THE MONITOR

NEWSLETTER OF THE HOOSIER HERPETOLOGICAL SOCIETY

A non-profit organization dedicated to the education of its membership and the conservation of all amphibians and reptiles.

Volume 34 Number 8 August 2023

HHS Meeting

August 16, 7:00PM, Holliday Park Nature Center

Guest Speaker – Roger Carter (HHS)

Topic – *Herp Art in Zoos*

Roger has been an HHS member since moving here in 1989 and still involved today. Roger has served on the HHS board as Vice-President, President, and Treasurer. Join Roger on a trip to several regional zoos to get a close up look at some of the Herp related art on the zoo grounds.

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WELCOME NEW MEMBERS!

Thank you and welcome to the Hoosier Herpetological Society! Thank you to our returning members! Without all of you, we wouldn't be the organization that we've grown to be today!

Renewals

Ellie and Bob Hammond

New Members

Emmett Collins
Angela Frailey
Dallas Walgreen

HHS Kayak/Canoe Float August 19

9:30AM, Blues Canoes – Edinburgh

Join fellow HHS members on the Driftwood/Flatrock Rivers.

This year, like the rest, will be another turtle-filled adventure on the water.
HHS members will count turtle species and numbers as we go. Northern water snakes and queen snakes are also found along this river corridor.

Indiana's Rat Snakes

By Ed Ferrer

Adult grey rat snake

Young grey rat snake

Some of my friends in herpetology tell me that they don't subscribe to herp magazines because they claim they can get any information from the internet. But I still subscribe to Reptile magazine because I always find a couple of articles that are interesting and informative. It also keeps me up to date on issues such as new laws regarding reptiles and other items that I might not think about. In the July/August issue of Reptile magazine I found an article titled "Rat Snakes of the United States". The authors stated that rat snakes make ideal pets because of their numerous colors and patterns and ease in handling. They found them to be intelligent, curious, and active. Since they normally exist in temperate climates, they don't require a lot of high temperature doing well from75 to 82 degrees. They can be found in a variety of habitats from forests, open fields, prairies and even residential neighborhoods. They can be found in trees and even have been known to climb into attics. Farmers usually welcome in their farms because they are good at hunting mice and rats. But they often prey on lizards, amphibians, birds, using their climbing skills to even include birds and eggs. In the Southern states they are often referred to as "cow snakes" or "chicken snakes" since they are often seen on farms. Of course, one rat snake called the corn snake or red rat snake, is probably one of the most common snakes found in the pet trade.

I thought I would check out the rat snakes that are found in Indiana. I remember when I used to do field herping, we used to find what were then called black rat snakes. Since they were rather large, sometimes over seven feet and usually docile, they were always a good find. Since they were diurnal, active during the day, they were easy to spot. Their color was mostly black or dark brown with some lighter scales. Hatchlings were light grey with medium blue blotches. They were very common throughout Indiana except for the Northwestern prairie section of the state. Since they were good climbers, we might see one resting on a tree branch. When I was a middle school science teacher, I served as a counselor for a week camp out during summer. I was in charge of identifying the animals that we encountered. As I was walking back to camp, I saw a five-foot black rat snake on a tree branch. I carefully lifted it off the branch and took it back to show the students. While I was describing the snake to the campers and telling how they were normally docile, it struck me. Everyone was surprised. I just made light of it and said "I guess it was tired of being the star attraction." I just took it back to the tree where I found it. Back then the scientific name was *Elaphe obsoleta obsoleta.* Now the name has been changed to *Pantheropus spiloides* and its common name is gray rat snake even though its major color is still black. I think it seems that a lot of herpers still go by the original name which more accurately described its color.

Also, originally there was another rare rat snake that was found in the Southwestern corner of the state around Evansville that was called the Gray rat snake, *Elaphe obsoleta spiloides.* It was slightly smaller than the black rat snake with a base color of medium grey with burgundy blotches. Now it is included in the Western rat snake with a new scientific name of *Pantherophis spiloides*.

I thought I would include both the original names and the new names and let the reader choose which they wish to use. I think it is telling that the two authors of the Reptile magazine article chose to use the original names.

References:

"Rat Snakes of North America" Billy Fraser and Jason Nelson, Reptile magazine, July/August, pages 16-23

Amphibians and Reptiles of Indiana, Sherman A. Minton, Indiana Academy of Science 2001

Peterson Field Guide to Reptiles and Amphibians of Eastern and Central North America, Robert Powel, Roger Conant, and Joseph T. Collins, Houghton Mifflin Harcourt 2016

President's message

Jim Horton

Our new website is online! hoosierherpsociety.org
Ethan Estabrook has done the brunt of the work on this site and we're sure you're gonna love it! The new logo is featured on the cover of this issue.

We cancelled our exhibit at the Hamilton County 4-H fair last month. This wasn't evident until after press time for the July issue. We hope to work with them to secure a spot next year.

HHS member Roger Carter will be discussing herp-related art in zoos this month. Should be an interesting one!

Our annual float on the Flatrock/Driftood River will be August 19. We hope to see you there!

HOOSIER
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Indiana's Endangered River Cooter Turtle

Jim Horton

Indiana boasts a diverse array of wildlife, but some of its species are under threat. One such species is the Indiana River Cooter Turtle (Pseudemys concinna hieroglyphica), a remarkable species playing a vital role in the state's aquatic ecosystems. As this beautiful creature faces mounting challenges, conservation efforts are crucial to ensure its survival for future generations.

The River Cooter, also known as the Hieroglyphic Turtle, is similar to Red-ear sliders in appearance but lack the red markings behind the eye. The carapace is oval in appearance and slightly serrated at the rear. Carapace is dark with an intricate pattern of yellowish lines. The head, legs, and tail are dark with yellow striping.

River Cooters are primarily found in slow-moving rivers, ponds, and lakes in a few southwest counties bordering Wabash River. Known for their striking patterns and distinctive red eyes, these turtles favor marshy habitats with abundant aquatic vegetation, offering an ideal environment for breeding and foraging. This species is predominantly herbivorous but may feed on mollusks, fish, and invertebrates.

Despite its adaptation to various habitats, the River Cooter is facing a myriad of threats, pushing it to the brink of extinction. Some of the significant challenges include habitat destruction due to urban development, pollution from agricultural runoff, and the introduction of invasive species. Additionally, illegal poaching for the pet trade remains a pressing concern, further impacting their numbers.

Like many other semi-aquatic turtle species, the females lay their eggs in sandy riverbanks during the spring, where they incubate until hatching. Once hatched, the young turtles venture into the water, relying on camouflage and quick reflexes to avoid predators. Like other turtle species, they possess a high capacity for longevity, with some individuals living for several decades if not disturbed by human activities.

Public engagement is a vital aspect of protecting endangered species like the Indiana River Cooter. Raising awareness about the significance of these turtles in maintaining the ecological balance can foster support for conservation initiatives. Educational programs and community involvement can help drive positive change for these turtles and their habitats.

To provide the River Cooter with legal protection, it is crucial for authorities to enforce wildlife protection laws. The inclusion of this species on the Endangered Species List can grant them additional safeguards, limiting human impact on their habitats and restricting the pet trade.

Preserving the Indiana River Cooter is not only a responsibility to this unique species but also a commitment to the preservation of Indiana's natural heritage.

New human antibody neutralizes snake neurotoxins across species and geographies, study finds

February 23, 2023 Source: Technical University of Denmark

Snakes bite 5.4 million people each year -- and roughly half are injected with venom, according to the WHO. Between 81,000 and 138,000 people die, while around three times as many suffer amputations and other permanent disabilities. Due to their size, children often suffer the most severe effects.

For 128 years, our primary treatment against snakebite has been using mixtures of polyclonal antibodies derived from immunized animal blood. Although they are proven effective, these medicines may cause adverse reactions that can sometimes be severe. So, the search for novel ways to treat severe snakebite envenoming is ongoing.

Recently, an international team of scientists led by DTU reached remarkable results and developed a new modernized prototype treatment that proves effective against the venom of African and Asian elapid snakes, such as some cobra, mamba, and krait species -- many of which are among the world's deadliest.

"We have previously developed antibodies against the venom toxins from single snake species; however, our new results demonstrate that our technology has great potential in neutralizing toxins from multiple species, even from different continents. This broadened cross-neutralization capacity is very promising. It could provide the basis for more effective treatments for snakebite victims in the future," says Andreas Hougaard Laustsen-Kiel, a professor at DTU Bioengineering.

He conducted the research with colleagues at DTU, ETH Zurich, Universidad de Costa Rica, and industrial partners Sophion Bioscience and IONTAS. Their work is published in *Nature Communications.*

New antibody works against several neurotoxins

In essence, their approach is to develop antibodies of fully human origin, which offer fewer adverse reactions, competitive costs, and, when fine-tuned, superior efficacy. They use phage display technology, a popular in vitro methodology within drug discovery, to select antibodies that bind well to the toxins in the venom, enabling broad neutralization.

"There has been a revolution in recombinant antibody technology over the last three decades. I am delighted to be involved in these efforts to direct phage display technology to the blight of snakebite envenomation," says John McCafferty, the inventor of antibody phage display. He founded IONTAS and has recently established a new anti-venom group at the University of Cambridge.

Deliberately selecting hundreds of antibody candidates and testing the most promising against toxins in different snake venoms, the researchers found that one in particular (2554_01_D11) was especially potent and broadly neutralizing. It bound to various neurotoxins present in the venoms of the monocled cobra, the forest cobra, the spectacled cobra, the king cobra, the black mamba, and the many-banded krait.

Subsequent in vivo studies showed that the antibody prevented or delayed death from venom. For the monocled cobra specifically, the antibody completely prevented lethality in envenomed mice.

"In light of the positive results regarding the neutralization of venom from the monocled cobra, we mimicked a true rescue situation, injecting mice with cobra venom and then administering the antibody. And sure enough, we were able to prevent death when the antibody was injected rapidly after envenoming," says José María Gutiérrez, emeritus professor of Instituto Clodomiro Picado, University of Costa Rica.

While the antibody could not prevent death from black mamba venom, survival was prolonged by several hours, suggesting that the antibody provided a partial neutralization of the venom.

"These are remarkable results," says Andreas Hougaard Laustsen-Kiel:

"The antibody we used worked against different neurotoxins derived from different snake species from different parts of the world. These toxins are far from identical but share some crucial similarities in their structure. And apparently, these are just enough for our antibody to display extensive cross-reactivity. We have yet to establish the boundaries of what this antibody can neutralize. Still, we would like to see if it shows the same promise concerning neurotoxins from, for example, the blue krait, the banded krait, and the Egyptian cobra."

The researchers expect antibodies, such as 2554_01_D11, will be helpful when designing future envenoming therapies. At the same time, however, they stress that their pipeline for discovery could be useful in developing other broadly neutralizing antibodies against toxins from other animals, bacteria, viruses, and parasites or even in developing cancer therapies.

2023 HERPETOLOGICAL EVENTS

August 16, 2023 – HHS meeting, Guest Speaker – Roger Carter (HHS) Topic – Herp Art at Zoos

August 19, 2023 – Annual HHS kayak/canoe float on the Driftwood/Flatrock Rivers. Blues Canoes, Edinburg.

September 10, 2023 - Midwest Reptile Show, 10:00 a.m.- 4:00 p.m. Indiana State Fairgrounds, Indianapolis. $5.00 admission, reptiles, amphibians, books, cages, feeder animals, and other supplies. Sell your herps and dry goods free of charge at our H.H.S. information booth (HHS members only), www.midwestreptile.com Other dates 11/12

September 20, 2023 – HHS meeting, Guest Speaker - TBA

www.hoosierherpsoc.org

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Look for the HHS on social media

HHS Board of Directors - 2023

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Ouachita map turtle (Graptemys ouachitensis)
HHS kayak/canoe float – Edinburgh, IN

HHS board meetings

Board meetings are always the second Wednesday of the month, 7:00pm
All members are welcome to attend. Contact any board member for the current locations.

MEMBERSHIP FORM

____New Member ____Renewal

Name_____ Date _____
Address_____
City_____ State_____ Zip Code_____ Phone_____
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__ Individual/Family Membership $20.00
__ Sustaining Membership $25.00 or more

Herpetological Interest(s)
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Hoosier Herpetological Society
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Dated Material Enclosed

Address Correction Requested

____ If this area is checked, it's time to renew your membership!