2013 YEAR of the Snake

Year of the Snake News

No. 12 December 2013

www.yearofthesnake.org

Fear of Snakes

Gordon M. Burghardt, Alumni Distinguished Service Professor, Departments of Psychology and Ecology & Evolutionary Biology, University of Tennessee

South American Rattlesnake, *Crotalus d. durissus*. Photo by Fred Antonio.

Human attitudes toward snakes have ranged from curiosity and fascination to wonder and awe to fear and loathing. Many of us love snakes; but we do so for varying reasons. Some of us are attracted to their physical beauty, others to their capacity to live a unique lifestyle, and some may be attracted to animals that others dislike, if not hate. The killing methods of snakes may attract others – as a curator once told me, the secret to a successful reptile house is having plenty of giants and killers. Snakes provide great examples of both. And some of us like standing up for a maligned group of animals that have important ecological roles to play. In truth, most PARC ophidiophiles may blend these motivations to varying degrees.

As we know, the news and entertainment industries never miss an opportunity to sensationalize snakes. Every snake on a plane or newly discovered bicephalic serpent generates numerous stories. The influx of pythons in Florida fuels genuine conservation concerns as well as mass hunts to "remove evil" from the world. Historically, snakes have been key components of religion from ancient times to current practices. Snakes play critical roles in Hinduism as well as the snake-handling Pentecostal churches I have studied in Appalachia. Snakes, then, more than any other species, penetrate human consciousness at multiple levels.

We are now starting to understand why this is so. Our ambivalent relationship to snakes is not a product of the story of Adam and Eve and the serpent; that story resulted from an evolutionary legacy already present. It is also not due to fears being handed down culturally from parents and other adults to children. Certainly these may play a role, but are not the causative process, in spite of research that claims that monkeys and humans respond fearfully to snakes because of modeling adults. In fact, primate brains, including human brains, seem to have neural circuits

continued on p. 5

Inside:

A Harlequin Coralsnake, *Micrurus fulvius*, by Dirk Stevenson. While coralsnakes are venomous, some species of harmless kingnakes and scarletsnakes may be mistaken for them.

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Get Your December Photo Contest Calendar

Photographer **Lance Benedict** traveled far afield to capture this month's winning image of an **Olive Sand Snake *(Psammophis mossambicus)*** - all the way to Kenya. Look closer to home for our runner-up, and download your free December calendar to take them both home at **http://parcplace.org/images/stories/YOS/YearoftheSnakeCalendarDecember.pdf**.

If you missed the November calendar, check it out at **http://parcplace.org/images/stories/YOS/YearoftheSnakeCalendarNovember.pdf** to see the winning night shot of a Colorado Desert Sidewinder (*Crotalus cerastes laterorepens*) by Joshua Pierce (below), and the runner-up Mangrove Saltmarsh Snake (*Nerodia clarkii compressicauda*) by Mike Martin.

Hey, what happened to November?

Wondering why there was no November issue of *Year of the Snake News*? Many of the authors and staff contributing to the issue were affected by the federal government shutdown in October, during the period when newsletter content would have been produced and assembled. As a result, it had to be canceled.

YOS/NE PARC Brochure on Common Snake Myths

Myth: You have a good chance of being killed by a snake.

Fact: According to the National Safety Council, you have a better chance of being killed by heart disease (1:6), falling (1:163), bees (1:79,842), lightning (1:134,906) or dogs (1:144,899) than being killed by a snake. In fact, only about 5 people die as a result of a snake bite in the USA each year.

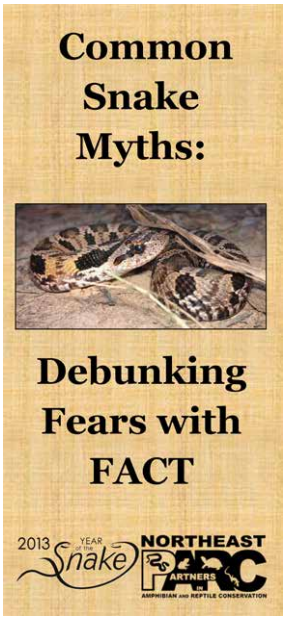
Myth: Snakes are aggressive.

Fact: According to the New England Journal of Medicine, most snake bite victims are males between the ages of 17-27 and 89% of bites occur to the arm or hand, with alcohol intoxication playing a factor in MANY bites. Most snake bites are a result of, "deliberate attempts to handle, harm or kill" snakes (Gold et al. 2002). Protect yourself by leaving snakes alone!

These myths and facts came from a brochure developed by the NE PARC Year of the Snake Working Group. For more myths and facts about snakes, please visit **www.northeastparc.org** to view the full brochure.

References:
Gold, B.S., R.C. Dart and R.A. Barish. 2002. Bites of venomous snakes. New England Journal of Medicine 347(5): 347-356.

Brochure design by John Vanek, Patti Douglas and the NE PARC Year of the Snake Working Group. Photo by John Vanek. The full brochure can be found at www.northeastparc.org.



Thank You, Year of the Snake Partners!

Partners in Amphibian and Reptile Conservation

The Orianne Society

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Maryland Department of Natural Resources

The Center for Snake Conservation

Viper Specialist Group

Respect the Snake

The Wilderness Center

Connecticut Energy Environment

The Copperhead Institute

Life is Short, but Snakes are Long

NC PARC
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Edmonton Valley Zoo
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Zoo Atlanta

Department of Environmental Conservation
New York State

Juniata Valley Audubon

The Vermont Reptile & Amphibian Atlas

The Wildlife Society

Edmonton Reptile & Amphibian Society

The Wandering Herpetologist

ARAV
Association of Amphibian & Reptilian Veterinarians

Societas Herpetologica Slovenica

DGHT
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Because life is good.

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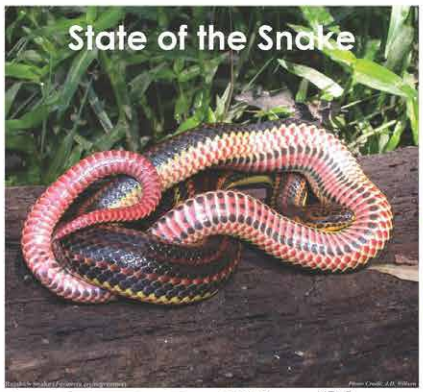
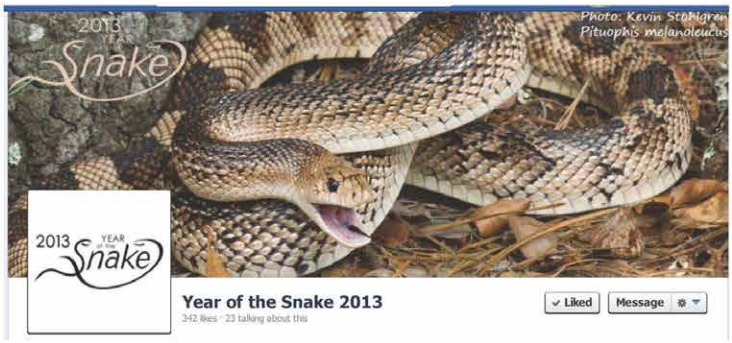
2013 Year of the Snake SUCCESS!



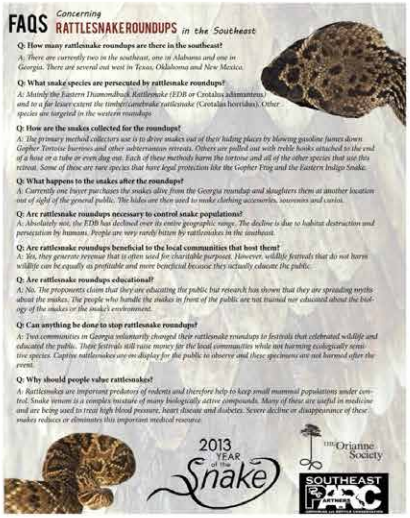
STATE OF THE SNAKE DOCUMENT

11 NEWSLETTERS

OVER 150 PHOTOS SUBMITTED FOR CALENDAR



ALMOST 400 FACEBOOK FOLLOWERS



NUMEROUS OUTREACH MATERIALS DEVELOPED

OVER 30 GLOBAL PARTNERS

Fear of Snakes, *continued from p. 1*

present at birth that mature into both fascination and fear of snakes. This makes sense, as snakes were potent dangers to primates throughout their evolutionary history, as is being increasingly documented by research in labs around the world.

If there is a strong evolutionary component to snake fears, ophidiophobia, or more compactly, ophiophobia, this needs to be recognized in our efforts to conserve snakes and educate populations on their important biological and cultural roles. There are no easy answers and diverse approaches need to be tried out. Some of these have been discussed in the recent book, ***Snakes: Ecology and Conservation,*** edited by Steve Mullin and Rich Seigel (2009). Creative and imaginative tools are urgently needed as many snakes, along with other herpetofauna, are facing extinction crises.

A Cottonmouth (*Agkistrodon piscivorus*), displaying the white lining palate that gives it its name. Also known as Water Moccasins, Cottonmouths are found in the southeastern U.S. However, several species of harmless watersnakes (genus *Nerodia*) may be mistaken for them. Photo by Dirk Stevenson.

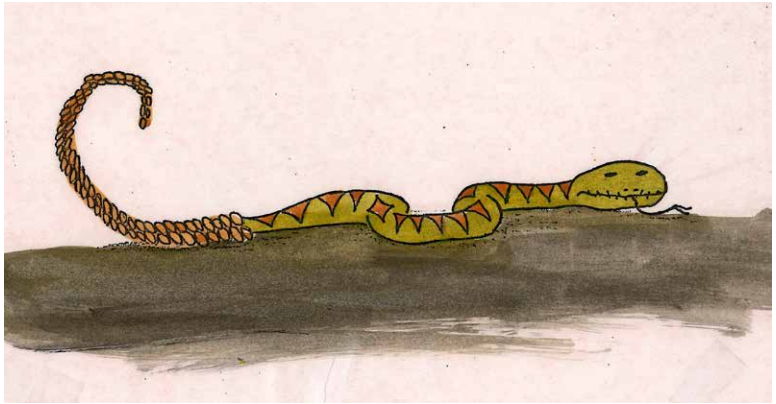
Snake Myths

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 Tell the Age of a Rattlesnake by Counting Its Rattles

Facts: A rattle is a series of interlocking, modified scales. A rattlesnake is born with one segment, which quickly falls and is replaced with the first real rattle. Unless it falls off, this rattle "button" will always be the end of the rattle. Each time the snake sheds, a new rattle is added. If all the segments remain in place, the number of rattles will tell you how many times the snake has shed. However, because snakes shed more than once each year, this will only tell you the number of times the snake has shed, not how old it is. In addition, old segments may break off, further complicating matters.



Artwork courtesy of The Wilderness Center

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.

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

Biodiversity of Snakes - What's the Status?

Dr. Monika Böhm, Postdoctoral Researcher, Indicators & Assessments Unit, Institute of Zoology, London

Biodiversity is in rapid decline across the globe, with stories about population declines and species extinctions hitting the news on a regular basis. Halting biodiversity loss is not an easy task, and has become the focus of international biodiversity policies such as the Convention on Biological Diversity. In order to measure progress towards specific biodiversity targets, effective monitoring and robust biodiversity indicators are needed to track changes in biodiversity.

Emerald Tree Boa, *Corallus caninus*, native to the rainforests of South America. Photo by Alfred Dosantos Santillan.

The IUCN Red List of Threatened Species is one of the best known and most important tools for nature conservation, providing us with a way to assess species' extinction risk via a scale of increasing extinction risk, from Least Concern (LC) and Near Threatened (NT) through the threatened categories [Vulnerable (VU), Endangered (EN) and Critically Endangered (CR)] to Extinct in the Wild (EW) and Extinct (EX). Using this system, complete assessments and reassessments of species groups over time can supply us with information about the changing extinction risk of species (the Red List Index). However, such complete assessments are not practical for some of the highly species-rich groups such as fish, many insect orders, and reptiles.

As a result, we are working on an adaptation of the Red List Index, called the Sampled Red List Index. For this, we represent species groups by carrying out IUCN Red List assessments for a sample of 1,500 species randomly drawn from the complete species list of the group in question. The picture we get from these assessments is broadly representative of what is happening to the entire group.

In February this year, we finally completed the sampled assessment for 1,500 species of reptiles with a publication on the conservation status of the world's reptiles, featuring an astonishing number of authors (more than 200!). Why this many authors? Because compiling all the necessary data for IUCN Red List assessments – information on the distribution, ecology, habitat, population, threats and conservation actions in place for a species – requires a lot of expert input. With the IUCN's Global Reptile Assessment still underway, this sampled assessment for reptiles represents the first summary of the group's extinction risk.

Our assessment shows that 19% of species, so roughly one in five reptiles, are threatened with extinction (Figure 1). Of these, 12% were classified as Critically Endangered, 41% as Endangered and 47% as Vulnerable. Extinction risk is not evenly spread throughout this highly diverse group: freshwater turtles are at particularly high risk, mirroring greater levels of threat in freshwater biodiversity around the world. Overall, this study estimated 30% of freshwater reptiles to be close to extinction, which rises to 50% when considering freshwater turtles alone, as they are also affected by threats from national and international trade.

Common Liana Snake, *Siphlophis cervinus*, also known as the Checkerbelly, is a rare snake of the Amazon region of South America. Photo by Alfred Dosantos Santillan.

Snakes are less threatened than lizards, turtles and tortoises (Figure 1). Of the 555 species of snake in the sample, only 12% were estimated to be threatened with extinction, compared to 21% of lizards. This may at least in part be a reflection of larger range sizes for snakes – since in nearly all cases, we do not have population data

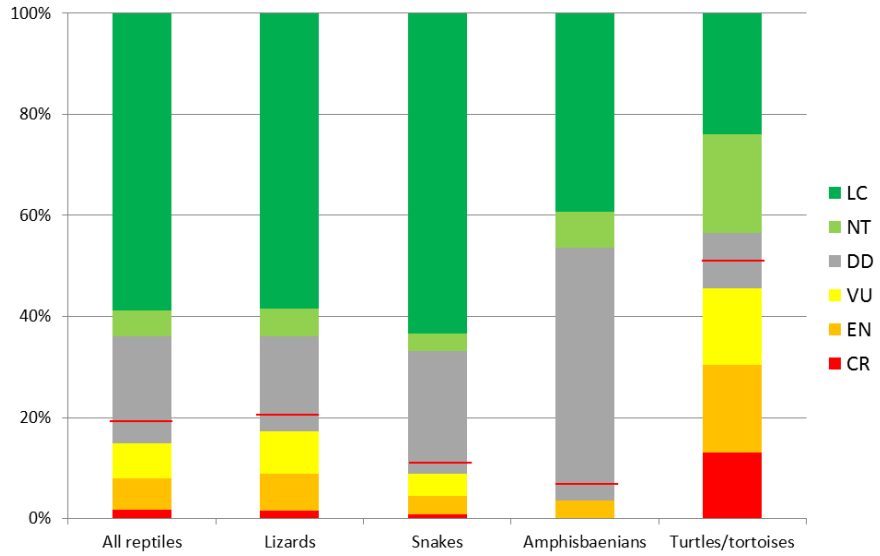
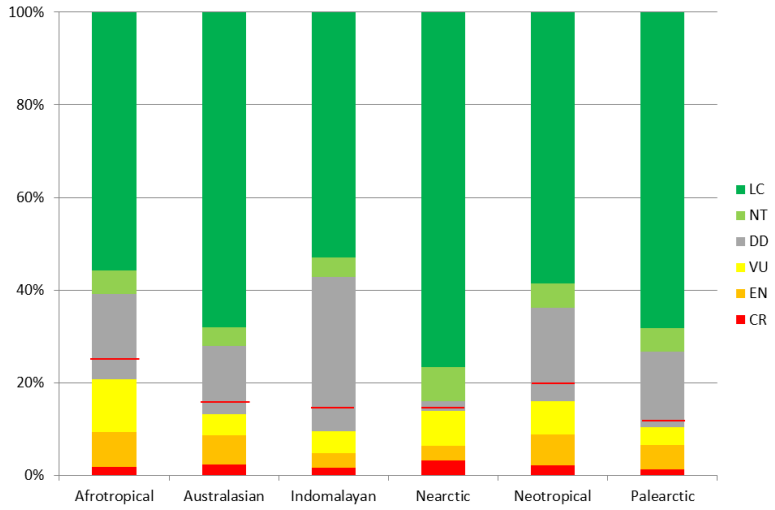


Figure 1 (left). Global status of reptile species in the sampled assessment of 1,500 species. The red bar shows the estimate of threat assuming that species identified as Data Deficient (DD) show an equivalent proportion of threat as non-Data Deficient species.

Figure 2 (below). Global status of reptile species from sampled assessment of 1,500 species, by biogeographic realm.



for our species, range size is the most important criterion under which to list reptiles as threatened on the IUCN Red List. As with most of the families represented in the sample, most snake families were significantly more threatened than expected by chance, for example the vipers and elapid snakes.

Overall, agriculture and biological resource use (predominantly logging and harvesting) present the most common threats to terrestrial reptiles, while biological resource use, though mainly due to targeted harvesting of species, was the predominant threat for freshwater species. These threats are prevalent throughout tropical regions, specifically Southeast Asia, where we find most of our threatened species (Figure 2). It is these tropical regions too where we see largest uncertainty about the status of species, with most species classed as Data Deficient (i.e. insufficient information is available to place the species in any of the categories of extinction risk) found in tropical areas.

So how do reptiles fare relative to other species groups? Overall, threat levels in reptiles are lower than those observed in amphibians (42% threatened), mammals and freshwater fish (both 25% threatened), but higher than in birds (13% threatened). This could be seen as relatively good news, considering, but we need to keep in mind that we know virtually nothing about the population trends of most reptiles, particularly lizards and snakes, and that most of our assessments are based on range size criteria as a proxy for extinction risk (in conjunction with some indication of fragmentation, restriction or decline). We are currently working to rectify the situation by searching the published and grey literature for population trend data for reptile species (and are always happy for people to point us in the direction of available time series data), so hopefully over time we will get a clearer picture of how populations of lizard and snake are faring.

For the time being, we hope that this first study on the conservation status of the world's reptiles helps to bring reptiles into the conservation spotlight. For example, we can now start to assess if and how protected areas are benefitting reptiles and fill data gaps highlighted in the study. In order to derive a trend in status over time, we are working on retrospective Red List assessments to establish a baseline against which to compare the current status of reptiles. Thankfully, reflected in the large author base of the paper, we now have a much stronger network of reptile experts working towards the common goal of safeguarding the world's reptiles and feeding into the IUCN's ongoing Global Reptile Assessment.

For information on the study and ongoing projects, please contact monika.bohm@ioz.ac.uk.

Legally Speaking, What Can You Do with Amphibians and Reptiles in the U.S.?

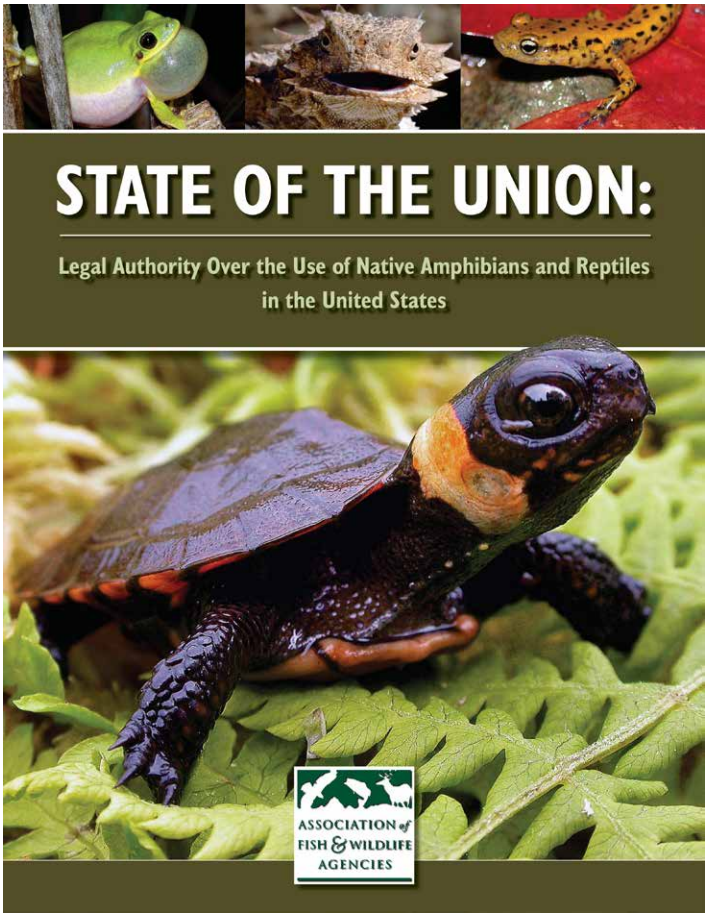
By Polly Conrad and Priya Nanjappa

Native amphibians and reptiles (collectively, herpetofauna) are natural resources that can be used in unique ways relative to other vertebrates managed for the public. Some of these uses include removal from the wild for commercial, non-commercial, and scientific purposes. In particular, snakes are known to be used for human food consumption, for their skins, as pets and for other hobbyist purposes, for religious purposes, and for research or educational purposes. Snakes are sometimes removed, or killed, due to (real or perceived) safety concerns. While the herpetofauna user community largely supports the protection, persistence, and sustainable use of herpetofauna, including snakes, there is growing evidence of large-scale uses, both legal and illegal, that could be threatening native wild populations.

A striped morph of California Kingsnake (*Lampropeltis californiae*). Some populations of this species are threatened by overcollection. Photo by Rob Lovich.

Each state wildlife agency has adopted laws and regulations pertaining to the various uses of herpetofauna. As a first step in examining the issues surrounding herpetofauna use, we compiled current legal and regulatory approaches in the 2011 report, ***State of the Union: Legal Authority Over the Use of Native Amphibians and Reptiles in the United States***. In an analysis of the data provided by the state wildlife agencies about uses of native herpetofauna, we determined that:

- 82% of states allow some form of commercial use. Of these states:
  - o 71% have multiple restrictions (e.g., limits on species, size, or numbers of animals)
  - o 80% require reporting
- 96% of states allow personal or hobby uses. Of these states:
  - o 58% require a permit for this type of use
  - o 20% require reporting
- 100% of states allow educational and/or scientific use.
  - o 98% require a permit for this type of use
  - o 92% require reporting
- 54% of states have fines greater than or equal to $500 for violating herpetofauna use laws or regulations



This report (Nanjappa and Conrad 2011) summarizes existing state wildlife agencies' regulations pertaining to the use of native herpetofauna in the U.S. and is available for download at **http://www.fishwildlife.org/files/SOU_FULL-lo-res.pdf**.

Scientific collection and/or educational use is the most consistently, and strictly, regulated use of herpetofauna across the continental U.S. Laws and regulations over other uses vary widely, with broad ranges in limits and reporting requirements as well as inconsistencies from

Terrestrial Gartersnake (*Thamnophis elegans*). Photo by Danny Martin.

state to state, even among adjacent states. While most states allow some form of commercialization of native herpetofauna, the majority of these states also have several additional limits and restrictions (e.g., seasons, take limits, or species provisions). In addition, over half of the states require a permit for hobby or personal/non-commercial use of some native herpetofauna. Permit requirements and subsequent permit reporting can greatly assist management agencies with tracking and establishing appropriate and reasonable regulations for sustainable commercial and personal uses, which in turn can provide a scientific basis for regulations. Fines and penalties are an important part of these laws and regulations, particularly with respect to discouraging repeat, and knowing, offenders.

With respect to snakes, many states have rules regarding rattlesnake round-ups, religious and/or cultural uses, and removal of 'nuisance' snakes. For more details on our findings, or for more information specifically on snakes, please see the Nanjappa and Conrad (2011) publication here. However, to be sure of the most current laws and regulations in your state, always contact your local state and federal wildlife management offices.

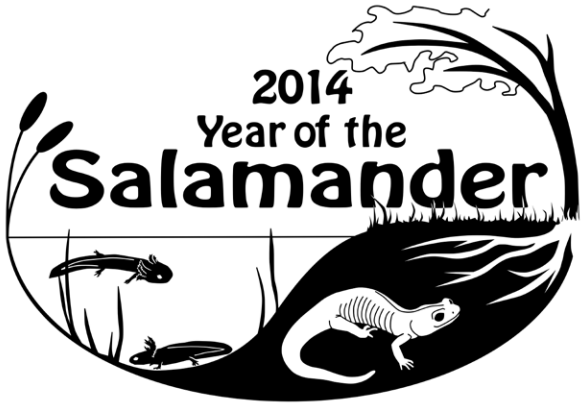
As a result of this effort to examine legal and regulatory approaches, biologists, law enforcement officers, and policy administrators are now discussing potential opportunities for improving these approaches to be more consistent with uses of other wildlife species, e.g., game or fish species. Such recommendations are now being developed.

With permission from the Association of Fish and Wildlife Agencies and the Editors, portions of this article have been adapted from: Nanjappa, P. and P.M. Conrad.Eds. 2011. ***State of the Union: Legal Authority Over the Use of Native Amphibians and Reptiles in the United States****. Association of Fish and Wildlife Agencies. Washington, DC.*

Ring-necked Snake, *Diadophis punctatus*. Photo by Jim Coleman.

Announcing the 2014 Year of the Salamander Logo!

The Year of the Salamander planning team is pleased to announce the winning logo, designed by Sheri Sanders, which will be used for PARC's Year of the Salamander campaign. Sheri's logo was selected out of a pool of 14 logo entries that were submitted by very talented artists. Congratulations to Sheri and thanks to all the artists that competed in this contest!



'Snake Man' Helps Save Callawassie and Spring Island Slitherers

By CASEY CONLEY — cconley@islandpacket.com

Reprinted with permission. Published March 14, 2013 by The Island Packet/The Beaufort Gazette at **http://www.islandpacket.com/2013/03/14/2420544/snake-man-helps-save-callawassie.html**

By the early 2000s, there were hundreds of tiny feet scurrying all over Callawassie Island.

Residents noticed a sharp increase in the number of rats, voles and other varmints in backyards and around their bird feeders.

And why wouldn't these critters have the run of the place? Snakes, a natural predator, had been killed in great numbers for years by maintenance workers and residents.

"They would kill anything that crawled before we started educating them," Callawassie's Dave Harris says. "Mostly, it was from not knowing the value of the animal itself."

In 2002, Harris decided to do more than simply watch the serpent slaughter continue. He volunteered to remove any snake found slithering around Callawassie and Spring islands.

That informal service evolved into the Save a Snake program in 2006.

The idea is simple. Neighbors who encounter a snake give Harris a call. He comes over, tools in hand -- a plastic bucket, a snake hook and snake tongs. He uses the tongs only on the most aggressive snakes.

The nonpoisonous variety are dropped off elsewhere on the island. Copperheads and other venomous species are taken to an undisclosed spot on the mainland.

None are killed.

"Right at first, they thought I was crazy," Harris said. "They nicknamed me 'the snake man.' "

But his work soon tipped the scales in his favor.

"After they saw what I was doing and after they saw what snakes could do, it all kind of backed off."

Harris and his wife, Mary, moved to the gated community in 1999, drawn to the island's centuries-old live oaks and natural landscapes that serve as nesting areas for egrets, wood storks and bald eagles. The views across the Colleton River aren't bad either.

A retired salesman and lifelong hunter and fisherman, Harris has always been interested in snakes and amphibians. That interest had time to grow in retirement.

Harris also had a good teacher.

He contacted Tony Mills, the LowCountry Institute's education director and in-house snake expert. Harris learned to identify and handle different types of snakes.

Dave Harris, founder of the Callawassie Island Save a Snake Program, poses in his yard with a Copperhead (*Agkistrodon contortrix*). Photo by Jay Karr.

Harris, in turn, has passed that knowledge to neighbors—many of them from the North, where snakes are less common. Those neighbors are beginning to shed old fears.

"When he is going over and picking up the animals, he is educating people as to what species they are and why they are important," Mills said.

During the early days of Save a Snake, Harris got frequent phone calls from nervous neighbors who had stumbled across a snake. In one case, a small snake had a rather big man in a sweat when Harris arrived to remove a copperhead.

These days, he gets about 35 calls a year, down significantly from 2006.

"Dave wasn't getting as many calls as the years went on," Mary, a retired biology teacher, said Thursday.

Over the same period, neighbors grew more accustomed to the creatures.

"Incidentally someone would say, 'Mary, we had a snake in the garage, but we knew it wasn't a copperhead so we just swept it out,'" she said. "Knowing what a copperhead is the biggest thing in overcoming people's fear."

In 2012, the program removed 27 snakes, 17 of them copperheads.

Harris still responds to about 80 percent of the calls. The islands' maintenance crews -- now also trained to safely remove the reptiles—handle the rest.

After the typical winter lull, Harris is gearing up for the spring, his busiest time of the year as the snakes emerge from hibernation.

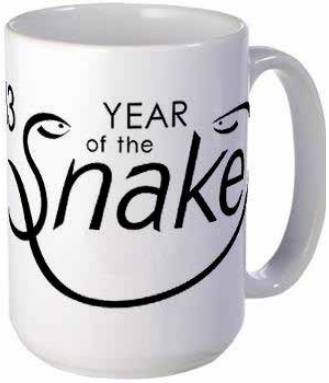
Nearly a decade after catching his first snake, Harris can see the program's impact.

"We hardly ever see a grass rat anymore," he said, "and people are very used to the snakes."

Get your Year of the Snake 2013 Gear!

Go online to the PARCStore (**http://www.cafepress.com/parcstore**).

Year of the Snake 2013 t-shirts (men's and women's styles), sweatshirts, hoodies, and mugs are now available for order at the Café Press PARCStore. Proceeds from sales go to the Year of the Snake Conservation grant, managed by Amphibian and Reptile Conservancy, a not-for-profit organization that helps support PARC activities, such as public education, publications, and research.



Missed out on our terrific Year of the Snake Wall Calendar and Rattlesnakes and Pitvipers Calendar in 2013?

You can still order one for 2014—the Café Press site lets you set the starting date at any month you want, and you will get the original text and 12 months'-worth of fantastic snake photography to enjoy onward through 2014. (The cover will commemorate the real Year of the Snake, 2013.) Shop for those snake-lovers on your holiday list now! Year of the Lizard calendar, mugs, and shirts are also available.