



NEWSLETTER

Southwestern Research Station

Portal, Arizona



Number 27

Year 2012

From the Director

Dawn S. Wilson

The Southwestern Research Station (SWRS) opened as a biological field station in 1955. For the next 58 years, the SWRS evolved into a renowned field station where scientists could reside, eat home cooked meals, and conduct research in one of the most biologically rich environments in the United States. Through support from the American Museum of Natural History, external grants, and donations, the SWRS has continued to make significant progress towards enhancing its science and educational programs.

Over a decade ago, Director Wade Sherbrooke supported the development of two taxonomy workshops to be held at the station: The Bee Course in 1999 and The Ant Course, hot on its heels in 2001. The creators of these two hugely successful taxonomy workshops did not choose the SWRS randomly as a site to host their workshops, but did so because of the high biodiversity of bees and ants in this area. During my 10-year tenure as director, I have noted an increasing need by students and academics from universities, federal and State agencies and other science organizations for additional training workshops in plant and animal taxonomy. Taxonomy, a science of describing and naming new organisms, is central to understanding the world's biodiversity. Many scientists lack the training or the opportunity to acquire the training needed to describe current and new species in regions of high biodiversity or conservation concern.

To help fill this need, the station increased its course offerings over the last decade using the ever popular Bee and Ant taxonomy workshops as models. As our workshops became increasingly popular, the station began filling to capacity during the summer

months. Therefore, to preserve the station's primary mission of supporting scientists in their research endeavors, and at the same time, facilitate the growing need by students for training workshops, the station needed to a) construct new housing, and b) remodel our older rooms -- providing accommodations for a diversity of station users.

Fortunately in 2011, the SWRS received funding through a grant from the National Science Foundation and a generous donation from David Rockefeller to build a new dormitory and upgrade the aging infrastructure of our nine existing housing units. These advances in infrastructure provided safer and more energy efficient housing for all station users.



Newly constructed dorm

Since our grand opening of the dorms in spring 2012, we continue to encourage and provide facilities for scientists in their research endeavors, and will continue to expand our selection of training workshops for all station users.

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

Elaine Moisan, Administrative Assistant

Jodi Kessler, Kitchen Manager/Head Cook

Chip Blackburn, Cook

Juvy McEwan, Kitchen Assistant

Sharman Wisdom, PT Kitchen Assistant

Leesa Bunts, Head Housekeeper

Beatrice Lopez-Faltum, Housekeeper

Lorraine Titus, Gift Shop Clerk

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The remodel included new electric and plumbing, insulated walls, operable windows, and tiled floors -- making each room more comfortable and energy efficient. Each room can accommodate up to three persons and is equipped with a small kitchen area that



Newly remodeled and upgraded triplex room. Includes a coffee maker, microwave and small refrigerator. As part of the remodel, two of our triplex units were made handicap accessible.

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



Corner dorm room

Our newly remodeled triplexes provide living space for researchers, course instructors, and naturalists.



One of the three remodeled triplex units

Our new dormitory has 24 rooms available for researchers, workshop participants, and interns. The seven, spacious, corner rooms can accommodate three persons and include a desk, chair, and closet for each occupant. The other 17 dorm rooms are similar, but have two twin beds, instead of three. The dorms have community bathrooms, showers, and a laundry room.

<http://research.amnh.org/swrs/education/class-workshop-housing-and-rates>

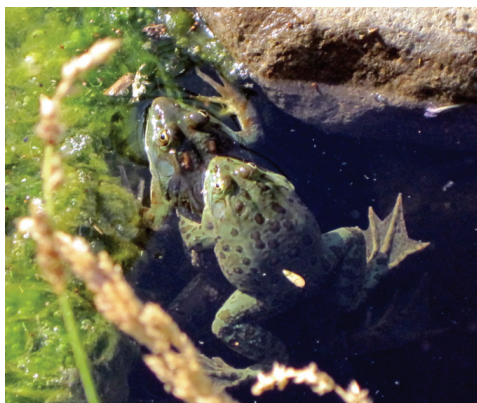


Re-establishment of the Chiricahua Leopard Frog, *Lithobates (Rana) chiricahuensis*, into the Eastern Chiricahua Mountains, Dawn S. Wilson

The Chiricahua Leopard Frog (CLF) was federally listed as a threatened species in 2002 and a recovery plan was adopted in 2007 to help reestablish this species into previously occupied habitats. Throughout its range, the frog's decline was a result of reduced quality and quantity of its riparian habitats -- including but not limited to -- introduction of non-native species, stream channelization, mining, catastrophic wildfires, drought, and disease. Unlike spadefoot toads (featured in our 2011 newsletter) that prefer an ephemeral pond to develop from egg to frog, the CLFs require a permanent water source for the egg and tadpole stages.



Pond in head-starting facility



Male and female CLF in amplexus

than those born in the wild. We began by retrofitting an old, stone building into an indoor ranarium and then constructed outdoor enclosed ponds. Tadpoles collected from a population on the western side of the mountain were released into the enclosed ponds and nature took its course. By summer of the next year, adult males were observed mating with females.

In 2010, the SWRS partnered with USFWS and AZGFD to reintroduce the frog back to the eastern side of the Chiricahua Mountains, where it had not been observed for over eight years. To accomplish this goal, we began a head-starting program at the station. Head-starting is a powerful tool used for stabilizing or re-establishing a species that has suffered a significant decline. Allowing animals to spend some of their early life-stages being cared for in a head-starting program can provide them with a greater chance of survival



Juvenile frogs in outdoor enclosed pond



Head-started frog released into Spring Box Pond

In October of 2011, we proudly transferred 52 juvenile frogs and 284 tadpoles from the enclosed ponds to a pond on station grounds called the Spring Box Pond (SBP). By 2012, we heard male frogs calling and found our first egg mass laid in the wild on 10 May. As of this newsletter, over 2000 tadpoles have been head-started and released into the SBP. Working with another partner, Bat Conservation International, we just recently constructed four more ponds on station grounds, significantly increasing our frog habitat.

Currently, frogs in the SBP are coming out of winter hibernation and we anticipate that some of them will migrate from the SBP to the new ponds. We will continue to work with our partners to manage our current frog habitat, as well as, create new habitats -- such as movement corridors for frogs to disperse throughout the Chiricahuas. We welcome all of our friends to come visit the station, tour our frog ponds, and listen to a sound that has not been heard in this area for many years -- the call of the Chiricahua Leopard Frog!

EDUCATION

Herpers from across the Pond: The Bangor University Herpetology Field Course By Wolfgang Wüster, Bangor University

Reptiles and amphibians make a minor contribution to the biodiversity of the British Isles, and consequently, they rarely feature prominently in University curricula. However, over the last 19 years, three faculty with herpetological backgrounds have developed Bangor University (North Wales, west coast of Great Britain) into the UK's main centre for herpetological studies, culminating in the creation of a specific undergraduate degree in Zoology with



A Western Diamondback is the star of the show for class participants

Herpetology. To our delight, this has resulted in a considerable number of budding herpetologists choosing Bangor as their undergraduate institution. Though, while lectures and practical exercises can be supplied anywhere, a herpetology course in a herp-poor, rain-soaked country like the UK raises the challenge of how can we expose these eager young students to good herpetological diversity in the field.

Many of the world's best herp-rich locations are logistically difficult, unsafe, or the herping success is simply too unpredictable. So, how do you entice a group of students to pay for a herpetology class without providing them with a near certainty of being able to deliver a first class experience? My first visit to southern Arizona in 2009 provided the answer to this question. Having found virtually all the species I searched for (with the help of many friends who put dots on maps) and large numbers of other species as well, the seed was sown and the first draft of a new

course saw the light of day scribbled on the back of an envelope on my long flight home. Having managed to convince and enthuse my Department Head and even the university Safety Officer, the scene was set for the first 13 intrepid undergraduates and three mentors to arrive in Arizona in September 2011. The first year was such a success that I offered the course again in 2012 and hope to make it an annual event for the foreseeable future.

The course emphasises herpetological diversity, field skills, and proper handling and management of reptiles and amphibians. Early mornings and late nights alternate as students compete to be the first to noose a tree lizard, spot a rattlesnake, or simply win the scramble out of the van to be the first to photograph whatever is crossing the road in front of us. Since rattlesnakes are both iconic macroherps and a conspicuous component of southwestern reptile faunas, I use them to illustrate ideas of niche overlap, as well as teach students how to strike a sensible balance between fear, respect, and confidence in dealing with animals that are dangerous but also manageable. For most students, the opportunity to study, observe, and photograph rattlesnakes is their first interaction with a venomous snake -- and one of their most lasting impressions of the trip.

The opportunity to visit study sites of other researchers is another key component of the course. Thanks to the generous assistance of Roger Repp, an avid field herpetologist, and his colleagues in Tucson, students get to try their hand at radio-tracking rattlesnakes. Also during the field course, Melissa Amarello (ASU) shares her appreciation of snakes by educating the students on the amazing social behaviour of rattlesnakes at her study site in the Galiuro Mountains.

The field course spends the majority of its time at the Southwestern Research Station, which provides an ideal environment with stunning surroundings and a temperate climate. The station also provides all the facilities needed for a field course and excellent food! However, since one cannot send a group of students to southern Arizona without seeing a saguaro forest, black-lighting a scorpion, or watching a sidewinder move through the desert sand, a few additional days are spent in Tucson and surrounding areas, exploring the Sonoran desert and testing the hypothesis that even students can overdose on fast food. More than anything, this trip aims to inspire a sense of awe for

some of the world's remaining wild places. For students from overpopulated Britain, there is real



Wolfgang (center front) and his field herpetology students magic to be found in clear, starry, desert skies, endless vistas stretching to the horizon, the distant howling of coyotes, and in the simple knowledge that there are still untamed places with megafauna not yet hunted to extinction. It is my hope that these impressions will continue to inspire them, wherever their careers may lead them in the future.

2012 FEATURED SCIENTIST
DESERT CORAL by Lyn Loveless
The College of Wooster

My first visit to SWRS was as a botanist in disguise. I was a student in the 2002 Bee Course, so that meant we looked at bees. The hidden payoff was that you find bees on plants, and the plants of the Chiricahuas are diverse, beautiful, and fascinating. I had spent 25 years working on genetic structure in tropical trees in Panama and Brazil, and it was refreshing to be around short plants, ones whose flowers I could observe closely while actually standing on the ground. In 2006-2007, thanks to Dawn Wilson and the SWRS advisory board, I spent a great sabbatical year as the first SWRS "visiting scientist," getting to know the flora and the pollinators of our favorite Sky Island, collecting specimens for the herbarium collection, and curating the valuable and quite substantial SWRS plant collection. This herbarium resource at the station is essential as a reference for every scientist who works in the area, and it is an important regional collection from this biologically diverse habitat. In that "visiting scientist" year and over summers since then, my students and I have curated and repaired specimens,

reordered material into modern systematic categories, and entered almost all the mounted plant specimens into the SEINet (Southwest Environmental Information Network;

<http://swbiodiversity.org/seinet/>). SEINet is a searchable database, where records and collection data can be accessed online by botanists anywhere in the world. The SWRS online database now includes 1681 specimens, of 984 species. We hope to move forward in the coming years to providing high quality digital photos of these specimens, and to georeference the collection coordinates so they can be better used in studying species distributions.

In the years since that first SWRS sabbatical, I have come back almost yearly to study what I describe as the ecological web centered around one specific plant species, the Coral Bean (*Erythrina flabelliformis*). I've brought students from The College of Wooster with me each year, as field interns, and several of them have done Independent Study projects on this system.



Lyn's students, Galen and Ananda, at Horseshoe Canyon study site

Our main study site is in Horseshoe Canyon, a place that has, unfortunately, had lots of attention by fire crews over the past few years. Many animal species are linked, trophically, to the Coral Bean. Hummingbirds are the principal pollinators; moth larvae and other insects eat leaves, flowers, and fruits; ground squirrels and rock squirrels consume buds and young fruits; and the flowers and leaves produce extra-floral

nectar which attracts ants. The one big hole in our understanding to date is, what disperses the seeds?



Lyn, Ananda, and Galen taking a break at Gila Cliff Dwellings National Monument

The plant produces brilliant red flowers and pods containing equally brilliant red seeds that were used decoratively by Amerindian peoples. We are examining reproductive biology, nectar production, between-population variation in reproductive traits, and fitness consequences of the facultative ant mutualism. With its main distribution in the Sierra Madre Occidental of Mexico, *Erythrina flabelliformis* reaches its northernmost limits in SE Arizona, at low



elevations on Sky Island ranges. This interesting biogeographical distribution, as well as its dramatic reproductive biology and its well-developed ant mutualism, makes Coral Bean a great study system which

will hold my attention for years to come.

INTERNS AND VOLUNTEERS

In 2012, the station welcomed 20 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, Frank Insana; Samantha Vaughan; California: Kimiko Woodman; Georgia: Cyndi Carter; North Carolina: Phyllisa Best; Oregon: Elaine Moisan, Sabrina Duncan; Tennessee: John Barthelme, Neil Choyce, Jake Pruett; Washington: Robert Snowden;

Belgium: Yannick Derosen; **Brazil:** Juliana Costa; **France:** Maelle Bellec; **Korea:** Jong Yeol Moon; **Poland:** Marta Boczon; **Tajikistan:** Dildora Fozilova, Botir Karimov (NJ); **United Kingdom:** Irina Chemshirova.

For a color version of this newsletter, please visit our website and click on **Researchers then Publications**

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 2012. Your donations provide financial support to several student scientists. These 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.

Peg Abbott, Stu Abraham, AST Foundation, Rosemary Barba, Larry Barello and Leigh Krueger, Raymond Barkhaus, John Barthelme, Keith and Carolyn Becker, Jack and Martha Carter, Carol and Jay Cole-Townsend, William Cooper, Lynn Crew and Aaron Miller, Jessie and Michael Cyr, Maryann Danielson, Susan Dieterich, Heidi Dobson, Eric Dugan, David Elwonger, Carol and Conrad Fialkowski, Bettina Fuschs and Paul Wolf, Stuart Fullerton, Pam Golden and Ross Zimmerman, William Grimm and Sylvia Marek, Billie and David Hardy, Sr., William and Karan Harris, Henry Hesperheide, Alan and Lucy Hinman, Don Hollister, Mike Judd and Cheri McConnell, Penny Johnston, Kolin Kromme, Kurt Leuschner, Lyn Loveless, Bruce McIntosh, Pat and Hal Michael, Guy Miller, Peter Moller, Laura and Bill Mullin, Dennis O'Shaughnessy, Nicholas Paizis, Kay Richter, Helen and Edgar Roca-Garcia, Marilyn Sigman, Andrew Sleeper, Annette Smith, Carol Simon and Howard Topoff, Steve and William Stiffler, Marie and Paul Stone, Kristine Stone, Angela Swistowski, Barney Tomberlin, Steve Tompkins, Vicki Wilhite, Mary Willy, Laura Winkler, Bob Winston, Andrea and James Wygle.

We would also like to thank the Portal and Rodeo communities for their continued support of the Station.

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. This past year we were able to support several students in their research endeavors by providing them partial funding for their room and board while at the SWRS.

Additionally, your generous support has played a vital role in enabling us to increase our educational programs. For 2013, we will host seven workshops, two middle and high school programs, and several classes from universities around the world.

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 about contributing to the SWRS**

Thank you for supporting the Southwestern Research Station!

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SOUTHWESTERN RESEARCH STATION
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SWRS volunteers at the fourth of July parade in Rodeo, New Mexico

Each year the volunteers spend countless hours designing and building a float for the 4th of July parade. First, the frame for the Gila monster's body was constructed of wood, then came the paper mache to form the body, and finally the lizard's unique scales were made using bubble wrap as the final layer. The lizard was then meticulously painted and mounted on the float.

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, Elaine Moisan, SWRS, P.O. Box 16553, Portal, AZ 85632 USA; 520-558-2396; emoisan@amnh.org



This large beast won a prize in the parade!!