



Virginia Herpetological Society

Newsletter

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<http://fwie.fw.vt.edu/VHS/>

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VHS Business

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President's Message

I would like to formally thank the VHS members for voting me in as president at the last Fall VHS business meeting. I am excited about serving the members for the next two years and working with the new vice president (Susan Watson), the re-elected secretary/treasurer (Paul Sattler), the newly appointed newsletter editor (Kory Steele), the Catesbeiana editor (Steve Roble) and all the chairs of all standing committees. I would like to thank Mike Clifford (outgoing president) and Shelly Miller (former newsletter editor) for all of their hard work. I learned a great deal from Mike and many of the things I will work to accomplish were motivated in part by listening and learning from him.

There are many things that I want to see accomplished during my term. Already the officers and committee members are planning three herping trips in 2006 (please see the announcement of dates and locations in this newsletter). We will have our annual VHS herp survey with a business meeting, we will participate in the Virginia BioBlitz, and we are instituting a new survey called Herp Blitz. There will not be a business meeting with Herp Blitz, this will be just a herping survey.

This spring we will begin 2 new herping opportunities (herpetofaunal counts and spotted salamander egg mass counts) which all members can do in their local area. Read in this newsletter about how you can participate in these activities. The VHS in February will have a table set up at Reptile Weekend at the Virginia Living Museum. Volunteers are welcome to help represent the VHS. We need members to sit at the table and talk with the public about the goals and activities of the VHS. This is a tremendous opportunity for us to promote our organization and increase our membership.

Longwood University will be the site of the Fall VHS symposium. We are already working to find speakers and line up volunteers to participate in our herp workshop.

Two new committees have been formed to help accomplish the mission of the VHS. The first committee is the research committee. Dr. Joy Ware (jlware@vcu.edu) has accepted being the chair of this committee. This committee has many goals but will mainly serve to advise the VHS about research related issues in Virginia herpetology. The second committee that has been formed is the membership committee.

Two young members, Mark Cramer (rocketmonkey2008@gmail.com) and Tyler Cassidy (trc.013@gmail.com) will co-chair this committee. This committee will help to promote membership growth and membership participation. We still would like to see a person volunteer to chair a conservation committee. Anyone interested in helping with these committees or helping in any aspect of the VHS is encouraged to do so. We need your help and participation.

We have also started a new way for VHS members to communicate using Yahoo! Groups (<http://groups.Yahoo!.com/group/VaHS>). Here, we can keep you updated on events and you can post about your herping experiences or ask questions for experts. See the full announcement on page 12.

Lastly, I would like to see the VHS membership reach the 200 member mark in two years. The VHS is the oldest active herpetological society in the United States. The many herping opportunities we offer, issues of our journal and newsletter, and our website make membership in the VHS a bargain. Please help me promote the VHS. If everyone would invite someone to join or post a membership application at a local library or college we could see our membership swell. Copies of the membership application can be found at the VHS website. I look forward to seeing and herping with all of you soon.

2) Biographies

Jason Gibson (frogman31@gmail.com)

President

- Biology instructor Galileo magnet high school and Danville community college
- B.S. biology from Old Dominion University, M.S. environmental studies from Longwood College
- VHS member since 1997 and have participated in 10 VHS herp surveys
- VHS president (2001 - 2003), VHS vice president (1999 - 2001)

Susan Watson (Susan.Watson@dgif.virginia.gov)

Vice President

- Research Specialist at the VDGIF in the Wildlife Diversity Division's Fish and Wildlife Information Services Section, 2001-present
- B.S. in Forestry and Wildlife Resources (Option: Wildlife Science), Virginia Tech, 1993
- Currently, serving as a board member representing Prince George County on the Friends of the Lower Appomattox River
- VHS member since 1999, participated in 4 VHS herp surveys, assisted in 2 teacher workshops
- VHS substitute newsletter editor for July 2004 issue

3) Fall Meeting

Dr. Don Merkle, a long-time VHS member and first editor of *Catesbeiana* has graciously agreed to host the 2006 Fall VHS Symposium at Longwood University in Farmville. More information on the Fall Symposium will be forthcoming in *Catesbeiana*, the summer newsletter and the VHS website. If you would like to volunteer to present a paper or be a presenter at our Herping Workshop please contact Mike Hayslett (mhayslet@vt.edu) or Jason Gibson (frogman31@gmail.com). In a departure from previous years, the "Teacher Workshop" is being modified to the "Herping Workshop" this year and will be for members, educators, and the public. Recertification points for teachers will still be available.

Auction Items

If you want to make a donation to the Fall Meeting Auction we will be collecting items at any of the survey events this year. Any herp related item would be appreciated (ex. Books, posters, tapes, collecting gear, aquaria etc).

*See information on the VHS **Annual Survey** in the [Herp Survey](#) section.

4) New VHS Research Committee Wants You!

In an effort to expand our knowledge of reptile and amphibian science and ecology in Virginia, the VHS is forming a Research Committee with the following responsibilities:

- Research and advise the VHS members what research needs to be done in Virginia.
- Report to members via the newsletter and during meetings, taxonomic changes reported in the literature (also if they are being accepted or not as a whole).
- Compile a list of all recently published papers on Virginia herps to be presented to the members via the newsletter.
- Report to members new techniques, equipment (ex. Digital cameras and digital recorders), statistical methods, or software that are being used to study herps.
- Be willing to write and publish in the newsletter and *Catesbeiana*.
- Develop a list of the top ten places to survey in the future.
- Review all submitted field grants and give recommendations to the executive committee regarding which ones should be funded.

Please contact the Research Committee Chair, Joy Ware, at jlware@vcu.edu if you are interested in participating in these activities. Many opportunities to expand your knowledge and share with other members of VHS.

Events

Reptile Weekend

- **Virginia Living Museum, Newport News**
- **February 18-20, 2006**

This popular annual weekend has been expanded to three days this year. Meet Crunch, a 165-lb., 150-year old Alligator Snapping Turtle that is one of the last of the world's giant turtles (crunchinfo.com). This cold-blooded weekend at the Virginia Living Museum (thevlm.org) in Newport News, explores the bizarre and beautiful aspects of reptiles. Experience the close encounter of the reptile kind. See native and exotic reptiles; learn the pros and cons of



having reptiles as pets; and learn how reptiles use the sky and how the sky uses reptiles.



The Virginia Living Museum carries the same theme as the VHS, by specializing in, and exhibiting, animals native to Virginia. The herp collection alone boasts over 150 individuals representing nearly 100 species. The VHS will have a membership table at Reptile Weekend. Volunteers for staffing the table will receive free admission and behind the scenes tours! Contact Kory Steele (colchicine@hotmail.com).

GPS ADVENTURE WORKSHOP 2006

- **Holiday Lake 4-H Center, Appomattox County**
- **March 3-4, 2006**

This Friday evening/all day Saturday workshop will focus on using the Global Positioning System in natural resources field work (sampling, area measurement, etc.), outdoor recreation, and youth education. We'll be using low-cost "recreational" GPS receivers, along with digital topographic maps and magnetic compasses, in a variety of indoor-outdoor activities at Holiday Lake and in the surrounding State Forest. You can bring your own GPS receiver or use one of the Garmin eTrex Legend or Rino (FRS-GMRS) models that will be available. The culminating adventure will be the GPS search & rescue of "Bubba" the lost hunter! The workshop is co-sponsored by the Virginia 4-H Natural Resources & Environmental Education (NREE) Curriculum Committee and Frog Holler' GPS. For more information and registration materials, contact:

Mike Clifford
Frog Holler' GPS

Phone: 804.561.5411
Email: mjc4h@vt.edu -or- frogholler@tds.net

Herp Trivia

- 1) According to the 1999 Atlas, which species has the most abundant distribution (by county) throughout the state of Virginia?
Five-Lined Skink or Red-Spotted Newt
- 2) True or False. The [black rat snake](#) been documented in every county in Virginia.
- 3) The Eastern Hognose is known for its preference for bufophagy (toad eating), what other peculiar food items has it been documented eating?
- 4) True or False. [Eastern Narrowmouth Toads](#) have never been known to eat anything other than ants and termites.
- 5) What is the only frog species in Virginia to have a vertical pupil?
- 6) What is the smallest frog in North America that also lives in Virginia?
- 7) Which of these salamanders lays its eggs in a nest and guards them?
Tiger, Mole, Marbled or the Spotted salamander
- 8) Which VA native belongs to a family of turtles with the highest rate of evaporative water loss of any reptile?

[Answers can be found on page 17.](#)

"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught." --Baba Dioum, Senegalese ecologist

Herp Surveys

- | | |
|-----------------------|--------------------------------|
| 1) Herp Blitz | 5) Herpetofaunal Counts |
| 2) Virginia Bioblitz | 6) Snake Lesion Study |
| 3) VHS Annual Survey | 7) Virginia Amphibian Survey |
| 4) Spotted Salamander | 8) Terrapin Observation Survey |

More information on these 3 surveys will be available on the VHS [website](#) and [Yahoo! Groups](#).

1) Herp Blitz (First Annual)

May 19, 20, and 21

Come out and join us for the first annual Herp Blitz. We will herp all weekend long. The first Herp Blitz will take place in Patrick and Franklin Counties at Fairystone State Park

(<http://www.dcr.state.va.us/parks/fairyst.htm>) and Fairystone Farms WMA (http://www.dgif.state.va.us/hunting/wma/fairystone_farms.html).

2) Potomac Gorge BioBlitz 2006

June 23, 24, 25

The fourth annual Virginia BioBlitz will be held in Northern Virginia at the Potomac Gorge. The VHS is going to sponsor the herp team. Please check out the 2006 BioBlitz website for more information

(<http://fwie.fw.vt.edu/vnhs/bioblitz.htm>). Pre-registration is required.

3) VHS Annual Survey 2006

June 30, July 1-2

The annual VHS survey and business meeting will take place in Bath County on Warm Springs Mountain Preserve (TNC property). Excursions to Douthat State Park will also take place. Make camping reservations early.

<http://nature.org/wherewework/fieldguide/projectprofiles/wsm.html>



4) Spotted Salamander Egg Mass Counts:

Around the state vernal pools remain an unprotected and vulnerable habitat that harbors some of the most diverse and interesting herp species in Virginia. In an effort to document where vernal pools are located and provide baseline data on spotted salamander reproduction, the VHS is initiating a statewide spotted salamander egg mass count. We propose to make this an annual event and would like all members, wherever they live, to participate. Results of each member's survey will be published in *Catesbeiana* or the VHS newsletter to make a historical record for future herpetologists and interested people.

Who: Any one person or group of people.

Where: Anywhere you can find a breeding pond. Spotted salamanders will utilize road cuts, beaver ponds, ephemeral streams, swamps, and other bodies of water. Permission in writing should be requested before entering private property.



When: The timing of reproduction will differ in each physiographic province. The time span will range from February to April.

What: Information that should be gathered:

1. Coordinates of breeding pond and specific written directions (GPS or coordinates from the internet Topozone.com, terraserver.com; UTM NAD 83 preferred). County or City and Physiographic province should also be recorded. It is important to be very accurate and clear of the location.
2. Names of people involved in conducting the survey.
3. The largest number of egg masses counted. Date of the count when the most egg masses were counted.
4. Size and depth of breeding pool.
5. Brief description of the surrounding habitat including dominant vegetation, nearest roads and buildings.
6. If you survey the pool long enough in a given season, the dates of the laying of the first and last egg mass would provide interesting phenological data.
7. Other amphibian or reptile species found in the breeding pool. (not required)
8. Digital photos of the breeding pool and species found. (not required)
9. Any other information that you would find useful.

Why: To document baseline data on spotted salamander reproduction, to identify the locations of vernal pools, and to have fun herping in your area.

All survey write-ups should be emailed to Jason Gibson (frogman31@gmail.com) by July 1 for inclusion in the fall publication. Jason will be responsible for formatting the data for publication. Sample write-up below.

5) Herpetofaunal Counts

In an effort to give members around the state an excuse to get out herping, the VHS would like to begin the first annual herpetofaunal counts survey in Virginia. The Kansas Herpetological Society has been doing these for years and many of their members have enjoyed participating in these surveys. This count is very simple. Pick your favorite herping spot and go out in April, May, or June and find, count, and record every reptile and amphibian you can (no repeats). For some a 2 hour survey may be all you can do but for others you might want to conduct a 2 day survey. It is important that you follow all laws and get written permission before going onto private property.

Who: Any one person or group of people.

Where: Anywhere you can find an optimal habitat. Investigate both aquatic and terrestrial habitats so all groups of amphibians and reptiles are equally surveyed.

When: During the months of April, May, or June, as many times as you like.

What: Information that should be gathered:

1. Coordinates of breeding pond and specific written directions (GPS or coordinates from the internet Topozone.com, terraserver.com; UTM NAD 83 preferred). County or City and Physiographic province should also be recorded. It is important to be very accurate and clear of the location.
2. Names of people involved in conducting the survey.
3. Weather Conditions
4. Species collected (scientific name and common name) and totals for each species collected.

5. Brief description of the surrounding habitat including dominant vegetation, nearest roads and buildings.
6. Digital photos of the surveyed areas. (not required)
7. Any other information that you would find useful.

Why: To provide baseline data on all species of herps, across the state.

All survey write-ups should be emailed to Jason Gibson (frogman31@gmail.com) by July 1 for inclusion in the fall publication. Jason will be responsible for formatting the data for publication.

Sample write-up:

On May 7, 2005 Jason Gibson, John White, Paul Sattler, and Mark Gibson conducted a herpetofaunal count at White Oak Mountain Wildlife Management Area [UTM 18 S 031087, 4194781 (NAD83), 1.4 km W jct. U.S. Rt. 58 and U.S. Rt. 33, Pittsylvania County, Piedmont Physiographic Province]. Collecting methods included road cruising, overturning rocks, listening for calling anurans, and baited hoop turtle traps. Field work was conducted from 0900 (25°C) to 1300 (37°C). The herp count began with a light drizzle and ended in full sun. The following species were observed:

<i>Ambystoma maculatum</i> (spotted salamander)	12
<i>Ambystoma opacum</i> (marbled salamander)	14
<i>Terrapene Carolina</i> (eastern box turtle)	6
<i>Storeria dekayi</i> (northern brownsnake)	15

Totals: 4 species, 47 individuals

6) Invitation to Join *Snake Force One!*

During the survey of the Rappahannock River Wildlife Refuge last June, VHS members discovered that about 40% of the snakes captured displayed extensive skin and/or eye lesions. This raised intriguing questions, such as "How typical is this incidence at the refuge? Are these lesions similar or different in origin and histopathology?" A group of us formed an on-going research team, Snake Force One, to investigate this issue systematically across the next couple of years. We have obtained the appropriate permits from the Division of Game and Inland Fisheries and the Regional Fish and Wildlife Office, as well as protocol approval by the Virginia Commonwealth University Institutional Animal Care and Use Committee (IACUC), to allow us to capture snakes, biopsy their lesions if present, and perform histopathology and microbiological analyses on these specimens. Our group leader, Joy Ware, is a professor of pathology at VCU, and will conduct the tissue analyses.

Thus far we made three surveys, in late July, late September, and early October. We captured and examined 5 out of 9 snakes observed. No snakes with lesions were found (although one did have red mites.) The occurrence of lesions in these snakes may be season related, and thus we intend to concentrate on spring and early summer next year. In addition, we should be able to capture a larger number of snakes than we did in those previous surveys.

Why should we study external lesions on snakes? There is very little data on the incidence and pathology of snakes in the wild. Most snake skin lesions are the result of infection that develops as a consequence of immune suppression, which can be due to climate, biohazards, and other types of stress. Because snakes are upper level carnivores, a high frequency of lesions could be a reflection of infections and/or environmental damage to a variety of other life forms as well. Thus the potential value for recording and understanding these lesions covers several important fronts.



A ribbon snake (*Thamnophis s. sauritus*) found during the 2005 survey, showing lesions at the midbody and tail, and a badly infected eye.

Members of VHS are invited to join us in the spring, summer, and fall of 2006 as we pursue this research project at both the Rappahannock River Wildlife Refuge (near Warsaw, VA) and the James River/Presquile Island Refuges (near Hopewell, VA). Among our participants thus far are Tim & Nicholas Christensen, Kory Steele, Leeanna Pletcher, John Agee, Brian Cutler, Catherine Tucker, and Jeanie Bishop. Please contact Joy Ware at jlware@vcu.edu if you are interested in joining the project.

7)

**Virginia Amphibian Monitoring
Volunteers Needed
To Hear the Evening Choruses of Frogs & Toads**
By John (J.D.) Kleopfer (VDGIF)



Why:

Observers around the world have become concerned about population declines and mutations of several amphibian species. Because of their sensitivity to air and water quality, amphibian populations can serve as an indicator of environmental conditions in their immediate habitat. When long-term standardized monitoring data are collected from across the country, the local, regional and national patterns of amphibian stability or decline can be analyzed. If population declines are observed, we can focus our attention on the causes and work to reverse them.

Who:

The U. S. Geological Survey (USGS) has developed an international study to investigate the distribution and relative abundance of amphibians in North America called the North American Amphibian Monitoring Program (NAAMP). Virginia Department of Game and Inland Fisheries has participated in the program since 1999.

How:

New volunteers are assigned a randomly generated starting point for a particular route. The volunteer will locate 10 "froggy looking" stations along roadsides from your starting point. You will return to these stations 3 or 4 evenings during the spring and summer. Specific "windows" of listening periods have been designated to insure that all possible species are heard. Your information will be incorporated into the national database.

Additional Information: If you are interested please contact:

John (J.D.) Kleopfer
Virginia Department of Game and Inland Fisheries
NAAMP State Coordinator
5806 Mooretown Road
Williamsburg, Virginia 23188

SUMMARY RESULTS**2005**

The unusually cool spring and dry summer of 2005 made things a bit difficult in trying to find a good night to conduct a survey, but that's the nature of the beast. Hopefully, this year will be wetter. The greatest accomplishment over the past year was getting 4 years of data entered into the NAAMP database (see tables below). Although the project has steadily lost surveyors each year, we did pick-up 8 new surveyors for the 2006 season.

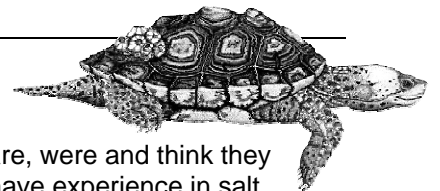
Recently, Virginia Department of Game and Inland Fisheries (VDGIF) staff held a meeting to discuss how to revitalize public interest and expand our Frog Call webpage. One modification is the redistribution of State-created routes for the purpose of making more routes accessible in more areas. In addition, the Frog Call Webpage will soon have a new look and additional information, including a map showing route availability. In the meantime, if you know someone who might be interested in volunteering, please have him or her checkout the VDGIF Frog Call webpage www.dgif.state.va.us/WILDLIFE/frog_call_survey.html.

Statewide statistics for the 2005 survey year:

Statistic	Tally	Total possible	Percent
Number of volunteers who collected data	17	50	34%
Number of routes surveyed	18	103	17%
Number of surveys conducted	44	412	11%
Number of routes in which all 4 runs conducted	1	103	1%
Number of species detected	19	28	68%

Statewide statistics for the 2004 survey year:

Statistic	Tally	Total possible	Percent
Number of volunteers who collected data	22	50	44%
Number of routes surveyed	22	103	21%
Number of surveys conducted	58	412	14%
Number of routes in which all 4 runs conducted	0	103	0%
Number of species detected	26	28	93%

8) Terrapin Observation Survey

To save Diamondback Terrapins we need to know where they now are, were and think they should be. You can help us, if you have ever seen terrapins in the wild and/or have experience in salt marshes of the eastern United States, you have useful information. If you have ever read about local sightings, and can tell us where you read it.

Also, whether or not you fill out the survey, please spread news about it far and wide to anyone else that might be able to fill it out. The survey can be found at www.people.hofstra.edu/terrapin.

Please take a few minutes of your time to fill out the on-line survey about the current and past status and range of the diamondback terrapin (*Malaclemys terrapin*).

Some Background on Terrapins

The diamondback terrapin inhabits brackish and salt marshes and bays throughout its range. In most of their range, terrapins are unlikely to be confused with any other turtle because they are the turtle that lives in the salt marshes. Historically the diamondback terrapin has been reported as far north as Cape Cod, MA and as far south as Corpus Christi, TX. They are most commonly seen basking or crossing roads to nest.

Field observations are necessary in order to determine the diamondback terrapins' past and current distribution. Along with distribution we would like to know the status of diamondback terrapins throughout their range, whether the populations are stable, increasing or decreasing. Your help is requested for providing information on diamondback terrapins that you may or may not have seen

Dr. Russell Burke
114 Hofstra University
Hempstead, NY 11549
http://www.people.hofstra.edu/faculty/russell_l_burke

Online Resources

- | | |
|----------------------|-------------------------|
| 1) VHS Yahoo! Groups | 4) Turtles of the World |
| 2) VA Lizard ID Key | 5) Seasonal Pools |
| 3) Tadpole Keys | 6) Frog Call Videos |

1)

YAHOO! GROUPS

The Virginia Herpetological Society has taken upon another endeavor to further involve its members in the education and conservation of Virginia's native reptiles and amphibians. We have created a new webspace under Yahoo! Groups that allows us to assemble as one and share our experience. If you are unfamiliar with Yahoo! Groups (<http://groups.Yahoo!.com/group/VaHS>), it is a popular service that is used by many herpetological societies that continues to remain a simple and free service. A minimal amount of information is required to sign up, and there are many other groups that you may find interesting to sign up for. There are nearly 400 groups specific to reptiles and amphibians alone! We envision this as a way for members of the Society, professional and amateur alike, to gather together and discuss anything related to Virginia herpetology or herping.

Yahoo! Groups has many features that will be useful for VHS members.

Messages

For a discussion on herps and herpetology in Virginia. This is where we expect members to discuss recent finds, good herping spots, assemble groups for herping, post questions for the experts, or provide us with feedback on the Society.

Photos

Got that one in a million shot? Found an interesting color variation? Can't figure out what kind of skink you found? Post it here for others to see.

Polls

This is where we may ask members where they would like to have the next meeting, what kind of design they want to see on the next T-shirt, or simply ask what your favorite frog is.

Members

See how many other VHS members are using the web site, and be able to contact them.

Calendar

We will add events to the calendar to keep you updated.

Activity on the site may be slow this time of year, but you are encouraged to sign up now, bookmark the page and visit often during the spring and summer months where a flurry of activity on Virginia herping will be going on.

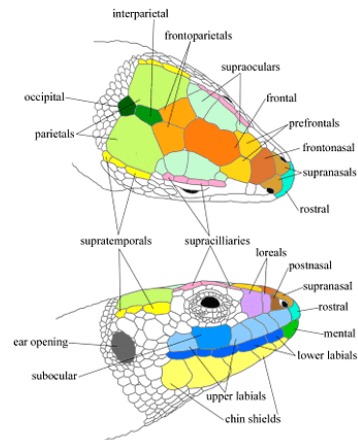
The Web address is

<http://groups.Yahoo!.com/group/VaHS>

2) Virginia Lizard Identification Key

VHS Webmaster **John White** has created an identification key based on the Reptiles of Virginia book, by Joe Mitchell. Complete with illustrations.

http://fwie.fw.vt.edu/VHS/virginia_lizard_identification.htm



3) New Online Tadpole Key Available

A new tadpole key, [Tadpoles of the Southeastern United States Coastal Plain](#), has been produced by the USGS and Southeast ARMI. Although it technically does not cover the state of Virginia, 15 out of the featured 23 species are native to Virginia. This guide can be downloaded in PDF form and printed out for folding into a booklet 60 pages in length. This booklet provides full-color photos of the tadpole and adult stages, including side-by-side comparisons of different species and different color and morphology variations.

http://cars.er.usgs.gov/armi/Guide_to_Tadpoles/guide_to_tadpoles.html

For a more in-depth and comprehensive key to the tadpoles, visit the [Tadpoles of the United States and Canada: A Tutorial and Key](#).

<http://www.pwrc.usgs.gov/tadpole>



Another great publication by USGS includes the [Monitoring Amphibians and Great Smoky Mountains National Park](#). This book is not only a great read, it is available by individual chapters in PDF form, and has excellent color illustrations of frog and salamander larvae.

<http://pubs.usgs.gov/circ/2003/circ1258>

4) Turtles of the World CD-ROM Now Available Online

A description of the CD-ROM

In cooperation with Smithsonian Institution Press, Prof. Carl H. Ernst and ETI editor Ruud G.M. Altenburg have updated and extended Ernst and Barbour's standard work "Turtles of the World" (1989). This CD-ROM edition features multiple color photographs of essentially every recognized species of turtle and tortoise in the world. About 40 new species have been added and the taxonomy has been completely revised. Different modules within the program allow for hyper-linked browsing through higher taxa, species, and lower taxa, with sections on recognition, distribution, geographic variation, habitat, natural history, and conservation status. The geographic information system MapIt™ plots distributions of selected species on a set of quadrant maps, allowing for different scaled maps, the ability to compare distributions of pairs of species, map species density per quadrant, and check listings of species included per quadrant. An

interactive key allows you to quickly identify turtles. All text is hyperlinked to an illustrated glossary covering 1000+ scientific and etymological terms.

<http://nlbif.eti.uva.nl/bis/turtles.php>

5) An Introduction to Mid Atlantic Seasonal Pools

Seasonal pools, also known as vernal ponds, provide important ecological services to the mid-Atlantic region. This publication serves as an introduction to seasonal pool ecology and management; it also provides tools for exploring seasonal pools, including a full-color field guide to wildlife. Seasonal pools are defined as having four distinctive features: surface water isolation, periodic drying, small size and shallow depth, and support of a characteristic biological community.

<http://epa.gov/maia/>

6) Frog Calls: An Evolving Webumentary

Sponsored by the [Chicago Herpetological Society](#)

A professionally produced and filmed webumentary with videos of 9 Virginia native frogs broken down into individual, easy to download files. Interviews with prominent experts in amphibian decline (Tim Halliday) and frog calls (H. Carl Gerhardt) are also featured.

<http://www.midwestfrogs.com/>



Herp News

- | | |
|---|--|
| 1) Barking Treefrogs get new ponds | 4) Movements of hatchling wood turtles |
| 2) Cottonmouth research in Newport News | 5) Chemistry of wood frogs |
| 3) Proposed state amphibian | |

1) Displaced tree frogs to get reprieve from Isle of Wight development

A homebuilder plans to set aside 23½ acres of wetlands to give the threatened amphibians a new place to croak.

By Veronica Gorley, Daily Press

December 8, 2005

ISLE OF WIGHT -- For years, the bulldozers of development have been silencing barking tree frogs. The noisy amphibians are in danger again, this time by development at Lawne's Creek in Isle of Wight County.

The frogs - listed by the state as a threatened species - haven't been seen or heard from in the county since 2001. Still, the developer, Virginia Timberline, has agreed to re-create their habitat to try to save the species from extinction.

Barking tree frogs - called that because the male's croak sounds a lot like a dog's bark - are a threatened species in Virginia, meaning they likely will be at the brink of extinction in the near future. It's one step away from endangered, which means a species is at the brink of extinction now. About 70 species are listed as threatened or endangered in the state.

The only other Virginia counties that barking tree frogs are known to inhabit are York, Mathews, Surry, Sussex and Chesterfield, all places where they haven't been spotted in at least 15 years, according to the state Department of Conservation and Recreation's National Heritage Program. Yet, that doesn't mean they aren't around, state herpetologist John Kleopfer said. "It's probably that nobody looked," he said.

A habitat that would suit the loud-mouthed amphibian exists near Lawne's Creek, where Ashland-based Virginia Timberline plans to build a 155-home subdivision on 1,600 acres in the northern part of the county.

The land is better known for its history - the state Department of Historic Resources identified 10 historic sites, including the former Confederate post called Fort Huger and possibly the first English settlement in the county, the plantation of Capt. Christopher Lawne.

The state Department of Game and Inland Fisheries discovered five potential barking tree frog habitats - three of which had ideal conditions for the hefty croakers. But the developer chose not to further study the area for evidence of the frogs. A study that extensive could take "a couple of seasons to verify the species was there," said Andrew Zadnik, an environmental services biologist with the state Department of Game and Inland Fisheries.

In March, the state Department of Environmental Quality and the Department of Game and Inland Fisheries noticed that upland construction work "partially impaired" the potential tree frog habitat, said Sheri Kattan, project manager for the Virginia Water Protection Permit Program.

Virginia Timberline agreed to set aside 23.5 acres of wetlands and an upland buffer for the amphibious residents. There, they would manufacture four vernal pools, which are temporary water bodies that often form during the spring, for tree frog breeding.

The agreement is designed to protect the creatures from future disturbances. The frogs are also hot on the illegal pet market, Kleopfer said. The state recently confiscated barking tree frogs from a pet store elsewhere in the state. "The illegal wildlife trade is second only to the illegal drug trade worldwide," Kleopfer said.

Ed: An article on VHS's own Vincent Passaro. Many of you may remember Vincent from the 2005 Annual Survey where he tubed a copperhead.

2) Watch out for snakes

A CNU graduate student's research on venomous cottonmouth snakes will prompt warnings to hikers at Newport News Park.

BY FRED CARROLL

247-4756

January 6, 2006

NEWPORT NEWS -- Come springtime, visitors to Newport News Park - one of the largest municipal parks in the nation - will see new signs warning them about the eastern cottonmouth, a pit viper with a poisonous bite. Park rangers have known for decades that cottonmouths, sometimes generically called water moccasins, slithered in the park's swamplands.

They just didn't realize they had so many. And they didn't realize the snakes - one nicknamed Godzilla weighs about 5 pounds and stretches nearly 5 feet - often nestle in decayed pine tree stumps not far from a hiking trail. "It's not like you're going to walk out and step on them," said Michael Poplawski, parks director, "but we're going to make people more vigilant."

Cottonmouths are the bugaboo of things scaly and slippery in the southeastern United States, the villain in creepy campfire stories and the supposed culprit in many an erroneous sighting. The Virginia Department of Game and Inland Fisheries has not found cottonmouths north or west of Colonial Heights, which is just south of Richmond near Petersburg. In Virginia, most cottonmouths are found south of the James River.

Poplawski has no record of any visitor reporting a bite from any venomous snake in the 40 years since Newport News Park opened. Well, no one except Vinnie Passaro, a 28-year-old environmental scientist studying the snakes for a master's degree from Christopher Newport University.

His bite on the arm was what experts call illegitimate. It really shouldn't count. "They're not aggressive, but they can be very defensive," Passaro said. "I was messing with it on purpose. I was doing something people shouldn't be doing."

Passaro has been doing what people should not since spring 2004. So far, he has captured and

released 74 water moccasins and estimates that between 90 and 180 live in the park. He has injected microchips into 53 snakes and has surgically installed radio transmitters in two others. Passaro collects data about their size, body temperature, reproduction cycle and habitat. He wants to know why these cottonmouths survive so far north. Biologists are aware of only one other population in Virginia that lives farther north. They've found no other populations on the Peninsula.

Among the interesting tidbits Passaro has learned:

Unlike in most other cottonmouth populations, females such as Godzilla tend to be larger than males in Newport News Park.

The snakes prefer to hibernate in pine stumps so old and decayed that they appear as little more than humps in the ground covered with leaves and brush. Virginia's other northern population prefers to use riverbank burrows.

The cottonmouths tend to cluster in the swamp and woods near a more remote trail called the Wynn's Mill Loop.

"I've only caught one snake on a trail, and that's out of 96 captures now," Passaro said. "You have to go out and get them." In the spring and summer, that means wading into the swamp. In the winter, it means monitoring the stumps used for hibernation by the two snakes with radio transmitters.

The new signs will go up in areas where the snakes are known to live. They will provide educational information about cottonmouths and urge hikers to be cautious and to stay on trails. Four decades ago, park rangers dealt with cottonmouths quite differently - and in a way that would break the law if tried today by a visitor - when building a bridge across the swamp.

"They carried a shotgun," Poplawski said.

Some advice and information from Stephanie Day, an expert on snakes with the Virginia Living Museum in Newport News:

- If you see a snake you can't identify, stay away from it and leave it alone.
- If you're bitten, stay calm and go to a hospital. Don't try to suck out the venom. Don't use a tourniquet. Don't cut the wound.
- The bite of the eastern cottonmouth has the potential to be fatal if not treated, but no such deaths have ever been recorded in Virginia. Many strikes are dry, meaning the cottonmouth does not release venom when it bites.
- Cottonmouths generally try to hide or escape. They open their white-lined mouths - hence their name - as a warning to intruders. Heed this warning because they will strike if bothered.

3) Critter's Cause Crawls Forward

Ward offers bill to make mountain salamander state's official amphibian

BY REX SPRINGSTON

TIMES-DISPATCH STAFF WRITER

Jan 10, 2006

A proposal in the General Assembly would make a moist-skinned mountain dweller the official state amphibian. The bill, submitted by Del. Jeion A. Ward, D-Hampton, would bestow the honor on the Shenandoah Mountain salamander. "It wasn't my idea," Ward said with a chuckle yesterday.

Fifth-graders in a 4-H Club at Cooper Elementary Magnet School in Hampton asked Ward last spring to push the bill. Students plan to travel to Richmond to show support for the 4-inch-long animal, said Ward. "These children are serious."

Salamanders resemble lizards, some mountain people call them "spring lizards" -- but they have smooth, damp skin, not a scaly hide. Salamanders are amphibians, like frogs, while lizards are reptiles, like snakes.

Malik Nolder, 11, who was vice president of the Cooper Elementary 4-H club last year, said the group chose the Shenandoah Mountain salamander largely because of its scientific name, *Plethodon virginia*. "We picked the name we thought people would like," he said.

The animal has blue-black skin with small white spots, a long tail, tiny legs and bulbous eyes. It looks like a walking worm. "They're all beautiful, come on now," said Steve Roble, a state zoologist.

Joseph Mitchell, a University of Richmond expert on amphibians, called the choice "a big mistake." The Shenandoah Mountain salamander looks so much like a relative, the valley and ridge salamander, that genetic tests are necessary to tell them apart, Mitchell said. The proposed state amphibian lives under leaves and logs on Shenandoah Mountain in Rockbridge County and in a nearby part of West Virginia, Mitchell said. He suggested two candidates that live only in this state -- the Peaks of Otter salamander near Bedford and the Shenandoah salamander in Shenandoah National Park. "Those two are truly in Virginia, but not this other thing," Mitchell said.

The 4-H children considered other species but "stayed with the one that had Virginia in its name," said Shirley Sypolt, a fifth-grade teacher who is the club's adviser. After all, Sypolt noted, a proposal in 1999 to make the box turtle the state reptile failed in part because of its scientific name -- *Terrapene carolina*.

If Ward's bill goes through, the Shenandoah Mountain salamander will take its place among official emblems such as the state bird (cardinal), state flower and tree (dogwood) and state beverage (milk). Some people oppose the creation of new state emblems as a waste of the legislature's time and money. But Ward said the effort will be educational for the children.

Last year, then-Del. Jackie T. Stump, D-Buchanan, got the Virginia big-eared bat named official bat of the commonwealth. For his effort, Stump was called "bat man," Ward said. "They are going to call me lizard lady."

4) Movements and Behavior of Hatchling Wood Turtles (*Glyptemys insculpta*)

Sheila E. Tuttle, and David M. Carroll

Northeastern Naturalist: Vol. 12, No. 3, pp. 331-348.

ABSTRACT: Twelve hatchling Wood Turtles (*Glyptemys insculpta*) were tracked successfully with fluorescent powders during their migration from nest to water in New Hampshire in August and September 1993. Most frequently, hatchlings selected habitat in herbaceous vegetative cover and hayfield banks bordering sandpit nesting areas, as well as in dense woody and herbaceous ecotones along dirt roads. Mean distance traveled per movement was 23.4 ± 9.5 (0.5-109.0) m ($n = 84$ movements). Total distance traveled to a brook averaged 131.7 ± 119.7 (27-445) m (geometric mean distance = 96.75 ± 0.35) ($n = 12$). Mean time taken to reach a brook was 6.2 ± 6.3 (range 1-24) days ($n = 12$). Hatchlings' trails often overlapped one another precisely, suggesting that the turtles may have followed conspecific cues. We suggest that cues such as olfaction, vision, positive geotaxis, and auditory cues may be employed as orientation mechanisms in hatchling *G. insculpta*.

Source: *Herpdigest.org*

5) Urea Protects Sleepy Frogs : Component Of Urine Helps Creatures Survive Winter. (Wood Frog, *Rana sylvatica*)

By Charlotte Schubert, Science Daily, 11/4/05

Not being able to have a proper pee for months at a time might not sound like fun. But the build up of urea in frogs seems to help them survive freezing, desiccation and starvation during winter, says one study on a hardy northern amphibian.

The wood frog *Rana sylvatica* lives as far north as the Arctic Circle, and survives the freezing of more than half of its body water during hibernation. As winter approaches, urea levels in these frogs climb drastically, report Jon Costanzo and Richard Lee, researchers at Miami University in Oxford, Ohio. During hibernation, the frogs barely urinate and urea is reabsorbed into their system, peaking at levels 50 times those seen in summer. The body normally eliminates urea, through peeing, because it can be dangerous if it builds up: it can rip up cellular components at high concentrations.

"Urea has kind of a bad rap," says Costanzo. But the levels in the frog do not seem to be high enough to mangle the animal. Instead, this waste product becomes a balm. To show that urea protects frogs from the cold, the researchers subjected frog blood and tissues to a freeze-thaw cycle in a solution of urea. At

concentrations found in hibernating frogs, urea protected the cells and tissues from damage. Urea worked about as well as glucose, the only other molecule known to protect wood frogs from cold, says Costanzo. The findings appear in *The Journal of Experimental Biology*¹.

Like other substances that protect from cold, urea is a small molecule that can cross the cell membrane. But exactly how it operates is unknown. Previous work on desert frogs had shown that urea helps the animals retain water during dry conditions. And the winter spike in urea probably protects wood frogs from drying out in the snow and ice, says Costanzo.

Costanzo and Lee's work also hints that urea might help to slow metabolism in a safe way. Using a dye that measures energy consumption, the researchers found that urea seems to slow down the liver and muscle tissue, but leaves the all-important kidney and heart alone. Slowing one's metabolism conserves energy, and wood frogs have a special interest in doing that during these sleepy months. The first thing that these frogs do in the spring thaw is mate; even before they eat and have a chance to replenish energy stocks.

Jack Layne, who studies cold hardiness at Slippery Rock University in Pennsylvania, says that finding that wood frogs can increase their urea concentrations is not in itself surprising, because desert frogs are known to do it. But it is intriguing, Layne adds, to think that frogs might use this strategy to cope with cold. "You could argue that the build-up of urea is a forerunner adaptation that set the stage for freeze tolerance to evolve."

References

Costanzo J. P., Lee R. E. *The Journal of Experimental Biology*, 208. 4079 - 4089 (2005).

Source: *Herpdigest.org*

VHS Publications

As freshman Newsletter Editor, I am looking to expand the content of our newsletter to hopefully provide something interesting for all of the VHS membership. The following are ideas I am asking the VHS members to contribute to the Newsletter.

- Narrative of a herping trip, in VA or abroad.
- Amusing stories
- Candidates for a Member Profile
- Opinion letters related to herps / environment / conservation
- "First Love", how you got started in herpetology or your career highlights
- Results of informal herp surveys
- Any news articles, online resources, or herp events you find out about around the state
- Suggestions for herp trivia, both easy and difficult

NOTICE: Submissions for *Catesbeiana* Vol. 26 No. 1 are due March 1, 2006!

Please support the VHS by submitting any papers, field notes, or artwork for *Catesbeiana* to: Dr. Steven M. Roble, Editor, *Catesbeiana*, Virginia Department of Conservation & Recreation, Division of Natural Heritage, 217 Governor St., Richmond, VA 23219, Steve.Roble@dcr.virginia.gov.

[Answers from page 4.](#)

Herp Trivia Answers

- 1) [Red-Spotted Newt](#)
- 2) False. Despite being the most common snake in Virginia, a few scattered counties are missing records, especially southwestern Virginia.
- 3) Arthropods have frequently been found in the stomachs of [Eastern hognoses](#), especially beetles and centipedes. They also frequently eat small mammals.
- 4) False. While ants and termites are their primary food, they have also been known to eat other small invertebrates.
- 5) [Eastern Spadefoot Toad *Scaphiopus holbrooki*](#)
- 6) [Little Grass Frog *Pseudacris ocularis*](#)
- 7) [Marbled salamander](#)...they will lay her eggs in a dry vernal pool and stay with them until the pool fills with water.
- 8) [Apalone spinifera spinifera \(Eastern Spiny Softshell\)](#)



Send your suggestions for herp trivia to the newsletter editor, Kory Steele, colchicine@hotmail.com.

Virginia Literature

Literature. These selections represent articles published or In Press, June 2005 to January 10, 2006. Included articles are focused primarily on (1) studies performed within Virginia environments, (2) studies on reptiles or amphibians found within Virginia, or (3) additional herpetological topics that are of general interest.

Clark, K. Hendricks, A, and Burge, D. 2005. Molecular identification and analysis of *Borrelia burgdorferi sensu lato* in lizards in the southeastern United States. *Appl Environ Microbiol.* 71(5):2616-25.

Flint, WD and Harris, RN. 2005. The efficacy of visual encounter surveys for population monitoring of *Plethodon punctatus* (Caudata: Plethodontidae). *J. Herpetology* 39: 578-584.

Garriock, C. Shay and Rick Reynolds. 2005. Results of a Herpetofaunal Survey of the Radford Army Ammunition Plant in Southwestern Virginia. *Banisteria.* 25:3-22.

Given Mac F. 2005. Vocalizations and Reproductive Behavior of Male Pickerel Frogs,

Rana palustris. *Journal of Herpetology.* 39 (2):223—233.

Grant, E.H.C., R.E. Jung, and K.C. Rice. 2005. Stream Salamander Species Richness and Abundance in Relation to Environmental Factors in Shenandoah National Park, Virginia: A Stratified Random Survey. *American Midland Naturalist* 153:348-356.

Lannoo, M. (editor), with over 215 contributors. 2005. *Amphibian Declines, The Conservation Status of United States Amphibians*, University of California Press, Berkeley, CA. 1,024 pp.

Hopkins, WA, Winne, CT and DuRant, SE: 2005. Differential swimming performance of two natricine snakes exposed to a cholinesterase-inhibiting pesticide. *Environ Pollut.* 133(3):531-40.

Jancovich JK, Davidson EW, Parameswaran N, Mao J, Chinchar VG, Collins JP, Jacobs BL, Storfer A. 2005. Evidence for emergence of an amphibian iridoviral disease because of human-enhanced spread. *Mol. Ecol.* 14(1):213-24.

Marsh, DM, Milam, GS, Gorham, NP and Beckman, NG. 2005. Forest Roads as Partial

- Barriers to Terrestrial Salamander Movement . Conservation Biology 19 (6): 2004-2008.
- Mitchell, Joseph C. 2005. Mortality of Larval Spotted Salamanders (*Ambystoma maculatum*) in a Central Virginia Road Rut Puddle. *Banisteria*. 25:55-56.
- Mitchell, Joseph C. and C. Todd Georgel. 2005. Anophthalmia in an Upland Chorus Frog (*Pseudacris feriarum feriarum*) from Southeastern Virginia. *Banisteria*. 25:53-54.
- Mitchell, Joseph C. and C. Todd Georgel. 2005. Bilateral Ectromelia in a Northern Cricket Frog (*Acris crepitans crepitans*) Metamorph from Virginia. *Banisteria*. 25:54-55.
- Mitchell, Joseph C. and John White. 2005. Leucistic Wood Frog (*Rana sylvatica*) Tadpole from Northern Virginia. *Banisteria*. 25:52-53.
- Mitchell, Joseph C., and Liam McGranaghan. 2005. Albinism in American Bullfrog (*Rana catesbeiana*) Tadpoles from Virginia. *Banisteria*. 25:51.
- Muth, E, Jung, RE, Bailey, LL, Adams, MJ, Corn, S, Dodd, Jr, CK, Fellers, GM, Sadinski, WJ, Schwalbe, CR, Walls, SC, Fisher, RN, Gallant, AL, Battaglin, WA, and Green, DE. 2005.
- Amphibian Research and Monitoring Initiative (ARMI): A successful start to a national program in the United States. *Applied Herpetology* 2: 355-436.
- Olmo, E. 2005. Rate of chromosome changes and speciation in reptiles. *Genetica*. Nov;125(2-3):185-203.
- Petranka JW, Smith CK. 2005. A functional analysis of streamside habitat use by southern Appalachian salamanders: implications for riparian forest management. *Forest Ecology and Management* 210: 443-445.
- Pryor, GF, Bjorndal, KA. 2005. Effects of the nematode *Gyrinicola batrachiensis* on development, gut morphology, and fermentation in bullfrog tadpoles (*Rana catesbeiana*): a novel mutualism. *J Exp Zool A Comp Exp Biol* 303: 704-712.
- Roth, ED. Buffer Zone Applications in Snake Ecology: a Case Study Using Cottonmouths (*Agkistrodon piscivorus*). *Copeia*. 2005(2): 399-402.
- Seebacher, F and Franklin, CE. 2005. Physiological mechanisms of thermoregulation in reptiles: a review. *J Comp Physiol [B]*. 175(8):533-41.
- Sullivan, AM, Picard, AI, and Madison, DM. 2005. To avoid or not to avoid? Factors influencing the discrimination of predator diet cues by a terrestrial salamander *Animal Behaviour* 69: 1425-1433.
- Tuberville, TD, Willson, JD, Dorcas, E, and Gibbons, JW. 2005. Herpetofaunal Species Richness of Southeastern National Parks . *Southeastern Naturalist*. 4(3): 537-569.
- Wilson, GL and Ernst, CH. 2005. Reproductive Ecology of *Terrapene carolina carolina* (Eastern Box Turtle) in Central Virginia - *Southeastern Naturalist*. 4(4): 689 – 702.
- Whit Gibbons & Michael Dorcas. 2005. *Snakes of the Southeast*. University of Georgia Press, Athens, GA. 253 pp.

The snake is an animal. It has a backbone and heart. It has red blood and drinks water and eats food. It breathes air and feels fear, just like every other animal in the world. And it's in a body that is the hardest thing for the average person to understand. —David G. Barker

Virginia Native

For this issue's **Virginia Native**, the information below on the barking treefrog (*Hyla gratiosa*) can be found on the website of the Virginia Department of Game and Inland Fisheries (VDGIF) as what is known as a 'short species booklet'. This is a shortened, less technical version of the 'booklets' that you can look up for each wildlife species in VDGIF's separate online system, the Virginia Fish and Wildlife Information Service (VAFWIS). To view the 'short species booklets', of which VDGIF currently has for reptile and amphibian species, go to VDGIF's home web page at www.dgif.virginia.gov, then click on 'Wildlife', and finally, click on 'Virginia Wildlife'. When you scroll down this page you should see links to Amphibians: Species Information and Reptiles: Species Information.

Virginia Department of Game & Inland Fisheries



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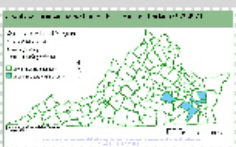
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Virginia Wildlife Information

Photo (click to enlarge):



Occurrence Map:



barking treefrog (*Hyla gratiosa*)

State Threatened

Characteristics: This is the largest native treefrog with a length from 49-68 mm. The coloration is gray, purple, or green, the skin is granular, and the back is evenly covered with dark, elliptical or round spots encircled with black. Spots may be absent. There is a light stripe that extends along the sides, bordered below by a purplish brown one. There are spots on the side, chin, and the rim of the jaw which are reddish brown. This species breeds from March to August. The eggs are laid singly on the bottom of a pond and are from 1.0-1.8 mm in diameter. This species breeds in cypress ponds and bays, and in pine barren ponds. It climbs high in trees, and often seeks shelter underground in hot, dry weather.

Distribution: This species is found in the Coastal Plain and adjacent Piedmont from Mathews County south. It is confirmed to occur in five counties: Mathews, Surry, Isle of Wright, Chesterfield, and Prince George. Unvouchered reports are from Greensville, Southampton, and Sussex counties. Choruses gather at permanent water, streams, cypress ponds, and bayheads to breed. All Virginia breeding sites were found in graminoid dominated temporary ponds. Most of the breeding sites are in open-canopied pools. The forest surrounding the breeding ponds are the supposed nonbreeding habitat. Common locally in sandy areas near shallow ponds in pine savannas and in low wet woods and swamps.

Foods: This species eats many arboreal insects.

For more information, please see the [Virginia Fish & Wildlife Information Service](#).

NOTICE to Members: If you have an email address, please send it to Paul Sattler, at pwsattler@liberty.edu. Then, for future issues of the newsletter, you will be notified via email upon its release on the website along with a provided link to it. Thank you for helping to save some trees, or should we say herp habitat!

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