

# Virginia Herpetological Society

## NEWSLETTER

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## **R**escue Operations for Snakebite

*Excerpts from an article by Diana Arendt and David B. Arendt, American Journal of Nursing, July 1992*

It's summertime, and the snakes are awake. In June, July and August, when unheeding campers, hikers and fishers invade the mountains, deserts, forests, and rivers, the chances of an unfriendly snake-human encounter rise dramatically. Many of these snakes are not poisonous - either the snake was nonvenomous or the bite was "dry" (little or no venom is deposited in 20% to 25% of bites by venomous snakes). Still, any animal bite carries the risk of tetanus, and when the bite is poisonous and untreated, the victim can suffer serious consequences, such as internal bleeding or gangrene.

However, of the nearly 4,000 snakebite victims treated in health-care facilities last year, none died. The key to preventing problems after snakebite is rapid first aid, transport and treatment. A venomous snakebite

is actually several simultaneous poisonings: the body must fight off neurotoxins, hemotoxins, cardiotoxins and cytotoxins all at once. The first 15 to 30 minutes after a snakebite will tell whether the victim has been poisoned, but to be on the safe side, you don't want to wait to find out.

Pit vipers (rattlesnakes, cottonmouths and copperheads) are responsible for most bites. The signs and symptoms of pit viper envenomation are easily remembered: the two P's - pain and puncture marks - and the two E's - edema (abnormal accumulation of a watery fluid in tissues) and erythema (abnormal redness of the skin). The severity of symptoms depends on the victim's size, health, and level of exertion; the amount of venom delivered; the size of the snake; the location and the depth of the bite; the

presence of bacteria in the snake's mouth or the victim's skin; first-aid measures; and how long it takes for the victim to receive medical attention.

Immediately after a venomous pit viper bite, the victim feels burning pain in the affected area, primarily due

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to rapid tissue swelling. Local swelling usually develops within 5 to 15 minutes and spreads from the wound in all directions. If no edema is seen within 30 minutes of the bite, envenomation is not likely (if the snake is not identified, however, the patient is usually treated anyway). Systematic effects of venom absorption include profuse

perspiration, chills, weakness, rising body temperature, hypotension, rapid pulse and respirations - all which may precede cardiovascular/respiratory arrest in venom-induced shock.

Snakebite victims often report tingling sensations in the tongue and mouth,

scalp or feet, sometimes accompanied by a metallic taste. They may report that their tongue feels "rubbery". Muscle twitching, primarily in the face, back, and neck, may appear within ten minutes of some snakebites.

used within three minutes.

The definitive antidote to snake venom is antivenin. Some physicians, however, believe that antivenin, which is developed from horse serum, can cause serious sensitivity reactions and should be used only in life-threatening envenomations.

Confused? Sounds as if nothing is certain about the best way to handle snake bite. However, know this - **all authorities agree on the need to get the victim to an adequately equipped medical facility within one hour of the incident.** It is useful if the snake can be killed safely and brought into the hospital for identification, but capture should not delay transportation of the victim to the hospital. Be sure to handle the dead snake carefully - there still may be venom in its fangs. Keep notes about time of the snakebite, when first aid was begun, and a description of the snake. Tell the doctor about previous episodes of bites and the treatment used, of any known allergies, especially to horse serum and antibiotics - and the date of the last tetanus immunization.

Most of all - be alert when you are in the field. Take a friend along with you. Know where the nearest medical facility is and have a planned escape route out of the woods. Immobilize the victim as much as possible and stay calm. Have fun, but act smart, and play it safe.

## First + Aid for Snakebites



### ***First, limit the spread of venom.***

After removing the victim to an area safe from the snake, calm and reassure him/her. Remove jewelry and constrictive clothing. Make sure the victim remains still; exertion will help pump the venom through the bloodstream. Splint the affected limb in a functional position and immobilize it at or below heart level to reduce the absorption of venom. If the bite is on the face, have the victim lie flat and still. Place cotton balls or clothing between the digits of the injured limb so they do not later swell together and rub raw.

***First aid for snakebite victims is fraught with opposing ideas.*** For example, the use of a constrictive band is controversial. Some experts believe that a wide constrictive band impedes lymph flow and venous return and thus slows the

dissemination of venom. Others believe the constriction might cause more local tissue damage. If used, the constrictive band should be two to three inches wide, applied above the bite loosely enough so that two fingers can slide beneath it.

Incision and either mechanical or mouth suction of the wound is also controversial because if the incision is too large it may cause further damage, the benefit is uncertain, and it may waste precious transport time.

***Incision and suction is suggested only if the hospital is more than one hour away.*** If mouth suction is indicated, it is reassuring to the rescuer (who may also be the victim, if alone) to know that human gastric acids inactivate the venom. The *Sawyer Extractor*, a vacuum pump, can extract up to 30% of venom if

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## Annual Meeting of the American Society of Ichthyologists and Herpetologists, University of Texas at Austin, 27 May-2 June, 1993.

*The annual ASIH meeting was a great time and very informative. The meeting was well-organized with an overwhelming number of concurrent sessions. VHS members in attendance included Dr. Joe Mitchell, Kurt Buhlmann, and Sue Bruenderman. Dr. Mitchell co-chaired the session on Turtles/Sea Turtles, and Dr. Alan Savitzky from Old Dominion University co-chaired the Snake Ecology session. Inevitably, there were too many choices as to which paper to attend. Luckily, abstracts of all papers and poster sessions were available in the program. To follow are just a few of the abstracts, relevant to Virginia's herpetofauna which we thought would be of interest to the VHS membership.*

**Savitzky, A.H.; Savitsky, B.A.; Petersen, C.E.** (AHS and CEP Department of Biological Sciences, Old Dominion University; BAS Department of Biology, chemistry, and Environmental Science, Christopher Newport University). Overwintering ecology of *Crotalus horridus* (Viperidae: Crotalinae) in southeastern Virginia.

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The canebrake form of *Crotalus horridus* occupies forested habitats on the coastal plain of southeastern Virginia. The overwintering ecology of *C. horridus* was studied in four specimens by means of radiotelemetry. Two males implanted in late August and early September traveled more than 1 km to their hibernacula. Hibernation was preceded by a period of up to several weeks in which all snakes transiently occupied one or more retreats (tunnels or tree cavities). Three snakes entered their final overwintering retreats between 16 and 29 October, the fourth on 28 November. No simple

correlation was observed between air or soil temperature and date of entry into hibernacula. Snakes hibernated in tunnel systems resulting from the decomposition of tree roots, selecting relatively shallow sites (approx. 15-20 cm in depth). The snakes occupied well-drained locations, as determined by direct observations of hibernacula. Tunnel moisture in winter appeared to be correlated with depth. Therefore, the selected locations may represent a compromise between avoidance of low temperatures and excessive moisture. Both conspecific and heterospecific aggregation during hibernation were observed.

**Wicknick, J.A; Jaeger, R.G.; Griffis, M.R.; Simons, R.R.; M.W. Bellot, M.W.** (Department of Biology, University of Southwestern Louisiana). Social interactions between adults and juveniles of a territorial salamander.

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We examined the interactions between adults and juveniles of the redback salamander *Plethodon cinereus* in six experiments. In the forest, 22% of juveniles were found under the same cover object as an adult. In behavioral tests, territorial adults exhibited significantly less aggressive behavior toward intruding juveniles than toward intruding adults. In a second set of behavioral tests, territorial adults threatened juveniles that were collected >25m away significantly more than they threatened juveniles found cohabiting under their cover object. In tests on chemical communication, juveniles spent significantly more time on substrate previously occupied (and pheromonally marked) by an adult than on an unmarked substrate. Histological analysis of post-cloacal glands, important in placing substrate chemical cues, indicates that these glands are active in both adults and juveniles. Stomach contents showed that the maximum prey width of adults is significantly larger than that of juveniles; minimum prey size is not different. From these data, we conclude that juveniles are attracted to the territories of adults, and that adults tolerate the presence of juveniles because they do not compete for food. We suggest that adults may also tolerate the presence of juveniles because they are likely to be kin.

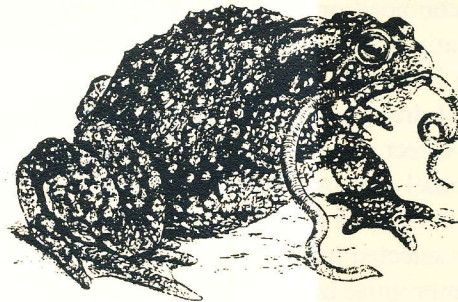
**Babbitt, Kimberly J.; Jordan, F.** (KJB Dept. of Wildlife and Range Sciences, University of Florida, FJ Department of Zoology and Florida Cooperative Fish and Wildlife Research Unit, University of Florida). Effects of habitat drying, density, and food on age and size at metamorphosis in southern leopard frogs, *Rana utricularia*.

Phenotypic plasticity in relation to density and food availability has been widely demonstrated among anurans. Plasticity in timing of metamorphosis in relation to the drying characteristics of a site is also expected, but has been less studied. We examined the effects of drying (constant vs. 16 week drying), tadpole density (4 vs. 8) and per capita food levels (0.15x vs. 0.075x weight) on age and size at metamorphosis in southern leopard frogs in a 2x2x2 factorial randomized block design with 6 replicates. Because southern leopard frogs breed in aquatic habitats ranging from temporary to permanent, we expected a response to drying, as well as to density and food. Individuals on the high food treatment metamorphosed earlier and weighed more than those on low food. Drying did not significantly affect age at metamorphosis, but did result in lower weight at metamorphosis. In addition, some individuals (n=15) did not complete metamorphosis, even though drying was gradual. Density had no significant effects. These results do not support the idea that southern leopard frogs respond to habitat drying by decreasing age at

metamorphosis as has been found for other species that breed in temporary sites, but rather that drying has a negative influence on metamorphosis.

**Hill, Jacques G.; Joanna Burger** (Department of Biological Sciences, Rutgers University). Aspects of the behavioral ecology of the black racer (*Coluber constrictor*) and eastern hognose snake (*Heterodon platyrhinos*) in the New Jersey Pine Barrens.

Drift fences with pitfall and funnel traps were used to live trap snakes in two habitat types of the New Jersey Pine Barrens during April through October of 1991 and 1992. Behavioral



and morphological data on the two dominant species, the eastern hognose snake (*Heterodon platyrhinos*) and the black racer (*Coluber constrictor*) will be used to compare aspects of the life histories of the two species. Mark recapture data indicate *C. constrictor* exhibit higher activity levels and move longer distances than *H. platyrhinos*. They eat a variety of prey types including rodents, snakes, and frogs. *C. coluber* exhibit a simple, and probably energetically costly repertoire of defensive behaviors; primarily

locomotor escape, tail rattling, and repeated striking and biting. *H. platyrhynchus* appears to exhibit low activity levels and moves shorter distances. They prey primarily on Fowler's toads (*Bufo woodhousei fowleri*). *H. platyrhinos* exhibits a complex repertoire of defensive behavior which includes hissing, inflation of the body, feign striking, defecation, and death feigning but rarely locomotor escape or actual biting. *C. coluber* appears to be an actively foraging, generalist predator with a more energetically costly life history strategy compared to *H. platyrhinos* which seems to be a more specialized, sit and wait predator.

**Weatherby, C.A.** (CAW, Biology Department, Adrian College). Movement patterns, home range and seasonal site fidelity of the eastern box turtle, *Terrapene c. carolina*, in southeastern MI.

Daily telemetry monitoring of 13 individuals was conducted during the activity seasons of 1991 and 1992. Average, 24 hr straight line distances traveled for adults was 35.7m (the male's average, 46.9m, being the larger than the female's, 30.0m). In contrast, the three greatest, 24h travel distances recorded (for three different adult turtles, of both sexes) were 412.5, 445.9 and 480.8m. Although the average home range size for adult turtles (of both sexes) was 10.0 ha, 75-95% of the time these adults were restricted to an average of 11 different locations (activity nuclei) within each of their home ranges totalling, on average, only 1.0 ha. Seasonal site fidelity was identified when, on

# H e r p H a p p e n i n g s

## CANEBRAKE

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A recovery team for the state endangered canebrake rattlesnake has been organized and is establishing a plan of action to help prevent further endangerment of this unique and troubled reptile species. Team members Don Schwab (Chair), Joe Mitchell, Alan and Barbara Savitzky, and Gary Williamson have been tackling some very difficult management issues, such as the development of recommendations to the Department of Game and Inland Fisheries for the handling and disposition of rattlesnakes that come into the agency's possession. Team member Joe Mitchell completed a draft recovery plan for the snake, which has been reviewed and critiqued by the team.

## PUBLICATION

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A contract has been signed between the Department of Game and Inland Fisheries and the Smithsonian Institution to publish the long-awaited *Reptiles of Virginia*. Author and VHS president Joe Mitchell has been diligently working to complete the final details of the book. If all goes well, *Reptiles of Virginia* should be on the shelf by December 1994.

## SURVEY

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Thanks to the Virginia Herpetological Society and others who helped the Virginia Department of Game and Inland Fisheries in the April 16-17 survey of Loudon County for the state threatened wood turtle, *Clemmys insculpta*. Despite heavy rains and turbid stream conditions that significantly hampered their efforts, 70 diligent individuals waded through streams and combed riparian areas in valiant attempts to find this rare turtle species. Because of poor sampling conditions, the survey was terminated prematurely. All was not lost, however. Participants learned first-hand about the biology, ecology, and threats to wood turtles in Virginia. A live specimen was available so that everyone learned how to identify, measure, and age these animals. No wood turtles were found, but substantial achievements were made by refining potential habitat for this species in Loudon County, thus greatly reducing area and search requirements for the next survey attempt (we will update you later concerning this revisit). Additionally, participants substantially increased our general knowledge about the herpetofauna of Loudon County, as numerous other animals were identified at a total of 19 sites on 11 different streams (see the next issue of *Catesbiana* for species list). Participants received free "VHS Wood Turtle Survey '93" t-shirts (expertly designed by artist Alisa Horniman). We extend special thanks to Lucille Porter, and Earline and Bob Hogan for all the time and energy they devoted towards the planning and preparation of the good food they provided for us!



Note: to all drivers who paid for gasoline expenses, reimbursement checks are on the way (mailed 7/23). Thanks!

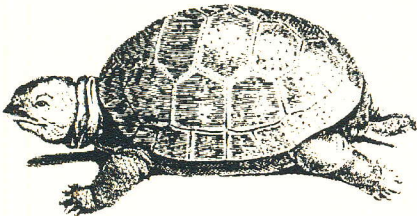
# *If I Were GOD*

by Stuart Nottingham, M.D.

Tomatoes grew for Victory  
In 1943.  
Terrapene would come and bite  
Into the ripened globes.  
Ruined fruit! Small price to pay  
For lessons we can learn  
From Terrapene's history,  
Far older than the dinosaurs.

When Terrapene attempts to cross  
Our busy Interstates,  
Some drivers stop to help him  
along,  
While others carefully aim  
And crush his shell beneath the  
wheels.

Who goes to Heaven,  
Who goes to Hell,  
I could decide  
If I were God.



## *What is happening*

On 28 July, 1992, Canada Customs and Agriculture seized a large shipment of reptiles and amphibians which was being smuggled into Canada at Lacolle, Quebec. Hidden in a single truck were six hundred-sixty seven (667) animals: 3 snakes, 2 lizards, 46 frogs, and many turtles of various species: 3 wood turtles, 27 Florida snapping turtles, 17 Florida soft-shelled turtles, 200 eastern box turtles, and 239 cooters. These animals suffered from massive infestation by parasites, stress of capture and transportation in crowded conditions. Despite extensive efforts to treat the confiscated animals, more than two-thirds of the animals perished. Says Geoff Gaherty of the Centre for Endangered Reptiles, "What the

.....*to our Herps?*

numbers, horrible as they are, do not convey is what I experienced when I visited the Centre in late August. The sight of the large numbers of dead and dying animals and the smell of putrid flesh turned my stomach and will stay with me for the rest of my life...I'm sure the mortality rate in most shipments of pet turtles is much higher, but you never hear about it because the dead animals are simply thrown in the garbage. The survivors, still riddled with parasites and bacterial infections, are then put on sale, likely to die themselves before long, perhaps infecting their owners along the way".

George R. Zug, Curator, Division of Amphibians and Reptiles, National Museum of Natural History, comments about this incident..."these reptiles and amphibians may not have been raped from Virginia but it is likely that such pillage of our herpetofauna occurs regularly". Unfortunately, this massive mortality of pet-trade animals is the rule rather than the exception.

## Salmonella Incidence in Captive Reptiles

*Excerpts from a paper submitted by Anne M. Sutton and Dr. Robin Hughes, DVM. Virginia Living Museum, Newport News, Virginia.*

**S**almonella is a bacteria that has the capacity to live under various environmental conditions and is potentially pathogenic for humans. Some of the most highly infective Salmonellas have been traced to reptiles. Salmonella bacteria constitute a portion of the normal intestinal microflora of many reptiles, but when these animals are sufficiently stressed (i.e. poor sanitation, overcrowding, inclement weather, hospitalization and surgery stress, transportation), their immune

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***The results of this investigation showed that the incidence of Salmonella was higher in snakes than in turtles.***

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responses can become impaired and the bacteria become pathogenic for hosts. Pathogenic intestinal bacteria can become highly virulent when an animal's immune responses are depressed; hence the value of careful quarantine and microbiological testing of newly acquired animals. Cage sanitation and appropriate waste removal are essential in preventing bacterial disease outbreaks.

A project to test reptiles for the presence of Salmonella was carried out at the Virginia Living Museum. Forty-one reptiles were tested, including snakes, turtles, and lizards.

Fecal samples were collected using two methods. Long swabs were used to collect easily visible samples of feces from some of the reptiles. Reptiles that live in water, such as the water snakes, had cloacal samples taken from them. Approximately 37% of the reptiles analyzed tested positive for Salmonella. Five reptiles had strains of Salmonella which are not pathogenic to humans; however, a black rat snake was typed as having a pathogenic strain known as *Salmonella typhimurium*. The results of this investigation showed that the incidence of Salmonella was higher in snakes than in turtles.

Salmonella can cause two violent types of gastrointestinal disease in humans: enteric fever and gastroenteritis. Enteric fever is characterized by continual feverishness. Gastroenteritis is acute and can induce vomiting and diarrhea.

In their paper, the authors stress several points: 1) the public health concern related to salmonellosis in reptiles, particularly those in captivity and in close contact with humans, is significant, 2) there is a need for increased awareness about the possibility of infection from bacteria when proper sanitary precautions are not followed, 3) people can contact Salmonella both through direct contact with reptiles and their feces, and through "fomites" - nonliving objects on which bacteria can exist.

### REPTILE TRADE SHOW



**The First Annual  
Richmond All Captive Bred  
Herpetological Exhibition  
& Trade Show**

~ August 28th · 9-3:30 ~

Holiday Inn Koger Cntr.  
1021 Koger Center Boulevard,  
Richmond, Virginia 23235

- *For captive bred animals only*
- *Reptile species native to Virginia will not be offered for sale or trade unless they are "albinos"*
- *No venomous animals allowed*
- *All animals must be secured in escape proof containers*

**For information contact:  
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average, 76.4% of each males's, and 67.9% of each females's, 1991's total home range overlapped with 1992's. With regard to overlap of each turtle's activity nuclei, on average, 2 of the 11 nuclei overlapped, representing 36% of the total nuclei area for males and 29% for females. Site fidelity for hibernacula selection was also partially present in 9 turtles examined, three of which chose hibernacula within 10m of the previous year's locations (10.0, 6.1, and 2.2m) while most of the rest chose the same general, but more distant, locations.

## Welcome New Members

Joann Bodurtha, MD  
 Brian Horne  
 Robert Fairchild  
 Dylan Ward  
 Nell Fifer  
 Jennifer Page  
 Carola Haas  
 Scott Stahl, DVM  
 Danny Dombrowski  
 Shawn Lee Saladiner  
 David Hut  
 Mark Rudy  
 Gary Fox

Bion Howard  
 John Anderson  
 Kevin Harris  
 Ted Kahn  
 Kevin Leftwich  
 Robert McGee  
 Stuart Nottingham, MD  
 Brian Patrick  
 Steven Roble  
 Vanessa Rolfe, DVM  
 John Sealy  
 Tom Thorpe  
 Eric Fishman



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**MARK YOUR CALENDAR:** *Fall meeting is scheduled for October 9, 1993 at Liberty University, Lynchburg. More details in next issue of Catesbeiana.*