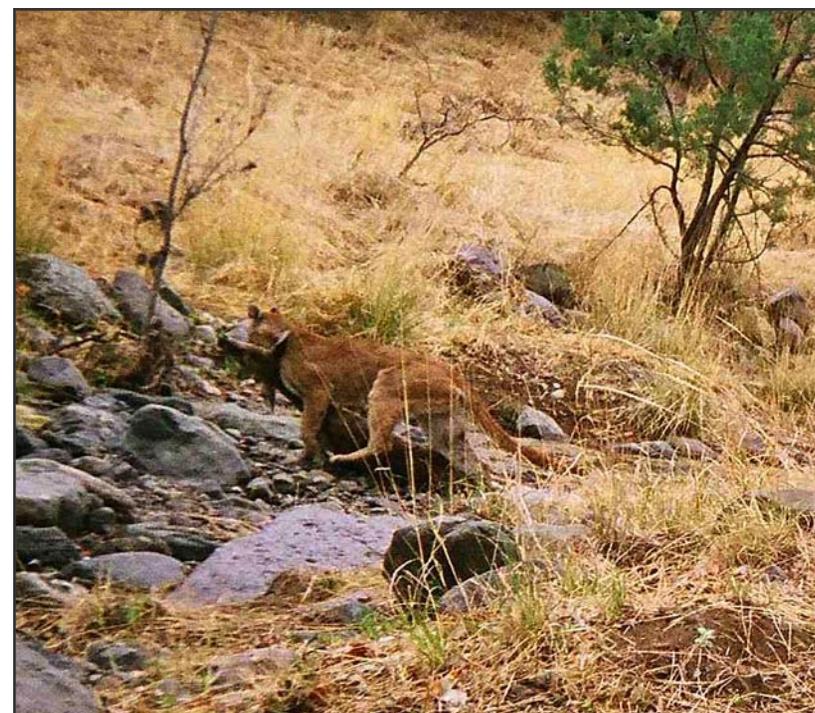
university researchers to conduct analysis of our results.

The continuous monitoring of wildlife through these photographs, offers a glance at wildlife populations, diversity of species, group sizes, preferred areas and sometimes their interactions. Examples of interactions are photographs of carnivores transporting their meal to a safe place for dinner (photo, right). Each photograph is stamped with time and date, and associated information includes camera site description (location, vegetation, elevation, topography), date when camera was set and revisited, number of photos and general observations (wet and dry seasons, human activities or presence of domestic animals).

In short, the use of remote cameras for studying wildlife is a safe, non-invasive technique that offers the potential to inform and facilitate conservation action for sensitive or elusive species, and areas with high species diversity. Adequate project design allows to plan for collection, analyzes and application of the information collected. Using remote cameras, researchers detect presence or absence of a species in an area, and should leverage this information to results that inform about species habits and interactions, beyond spectacular images or videos. By comparing when animals are most often photographed to time cycles we can draw conclusions about species habits and interactions.

The popularity of remote cameras for wildlife monitoring and study presents high potential to inform conservation. If you or anyone you know is interested in setting up and maintaining remote cameras within the Sky Island region and would like to learn the basics to get the best use of this technique, please contact Sergio at 520.624.7080 x16 or sergio@skyislandalliance.org.

Sergio Avila would like to thank biologists Jennifer Yates, from University of Georgia, for the use of preliminary analyses from her thesis research, and Nohelia Pacheco and Carolina Piña, from Universidad de Sonora, for updating the photo-database with over 30 months of photographs from our remote cameras.



A mountain lion drags a white-tail deer to cache the carcass.

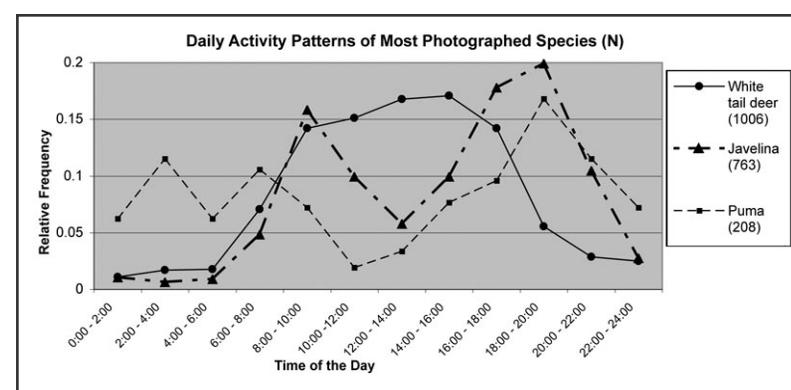


Figure 1. Activity patterns of species most commonly photographed: one predator (puma) and two prey species (deer and javelina). From our photo-data, we plot the relative frequency of capture by species to estimate activity patterns in a 24-hour cycle. The chart shows diurnal habits for deer, with daily activity between 6am and 6pm. Javelina show two daily peaks of activity: one between 8am and 10am and another between 6pm and 8pm. Puma activity, though constant throughout the day, increases at dawn and dusk.

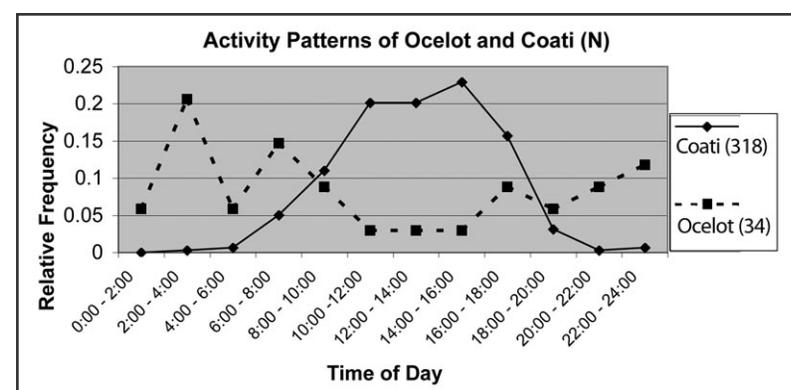


Figure 2. Activity patterns of two mid-sized carnivores (ocelot and coati). The chart shows nocturnal habits for the ocelot (a solitary animal) and diurnal habits for coati (generally moving in groups). Sample size for these two species varies greatly, however this preliminary analysis shows temporal preferences for each one.

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. For more information on this project, please visit www.skyislandalliance.org/jaguars.htm



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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

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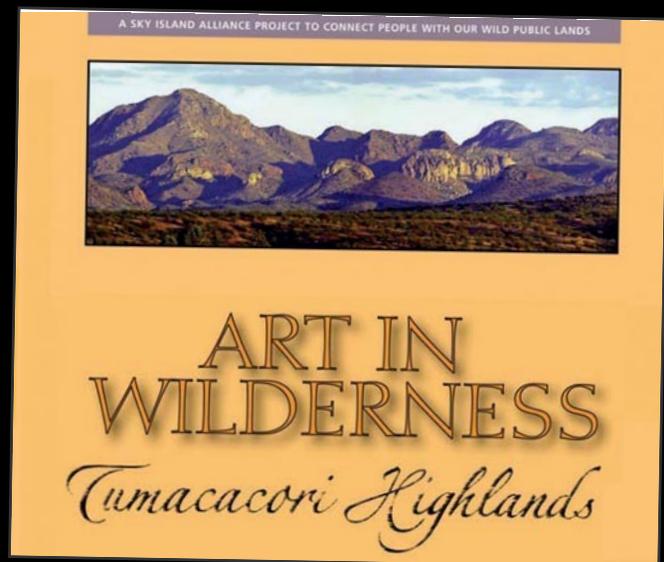
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We Need You... to Volunteer!

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 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

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.

Contact Janice at 520.624.7080 x15 or janice@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

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

Sustainable Energy *by Julie St. John, Editor*

My life has changed significantly since my dad died a year and a half ago. The responsibility of making sure my mom is doing okay, along with taking care of all the stuff Dad used to do, finally began taking its toll on me this Fall. I ran out of steam. How ironically appropriate that the theme of this issue was Energy and I was facing the bottom of my energetic barrel.

But it's not just me... I see this across the wide swath of nonprofit environmental groups I have the privilege of working with. Especially with today's economic climate, everyone has had to turn their volume — work volume, that is — up to at least Nigel Tufnel's "11." Big business expects — and financially rewards — this kind of dedication. But I don't know anyone who gets into conservation or environmental action work for the money; we are here because we want to make a difference. This unites us, no matter how differently we approach the other aspects of our lives.

I have to wonder, though, if we've become insular in how we take on the big ticket items, whether it's protecting landscapes through positive measures, like Wilderness designation, or from harm, like the Rosemont Mine or the border wall. I think there's an Aha! moment we're missing in our sisyphian task of rolling our well-meaning, thoughtfully articulated objectives up the hill... *especially* when we're operating from the bottom of the barrel... *especially* when the task is bigger than our combined energies. *What if it takes a village to push the rock up the hill?* As in, what if it takes not just the people who mostly agree with us and even help out sometimes, but the rest of the village as well?

I occasionally work with a woman whose sole bumpersticker — McCain/Palin 08 — should mean that she and I will disagree on just about everything. All the same, we get along well and have similar work ethics and sometimes even senses of humor. I have the feeling that if we could stop focussing on the value system rhetorics that divide us, we could gravitate towards the core value I know we have in common... a deep appreciation of wildlife and wildlands.

I know, I know, messages and results can get diluted when you begin to include other viewpoints. But I think we need to get over that. We need to get over "winning" too — when we win, someone else loses and then they try their darnedest to push the rock downhill again. I, for one, have no energy for that. When I've helped roll the rock up the hill, I want that rock to endure, no matter who's President or who's Governor.

In the current economic climate and with a physical climate that's warming faster than our worst projections, do we really have any other choice but to engage the entire village? Isn't it time we let go of our self-righteousness so that our hands are free to clasp our common visions and make them a reality? I'm pretty sure I can find the energy for that — and I'm willing to make the first move and extend my hand. How about you?



Next issue? Inspire us!

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julie@skyislandalliance.org



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Spring Wildlife Tracking Workshop

Feb. 26-28 and March 27-28, 2010
 (must commit to both weekends)

SIA's tracking volunteers monitor the presence of large mammals (mountain lion, black bear, jaguar, Mexican grey wolf and others) between the mountain ranges in the Sky Island region.

We are currently looking for dedicated "citizen scientists" who can commit to regular monitoring of an assigned tracking route every six weeks for at least one year. You'll learn where to look for signs and about the biology and behavior of local mammal species.

Learn more by contacting Janice Przybyl, Wildlife Linkages Program Coordinator: janice@skyislandalliance.org

