

The Value of Snakes - Snake Venom Can Save Your Life

By: Polly Conrad,
The Orianna Society



Copperhead, *Agkistrodon contortrix*.
Photo © John White.

Even if you don't like snakes, chances are that you or someone you know can benefit from the research and applications surrounding snake venom proteins. These proteins are being used to study, treat and cure heart disease, high blood pressure, stroke, Alzheimer's disease and cancer. So if you know someone who suffers from any of these diseases

or disorders, you should support snake conservation! In this article, I present a brief overview of some of the medicinal values of snakes. Who would have thought snake venom could be life-saving?

It all starts with living, breathing, venomous snakes, which are milked by professionals for their venom. The venom samples are then sent to laboratories for various analyses and testing. Venom is a blend of molecules, including enzymes, peptides, and proteins. Many studies have identified several benefits provided by snake venom proteins. I've listed some below.

- The protein, ancrod, from the Malayan Pit Viper (*Callaselasma rhodostoma*) is being studied to treat patients suffering from deep vein blood clots or stroke, and to prevent blood clots after surgeries or other medical procedures.

- A southern Copperhead (*Agkistrodon contortrix*) venom protein, called contortrostatin, prevents cancer cells from attaching to other cells and also prevents them from producing the signals necessary to prompt new blood vessels to sprout and support the spread of cancer. Contortrostatin curbed the spread of cancer by 90% in mice implanted with breast cancer tumors!
- A novel King Cobra (*Ophiophagus hannah*) venom protein, haditoxin, may be useful as a 'molecular probe' which will help researchers study neurotransmitter receptors and their roles in neurodegenerative conditions such as Alzheimer's and Parkinson's diseases, as well as schizophrenia, anxiety, and depressive disorders and even nicotine addiction.

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While treading on one isn't so good for your health, rattlesnake venom is a source of life-saving drugs that can prevent heart attacks. Midget Faded Rattlesnake (*Crotalus oreganus concolor*) photo © Steve Spear.



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Get Your March Photo Contest Calendar



Spring beauty isn't only flowers. Take a look at the lovely **Sonoran Mountain Kingsnake** (*Lampropeltis pyromelana*) portrait by March photo contest winner **J.D. Willson**. Download your free March calendar for the full effect, and to see the subtle colors of the runner-up at <http://parcplace.org/images/stories/YOS/YearoftheSnakeCalendarMarch.pdf>.

Call for Photos for the 2013 Year of the Snake Calendar Photo Contest

We are seeking close-up, digital photos of snakes, preferably in their natural habitats or within an educational or conservation context. One winner will be selected each month to be the featured photo as part of the Year of the Snake online calendar. Runner-up photos will also be included in the calendar. Additionally, all submitted images will be considered for use in the Year of the Snake monthly newsletter and website as well as other Year of the Snake-related conservation, outreach, and educational efforts. Give us your best shot! For more information and for entry details, please visit http://parcplace.org/images/stories/YOS/YOS_Photo_Contest.pdf.

2013 YEAR of the Snake

Visit www.yearofthesnake.org

PARC PARTNERS IN AMPHIBIAN AND REPTILE CONSERVATION

We seek:

- Your involvement!
- Your conservation efforts
- Your snake art, stories, & poetry
- Events to sponsor
- Ideas to make the year a success

Contact: parcyearofthesnake@gmail.com

A Year to Highlight

- Education
- Conservation
- Research

Monthly Newsletter

Year of the Snake products at the PARCstore www.calepress.com/parcstore

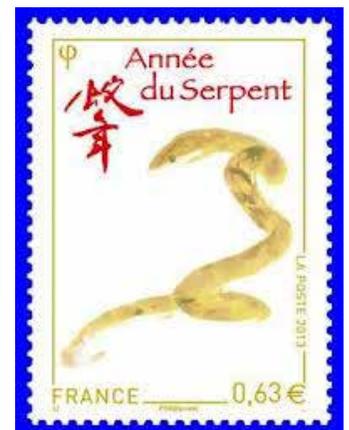
Monthly Photo Contest & Calendar

Year of the Snake outreach posters:
Available at www.yearofthesnake.org!

More Year of the Snake Stamps!

France and the United States Postal Service have also issued special stamps featuring the Chinese Year of the Snake. Buy USPS Year of the Snake Lunar New Year **forever stamps and notecards** at:

<https://store.usps.com/store/browse/category.jsp?categoryId=catBuyStamps>



Year of the Snake Collaborating Partners

Maryland Department of Natural Resources

www.dnr.state.md.us

The Department of Natural Resources leads Maryland in securing a sustainable future for our environment, society, and economy by preserving, protecting, restoring, and enhancing the State's natural resources.



Respect the Snake

<http://respectthesnake.com/home.html>

Respect The Snake is dedicated to educating people about the Lake Erie Water Snake (often called LEWS) through good scientific research and continued public outreach. Our goal is not necessarily to convert the masses into 'snake lovers', but rather to encourage and promote mutual respect for peaceful co-existence.



Center for Biological Diversity

www.biologicaldiversity.org

The Center for Biological Diversity believes that the welfare of human beings is deeply linked to nature — to the existence in our world of a vast diversity of wild animals and plants. Because diversity has intrinsic value, and because its loss impoverishes society, they work to secure a future for all species, great and small, hovering on the brink of extinction. They do so through science, law and creative media, with a focus on protecting the lands, waters and climate that species need to survive. With a staff attorney and biologist dedicated to conservation of herpetofauna, the Center advocates for North American snakes by fighting to outlaw rattlesnake roundups and working to secure Endangered Species Act protection for the most imperiled snakes. Visit the website to get the latest updates on our campaign and learn how to become a biodiversity activist.



Connecticut Department of Energy and Environmental Protection Wildlife Division (CT DEEP)

www.ct.gov/deep/wildlife

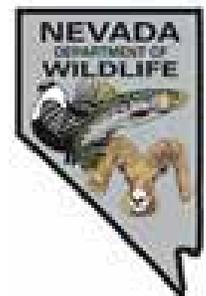
CT DEEP Wildlife Division is a state agency that has developed a number of programs to manage wildlife and contribute to diversified and healthy wildlife populations throughout the state. The CT DEEP Wildlife Division is engaged in a comprehensive outreach and education effort to make the public more aware of the wildlife that can be found throughout the state. In 2013, the CT DEEP Wildlife Division also has made a commitment to inform Connecticut residents about the state's 14 native snake species through monthly press releases, snake fact sheets, and various articles in the agency's bimonthly magazine, Connecticut Wildlife, and related events.



The Nevada Department of Wildlife (NDOW)

www.ndow.org

The NDOW mission is to protect, preserve, manage and restore wildlife and its habitat for its aesthetic, scientific, educational, recreational, and economic benefit to citizens of Nevada and the United States, and to promote the safety of persons using vessels on the waters of this state. There are 31 snake species (subspecies included) native to Nevada, making it a great place to celebrate Year of the Snake!



Our growing list of Collaborating Partners will be featured in future newsletter issues.

If you are interested in contributing to the Year of the Snake efforts, please send an email to parcyearofthesnake@gmail.com with a brief description of your organization and its efforts. Our full list of partners can be found at: <http://www.parcplace.org/news-a-events/2013-year-of-the-snake/271.html>.

Snake Venom Can Save Your Life, *continued from p. 1*

- African Black Mamba (*Dendroaspis polyepis*) venom proteins are showing promise in early studies to combat brain diseases and disorders, because they are highly specific for which brain and nerve cell receptors they will latch on to. In looking at receptors that play primary roles in pain disorders, Alzheimer's disease, asthma, and Parkinson's disease, researchers are investigating developments of new drugs to alter the actions of these receptors, and they need proteins that are highly specific to each target receptor type, like those from mamba venom.
- Current drugs on the market that are derived from snake venom proteins include Eptifibatid and Tirofiban. These are derived from venoms from rattlesnake species (*Crotalus* spp.) and the African Saw-scaled Viper (*Echis carinatus*), respectively, and have been used to help prevent heart attacks since 1998.
- A protein from Brazilian Pit Viper (*Bothrops jararacussu*) venom blocks the action of a compound called angiotensin-converting enzyme (ACE), which the body uses to maintain adequate blood pressure levels. From this, one of the first of many ACE inhibitor drugs to treat people with high blood pressure was developed and has been in use since the 1970s. Today, ACE inhibitor drugs are also used to decrease the risk of developing diabetes, stroke, and kidney disease.

Research on and applications of snake venom proteins can be healing for millions of people. Coronary

heart disease affects millions of people in the United States alone, and is the single largest killer of Americans. Whether it's fighting cancer, brain disorders, coronary heart disease, or for their intrinsic, ecological, or educational values, it's well worth keeping all snakes around! Celebrate 2013 as Year of the Snake and spread the word of the many values of snakes!

Sources:

- Finn, R. 2001. Snake venom protein paralyzes cancer cells. *Journal of the National Cancer Institute* 93(4): 261-2.
- Hawgood, B. and H. Reid. 1998. OBE MD: Investigation and treatment of snake bite. *Toxicon* 36(3): 431-46.
- Minea, R., S. Swenson, F. Costa, T. Chen and F. Markland. 2005. Development of a novel recombinant disintegrin, contortrostatin, as an effective anti-tumor and anti-angiogenic agent. *Pathophysiology of Haemostasis and Thrombosis* 34(4-5): 177-83.
- Pal, S. A. Gomes, S. Dasgupta and A. Gomes. 2002. Snake venom as therapeutic agents: From toxin to drug development. *Indian Journal of Experimental Biology* 40: 1353-8.
- Patlak, M. 2003. From viper's venom to drug design: treating hypertension. *FASEB Breakthroughs in Bioscience* 18(3): 421.
- Rosamone, W., K. Flegal, G. Friday, K. Furie, A. Go and K. Greenlund. 2007. Heart disease and stroke statistics – 2007 update. *Circulation* 115: 69-171.
- Roy, A., et al. 2010. Structural and functional characterization of a novel homodimeric three-finger neurotoxin from the venom of *Ophiophagus Hannah* (king cobra). *The Journal of Biological Chemistry* 285: e99921.
- Sherman, D. and C. Ancrod. 2002. *Current Medical Research and Opinion* 18: 48-52.
- National Institute of Health: Making Medicines from Poisonous Snakes. Article retrieved on 2/12/13. <http://science.education.nih.gov/animalresearch.nsf/Story1/Making+Medicines+from+Poisonous+Snakes>

Snake Myths

by Carrie Elvey,
The Wilderness
Center

Because of their unique lifestyle, snakes are prone to being the subject of myth and legend. Some of these myths have a kernel of truth, others have no discernible origin. Read on to learn the truth about these myths.

MYTH: You Can Cure a Headache by Wrapping a Shed Snake Skin Around Your Ankle/Head/...

FACT: While the origin of this myth is unclear, a man apparently made his living during the late 19th century selling snake skins for just this purpose in Cambridge. Obviously this does not cure a headache, but perhaps it would draw your attention away from a pounding skull.

Artwork courtesy of The Wilderness Center



Wildlife and the Outdoors — Snakes: The Good, the Bad, and the Ugly

by Mark Sasser, Nongame Wildlife
Coordinator, ADWFF

Of all wildlife that exists on our planet, snakes are the “Rodney Dangerfields” of the wildlife world. As he always said, “I get no respect,” and neither do snakes. They are scorned and feared by many, but actually are most interesting creatures and serve a vital role in the health of our natural world.



A Red Cornsnake, *Pantherophis guttatus guttatus*. Beautiful and completely harmless, unless you're a rodent. Photo by Dirk Stevenson.

“How can there be such a thing as a ‘good’ snake?” you might ask. Snakes are a key component in the balance of nature. Small snakes feed on many harmful bugs and insects. Larger ones eat mice, rats, and other small mammals that can destroy crops or damage personal property. Without snakes, we would be completely overrun by these nuisance rodents. Also, snakes serve as a food source for larger predators such as hawks, owls, herons, and carnivorous mammals such as bobcats. Some snakes consume other snakes if given the opportunity. Immune to the poisonous venom, kingsnakes will readily make a meal of a rattlesnake that they might encounter.

What about the “bad” snakes? While all snakes have ecological value, some snakes might be considered bad because they are venomous. Of the 42 different species of snakes in Alabama, only six of these are venomous; the Eastern Diamondback Rattlesnake, Timber Rattlesnake, Pigmy Rattlesnake, Cottonmouth, Copperhead, and Eastern Coralsnake. While no one wants one of these unwelcome visitors around their home, malicious killing of all snakes has a negative impact on the environment.

Most snakebites are the result of people trying to catch or kill a snake. The best way to prevent snakebite is to take precautions by being aware of your surroundings when outdoors and using common sense. First, learn to identify the venomous species from the non-venomous species. If you encounter a venomous snake, instead of trying to capture or kill it, simply leave it alone and allow it to flee and move away. If it is in your yard, consider calling a professional wildlife damage control agent and have it captured and removed before killing it needlessly.

How can anyone appreciate a creature so “ugly”? As is often said, beauty is in the eyes of the beholder. Actually, when you study photos of the various colors and patterns of the different species and how they are camouflaged with their natural surroundings, you realize the natural beauty of this misunderstood creature. Unfortunately for snakes, they aren't cute, warm and fuzzy like the baby birds in a nearby nest in your backyard or the young cottontail at the edge of the roadside. Instead of being frightened by or hating snakes, learn facts about them and their importance to the environment. Teach your children what you have learned -- that all wildlife deserves to be treated humanely and to respect all forms of life.

For more information about snakes in Alabama, contact Mark Sasser, Alabama Division of Wildlife and Freshwater Fisheries, 64 North Union Street, Suite 584, Montgomery, AL 36130-1456



Yes, Cottonmouths (*Agkistrodon piscivorus*) are venomous, but if you give them a chance, they'd rather escape than bite you. Most snake bites are the result of trying to capture or kill a snake. Live and let live! Photo by Dirk Stevenson.

Zoo Draws 13,500 Visitors for 'Year of the Snake' Celebration

by Hova Najarian, Oregon Zoo, Portland, Oregon

More than 13,500 people visited the Oregon Zoo (Portland, Oregon) on Feb. 10, a free-admission day celebrating the start of the Lunar New Year and, according to Chinese astrology, the Year of the Snake.

Zoo visitors took in animal talks, had some up-close encounters with live snakes, and learned more about conserving endangered Asian wildlife.

“Celebrating the Lunar New Year helps us bring attention to Asian animals that are imperiled, including snakes,” said Kim Smith, zoo director. “We want visitors to make a connection with the animals here — even the cold-blooded ones — so that they leave the zoo wanting to make the world a better place for wildlife.”

The snake is the sixth animal featured in the 12-year cycle of the Chinese zodiac and traditionally symbolizes intelligence and grace.

Animal talkers were on hand throughout the day near the home of Bubba, the zoo’s impressively huge Burmese Python, located in the Predators of the Serengeti exhibit. More Year of the Snake activities took place in the Discovery Room just across the way, where zoo volunteers offered up-close encounters with smaller snake species, such as the Rubber Boa, Ball Python and Taiwan Beauty Snake.



Bubba, the Oregon Zoo’s Burmese Python (*Python molurus bivittatus*) has outgrown two previous exhibits, and will continue to grow all his life, potentially reaching 20 feet and 200 pounds. Photo courtesy Oregon Zoo.

Though Burmese pythons are not native to the African Serengeti, Bubba was relocated to this section of the zoo in January to provide him with a more comfortable living space. He came to the Oregon Zoo in 2006 after outgrowing his exhibit in OMSI’s Life Science Lab. At around 15 feet long and weighing more than 125 pounds, Bubba is

thought to be one of the largest snakes in the Portland area — and he could get even bigger.

“Snakes keep growing for their entire lives,” Smith said. “A Burmese python like Bubba could eventually grow to 20 feet long and weigh up to 200 pounds — that’s a whole lot of snake.”

The Burmese python, one of the largest snakes in the world, is considered vulnerable in its natural Southeast Asia range due to habitat loss, hunting for leather, and capture for sale as pets. The pet trade has also led to problems here in the United States: People have kept the pythons as pets until they grew too big to handle, then released them into the wild, where they threaten local ecosystems. In Florida, Burmese Pythons are considered an invasive species, competing with native wildlife and preying on species such as the endangered Key Largo woodrat.



Ball Pythons (*Python regius*) are native to Africa, and usually only grow to less than 4 feet in length. Photo courtesy Oregon Zoo.

Submit Your Citizen Science Projects

A compilation of snake citizen science (volunteer) inventory and monitoring projects has begun. These will be featured in our monthly newsletters. Send any information on these types of projects to parcyearofthesnake@gmail.com.

An Interview with Rob Carmichael

By: Heidi Hall,
The Orianna Society



Rob holding a Banded Egyptian Cobra (*Naja annulifera*).

We caught up with Rob Carmichael, curator and founder of the Wildlife Discovery Center, to discuss the value of snakes. The Wildlife Discovery Center, part of the City of Lake Forest Parks and Recreation Department in Lake Forest, Illinois, is very unique, giving visitors a chance to experience the combination of a nature center, wildlife sanctuary, museum, and biological station filled with live reptiles, amphibians, fish, birds, and even a bobcat!

1. How did you become interested in snakes, and at what age?

I've been fascinated by snakes ever since I was a very young boy (by the age of 5 I was already catching them outside). My fascination started with dinosaurs, and it wasn't long before I decided I wanted a few reptilian pets in the house. My parents were very supportive of my hobby. I have a twin brother, Dr. Chris Carmichael, who is also a professional herpetologist

and a professor of biology at a school out east.

2. What is your current role in snake research and conservation?

As Curator of the Wildlife Discovery Center, I wear a number of hats but as it relates specifically to snakes, we do have a number of projects we are working on. I'll break them down into categories:

Captive Breeding: We currently captive breed a number of snakes that are used to provide specimens to other nature centers/zoos/museums, or, actual conservation efforts in addition to providing snakes for venom research. Some of our recent and ongoing projects include: Butler's Garter Snakes, Western Fox Snakes, Eastern Indigo Snakes, Rhinoceros Ratsnakes, Ridge-nosed Rattlesnakes, Eastern Massasauga, Eastern Diamondback Rattlesnake, King Cobras, and Eyelash Vipers.

Field Research: We are currently radio tracking a group of Western Fox Snakes at the Illinois Beach State Park in Zion, IL. The Zion Nuclear Plant is being decommissioned, and during the process of tearing down the old railroad tracks to put up new tracks, it was discovered that a large population of fox snakes were using the area underneath the old tracks to hibernate and lay eggs, often communally. With the assistance of the Illinois Dept. of Natural Resources, we re-created a new hibernaculum and are now in the process of determining if translocating a population of snakes can be successful.

Other projects we are involved with include the Northeast Illinois Eastern Massasauga Recovery Team. We are assisting with ongoing field surveys to determine if this species has been

extirpated.

Project Blue Racer: We are conducting some field research looking at mate selection behavior of the Blue Racer in conjunction with Planet of Wonders.

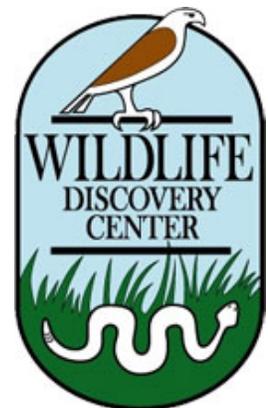
Last, we are embarking on a new study looking at the benefits of UV exposure of Eastern Indigo Snakes. One of our theories is that indigo snakes exposed to UV can produce viable eggs much longer than those raised in more traditional set-ups. Exo Terra is sponsoring this study. We are still getting our ducks in order and perhaps this is something that Orianna might be interested in partnering with.

3. What is your favorite snake or group of snakes?

I started keeping and breeding Eastern Indigo Snakes about 20 years ago and they are still my favorite. After that, it's a VERY close second between King Cobras and rattlesnakes in general. I could be a very happy man just having a place in the desert and sharing it with a large group of rattlers!

4. If someone asked you, "what is the value of snakes" how would you answer?

Obviously, anyone who loves snakes will say "they eat rodents"



and that's an important part of appreciating what they do for us. For me, it goes much deeper. Sure, venom can cure cancer and other diseases and they are a vital link in a healthy ecosystem but for me, it's more intrinsic. I just find them to be of extraordinary beauty and once humans get beyond the "limblessness" and constant stare of the serpent, they quickly realize just how beautiful they are. They are entrenched in human history, culture and mythology. Their adaptations are second to none. And finally, the amount of diversity and physiological differences and seeing how perfectly adapted they are to their domain, one has to admire their "value" to the human race and to the environment.

5. *What is your defining moment or favorite memory of working with snakes?*

When I had my first baby Eastern Indigo Snakes start pipping from their eggs, I was absolutely HOOKED... that was the moment when I realized I can make a difference in some way in helping to learn more about snakes, and, ultimately, save them.

6. *What do you believe is the biggest threat facing snakes in the 21st century?*

Human ignorance and human population growth. We see the rampant destruction from legalized rattlesnake hunts in addition to habitat fragmentation in historic eastern indigo habitat. We are putting unparalleled pressures on snakes and many are at the brink of collapse if we don't do something radical. I believe humans and snakes can co-exist, but we must be diligent in grass-roots educational programs and awareness campaigns. We must support organizations like Orianne who are doing exceptional work in preserving and managing habitat, purchasing habitat, and then using SCIENCE to solve some of the many questions we have for helping these animals survive.

7. *How can the public help in the conservation of snakes?*

First, SUPPORT Orianne and other conservation-minded groups. There are many fundraising ideas out there and if more people realized the great work being done, and, celebrating those successes, that synergy will lead to more funding. Have local nature centers, zoo, museums, and herpetological societies host special snake day programs. With the year of the serpent upon us, no better time than right now. We just partnered with the Peggy Notebaert Nature Museum and the



Rob in California after he caught a large Red Diamond Rattlesnake (*Crotalus ruber*).

American-Chinese Museum in Chicago in putting on a special display of venomous snakes from my zoo. To see peoples' amazement and awe when looking at a full-grown Eastern Diamondback Rattlesnake or a large Gaboon Viper was a sight to behold. Snakes made many new fans this past week!

8. *What advice would you give to young people or adults who love snakes and want to work with them?*

Get involved with as many conservation groups as you can. Join your local herpetological society and get involved with outreach. It's amazing how much power there is in sharing an animal as common as a corn snake with the general public. Many conservation groups allow the general public to get involved with some of their efforts. Those are great opportunities as well.

9. *Is there anything else you would like to add?*

In this day and age when human population growth is expanding, habitat is shrinking, climate change becoming a reality, and the uncertainty of clean water is growing, it's apparent that humans and snakes alike share the same planet, the same resources, and the same need for having adequate space. If we can just step outside of our preconceived notions of snakes and realize that they have red blood like us, breath air like us, and even feel fear like us, I think this earth would be a better place to live.

For more information about the Wildlife Discovery Center's programs, please visit www.cityoflakeforest.com/cs/rec/cs_rec2d2.htm. The Center will be hosting the Reptile Rampage live reptile exhibit and show on Sunday, March 10, from 10 am to 4 pm. For details, see: www.cityoflakeforest.com/cs/rec/cs_rec2i21.htm

Snake Destinations

Mills Canyon, Kiowa National Grassland, New Mexico – Hidden Snake Wonderland

by Cameron A. Young – Center for Snake Conservation



Mills Canyon is a hidden wonderland from several perspectives. First, it occurs in a part of the country rarely visited by people, much less herpetologists. Second, it is really hidden among the grassland flats of the Kiowa National Grassland. You would never know that the canyon existed unless you ventured down to the end of the long dirt road that leads to it. In this area, the Canadian River rips a wide, deep, and breathtaking canyon into the landscape, which you enter by following the road as it falls into the canyon's depths.

Mills Canyon is a snake wonderland because of the unique influence on snake diversity from three regions – the Great Plains, Texas, and Desert ecoregions converge at the canyon. Approximately 24 species of snakes can be found in or around Mills Canyon. While dominated by grassland snake species, the canyon provides microhabitats needed to support species from Texas and even a few desert species that are more common residents farther west. A visit to Mills Canyon provides an opportunity to see Western Diamond-backed Rattlesnakes (*Crotalus atrox*), Prairie Rattlesnakes (*Crotalus viridis*), and Desert Massasaugas (*Sistrurus catenatus edwardsii*) all on the same night. You can also find Plains Black-headed Snakes (*Tantilla nigriceps*), Variable Groundsnakes (*Sonora semiannulata*), Lined Snakes (*Tropidoclonion lineatum*), and Prairie Ring-necked Snakes (*Diadophis punctatus arnyi*) under the same rock! If you are into gartersnakes, then a mid-morning hike or road cruise may yield Plains Gartersnakes (*Thamnophis radix*), Western Terrestrial Gartersnakes (*Thamnophis elegans vagrans*), and Western Black-necked Gartersnakes (*Thamnophis crytopsis crytopsis*). It would not be a surprise if a Marcy's Checkered Gartersnake (*Thamnophis marcianus marcianus*) showed itself. If you are into the fast-moving diurnal snakes, Mills Canyon has a few species for you to chase. The prize will go to the person who can complete the trifecta of a Western Coachwhip (both red and tan phases of *Coluber flagellum testaceus* occur here), Eastern Yellow-bellied Racer (*Coluber constrictor flaviventris*), and Desert Striped Whipsnake (*Coluber taeniatus taeniatus*)! Careful observers may even find Arid Land Ribbonsnakes (*Thamnophis promixus diabolicus*) in the willows along the banks of the Canadian River itself. Don't forget that Bullsnares (*Pituophis catenifer sayi*), New Mexico Milksnakes (*Lampropeltis triangulum celaenops*), Western Hog-nosed Snakes (*Heterodon nasicus*), and integrate Kingsnakes (*Lampropeltis getula*) can also be found in nearly all the habitats in the area.



Marcy's Checkered Gartersnake. Photo © J.D. Willson.



An orange-and-black banded morph of the Variable Groundsnake. This species can also be brown with an orange stripe down the back, solid tan, or black-and-white or black-and-grey banded. Photo © Tim Warfel.

Getting to Mills Canyon can be tricky. It is nestled deep in the grassland expanses of Harding County, New Mexico. Once there, the nearest cell phone reception is 20 miles away and the nearest gas/food is over 40 miles away. The only camping available along the river is primitive, since you cannot get large RVs and trailers

down the steep canyon road. However, there is a campground on the rim for folks with horses, RVs, and pop-ups. The best time to go to Mills Canyon is mid to late May, when most species are easily detected on-the-crawl or under rocks. No permits are needed for observing snakes at Mills Canyon, although collection is strongly discouraged. If you come, remember to fill up your gas tank, bring plenty of food and water, and prepare for any emergency as Mills Canyon is VERY remote.

If you are interested in a field trip to Mills Canyon, consider joining the Center for Snake Conservation this May. As part of the 2013 Spring Snake Count, the Center for Snake Conservation will be leading a field trip to Mills Canyon in hopes of documenting every possible snake species in the area. You can learn more about this field trip and other Center for Snake Conservation - Snake Count events around the country at www.snakecount.org.



2013 Year of the Snake on Display at Southeast Partners in Amphibian and Reptile Conservation

by Christopher L. Jenkins, Chief Executive Officer, The Oriante Society



I was recently invited to give a presentation leading-off a Year of the Snake Symposium at the Southeast Partners in Amphibian and Reptile Conservation (PARC) meeting held at Hickory Knob State Park, S.C. on February 22, 2013. I have been going to SEPARC for many years serving a stint as co-chair and on the steering committee and have always been impressed by the participation at the meeting; it by far has the greatest attendance of any regional PARC meeting. But I was even more impressed when

I realized how many snake ecologists and conservation biologists were participating in this year's meeting. Every year at SEPARC they make available for purchase Mason-jar style glass mugs so we all can have something to fill with beer and in the process save a few trees. As I stood at the registration table I could not believe my eyes when I saw the mug and saw that this year's logo was the head of an Eastern Indigo Snake (*Drymarchon couperi*). Indigo snakes are large snake-eating snakes of the southeastern coastal plain, and in my opinion our greatest flagship for the Year of the Snake campaign.

The Year of the Snake symposium was held on Friday afternoon and was well attended; there were about 150 to 175 people in attendance representing a variety of universities, agencies, organizations, and private citizen interests. Cameron Young from the Center for Snake Conservation moderated the session and I gave the

lead-off talk in the symposium. I started my presentation by emphasizing the importance of education outreach and campaigns such as Year of the Snake by giving some examples of outreach efforts making a difference in snake conservation. I then took the audience on a tour around the world describing the diversity and status of the world's snakes. I finished with two examples of conservation projects that had education components and were making a difference (Lake Erie Water Snakes [*Nerodia sipedon insularum*] and Eastern Indigo Snakes). Jayme Waldron from Marshall University followed me, giving an interesting presentation on the ecology of Eastern Diamond-backed Rattlesnakes (*Crotalus adamanteus*) on populated barrier islands. Next Craig Rudolph from the US Forest Service gave an update on the status and conservation of Louisiana Pinesnakes (*Pituophis ruthveni*). Along with the audience, I was shocked to learn that this species is on the edge of becoming extinct in the wild within the next ten years. J.D. Willson from the University of Arkansas

Louisiana Pinesnake - on the edge of extinction. Photo © Pete Oxford.



gave a presentation on the population ecology of multiple species of watersnakes. Specifically, he described how droughts affected watersnake communities. Finally, Mark J. Margres from Florida State University presented on geographic, inter- and intra- specific, and ontogenic variation in snake venom.

Overall, the symposium was a great success, it was well attended and the speakers gave excellent presentations.

As the symposium finished I looked around the room at the diverse group of people all sharing common interests and goals to conserve reptiles and amphibians and I thought that this is the perfect venue for such a symposium. Campaigns such as Year of the Snake can breathe life into the future of such misunderstood animals as snakes.



Follow all of the Year of the Snake news and happenings on Facebook (<http://www.facebook.com/YearOfTheSnake2013>) and Twitter (@yearofsnake2013).



Upcoming Meetings & Events

Claxton Rattlesnake & Wildlife Festival, March 9-10, Claxton, GA

Reptile Rampage live reptile exhibit, Sunday March 10, 10 am - 4 pm, Wildlife Discovery Center, Lake Forest, IL

Box Turtle Conservation Workshop, March 22-23, Asheboro, NC

Georgia Reptile Experience, March 30, Macon, GA

North Carolina PARC and the North Carolina Herpetological Society, April 19-21, Joint meeting, NC Zoo, Asheboro, NC

Graduate and Professional Course - Species Monitoring and Conservation: Reptiles, May 13-24, Smithsonian Conservation Biology Institute, Front Royal, VA

2013 Spring Snake Count, May 18-27, Center for Snake Conservation. For more information please visit www.snakecount.org.

You Can Participate!

Are You an Educator or Interpretive Naturalist?

We are working to create resources for teachers and naturalists! If you are willing to share, please send your unit materials, educational program information, or PowerPoint presentations to parcyearofthesnake@gmail.com. Please include your name, the name of your school/nature center or organization, and location. If you did not create the materials, please be sure to tell us where you found the materials.

Have a Question? Ask the Experts!

Submit your snake questions via email (parcyearofthesnake@gmail.com) to our panel of snake experts, and we will select questions to answer in upcoming newsletters. Please include your name and location in your email message.

Submit Your Snake Art, Stories, and Poetry

Submit photos of your snake art (jpg, tiff, or pdf files) and copies of your stories and poems via email to parcyearofthesnake@gmail.com. Please include your name, location, and any comments about the submission in your email message. We will select submissions to include in upcoming newsletters.

Submit your Articles for Consideration in The Year of the Snake News

We would like to hear about your research projects (local, national, and abroad), citizen science efforts, school projects, folklore, natural area conservation proposals, snake luminaries (people or animals that have been shining stars in your life), or other topics related to snakes.

Please include these components:

- 1) Title; 2) Author name, affiliation, location; 3) Text: ~400 words will fill one page, a nice size to consider. Shorter and longer articles are fine. It is an electronic newsletter, after all!
- 4) 1-2 photographs or graphics (with captions and photographer recognition; sometimes we can use more than 2) per page: 300+ dpi resolution, jpg or tiff.

Themes of the upcoming monthly newsletters include: venomous snakes; invasive snakes; snakes of narrow habitats; aquatic snakes; conservation efforts; international snake conservation; captive breeding & reintroduction; and regulation, trade & commerce. Any snake-related topic is welcome.

Submit your potential articles or any questions pertaining to contributing via email to parcyearofthesnake@gmail.com.