



NEWSLETTER

Southwestern Research Station

Portal, Arizona



Number 28

Year 2013

From the Director Dawn S. Wilson

In September 2013, the Southwestern Research Station was honored to host the Annual Meeting of the Organization of Biological Field Stations (OBFS). The theme for the meeting was “How Biodiversity is Shaping the Evolution of Research and Education at Field Stations”. The last time this meeting was hosted at the SWRS was in the early 1980’s. Since that meeting, the Station expanded its education and science facilities and built a new dormitory— so we were confident that we could provide meeting space, housing and food for the estimated 80-90 attendees predicted to register for the meeting. After filling every bed at the Station, several tents scattered



OBFS field trip to Rustler Park

throughout the station grounds, and every empty bed in the towns of Portal and Rodeo, the final numbers reached 112! How could any serious OBFS member resist the lure of the Chiricahua Mountains!

To kick off the meeting, the SWRS offered early

arrivals the option of registering for a prearranged field trip to highlight the beauty and biodiversity of this area. Choices included a hiking excursion to either the Chiricahua National Monument, Rustler Park, or South Fork, or Horseback riding in Pinery Canyon. For the next three days, OBFS members attended seminars, concurrent sessions, roundtables, and plenary talks. Many attendees were “old timers” – having attended the OBFS meeting for 20 years or more. However, for several of the attendees, this was their first meeting.

One thought-provoking session was entitled “Field Stations: Not just for Science Anymore”. The session included a forum for exploring how and why the OBFS might encourage non-science use of biological field stations, including such ideas as liberal arts, service learning, and community outreach. Other sessions included issues from “Providing access to scientists on public lands” to “Social media and website publishing”. Our keynote speaker was Bill Radke (USFWS) from the Leslie Canyon National Wildlife Refuge. His presentation concerned overcoming the challenges of conducting research, monitoring, and species recovery along the Arizona/Sonora border. He discussed how landscapes along this international border have been impacted by illegal activities and the frustrating recovery of rare species.

As each day of the meeting wound down, the attendees enjoyed night activities such as mist netting bats at the SWRS pool—led by Tim Snow from AZGFD. Also, evening social events provided time where new members could meet with seasoned attendees to share advice and ideas.

For more about the OBFS and its role in supporting field stations, check out the next page.

Dawn S. Wilson

The Southwestern Research Station

The research station is a biological field station owned and operated by the American Museum of Natural History (AMNH) in New York, NY.

The SWRS enhances AMNH's diversity and strengths by providing scientists and educators from the museum, 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.

Staff:

Dawn S. Wilson, Director

Geoff Bender, Operations Manager/Budget Officer

P.D. Hulce, Chief Maintenance

Tresa Glone, Administrative Manager

Terri Beilke, Administrative Assistant

Jodi Kessler, Kitchen Manager/Head Cook

Mike Isenhardt, Cook

Juvy McEwan, Kitchen Assistant

Sharman Wisdom, PT Kitchen Assistant

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Beatrice Lopez-Faltum, Housekeeper

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Organization of Biological Field Stations (OBFS)

The OBFS is a non-profit organization that represents field stations around the world. Each year, the OBFS hosts its annual meeting at one of its many member field stations. Through plenary sessions, roundtables, and seminars, OBFS members have the opportunity to share new ideas and gain knowledge of the resources available to their field station. The meeting also helps provide field stations, like the SWRS, with the tools needed to aid in the development and expansion of their research, education, and outreach programs.

RESEARCH: Field stations provide outdoor laboratories where researchers can conduct both short and long-term research projects and provide an

environment where researchers and students can share ideas and collaborate on science projects. Since the SWRS founding by the American Museum of Natural History almost 60 years ago, research use of the SWRS has increased steadily. The uniqueness and high biodiversity of fauna and flora in the surrounding areas, the relatively undisturbed biotic communities, and the



expansion of onsite research facilities continue to attract outstanding senior and student researchers. Over the years, scientists at the SWRS have broadened their programs and recognize that biodiversity conservation must be based on a much broader interpretation than the traditional species-centered concepts. Research at the SWRS has provided data needed to help address current environmental issues such as climate change and resource sustainability. In just the past five years, SWRS scientists and their assistants have conducted over 200 research projects at the SWRS, encompassing fields including population and community ecology, physiological and behavioral ecology, global climate change ecology, and systematics.

EDUCATION:

Educational opportunities at field stations give many students their first experience at working alongside a



researcher collecting data in a natural environment. Training courses have become an integral part of the educational activities at the SWRS. Just in the last decade the SWRS has increased the number of training workshops by 80%. Participants in these workshops are scientists from government agencies, conservation organizations, and academic research institutions who use the knowledge gained for professional reasons. They leave the course better equipped to pursue research, teaching, and/or conservation efforts. The workshops emphasize

taxonomy, ecology, and field identification techniques. Two of our newest workshops offered are “Spiders and Their Relatives” and “Conservation Medicine and Diseases of Amphibians and Reptiles”.



OUTREACH: Field stations provide opportunities for young minds to think critically about the world around them. Through new course offerings to science

teachers, students, and lay people, the SWRS has increased its educational outreach opportunities which have led to increased collaborations between scientists and educators. Historically, the courses offered at the SWRS were geared towards upper level university students and/or agency personnel. More recently, the SWRS has reached out to middle and high school students in Arizona.

Visit the OBFS website to learn more about their role in supporting environmental research and education. <http://www.obfs.org/>

EDUCATION AND RESEARCH HIGHLIGHTS

Bat-study Workshops at the SWRS by Janet Tyburec



One summer night back in 1992, I was standing in the middle of a swimming pool, untangling a Mexican free-tailed bat from a mist net. I was with my boss, Merlin Tuttle, Founder and then Director of Bat Conservation International,

and two other employees. We were on a bat survey trip and the swimming pool of course was at the American Museum of Natural History’s Southwestern Research Station. At that time it was rumored to be the location with the most bat-captures throughout the history of mammal studies in the U.S. Yet, while we were arranging for collecting permits for the trip, we discovered that many of the biologists had little to no experience with handling and capturing bats, or with bat research techniques. From this insight, the idea for “Bat Study Workshops at SWRS” was born. In May 1993 we conducted our first week-long bat course at the Station.

We began collaborating with colleagues to offer a variety of bat workshops focused on different bat research topics.



Since 1996, I’ve been working with John Chenger, President and Founder of Bat Conservation and Management in Carlisle, PA.

<http://www.batmanagement.com/>. Together we grew and expanded our training programs throughout the U.S. But every year, we look forward to returning to our flagship venue at the SWRS, which provides unparalleled classroom, lodging, and dining facilities, all situated no more than 5-miles from our field sites. At this amazing location, students can encounter up to 21 different species of bats over a five-night period, including glimpses of the federally endangered Lesser Long-nosed Bat visiting humming-bird feeders at the Station. There is no other place in the U.S. that boasts this concentration of bat diversity.

Over the past two decades, we have trained over 700 people with our SWRS bat workshops. Nearly a quarter of the participants represent federal agencies, from the Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and National Parks Service, to the Department of Defense. About 20% of our students are from State or city government agencies such as State and regional parks, departments of natural resources, and departments of



health. Over 50 participants representing 12 foreign countries, from every continent (except Antarctica) have participated in these workshops, including students and educators from elementary to graduate school programs; zoos, nature centers, and museums and other NGOs.

At the core of every workshop, is a combination of



lectures and demonstrations, blending daytime classroom instruction with guided demonstrations and fieldwork in the evenings. We are especially fortunate that SWRS is actively

practicing natural resource management that accommodates bats, and many of our field trips allow us to observe the process and progress. For example, while teaching bat classes in Cave Creek Canyon, we have witnessed a decline in water resources over the past 20 years – estimating a 90% reduction in pooled surface water in this canyon. Not only is water a critical resource for bats, but for a host of other wildlife as well. The pool at SWRS remains a valuable asset for researchers and the animals they study. It is truly exciting that the SWRS and AMNH are working directly with federal and State agencies to actively promote the protection, development, and management of water resources in the area.

The highlight of each bat workshop is the nightly guided, hands-on netting and trapping activities. Students receive individual instruction on bat removal, handling, identification, processing, and data collection techniques, while safely handling and releasing 100 bats or more in a single evening. Moreover, the dataset resulting from our consistent presence at survey sites throughout Cave Creek Canyon, represents one of the largest, long-term monitoring efforts for bats in the U.S.

Bat research has benefitted from the collaborations and ideas shared at these workshops. Some of these include: developing “artificial bat bark” for forest-dwelling bats, creating man-made wetlands, and working with landowners to solve problems with bats occupying buildings. One of our current areas of focus is to design and test protocols for the acoustic monitoring of bats, using high-frequency microphones to eavesdrop on their echolocation calls. A significant portion of the recordings used to develop automated-classifiers for identifying bats on the basis of their echolocation calls has been collected at the SWRS.

One of the most gratifying moments from a recent workshop was when a participant came up to me at

the end of class and said, “You know, my boss made me come to this course, and I was absolutely dreading the week. But after spending 6-days with you, I am SO excited about bats, and I can’t wait to put some of this training to work and incorporate bats in my management plans.”

When we laid the groundwork for our first workshop in 1992, I don’t think any of us dreamed that we would still be battling at SWRS over 20-years later. In fact Merlin Tuttle wrote in an old Bat Conservation International document: “Once we feel the market for our bat workshops is exhausted at our AZ location, we will investigate new venues to keep interest fresh.” Merlin has since retired, but the people he inspired with his leadership are still going strong. We continue to offer classes at SWRS each year, and continue to keep careful tabs on the bats in Cave Creek Canyon.

A Long-term Lizard Study

By George Middendorf

Howard University, Washington, DC

As near as I can recollect (I could look back at my field notes but that seems like cheating), I first arrived at SWRS in June 1974 just as the birders were departing and the lizard researchers arriving. I’d only been west of the Mississippi once before (non-stop from NY to CA), and as I stood on the tarmac in Tucson (these were the days before jetways), I knew I’d entered a whole new country. The trip to the station started off dimly as Vince Roth, then director, backed over and crushed my backpack, frame and everything inside, but after that, the rest was magical as we drove through the weirdly different desert and then up canyon to the research station. I spent three months at SWRS that summer and have returned pretty much every summer since. OK, I may have missed a few, but not very many.



June is a particularly interesting time to visit. The incredible birding bonanza is concluding with the last of the migratory species moving northward through the mountain sky islands of Arizona and New Mexico. Lizard activity is just shifting into high gear with the



Yarrow's Spiny lizard

emergence from overwintering sites and the establishment of territories. Yarrow's spiny lizard (*Sceloporus jarrovii*), the focus of my research, is a bit of an anomaly

compared to other lizards. Having mated the previous fall, males and females emerge and spread out from their overwintering hibernacula to their summer territories. Depending on their size, females give birth to 6-15 jellybean-sized offspring in late May and early June.

It's a rough time for the little guys. Finding food is a challenge as insect numbers don't explode until the July rains begin. Larger animals – including predatory insects, birds, mammals, snakes and other lizards – like to eat these small lizards. A colleague once said, "These guys are just ecological popcorn." Surviving into the fall is tough. Only half of them make it and getting through the winter is equally as difficult, but being born 2-3 months earlier than the egg-laying lizards, they have a bit more time to grow and put on the weight that may help them to make it through the winter.



George's graduate students in Cave Creek Canyon

My studies of the behavioral ecology and demography of Yarrow's spiny lizard have continued far longer than I could have envisioned. After completing my dissertation on these lizards and a

post-doc on intertidal crustaceans (I thought I should look at a different system), I got a job at Howard University and soon thereafter returned to watch lizards in the southwest. While most of my research has focused on studying this species in the Chiricahuas (foraging behavior, activity patterns, and parasite-host relationships), Doug Ruby and I also have looked at population differences among the sky islands of



George looking for lizards along the canyon

Arizona and New Mexico. After conducting research over a period of years, I realized that I'd done something I never really started out to do; I'd collected data that allowed me to track individual lizards over their entire lifetime. By marking each lizard captured and returning to the same half kilometer of canyon year after year—for more than 25 years, my students and I have followed hundreds of lizards as they moved from summer territory to winter hibernacula and back again until they finally disappeared. We found that most of them really don't travel all that much. Lifetimes for many are spent within a 100 m stretch of canyon. To give you a sense of how small that is, it's as if you spent your life within a 6 mile radius of where you were born! By documenting daily activity, we found that some individuals remain active past sunset, a previously unrecorded behavior that helped to explain predation by owls. Who knew?

My students and I have documented changes in distributions resulting from canyon restructuring after extraordinary rain events and even the Horseshoe II forest fire. What I thought was going to be a one-time, short study on lizards for my dissertation turned into an examination of a small population of lizards in a very small piece of Arizona stretching over decades. I've been lucky and privileged to be there.

The SWRS hosted many researchers and their assistants in 2013. There are too many to list them in this newsletter. Please find below a sampling of some of the research projects from last year.

Anderson, Timothy; Purdue University.; Phylogeny and Systematics of the *Lithosiini (Erebidae)*

Cooper, Bill. Indiana University Purdue at Fort Wayne; Escape behavior and foraging of lizards.



Corcoran, Aaron. University of Maryland; Bats Jamming Bats: a Novel Form of Intraspecific Prey Competition.

D'Orgeix, Christian. Virginia State University; Comparison of gene flow and evolutionary history patterns in three sympatric species of lizards: *Sceloporus slevini*, *S. virgatus* and *S. jarrovi*



Drury, Jonathan. University of California, LA; Reproductive interference and interspecific territoriality in Rubyspot damselflies (*Hetaerina* spp.).

Fallon, Beth. Univ.of Minnesota; Influence of physiological tolerances on habitat partitioning and past migration patterns in the oaks (*Quercus*) of the mountains of southeastern Arizona.

Foitzik, Susanne. Johannes Gutenberg Univ. Mainz; Evolution of inbreeding and its impact on cuticular chemistry in the ant *Hypoconerops opacior*.



Gordon, Deborah M. Stanford University; Behavioral ecology of harvester ants.



Hall, H. Glenn. University of Florida; Nesting biology of solitary and cleptoparasitic bees.

Herreid, Judith. University of California, Riverside; Classification and evolution of the ant-parasitic genus *Orasema* (Hymenoptera: Eucharitidae).

Hews, Diana. Indiana State University; Hormone mediated conspecific signaling and aggression in male *Sceloporus jarrovi*.



Kelly, McKenna. Cornell University; The neurobiology of cooperative breeding in birds.



Porter, Cody. University of North Carolina at Chapel Hill; Resource Competition, Sexual Selection, and the Origins of Diversity

Ring, Caroline. Humboldt-Universität zu Berlin; Unraveling the genetic diversity of *Cimaciella brunnea* (Neuroptera: Mantispedae) – multiple species or a single polymorphic species?



Serrato-Capuchina, Gerardo Antonio. University of North Carolina at Chapel Hill; Quantifying gene expression changes between populations of *Spea bombifrons*

Shi, Jeff. University of Michigan, Ann Arbor; Ecological diversity, macroevolution, and community assembly of bats.

Tribull, Carly. American Museum of Natural History; *Chrysoidea* of the American Southwest.



Wallace, Alisa. University Puget Sound; Multimodal signaling in the striped plateau lizard *Sceloporus virgatus*: investigating the information content and efficacy of chemical cues and female-specific courtship ornamentation.

Woods, Art. University of Montana; Effects of microclimates on plant-insect interactions.



Interns and Volunteers

In 2013, the station welcomed 23 volunteers and student interns. We thank them for their work at the station and their assistance to SWRS scientists with research projects.

United States: **Arizona:** Steve Christensen; **Colorado:** Will Bryan; **Connecticut:** Deanna Marguis; **Georgia:** Jamie Botsch; Katrina Koppel; **Massachusetts:** Elliot Lustig; **New Jersey:** Ben Barkley; Kelly Halloran; Gaston del Pino; Sophie Liu; **New York:** Sophia Carryl; Brian Magnier; **Rhode Island:** Bob Weaver; **Tennessee:** John Barthelme; **Texas:** Graham Montgonery; Brad SoRelle; **Washington:** Tony Charvoz; Zander Westendarp

France: Joana Figuere; Teo Garcia-Marinez; Benjamin Remy; Thuriane Boutet

United Kingdom: Kathryn Kennedy.

MANY THANKS TO OUR FRIENDS OF THE SOUTHWESTERN RESEARCH STATION

We would like to thank the following individuals for their support of the station in 2013. Your donations provide financial support to several student scientists. Our young scientists are in degree seeking programs (both undergraduate and graduate) and use data that they collect here at the SWRS to further our understanding of the flora and fauna of the Chiricahua Mountains.

Stu Abraham, Robin Andrews, AST Foundation, Ton and Anne Bansak, Larry Barello and Leigh Stuart Fullerton, Bert Furmansky, Robert Getz, Phyllis and Richard Gliganich Arnold Gooder, Diana Hadley and Peter Warshall, William and Karan Harris, Henry Hespeneheide III, Alan and Lucy Hinman, Rod Hobson, Don Hollister, Mike Judd and Cheri McConnell, Kurt Leuschner, Lyn Loveless, Glen Lubcke, Donald Lyman, Chris McCooey, Bruce and Krueger, Raymond Barkhaus, Vicki and Donald Barnes, John Barthelme, Rene and Delane Blondeau, Carol and Jay Cole-Townsend, Carlton Collier, Lynn Crew and Aaron Miller, Carol and Conrad Fialkowski, Margaret McIntosh, Pat and Hal Michael, Madeline Miles, Peter and Elsbeth Moller, Laura and Bill Mullin, Nicholas Paizis, Mr. and Mrs. Thomas Parks, Irene Pawlak, Martha Pippitt, Warren and

Joyce Pulich, Kay Richter and Stephen Buchmann, Helen and Edgar Roca-Garcia, Philip Roper, Annette Smith, Carol Simon and Howard Topoff, Robin Steinberg, Steve and William Stiffler, Marie and Paul Stone, Kristine Stone, Steve Tompkins, Jan Van Meter and Elena Sansalone, Violet Vaira, Vicki Wilhite, Bob Winston, George Wood, Andrea and James Wygle.



Heartfelt Goodbye

The SWRS would like to say happy trails to P.D. Hulce. P.D. has worked at the SWRS for eight years as Chief of Maintenance and as our Bird Tour Guide. P.D. will retire from the station at the end of May 2014 but will continue to reside in the area. Although he will not be working as our maintenance chief, he will continue leading our SWRS bird tours each year.

We would love for P.D. to stay, however, he has chosen hiking, birding, herping, catching butterflies and relaxing (which is the same as birding) over working at the station for the rest of his life! The SWRS will miss him.



Some of P.D.'s past and current non-human friends.

BECOME A FRIEND OF THE SOUTHWESTERN RESEARCH STATION!

The SWRS provides scientists, educators, and students from across the country 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. Most importantly your donations provide grants to student scientists so that they can conduct research at the SWRS.

Your tax-deductible gift helps us advance both research and educational objectives at the SWRS by enhancing our technology infrastructure and providing students the opportunity to gain valuable research experience.

*** Please contact Dawn Wilson (520-558-2396; dwilson@amnh.org) for more information on giving opportunities.**

Thank you for supporting the Southwestern Research Station! You may also DONATE ON LINE on our secure website <http://research.amnh.org/swrs/donate>

If you wish to send a check:

Please accept my tax-deductible gift in the amount of:

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NAME

EMAIL ADDRESS (to receive newsletters and any updates on courses and workshops; please print clearly using block letters)

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Please hold down the CTRL key and press Enter to follow any links within this newsletter

SWRS Interns & Volunteers

Approximately 25 positions are available in this program each year. For more details on this program, please visit our website <http://research.amnh.org/swrs/> or contact our volunteer coordinator, Terri Beilke, SWRS, P.O. Box 16553, Portal, AZ 85632 USA; 520-558-2396; tbeilke@amnh.org

Enjoy some pictures from the 2013 Organization of Biological Field Stations Annual Meeting.



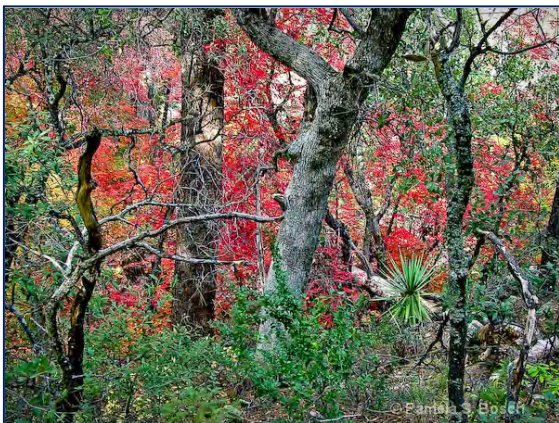
Representatives from biological field stations and marine labs from all over the world attend the meeting.



OBFS annual auction



Resting after a long hike



South Fork of Cave Creek



Chiricahua National Monument