



NEWSLETTER

Southwestern Research Station

Portal, Arizona

Center for
**Biodiversity
Conservation** and
AMERICAN MUSEUM OF NATURAL HISTORY

Number 23

Year 2008

FROM THE DIRECTOR

I am pleased to report that with continued support from our friend donors and the American Museum of Natural History, we are several steps closer to fulfilling the goals established in our master plan for growth and development of the Southwestern Research Station (SWRS). Each step not only provides additional space and equipment for researchers, students, and educational classes/workshops, but also reduces the station's impact on our environment.

With the addition of a constructed wetland on station grounds, wastewater now flows by gravity from



the septic tanks to the wetland, where it is fed through clean gravel and planted marsh vegetation. The wetland not only handles all the station's wastewater, but also provides habitat for wildlife—especially birds and butterflies—generating educational opportunities and an additional attraction for naturalists. A boardwalk across the wetland with interpretive signage educates visitors about water conservation and the protection of our environment. All water filtered through the wetland is clean enough to be reused in an underground irrigation system for the station grounds.

In last year's newsletter, I reported that we were about to

break ground on our new education building and interpretive kiosk. As the photo below shows, we are well on our way to hosting classes in our new building this



summer. The building utilizes daylighting, environmentally friendly building materials, and water conservation systems. Supporting the educational component of the SWRS mission, the building will also serve to “teach” about conservation and sustainability, so that students, scientists, and other visitors will come away with a sense of the area's ecology as well as the part we play in sustaining it.

Our next step is to raise money for much needed housing for scientists and students who use the station. Thanks to a generous donation from David Rockefeller this past winter, we have two-thirds of the funding needed to accomplish this goal! We anticipate this project will be complete in the next 2 to 3 years. Then we plan to renovate the older housing units to provide housing for scientists who bring their families to the station and more comfortable lodgings for our naturalist visitors.

I invite all of you to come visit us in the near future, so that I can show you the recent changes that have put us closer to reducing our dependency on outside energy sources.

Dawn S. Wilson

EDUCATION: UPCOMING NEW PROJECTS AT THE SWRS

Dawn S. Wilson, Director

SAVE THE FROGS!

Next summer the Southwestern Research Station will be working with the Arizona Game and Fish Dept. (AGFD) and the U.S. Fish and Wildlife Service (USFWS) to reestablish Chiricahua Leopard frogs (*Lithobates chiricahuensis*) back into the eastern half



Chiricahua Leopard Frog

of the Chiricahua Mountains. This frog has not been seen in our area for many years and is considered threatened throughout its range.

In 2007, the USFWS developed a recovery plan for this species and is currently working with private and public land owners to reestablish frogs in areas it currently inhabited. Over the past two decades the frog has seen many changes to the quality and quantity of its riparian and wetland habitats as a result of dams, groundwater pumping, introduction of non-native organisms, urban and agricultural development, grazing by livestock, altered fire regimes, and disease. Following the 1994 Rattlesnake fire in the Chiricahua Mountains, a debris flow filled in many pools that were used by this species as breeding sites.

Fortunately for the frog, the SWRS has a small pond on station grounds and representatives from AGFD and USFWS found the pond to be a great site for the release of head-started tadpoles. The pond is spring-fed and has an ample algal growth for tadpole development. I will be training several student interns each year to aid me in this head-starting program. Egg masses of leopard frogs from a nearby source population will be transferred to the SWRS by the USFWS for head-starting. Once the eggs have hatched, the students and I will feed the small tadpoles and eventually release late-stage tadpoles (froglets) into the pond on SWRS property.

Once we begin seeing adult frogs, we will track their movements using radio telemetry so that we can better understand the habitats that adult frogs use. The SWRS is very excited about this project and we hope that on your next visit to the station, you will hear the calls of the Chiricahua Leopard Frog.

PICTURES CAN TELL US A LOT ABOUT OUR FURRY FRIENDS

The SWRS is working with researchers at the Center for Biodiversity and Conservation at the AMNH on acquiring funding for a new research project that will help us better understand mammal populations in the eastern Chiricahua Mountains. Gaining a better understanding of the daily and seasonal movements of mammals and the proximate mechanisms underlying these movements is critical to effective conservation and management, especially in the context of on-going climatic and other environmental changes. With the development of remote infrared triggers for digital cameras, we can now collect data on rare, secretive species, such as large cats and bears, without capturing them. The mammal communities in the Chiricahuas include over 30 medium and large mammal species. Some of the larger mammals found in our area include mountain lion, *Felis concolor*; black bear, *Ursus americana*; javelina, *Peccary angulatus*; gray fox, *Urocyon cinereoargenteus*; mule deer, *Odocoileus hemionus*; and Coues white-tailed Deer, *Odocoileus virginianus couesi*. Of these species, white-tailed deer, black bear, javelina, and mountain lion currently are hunted in the area.



Jaguarundi

Our proposed project will employ camera trapping, habitat surveys, environmental monitoring, and geospatial techniques to collect and analyze data regarding the composition and movements of the mammal community at lower elevations of the eastern Chiricahua Mountains. One animal in which we are particularly interested is the endangered jaguarundi (*Felis yagouarundi*). Although there have been no confirmed sightings (scat, picture, hair sample) of this small, weasel-like, cat in Arizona, over 20 people living in the vicinity have reported seeing a jaguarundi. We hope that our camera traps will finally answer the question of whether this cat truly exists in the Chiricahua Mountains.

Check out our web site for information on courses and workshops offered at the SWRS!!

<http://research.amnh.org/swrs>

2008 RESEARCH ACTIVITIES

Many senior scientists return to the SWRS year after year to work on long-term research projects that focus on native plants and animals in surrounding mountains and desert valleys. These long-term projects add much to our knowledge and prove useful in guiding land management decisions for the surrounding national forests. We greatly appreciate our senior scientists' dedication to helping us preserve this hotspot of biodiversity.

CHRISTOPHER AGARD -- The effects of tail loss on lizards, *Sceloporus jarrovi* and *S. virgatus*: escape behavior. Howard University, Washington, D.C.

DANIEL ARREOLA -- Migrant impacts on national forest environments: a preliminary mapping in the Chiricahua Mountains, Arizona. Arizona State University, Tempe.

EVELYNG ASTUDILLO-SANCHEZ -- Is hummingbird nest success inter-related with raptor nest attempts? University of Missouri, Columbia.

JESSE BARBER -- Biosonar jamming in the bat-moth arms race. Colorado State University, Fort Collins.

DREW BARTON -- Impacts of drought and altered fire regime on Madrean pine-oak forest in an Arizona sky island. University of Maine, Farmington.

KATE BOERSMA & MIKE BOGAN -- Density and dispersal in the giant waterbug (*Abedus herberti*). Oregon State University, Corvallis.

TIMOTHY BONEBRAKE -- Climate, ecophysiology, and evolution within the temperate/tropical range of a butterfly. Stanford University, CA.

CHRIS BROWN -- Assessment of predation risk by the use of chemical cues in the riparian wolf spider *Pardosa valens*. Tennessee Tech University, Cookeville.

SARA HELMS CAHAN -- Microgeographic habitat segregation in contact zones between *Pogonomyrmex rugosus*, *P. Barbatus*, and four lineages of hybrid origin. University of Vermont, Burlington.

AMANDA CHUNCO -- Ecological correlates of hybridization in a *Spea bombifrons* x *S. multiplicata* hybrid zone. University of North Carolina, Chapel Hill.

JOHN CONWAY -- Biology and ecology of the honey ant, *Myrmecocystus mendax*. University of Scranton, PA.

BILL COOPER -- Antipredatory behavior in lizards: escape, refuge use, and predator monitoring. Indiana University & Perdue University, Fort Wayne.

BRIAN DIAS -- Evolution of brain-behavior controlling mechanisms (in *Cnemidophorus* lizards). University of Texas, Austin.

LEE DYER -- Climate change and multi-trophic interactions. Tulane University, New Orleans, LA.

DEBORAH GORDON -- Behavior ecology of harvester ants. Stanford University, CA.

MICHAEL GREENE -- Task allocation in harvester ants. University of Colorado, Denver.

PIOTR JABLONSKI -- Winter ecology of the Mexican jay: a study of vocal communication. Ewha Women's University, Seoul, South Korea.

JOHN JAENIKE -- The effect of male-killing *Wolbachia* on the fertility of female *Drosophila innubila*. University of Rochester, NY.

LEAH LARKIN & SANDY BRANTLEY -- Survey of the arthropods of the southwestern United States. University of New Mexico, Albuquerque.

MARILYN LOVELESS -- Plant-animal interactions in *Erythrina flabelliformis*. University of Wooster, OH.

RYAN MARTIN -- Resource polymorphism and the ecological origins of phenotypic diversity. University of North Carolina, Chapel Hill.

DENIS MICHEZ -- Origin and early diversification of bees, the role of foraging behavior and host plants. Universite de Mons-Hainut, Mons, Belgium.

GEORGE MIDDENDORF -- Behavioral ecology of *Sceloporus jarrovi* and other sympatric lizards. Howard University, Washington, D.C.

GORDON & SHIRLEY NELSON -- The San Pedro Region: A study in land use history, landscape change, and planning. University of Waterloo, Ontario, Canada.

JAMES NICHOLS -- Global evolution of communities associated with oak and rose cynipid galls. Edinburgh University, United Kingdom.

KAREN OBER -- Biogeography and genetic divergence of *Scaphinotus petersi* beetles. College of the Holy Cross, Worcester, MA.

SUSAN PERKINS -- Collection of *Plasmodium chircachuae* for taxonomic and molecular evolutionary studies of malaria parasites. American Museum of Natural History, New York.

DAVID PFENNIG -- Maternal effects, character displacement, and the origins of diversity. University of North Carolina, Chapel Hill.

KARIN PFENNIG-- Hybridization and its consequences in spadefoot toads. University of North Carolina, Chapel Hill.

NICOLA JOY RAINE PLOWES -- Individual and collective behavior during ritual territorial battles in honey pot ants (Hymenoptera: *Myrmecocystus*). University of Connecticut, Storrs.

TOM PRICE -- Collection of *Drosophila pseudoobscura*: selfish genes and climate change. University of Exeter, United Kingdom.

JUDITH RAMIREZ -- Migration pattern and population genetic structure of the lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*) in Arizona and Mexico. University of Arizona, Tucson.

DOUGLAS RUBY -- Behavioral ecology of *Sceloporus jarrovi*. University of Maryland Eastern Shore. College Park.

NATHAN SANDERS -- Ant population dynamics. University of Tennessee, Knoxville.

JAMES SAVAGE -- Ecology of the Mexican jay. Polish Academy of Sciences.

WADE SHERBROOKE -- Horned lizards: predator-prey interactions. American Museum of Natural History, New York.

HONG-SUP SHIN -- Natural predator model confirms behavioral and neurophysiological characteristics of escape response in locust. Seoul National University, Korea.

ADRIAN SMITH -- Fertility signaling in the desert-ant *Aphaenogaster cockerelli*. Arizona State University, Tempe.

SEVAN SUNI -- What drives variation in reproductive success among colonies of the red harvester ant? Stanford University, CA.

STACEY WEISS -- Communication signals of female striped plateau lizards (*Sceloporus virgatus*). University of Puget Sound, Tacoma, WA.

FEATURED SCIENTIST FOR 2008: HELEN SNYDER, PORTAL AZ

APACHE GOSHAWK RESEARCH IN SOUTHEASTERN ARIZONA

When Helen Snyder and her husband, Noel, visited SWRS during their honeymoon camping trip in 1967, they promised themselves they'd return for good someday. After full careers researching endangered birds such as the Puerto Rican Parrot, Everglades Kite, and California Condor, they returned to the Portal area in 1986 to live. They continue to study birds and publish their research.

Research on rare or sensitive animals often provides the basic information government agencies to protect and manage the species. The Northern Goshawk (*Accipiter gentiles*) is a panboreal hawk that haunts and hunts the deepest forests. The sparse



woodlands of the borderlands might seem an unlikely home for this old-growth obligate species, but in southeastern Arizona and northern Mexico there lives a larger, darker non-migratory

race called the Apache Goshawk (*A. g. apache*). This subspecies was first described in 1938 from a specimen shot in Paradise, a few miles from the Southwestern Research Station.

The Coronado National Forest is home to the US portion of the Apache Goshawk population. The U.S. Forest Service (USFS) asked me to help locate and map territories of the Apache Goshawk in the 1990s, at a time when western states were facing the possibility that the U.S. Fish and Wildlife Service would list the Northern Goshawk as threatened or endangered due to habitat loss from timber harvest in national forests. A grant from the Arizona Heritage Fund supported my work.

Using data from the literature and museum records, I identified about 75 historic nesting sites. Checking them for occupancy, I found that about 30 of these nests had been active in the past 17 years. A comparison between historic and modern territories indicates the Coronado's goshawks show a high degree of site fidelity. The oldest record is from a territory in the Huachuca Mountains, where an adult female was collected in 1936, and it continues to be active now, 72 years later!

Strong site fidelity means it is practical to manage for individual territories of a rare, sensitive, and potentially endangered organism, and the USFS has been vigilant about doing so whenever disturbing activities -- such as prescribed burns, road repairs and campground construction or maintenance -- are scheduled. I am asked every year to check territories for occupancy and to make recommendations for timing of these activities to minimize disturbance to goshawks.

By banding chicks and later trapping them as breeding adults, I have identified those territories most likely to produce offspring that survive to breed. These territories are therefore the most biologically important, and therefore the most important ones to monitor and manage.

Another part of my goshawk work involves collecting blood and moulted feathers for DNA studies. These analyses have shed light on population differences between *A. g. apache* and *A. g. atracapillus*, the subspecies found in the rest of North America. This genetic database from over 30 unrelated birds also has forensic applications. The Apache Goshawk by law is off limits to falconers but is nonetheless a very desirable bird and the southeast Arizona population has been subject to illegal harvest in the past.

I plan to continue my work on the Apache Goshawk in order to help the Forest Service manage its habitat and help ensure the health of the subspecies.

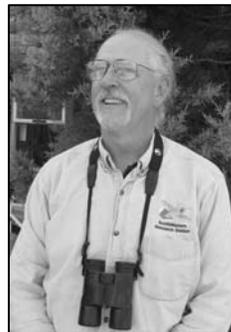
The Lepidopteran Course

This new course is a 6-day workshop offered to students, conservation biologists, amateur naturalists, and professionals who want to gain more knowledge on butterfly and moth taxonomy of S.E. Arizona. The workshop will emphasize taxonomy, ecology, and field identification. Lectures will include back-ground information on the biology of these invertebrates and their importance in pollination biology. During field trips and lab work, participants will learn collecting, sampling, and observation techniques as well as specimen identification, preparation, and labeling.



The workshop will be held at the SWRS from 22-28 August 2009. For application forms and workshop logistics, check out our website.

FOR THE NATURALIST THE CHIRICAHUA NATURALIST BY P.D. HULCE



The winter of 2007-08 was exceedingly dry, with no snowfall and little or no rainfall. As a result, spring wild flowers and butterflies were almost non-existent. An over-wintering Elegant Trogon was seen in South Fork in January, a Harris's Sparrow took up residence at a private residence below Portal, and a Wilson's Warbler, missed on the Portal Christmas Bird Count, was seen at the research station on January 11.

February brought the beginning of an invasion of Cassin's Finches that persisted through the summer. By the 19th, Spring Azure and Painted Lady butterflies were flying, with Satyr Commas and Sleepy Oranges being seen by the 29th. A single Phainopepla was observed at Portal on the 29th, and the first of season Turkey Vulture was flying over the research station on the 28th.

Spring White butterflies were spotted at the research station on March 5, with Mylitta Crescents and Sleepy Duskywings appearing on the 16th and 19th. By the 21st, Zone-tailed Hawk, Magnificent Humming-birds and Blue-throated Hummingbirds were all being recorded at the research station. Mountain Bluebirds were present in the desert flats below Portal on March 8. A very early Buff-breasted Flycatcher appeared at the research station on the 24th, and spent the next 2 weeks near the swimming pool. By the end of the month, Ash-throated Flycatchers and Lucy's Warblers were being seen in the desert flats.



Western Screech Owl

The first week of April brought Cassin's Kingbirds, Lawrence's Goldfinch, and Two-tailed Swallowtails to the research station, and the first Swainson's Hawk of the year appeared below Portal on the 5th. By April 17, Dusky-capped Flycatchers had returned to the research station. Red-faced Warblers were in South Fork, and an Osprey was seen flying over the road to Rustler Park. The research station was hosting Lazuli Buntings, Lucy's Warblers, an uncommon Common Yellowthroat, and a Belted Kingfisher in late April. Brown-crested Flycatchers, Lark Sparrows, and Greater Pewee were back at the station by the end of the month.

Green-tailed Towhees were still present in Portal on May 2. A Cardinal, unusual at the research station, and Red Crossbills also were seen at the research station in May. The avian event of the year occurred on May 5 when a Tufted Flycatcher was discovered at Herb Martyr Campground, only two miles from the research station. This bird was either the fourth or fifth individual of this species to ever be recorded in the United States. The May SWRS Birding Tour learned of this discovery at lunch, as the person that found the bird only hours earlier, was also staying at the station. The SWRS group immediately drove up to Herb Martyr, and within about 10 minutes, we spotted this beautiful bird for extended looks and photographs. The flycatcher stayed in the area for well over a month, and over 500 birders came from all over the U.S. and Canada to add this species to their North American life lists.

Five years ago, Gould's Wild Turkeys were re-introduced on the west side of the Chiricahuas. On June 14, a Wild Turkey was discovered sitting on a nest, with 18 eggs, on research station property. Subsequently another nest also was discovered at the

station, and by December at least five Turkeys were being seen regularly on station grounds. Greater Short-horned Lizards seemed to be fairly common on station grounds this past summer. A Black-throated Gray Warbler was observed feeding a baby cowbird, and there were reports of Mountain Lion and Black Bear within a mile or two of the station.

July brought a Yellow Grosbeak to a private residence in Portal and the station hosted a male Yellow-headed Blackbird. Cassin's Sparrows were actively singing in the grasslands below Portal and a pair of Northern Harriers were regularly observed around Stateline Road, raising the possibility of local breeding.

By late August, a great variety of native grasses were blooming all over the research station and Montezuma Quails also were being seen in the area.

October brought Arizona Giant Skippers, including one found inside the research station office. Chiricahua Whites, usually seen only at higher altitudes, also were seen at the research station. First of season Ruby-crowned Kinglets and Dark-eyed Juncos also appeared in October.

On November 1, the first Merlin that I have ever seen at the research station perched in the poplars outside the office for 10 minutes. A single White-throated Sparrow, rare in the Chiricahuas, was seen behind the station laboratories. Last winter's Canyon Wrens continued hanging around the station workshop and a Hammond's Flycatcher appeared on December 7. And finally, one very vocal tom and three hen Gould's Wild Turkeys have decided that the station is their new home. They visit the area in front of the main office regularly and can be seen taking a drink out of the station pool when thirsty. We hope they stick around for all to see in 2009.

STUDENT INTERN AND VOLUNTEER POSITIONS

Approximately 30 positions are available for the 2009 season. Two types of programs are available at the station:

1. RESEARCH SEASON – March – Oct., for students interested in conducting research: The student intern program offers students in biological sciences outstanding opportunities to observe and work with scientists conducting field research. Food

and lodging are provided in exchange for 24 hours per week of routine chores, with the remaining time available for research activities. This program is open to both undergraduate and graduate students.

2. NATURALIST SEASON – Sept. – May, for individuals interested in birding, hiking, and other nature adventures: The volunteer program offers individuals the opportunity to enjoy all the wonders of the Chiricahua Mountains. Just a few minutes walk from the station are hiking trails, creeks, and birding areas. Food and lodging are provided in exchange for 24 hours per week of routine chores, with the remaining time available for personal activities. This program is open from September through May each year.

For applications, please visit our website and click on Volunteers on the left side of the home page or contact: P.D. Hulce, SWRS, P.O. Box 16553, Portal, AZ 85632 USA; 520-558-2396; dhulce@amnh.org

2008 INTERNS AND VOLUNTEERS

Twenty-three volunteers and interns worked and learned at the Southwestern Research Station in 2008. We thank them all for their participation and hard work and wish them well in their future endeavors.

Germany: Julia Bass, Kirsten Richter, Juliane Schaer. **China (Hong Kong):** Ying Chi Chan. **Korea:** Ha-Eun Kim, Daehan Lee, Hong-sup Shin. **Mexico:** Ruth Percino. **United Kingdom:** Stephanie Brown, James Savage. **United States:** Carla Abrams, James Bonner, Virginia Brown, Amanda Clayton, D.J. Freese, Reed Heitlinger, Frank Insana, Mike Lesnik, Jeff Paul, Dwight Shannon, Lisa Van Etten, Melissa VanKleeck, Bob Weaver.

A BIG THANKS TO THE FRIENDS OF THE SOUTHWESTERN RESEARCH STATION

Donations to the Southwestern Research Station provide funding for special projects and also provide support to student researchers. We are very grateful to the following people who donated funds in 2008: AST Foundation, Abraham Associates, Inc., Stuart Abraham, John Alexander and Emily Fisher, Josiah & Valer Austin, Catherine Avery, Ian Bartoszek, David Beatty, Rene & Delane Blondeau, Bayard & Martha Brattstrom, Susan Buchan, Shane Burchfield, Gregg Campbell, Jack & Martha Carter, George Cawman, Charles Cole & Carol Townsend, Justin and Nancy Congdon, Mr. & Mrs. Conklin, William Cooper, Jr., B.

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The Southwestern Research Station

The research station is a non-profit organization under the direction of the Center for Biodiversity and Conservation at the American Museum of Natural History (AMNH) in New York.

The SWRS enhances AMNH's diversity and strengths by providing scientists and educators from the museum and other institutions and around the world the opportunity to participate in research, workshops, and classes in one of the most biologically rich environments in the United States.

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P.D. Hulce, Office Manager/Volunteer Coordinator
Lisa Bender, Bookkeeper
Geoff Bender, Operations Manager
Ben Knapp, Chief Maintenance
Jodi Kessler, Kitchen Manager/Cook
Shirley Pevarnik, Seasonal Cook
Juvy McEwan, Housekeeper/Volunteer Supervisor
Leesa Bunts, Housekeeper

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