

# THE MICHIGAN HERPETOLOGIST

NEWSLETTER OF THE MICHIGAN SOCIETY OF HERPETOLOGISTS

DEDICATED TO EDUCATION ABOUT AND CONSERVATION OF REPTILES AND AMPHIBIANS

## PICKY FEMALE FROGS

BY ROBERT SANDERS

Berkeley, CA -- Picky female frogs in a tiny rainforest outpost of Australia have driven the evolution of a new species in 8,000 years or less, according to scientists from the University of Queensland, the University of California, Berkeley, and the Queensland Parks and Wildlife Service. "That's lightning-fast," said co-author Craig Moritz, professor of integrative biology at UC Berkeley and director of the Museum of Vertebrate Zoology. "To find a recently evolved species like this is exceptional, at least in my experience."

The yet-to-be named species arose after two isolated populations of the green-eyed tree frog reestablished contact less than 8,000 years ago and found that their hybrid offspring were less viable. To avoid hybridizing with the wrong frogs and ensure healthy offspring, one group of females preferentially chose mates from their own lineage. Over several thousand years, this behavior created a reproductively isolated population - essentially a new species - that is unable to mate with either of



*Litoria genimaculata*. Photo by John Sullivan, wildherps.com.

the original frog populations.

This example suggests that rapid speciation is often driven by recontact between long-isolated populations, Moritz said. Random drift between isolated populations can produce small variations over millions of years, whereas recontact can amplify the difference over several thousands of years to generate a distinct species. "The overarching question is: Why are there so many species in the tropics?" Moritz said. "This work has led me to think that the reason is complex topography with lots of valleys and steep slopes, where you have species meeting in lots of little

pockets, so that you get all these independent evolutionary experiments going on. Perhaps that helps explain why places like the Andes are so extraordinarily diverse."

The green-eyed tree frog, *Litoria genimaculata*, lives in the Wet Tropics area of northeast Queensland, a rugged tropical region of Australia along the Pacific Ocean's Great Barrier Reef. The frog, which is green with reddish-brown splotches, is common around streams and grows to about 2 1/2 inches in length. Because of geographic isolation that began between 1 and 2 million years ago with the retreat of rainforest to higher elevations, two separate frog lineages developed in the northern and southern parts of the species' coastal range - only to be reconnected less than 8,000 years ago as the climate got wetter and warmer and the rainforest expanded.

Hoskin and his colleagues found that the northern and southern calls of the male frog, which are what females pay attention to in the mat-

(See *picky frogs* on page 6)

## CHECK THESE OUT:

- Please note that there will be no regular monthly meeting in January. We'll resume our monthly schedule on February 18th at the John Ball Zoo in Grand Rapids.

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## CALENDAR OF EVENTS

### THINGS TO DO, THINGS TO SEE

*MSH general membership meetings are open to the public, and members are encouraged to bring guests. Junior member meetings begin at 4 PM, the board meets at 5:30 PM, members are welcome at 7 PM, and the program begins at 7:30 PM.. Members are welcome to observe*

For the calendar year 2006, the MSH Board of Directors has voted to hold a total of nine monthly meetings, six in Lansing and three in Grand Rapids. More details will be published as they become available.

February 18 MSH MONTHLY MEETING. Program to be announced. John Ball Zoo, Grand Rapids.

February 25 OKEMOS SCIENCE FUN DAY. Held at Okemos High School, from 11 AM till 3 PM, this is the first exhibit event for MSH of the new year. Contact **Barbara Wheeler** at 517.321.6105 or [wheelerba@aol.com](mailto:wheelerba@aol.com) if you can exhibit.

September 16 MSH FALL EXPO. To be held on the grounds of the Ionia Free Fair. More details as they become available.

## THE MICHIGAN HERPETOLOGIST

### WELCOME NEW MEMBERS . . .

The Burke Family: Darrell, Marci, Brian, Allison, and Andrea  
Emily Russell

### AND RENEWING MEMBERS . . .

Warren and Steven Whaley

### TREASURER'S REPORT

This months treasurer's report is absent, due to the change-over in officers. The MSH Board of Directors would like express its deepest gratitude to Paul Susplinkas for his years of service in the capacity of Society Treasurer.

And we'd like to welcome David Critchlow to his position on the Board and to that same office of Treasurer.



No one seems to know exactly what happened to this snake. Not how, what, when, or where. But these two pictures have been making the circuit around the world wide web for a couple of months now. Some captions indicate that it ate a sheep and then met it's demise in the electric fence it's entangled in. Certainly is an impressive python, whatever the case.--Submitted by Wesley Sherman

## INTERNSHIP AVAILABLE

The Kentucky Reptile Zoo, a nonprofit organization, is seeking student interns for the 2006 season. The zoo is an educational exhibit, reptile breeding and venom research facility located near Kentucky's Red River Gorge and Natural Bridge State Park. The intern will assist in the captive maintenance of the zoo's reptile collection, collect admissions to the exhibit, give interpretive talks and interact with the public, assist with educational outreach programs, and perform other duties as assigned. In addition, the intern will be responsible for the completion of at least one research project related to the field of herpetology. The intern will not be involved in the handling of any venomous species.

Desirable qualifications include a willingness to handle snakes and other reptiles on a daily basis, ability to communicate effectively with people, writing skills, orientation to details, and self-motivation. The intern will be required to work Saturday and Sunday, with days off during the week. Students majoring in the biological or natural sciences are preferred. Interns are required to be either college students or recent graduates. Former interns have arranged for academic credit with their institutions. Benefits include experience with one of the most extensive and diverse collections of snakes in the United States, housing, and \$55/week to cover expenses. Interns have been successful in finding zoo keeper positions (over 95% hire rate!). Personal transportation is recommended. A valid driver's license is required. Starting dates are flexible, but a minimum of three months covering spring (April-June), summer (June-August), or fall (September-November) is required.

Deadlines are February 1 for spring, April 1 for summer and July 1 for fall. To apply, send a cover letter, resume, transcript, and at least 2 (preferably 3) references to:

Kristen Wiley, Internship Coordinator  
Kentucky Reptile Zoo  
200 L&E Railroad  
Slade KY 40376 or e-mail to: [kyreptil@pop.mis.net](mailto:kyreptil@pop.mis.net)

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### **Chameleons:**

CB 2<sup>nd</sup> generation, Adult breeding size *Ambilobe/Sambava* Panthers 1.1 unrelated pair, virgin female \$500 pair; CB Adult Nosey Be male \$250; CB Adult *Sambava* male \$250; CB Giant *Oustaletti* Chameleon adult breeders unrelated pair \$300 ,extra females available; CB Madagascar Leaf-tail *Sikorae* geckoes, regular producers 3 pairs \$300; CB 3<sup>rd</sup> generation *Chameleo quadricornis*, rare Redhead females/Orange head males unrelated regular producers 1 pair \$300; 5.4 Giant leaf tail geckoes *Fimbriatus* breeding colony, long term captives, regular producers, every three months like clockwork, eggs incubating now, 5.4 unrelated \$1200.

**Contact Chris Palmer at 734.433.1601 or [toadily2@msn.com](mailto:toadily2@msn.com). Please serious inquiries only, traveling is already a strain.**

Thanks

## MICH-HERP NEWS BRIEFS . . .

### LAX LAWS ENCOURAGE PROLIFERATION OF PYTHONS IN FLORIDA

*Delray Beach, FL.* -- As the sun set at Tropic Bay, most residents had already retired to their condominiums for the evening, just as they do every night. That's probably why, until last week, no one had spotted the 6-foot-long albino Burmese python that had been living under the pool deck for at least a year. Pythons hunt at night, after most senior condo residents have gone to bed. A visitor saw the bright yellow snake about noon on a Friday in the middle of the courtyard, where it evidently had decided to sun itself. "It scared him to death," community association manager Joann Bordelon said. She called a wildlife trapper and posted notices, "not to alarm anyone, but just to warn them to be cautious." How does a giant constrictor native to Southeast Asia wind up living under a pool deck by the Intercostal Waterway in Delray Beach? Fairly easily, because of lax laws that are difficult to enforce.

Faced with the prospect of spending \$100 a month to feed live rabbits to a growing 10-foot-long snake, overwhelmed python owners have been releasing them into the Everglades and local canals, where they've been breeding for at least 10 years, wildlife officials suspect. Lately, rain has encouraged the snakes to wander. As real-estate development creeps to the edge of the Everglades, animals and people see more of each other.

That's probably how the python came to Tropic Bay, the Trapper John team surmised as they sat by the pool in the dark, waiting for the snake to show itself. A foul odor pervaded the aseptic condo air — rabbit urine and dung trapper Bud Howell had spread around two saucer-sized holes in the lawn that led to the python's den. He wanted to lure the serpent out, but it would not happen tonight. Stray cats, rats and curly-tail lizards were conspicuously absent from the courtyard. "He's been eating well," Howell said.

Although the state has strict rules governing trade and ownership of venomous snakes, it requires no permits for python owners, only for those who sell them. That could change. Officials are working on a management plan for big snakes as part of a statewide invasive-species plan, said Scott Hardin, the Fish and Wildlife Conservation Commission's exotic species coordinator. The plan will focus on educating the public and potential snake owners. The state also could put up a few more hurdles to ownership. An outright ban on the snakes probably would backfire, driving the trade underground, Hardin said. "Sometimes regulation is all a well-intentioned person needs to know," Hardin said.

Although Florida residents may keep pythons in captivity, state law prohibits releasing any exotic species into the wild. The first-degree misdemeanor is punishable by a year in jail or a \$1,000 fine. Enforcing the law, which requires catching violators in the act, has proven difficult, Dennis said. And the python problem has grown "exponentially" since snake dealers set up shop on the Internet. "The biggest thing is Mom and Dad should not buy the python," he said, slowing to drive the point home. "Say no to snakes. Buy a yellow rat snake if you have to. It's native and you can turn it loose."

It's probably too late to eradicate pythons from the wild in South Florida, officials have conceded. They're breeding. They're heading east and making their homes under condo pools. They're here to stay. "I don't think we'll eliminate them," Hardin said. "We're just working on a containment strategy."

### PROPOSED REGULATIONS IN PA: BAD NEWS FOR RATTLESNAKE ROUNDUPS, GOOD NEWS FOR HERPS

No two states handle wildlife management the same way, especially when it comes to herps. In Pennsylvania, centuries went by before any agency took responsibility for reptiles and amphibians. Even after the PA Fish and Boat Commission reluctantly took charge of state herps in 1980, the state's seventy-six reptile and amphibian species and subspecies remained an unwanted burden and were continually tossed back and forth between PFBC and the PA Game Commission. While most fish and wildlife create millions of dollars of state revenue through hunting and fishing licenses, reptiles and amphibians are not so lucrative to manage. Neither agency has ever wanted to deal with herps, so they have remained largely unregulated in PA -- until recently.

With this history in mind, it should come as no surprise that PA is one of the seven states where rattlesnake roundups are still legal. Among the states where roundups are legal (TX, OK, NM, KS, AL, GA, and PA), Pennsylvania has always been one of the notorious. PA is home to no less than nine or ten roundups per year, despite the fact that PA's rattlesnakes are a candidate-threatened species (*Crotalus horridus*) and an endangered species (*Sistrurus c. catenatus*).

Unlike the relatively resilient Western diamondback collected for most southwestern roundups, the candidate-threatened Timber rattlesnake collected in PA is quite vulnerable. Adults only reach sexual maturity after 8-10 years, and reproduce only once every 3-5 years. Research shows Timbers may abandon den sites which have been molested. Survival rates are well under 25% for snakes released outside of their small 1-2 mile home range. During roundups, dens are commonly disturbed or destroyed and snakes that aren't killed or kept are often released outside their home range. After decades of roundups, these actions have taken their toll. A several-year study by state biologists has shown 71% of Pennsylvania's South Mountain Timber rattlesnake population has gone the way of the buffalo.

Under current regulations, a \$5 permit allows roundup participants to take up to two Timber rattlesnakes per year, regardless of sex or age. In fact, "heaviest rattlesnake" prizes are awarded at roundups, encouraging participants to seek out and capture gravid females from the wild. Under the proposed regulations, Timbers will receive much more protection. Hunting permits will cost \$50 instead of \$5, and participants will only be allowed one snake instead of two. Females will be completely off-limits, and males must be a minimum of 42 inches to be taken (the average adult length of a male Timber is 41 inches). Although roundups will still be legal, they will be far less harmful to populations under the proposed regulations.

Pennsylvania also leads the union with more roads per square mile than any other state. Consequently, PA harps have really felt the sting of fragmentation and habitat loss. Other changes proposed in the new regulation aim to sustain many other declining herp populations. Northern Copperheads will be given a closed season and collection permit for the first time. A new permit system for Snapping turtles will monitor their collection much more closely. Snapping turtle regulation changes come after a single Philadelphia meat vendor reportedly sold 12,000 pounds of Snapper meat per year. Additionally, every other herp in the state is given extra protection with possession limits being dropped from two to one. Several species which have been impacted by collection from the wild, like the Eastern Box turtle, will no longer be legal to collect at all. This comes after wildlife groups like the Sierra Club have urged PFBC to ban collection of the Eastern Box turtle and other turtles from the wild. -- Edited from Notes from Noah, December 2005.

#### **VIAGRA MAY BE SAVING ENDANGERED SPECIES AFTER ALL**

*Sydney, Australia* -- Chinese men are selectively switching from traditional Chinese medicine (TCM) to Viagra to treat impotence, but sticking with tradition for ailments such as arthritis, indigestion and gout, according to new research published in Environmental Conservation. The finding supports a prediction made by Australian and Alaskan researchers at the advent of Viagra's commercial release in 1998 that the new impotence drug might reduce demand for several animal species that are over-harvested to treat impotence with TCMs.

Animals such as seals, sea horses and tigers have long been hunted because practitioners of TCM use their body parts for their presumed healing and virility qualities. The researchers surveyed 256 Chinese men, aged 50 to 76, who sought treatment at a large TCM clinic in Hong Kong. The men were questioned about their previous and current use of TCM and Western treatments for arthritis, indigestion, gout and impotence.

"First, significantly more men had formerly used a TCM treatment for impotence than were current users," says Bill von Hippel. "Second, they were significantly more likely to be using a Western treatment for impotence than a TCM treatment. "Finally, among men who formerly used either Western or TCM treatments for impotence, they were more likely to switch from a TCM treatment to a Western drug than vice versa. In fact, nobody had switched from a Western drug to a TCM treatment for impotence.

In 2002, the global market for TCM products and treatments was valued at more than \$20 billion, according to the Chinese firm Shenzhen Matrix Information Consulting. -- Edited from a news release issued by the University of New South Wales dated October 12, 2005.

(*picky frogs* from page 1)

ing game, had become different from each other. Yet despite this difference, reflected in the call's duration, note rate and dominant frequency, the two lineages could still breed with one another. The southern females, however, were more picky about their mates than the northern females. And in one area of contact that had become isolated from the southern range, the southern females were extremely picky, to the extent that they almost never mated with northern males.

In laboratory breeding experiments, the biologists discovered the reason for this choosiness: While northern and southern lineages could breed successfully, they apparently had diverged enough during their million-year separation that offspring of southern females and northern males failed to develop beyond the tadpole stage. Though crosses involving northern females and southern males successfully produced frogs, the offspring developed more slowly than the offspring of pairs of northern frogs.

Field studies confirmed the laboratory results. Researchers could find no hybrid frogs in the contact zones that were the offspring of southern mothers, judging by the absence of any southern mitochondrial DNA, which is contributed only by the mother.

Hoskin and colleagues argue that because southern females have the most to lose in such cross-breeding, there may have been selection pressure to evolve a mating strategy to minimize dead-end mating with northern males. This appears to have occurred in the contact region where a population of the southern lineage had become isolated from the rest of its lineage and had developed a preference for certain male calls. The male frog call in this population has diverged significantly from both the northern and

southern lineage calls.

"If females have a reason not to get the mating wrong, and they have some way of telling the males apart - the call - the theory is that this should create evolutionary pressure for the female choice to evolve so that they pick the right males," Moritz said.

This so-called reinforcement has been controversial since the time of Charles Darwin, with some biologists claiming that it requires too many steps for evolution to get it right.

"Some have argued that it's just too complicated and that it is not really necessary, and there have been few convincing demonstrations. In their view, differences between populations arise because of natural selection or genetic drift or mutation or some combination of those three, and reproductive isolation is just some glorious accident that arises from that," Moritz said. "We do have very compelling evidence. We have addressed various lines of evidence and conclude that there has been reinforcement and that has given rise to a new species based on very strong female choice."

As a comparison, they looked at a second contact zone on the border between north and south, where frogs were not isolated from either lineage.

"Reinforcement does not appear to occur at the more 'classic' contact between northern and southern lineages, and we speculate that this may be due to gene flow from the extensive range of the

southern lineage into the contact zone," Hoskin said. "This problem does not exist at the other contact because the southern lineage population is very small and occurs primarily within the contact zone."

Because the frogs in the isolated contact area had a distinctively different call, and because they were effectively isolated from surrounding populations by mating preference, Hoskin and colleagues concluded that female choice led to this new species.

Interestingly, evolutionary theory would predict that the southern and northern frog populations would drift apart into two distinct species. In the case of the green-eyed tree frog, Moritz said, a sub-population of the southern species drifted away not only from the northern species, but also from the southern. That was unexpected, he said.

Moritz noted that geographic isolation in this "dinky bit of rainforest in Australia" has split many species, and that reinforcement at zones of recontact may be generating other new species.

"In this tropical system, we have had long periods of isolation between populations, and each one, when they come back together, have got a separate evolutionary experiment going on. And some of those pan out and some don't. But if they head off in different directions, the products themselves can be new species. And I think that's kinda cool. It gives us a mechanism for very rapid speciation."

The research was supported by the U.S. National Science Foundation, the University of Queensland and the Australian Cooperative Research Centre for Tropical Rainforest Ecology and Management. --Reprinted from a press release by UC Berkeley News, dated October 27, 2005



*Litoria genimaculata*. Photo by John Sullivan, *wildherps.com*.

## SAND SKINKS; ELUSIVE CREATURES

They leave S-shaped designs in the sand. Federal and state wildlife officials classify them as threatened. They live on the sand ridges of Central Florida. That sums up what most people know about Sand Skinks, if they've heard of them at all. Sand Skinks are among the creatures that live on the Lake Wales

Ridge, a chain of prehistoric islands that was all the dry real estate there was in peninsular Florida at one time.

Like better-known species such as Gopher Tortoises, their habitat is often bulldozed to make way for new development. This is the time of year when biologists try to learn more about these elusive reptiles because the skinks become more active and easier to detect as temperatures rise. The survey method is fairly low-tech. It involves placing a 2x2 piece of plywood on bare ground and going back every week or so and looking for tracks. The Sand Skinks forage in the sand beneath the board, leaving trails in the sand that can look like anything from a winding river bed to a plateful of macaroni.

The data collection is simple. Either tracks are there or they aren't. In fact it's good to stop here and mention that one of the important aspects in wildlife surveys is the ability to collect information along fixed routes, which are marked with flags, metal poles, wooden stakes or some other method. If you see these markers or the boards, that's what they're for. Don't disturb them or you could screw up someone's research project.

As wild creatures go, Sand Skinks are a relatively recent addition to the scientific list of creatures. The Sand Skink was not officially described in the scientific literature as a separate species until 1910



A sand skink (*Neoseps reynoldsi*). Photo courtesy floridata.com.

by Leonard Stejneger (1851-1943), who was head curator of reptiles, [turtles] and amphibians at the Smithsonian Institution.

Sand Skinks look like small snakes -- they're only about 5 inches long -- with tiny legs. They belong to a group of reptiles known as "sand swimmers." That means they move around just under the ground's surface looking for something to eat. Termites make up a major part of their diet. Mole Skinks and some species of snakes, such as [Southeastern] Crowned Snakes, also are in this category.

Because of their secretive habits, Sand Skinks are rarely seen and scientists are still trying to learn more about what they need to survive. Surveys at various wildlife preserves -- I tagged along on my first one last year at Polk's Crooked Lake Prairie -- are part of that research because they provide a baseline, a basis for comparison to spot population trends. I use population trends in a generic sense here. I haven't talked with anyone or read anything that leads me to believe there are any population estimates for Sand Skinks.

What do exist are lists that give the number of locations where Sand Skinks are found, but it's unclear how big a territory each Sand Skink occupies or where the young go after they hatch. One small step in Sand Skink research occurred when a University of Florida student

named Byrum Cooper set out on a quest to figure out how to capture these elusive creatures. This short 1953 account, published in the Florida Academy of Sciences Quarterly Journal, concluded a potato rake and quick hands were the best tools for collecting specimens. Some of you may know this young student as Buck Cooper, the retired B-52 navigator who served as naturalist at the Street Nature Center in Winter Haven for several years. By the way, nowadays it is illegal to collect Sand Skinks or any other protected species without a permit from state and federal wildlife officials.

One interesting side benefit of Sand Skink surveys is learning about other creatures that inhabit the scrub. Researchers have reported finding millipedes, centipedes, ants, termites, spiders and various other even smaller beetles and other invertebrates. Sometimes other reptiles are using the board as a temporary shelter. They include Scrub Lizards, a type of lizard called a [Six-lined] Racerunner and various species of snakes. One researcher even found a baby rattlesnake. I guess it's a good idea to lift the boards carefully. -- *Reprinted from a news release by the Center for North American Herpetology dated June 6, 2005. Originally published in The Ledger (Lakeland, FL) May 11, 2005.*



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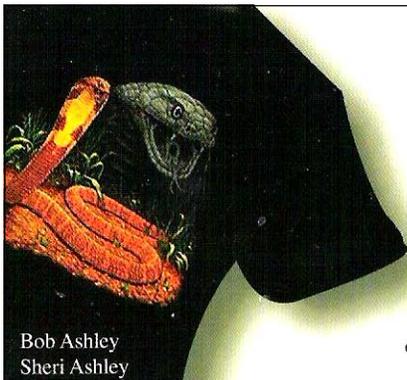
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## GOURMET DINING; BAT GUANO ANYONE?

Oklahoma City, OK -- After two years of study in an isolated Oklahoma cave, Jim Stout has discovered that a rare species of grotto salamander has a diet much different from what was expected. Stout, the supervisor of the Herpetarium at the Oklahoma City Zoo, has helped write a report published by a leading scholarly journal that documents how a blind cave-dwelling salamander eats bat droppings. The salamander was thought to subsist on bugs and shrimp and this is the first report of a salamander, or any amphibian, living on bat guano.

His article is in the Proceedings of the Royal Society of London: Biological Sciences. Dante Fenolio collaborated on the research. "Because bats don't fully digest their food, their guano was pretty

nutritious, and actually had more calories than the tiny shrimp," Stout said. "In effect, by eating the bat droppings, the salamanders have cut out the middle man."

At the time of the study, Fenolio, an expert in salamanders, was working on his master's degree at the University of Oklahoma in Norman, Stout said. Fenolio is now at the University of Miami, FL, where he is working on his doctorate. In addition to Stout, Fenolio's co-authors on the journal article are G.O. Graening, a cave biologist with the Nature Conservancy in Arkansas, and Bret A. Collier of Texas A&M University's department of wildlife and fisheries sciences in College Station, Texas.

Stout said the group's original mission was a two-year population ecology study of a federally protected cave in Delaware County. Stout said about 15,000 grey bats live in the cave he studied. "Except for the bats, the cave is a pretty sterile environment, and the grotto salamander population was larger than we thought the cave could support," Stout said. "Things didn't add up at first." The researchers also noticed a significant drop in the grotto salamander population when the migrating bats were not there. The bats occupy the cave from May to December. -- Reprinted from *Herp Beat*, a publication of the *Upstate (NY) Herpetological Association*, January, 2006. Originally an Associated Press release dated December 5, 2005.

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**Reptile Tank Closeouts:** Advanced Vivarium Technologies Closeout Reptile enclosures available while supplies last. See **Eric Tobin** for remaining inventory or visit the closeout website page at www.tobinherpetological.com/MSHmembers/MSHmembers.html.

**For Sale:** Snake hooks, curved (cage style) or straight (field style). \$15 each or 2 for \$25. Also, frozen mice; pinkies 4/\$1.00, fuzzies 3/\$1.00, adults 50 cents each. Can bring to MSH meetings. Contact **Paul Suplinskas**, 231.834.7803.

**Wanted:** Reptile hobbyists to show their field of expertise, knowledge, tips and tricks of reptile care for the general public on video. If you have a unique reptile that has interesting quirks, habits, abilities, looks or amazing story, the Reptile Renegade wants it on video. If you would like to participate in this project of bringing the reptile hobby to the public, contact **Joel Fluty** at reptilerenegade@charter.net

## About *The Michigan Herpetologist*

*The Michigan Herpetologist* is published monthly by the Michigan Society of Herpetologists, a non-profit organization "dedicated to member and public education about reptiles and amphibians."

**"The mission of *The Michigan Herpetologist* is to inform the membership of Society events, to report on those events whenever possible, to provide interesting information about the herpetological community, and to provide members a platform to express their interests and views."**

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Classified ads are free to MSH members. Others may contact the editor for rates. Articles by members and interested individuals are always welcome in almost any format. Please contact the editor.

This newsletter is now delivered in full color electronically as a PDF (adobe acrobat) file; e-mail the editor to start receiving it that way.

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TODAY'S DATE \_\_\_\_\_

**MSH MEMBERSHIP APPLICATION**

To join MSH, please complete the following application and return it, with your membership fee, to:  
Membership Secretary,  
Michigan Society of Herpetologists,  
321 W. Oakland Ave., Lansing, MI 48906

- \_\_\_\_\_ Individual (\$15.00)
- \_\_\_\_\_ Family (\$20.00)
- \_\_\_\_\_ Junior (\$12.00)
- \_\_\_\_\_ Commercial (\$30.00)
- \_\_\_\_\_ Sponsorship (\$100)
- \_\_\_\_\_ New Member
- \_\_\_\_\_ Renewal
- \_\_\_\_\_ Name or Address Change

Name(s) (Please Print): \_\_\_\_\_ Date: \_\_\_\_\_

Parent or Guardian (if member is a minor): \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: ( ) \_\_\_\_\_ E-mail: \_\_\_\_\_

Herpetological Area of Interest: \_\_\_\_\_

Would you be willing to volunteer for any MSH events? Yes No      Would you like to be listed in the MSH Directory? Yes No

Would you like to receive this newsletter in full color electronically? (Requires an e-mail address) Yes No

**GENERAL INFORMATION:**

The Michigan Society of Herpetologists (MSH) is a non-profit organization dedicated to member and non-member education about reptiles and amphibians.

**MEETING INFORMATION:**

MSH holds its general meetings in the cities of Lansing and Grand Rapids (see directions below). Meetings generally are held on the third Saturday of the month (but check the Calendar of Events). Meetings are open to the public and the society encourages anyone with an interest in herpetology to attend.

**CONTACT INFORMATION:**

Michigan Society of Herpetologists,  
321 W. Oakland Ave., Lansing, MI 48906

**WEB SITE:**

www.michherp.org

**Officers:**

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**DIRECTIONS TO MSH MEETING PLACES**

**SCOTT CENTER - LANSING**

The Scott Center is located at 125 W. Main Street where Capitol Avenue dead-ends at Main. Main Street is the freeway access road that runs immediately south of I-496 in downtown Lansing.

**Eastbound I-496:** Take Pine-Walnut Street exit. The third traffic light will be at the driveway to the Scott Center. Turn right into driveway.

**Westbound I-496:** Take the Downtown-Grand Ave. exit. Cross Grand Ave., cross first light at Washington Ave., turn left (south) at next light at Capitol Ave., and get in the right hand lane immediately. One block ahead is a light at Main. You must be in the right hand lane to drive straight ahead to the drive of the Scott Center.

The Scott Center phone number is 517.372.3232

**JOHN BALL ZOO - GRAND RAPIDS**

John Ball Zoo is located at the corner of Fulton and Valley (1300 W. Fulton), two miles west of downtown Grand Rapids, with easy access from I-196. Meetings are held in the lower level of the pavilion, located near the parking lot and outside of the perimeter fence.

From 196 East, exit at Lake Michigan Drive, and turn right to Fulton. Zoo entrance is to your right.

From 196 West, exit at Lane Street. Turn left on Lane. Turn right on Fulton. Proceed to corner of Fulton and Valley for Zoo entrance.

NO LIVE ANIMALS MAY BE BROUGHT TO MEETINGS HELD AT JOHN BALL ZOO.

THE MICHIGAN SOCIETY OF HERPETOLOGISTS  
321 W. OAKLAND AVE.  
LANSING, MI 48906



If this box is checked, your membership expires with this issue. When renewing, PLEASE fill out the membership form on the other side of this page. This will insure your newsletter delivery continues uninterrupted.

FIRST CLASS MAIL

## SAND SKINKS OF THE FLORIDA SCRUB

One of the most highly adapted scrub creatures, the 4" sand skink (*Neoseps reynoldsi*) occurs nowhere in the world except six counties in central Florida. Like most members of the skink family (*Scincidae*), the sand skink

is a smooth-scaled, shiny lizard that likes to stay out of sight. The sand skink is on the U.S. list of Threatened species. They are vulnerable to extinction because of habitat loss as more and more of the Florida scrub is cleared for development.

Sand skinks move about by "swimming" eel-like through the loose sand, where they pursue ant lions or "doodlebugs" and other subterranean invertebrates just below the surface. The "sine-wave" trails they leave in the sand are unique. Sand skinks have many specialized adaptations for sand swimming.

The whole body is streamlined. Their front legs are reduced to useless vestiges with a single toe and fold tightly against the body into tiny grooves. The hind legs aren't much bigger (they have two toes). The snout is wedge-shaped and the lower jaw is countersunk into the upper. The eyes are reduced and there are no external ear openings. The rare sand skink is one of Florida's most remarkable animals! -- *Text and photos reprinted from florida.com. For more information and a picture of a sand skink, go to page 7-- Ed.*



Sand skink tracks.