
Virginia Herpetological Society

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NEWSLETTER

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WORLDWIDE AMPHIBIAN DECLINE Is There a Virginia Connection?

*Submitted by Joseph C. Mitchell, Department of Biology,
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Amphibians have received considerable media and scientific attention over the past half dozen years because of species extinctions and population declines worldwide. Observations such as (1) the last individual of the Australian gastric brooding frog (*Rheobatrachus silus*) was seen in 1979 (Tyler and Davies, 1985); (2) the golden toad (*Bufo periglens*) of Costa Rica was last seen in 1989 (Crump et al., 1992); and (3) two species formerly widespread in the Sierra Nevada of California (mountain yellow-legged frog [*Rana muscosa*] and Yosemite toad [*Bufo canorus*]) have declined precipitously (Bradford et al., 1992). Examples such as these have been cropping up since herpetologists compared notes at the First World

Congress of Herpetology held in Canterbury, England in 1989.

Pin-pointing the causes of these problems has been elusive. Early on, scientists were looking for one global smoking gun, but the results of studies that have been published since the alarm surfaced indicate that the causes are varied and often local. The most common cause of local population decline continues to be habitat loss caused by a variety of factors, such as timbering, urbanization, and road building. Two physical factors have been implemented as major contributors. Lowering of the pH of ponds and soils by acid precipitation causes amphibian mortality in aquatic systems (Freda and Dunson, 1985; Wyman, 1988) and changes in

microdistribution patterns of salamanders in terrestrial environments (Wyman and Hawksley-Lescault, 1987). Increased ultraviolet radiation, apparently due to the thinning of the ozone layer, has been shown to kill developing eggs of the Cascades frog (*Rana cascadae*) and western toad (*Bufo boreas*) (Blaustein et al., 1994a). The widespread fungus (*Saprolegnia ferax*) introduced into ponds and lakes in the Pacific northwest by introduced fish has caused egg mortality in the western toad (Blaustein et al., 1994b). An unidentified virus carried by introduced fish, such as tilapia, guppies, and carp, is suspected as causing frog decline in Australia (Anderson, 1995). Introduced fish and bullfrogs (*Rana catesbeiana*) have been implicated as causes of amphibian decline in the American west (Hayes and Jennings, 1986; Bradford, 1989). Use of aerially-sprayed pesticides in Canadian forests has been shown to cause developmental and behavioral problems in three species of ranid frogs (Berrill et al., 1994).

precipitation occurs in the mid-Atlantic region contributes to the reduction of acid neutralizing capacity of several streams in Shenandoah National Park and on Massanutten Mountain in the George Washington National Forest. However, we currently have no data to indicate that increased ultraviolet radiation, the fungus, viruses, or introduced species are causing amphibian mortality, nor do we have direct evidence of declines caused by acid precipitation. Aerial application of pesticides and herbicides in mid-Atlantic national forests may not be a serious problem because these areas are used for hardwood products. However, private Piedmont and Coastal Plain timber operations that clear hardwood areas for loblolly pine plantations often use aerial chemicals to control hardwoods and forest pests. Except for a few studies that are just beginning to accumulate data on acid precipitation in amphibian breeding locations, I am unaware of any scientific study addressing these problems in this area.

In response to the myriad of examples of amphibian decline, the scientific community has called for the establishment of baseline inventories and long-term monitoring in sites across the United States and around the world (Freda et al., 1991; Pechmann and Wilbur, 1994; Blaustein, 1994). An important problem with assessing amphibian population trends is the lack of published long-term studies on amphibian populations and communities. The longest published studies were an intensive 12 year field census conducted in a Carolina Bay wetland in South Carolina (Pechmann et al., 1991) and a 20 year census of salamander populations in the mountains of North Carolina (Hairston and Wiley, 1993). These studies demonstrated that amphibian populations can fluctuate dramatically over time but that none have become

extirpated. Indeed, amphibian populations in eastern North America have apparently escaped the dramatic declines observed in western North America and other parts of the world.

Responding to the cry for appropriate data to assess the apparent worldwide problem with amphibians, The Species Survival Commission (SSC) of the World Conservation Union (IUCN) recently established the Declining Amphibian Populations Task Force (DAPTF). Its goals are to (1) organize a global network of Working Groups to monitor and assess the status of amphibian populations, (2) promote studies of potential causes of decline, (3) recommend uniform protocols for monitoring procedures, and (4) generate appropriate conservation action plans for policy makers, land managers, and scientists and organizations concerned with the maintenance of biological diversity (DAPTF, 1995). Goal three has been addressed by the publication of a book outlining standardized protocols and methodologies for studying amphibian populations (Heyer et al., 1994). This book has quickly become the standard reference for this worldwide effort.

Virginia lies within the Appalachian Working Group of the DAPTF, along with North Carolina, Tennessee, Kentucky, and West Virginia. David Withers (Natural Heritage zoologist in Nashville, TN) and I were appointed the Co-Chairs of this group in 1994. We have begun establishing a network of people to coordinate and assist those persons interested in conducting monitoring studies of amphibian populations. Our initial task was to select state coordinators who will be the primary contact person for their respective states. In Virginia, the state coordinator duties will be shared by Dr. Steven Roble and Christopher Hobson, both Heritage Program zoologists. Anyone

interested in monitoring amphibians at any level in Virginia should contact them (Division of Natural Heritage, VA Department of Conservation and Recreation, 1500 E. Main St., Suite 312, Richmond, VA 23219; 804-786-7951).

Our next goal is to formalize a standardized form for the accumulation of monitoring data and to have available a written protocol for use in nighttime frog call surveys, larval surveys, and terrestrial salamander surveys. We will be working with both scientists and amateur herpetologists, indeed anyone with an interest in conducting a long-term study, in order to develop a baseline of standardized data on these animals. Our goal is to be able to assess population trends over time so that we can be aware of any substantial changes as they occur. As part of the North American Program of the DAPTF, we will also be assessing periodically the status of amphibians in our five-state region. Thus, we will be developing a central clearinghouse of information on the various monitoring studies that are and will be ongoing. Anyone interested in helping with this effort is encouraged to contact me or the state coordinators. With your help, we should be able to determine whether there is a Virginia connection to the decline in amphibians.

If you would like additional information about the amphibian decline problem, the following publications should be available in libraries and bookstores: Wake (1991), Blakeslee (1986), Hale (1990), Livermore (1992), Phillips (1990a, 1990b articles and 1994 book), Spenser (1990), and Yoffe (1992). Articles in journals Conservation Biology, Biological Conservation, Copeia, Herpetologica, Journal of Herpetology, Herpetological Review and others may be found in nearby universities and college libraries.

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House to Take up ESA Soon

Excerpts from an article presented by the Endangered Species Coalition, 666 Pennsylvania Ave, S.E., Washington, D.C. 20003

The Endangered Species Act enters a critical period soon as the House Resources Committee is scheduled to consider legislation to drastically weaken the Act as soon as June 28th. A vote on the bill by the full House is expected to follow soon after, likely following the return of lawmakers to Washington after their July 4th recess.

Friends of the ESA are organizing in congressional districts around the country to firm up supporters and persuade undecided Representatives not to vote to cripple the ESA. Although protecting endangered species continues to enjoy strong support from the public, observers predict the House of Representatives will pass legislation rolling back or repealing the law unless the public speaks up.

Congressman Don Young, Congressman Richard Pombo, and their friends in the mining, timber, and utility companies have made crippling the ESA their goal for the 104th Congress. As of press time, Young has not introduced the bill he will report out of the House Resources Committee that he chairs, but recent hearings by the committee's ESA Task Force present a preview of what to expect.

The Task force had no interest in hearing both sides, no interest in how endangered species protect us, and no recognition of how important the ESA has been in protecting habitats, bringing back the bald eagle, or saving plants which can produce drugs saving thousands of lives.

The key point in the ESA debate in the House will

come when a substitute is offered on the House floor to the Young/Pombo bill, and then again on final passage.

"The message every endangered species advocate should send to their Representative in the House is oppose weakening the ESA, oppose the Young/Pombo bill, and support this law which protects the web of life that both people and wildlife depend on," says Roger Featherstone, grassroots coordinator for the Coalition.

A key to success in the Congress this year is recruiting friends of endangered species from many walks of

life to speak in defense of the ESA. Many doctors and patients know that the ESA protects rare plants, which can produce lifesaving drugs. The fishing industry knows that the ESA protects habitat that sustainable fisheries depend on. Business people understand that protecting the ecosystems on which we depend is good business. Religious leaders know that we have moral responsibilities to be good stewards of God's Creation. These voices and others must be heard by every Representative in Congress if we are to save the ESA.

"The ESA is an accomplishment which all Americans should be proud of," says Dr. Tom Eisner, Cornell University chemical ecologist and Chairman of the Endangered Species Coalition. "We can't let special interests take away from us the best legal tool we have to conserve the diversity of life, from elephants to scrub mints, the basis not just of our well being but that of future generations, too."

Sample Letter for ESA Supporters

Date
Name/Address

The Honorable (Congressperson's name)
US Senate/US House of Representatives
Washington, D.C. 20510/20515

Dear Senator/Representative:

I am writing to urge you to oppose any attempts to weaken protection for endangered species. The landmark Endangered Species Act (ESA) has protected us for 21 years, but is now under siege. We depend on you to defend this vital law.

Please fight any attempts to gut the Act's effectiveness. Ensure that regulation reform does not make the US Fish and Wildlife Services job of protecting our natural heritage impossible. Make sure that federal officials have enough money to enforce wildlife protection laws.

The ESA has helped prevent the extinctions of dozens of animals and plants, including the bald eagle and the gray whale. By safeguarding species like these and their habitat, the ESA also protects us. By removing toxic threats to sensitive species, we protect our own health and well being.

Natural sources are responsible for 40% of our pharmaceuticals, contributing billions of dollars to our economy each year. Most plant species have never been tested for their medicinal properties by western medicine. When we protect these species from extinction, we protect medical cures for ourselves.

Unless we act now, we stand to lose lifesaving medicines, productive agriculture, abundant fisheries, and biological diversity necessary for ourselves and our children.

My family is counting on your leadership on this critical matter.

Sincerely,
(your signature)

.....HERP HAPPENINGS.....

Ft. A.P. Hill Survey - Thanks to everyone who participated in the VHS herp collecting trip at Ft. A.P. Hill on April 28-30. Herp collecting was fairly good considering we had less than ideal weather conditions. Preliminary data indicates that 27 species of amphibians and reptiles were collected during the trip. We collected several carpenter frogs (*Rana vigatipes*), a state special concern species, which are locally abundant at this site. The collection of a ground skink (*Scincella lateralis*) indicates a new county record for this species. A detailed list of all the species collected will be presented in the next issue of Catesbeiana.

Snapping Turtle Study - The Virginia Department of Game and Inland Fisheries (VDGIF) currently is conducting a study to accumulate harvest numbers, morphometric, diet, and reproductive data on snapping turtles (*Chelydra serpentina*) caught by commercial turtle collectors. During the summers of 1995 and 1996, a technician hired by the department will measure, weigh, sex, and age snapping turtles brought to the Hazelwood Brothers Seafood company in Lanexa, Virginia. Current regulations allow for a commercial snapping turtle season from June 1 through September 30. There is no limit on the number of turtles that can be collected; however, all turtles must have a carapace length of 9 inches or greater. A \$50 permit issued by the department is required to commercially collect or sell snapping turtles. Information from this study may be used to support or refute size and unrestricted catch limits on the current commercial snapping turtle season.

Spring Meeting - The VHS spring meeting was held at Ft. A.P. Hill in Caroline Co., Virginia on April 29. Topics included organizing a teacher workshop for the fall meeting, the failed snake poster, producing information packets on the herps of Virginia, and plans to elect new officers. Nathan Hollenbach gave an overview of his endeavor to get the timber rattlesnake (*Crotalus horridus*) as the Virginia state reptile, and Dale Brittle gave a slide presentation on past VHS herp surveys in Caroline county. Liberty University was again selected to be the site of the VHS fall meeting. For information about the fall meeting, see the next issue of Catesbeiana.

Format Change - As you are well aware by now, there are some format changes to the VHS newsletter. Why you ask? The reason is simple. Our newsletter layout person Toni Harrison is leaving the DGIF to find her fame and fortune with her own graphic design business. On behalf of the VHS, we wish her well on her new venture and thank her for her excellent work on the newsletter over the years.

Rappahannock Turtle Study - The VDGIF will be conducting a study to determine the level and extent of shell erosion on turtles of the Rappahannock and Rapidan Rivers. A small number of turtles showing signs of shell pitting and erosion have been collected in these rivers. An earlier study found that shell erosion on mussels was abnormally high. Unfortunately, no clear cause could be found. The department study will hopefully clarify the cause and determine if these problems are crossing taxonomic groups.

Virginia Beach Exhibit - VHS president Ron Southwick and newsletter editor Mike Pinder gave presentations on Virginia's reptiles at the Virginia Beach Science Museum's "Revel in Reptiles" week. Past VHS president and current member Joe Mitchell gave a presentation on his years of experience surveying Virginia's reptiles. Attendance at the presentations was excellent and a lot of interest was generated about the reptiles of Virginia.



The Virginia Herpetological Society currently is accepting presentations for our October 28th fall meeting. Topics should be relevant to Virginia's herps. Titles should be submitted by September 29, 1995. For additional information contact Paul Sattler at:

Liberty University
Biology Department
Box 2000
Lynchburg, VA 24506-8001
(804) 582-2209

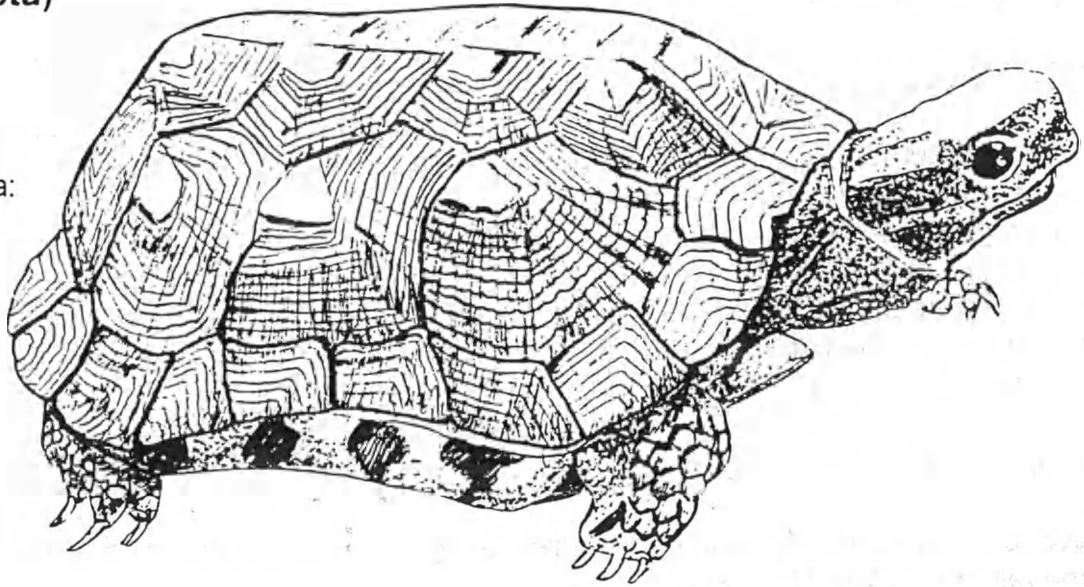
VIRGINIA NATIVE

WOOD TURTLE

(*Clemmys insculpta*)

Legal status in U.S.:
Unprotected

Legal status in Virginia:
Threatened



Description

With each rounded segment of its shell looking like the wood-grained cross-section of a branch, complete with growth lines and yellow rays radiating from protruding black-flecked centers, the name "wood" suits this medium-sized turtle. Its brownish, sculptured shell is a fusion of chiseled pyramids, hence its species name "insculpta".

When the top shell (carapace) is dry, the grooves take on a spider web pattern. A noticeable midrib or keel runs front to back. The bottom shell (plastron) is yellow with each segment blotched black along its side. On males, the plastron is concave for mating. A black, blunt head and brown limbs are highlighted by red or yellow on the throat and soft connecting flesh. Carapace length is usually less than 9 inches (225mm).

Habitat

The wood turtle is also well-named because of its choice of habitat, but its genus, *Clemmys*, is known as the "pond turtle" group. Putting these together means the wood turtle is semi-aquatic, living along forested rivers and streams. When summer arrives they forage in deciduous forests and open meadows adjacent to these rivers. Turtle experts now believe that wood turtles may be less terrestrial than originally believed; some "woodys" may inhabit rivers year round.

Wood turtles over winter in deep pools, under sand or mud, in burrows of muskrat and beaver, or simply lie on the bottom of a stream. Wood turtles can sometimes be seen walking on the stream bottom during the middle of winter.

Food

Active by day, April to November, wood turtles are omnivorous and consume insects, snails, carrion, dandelions and other succulent vegetation. They have been known to obtain earthworms by stomping on the ground.

Distribution

The wood turtle ranges from Nova Scotia to eastern Minnesota south to northeastern Iowa, east to Virginia and north to New York. Virginia is the southern most range extension for this species. In Virginia, the wood turtle is found from Fairfax county west to the Shenandoah Valley.

Breeding Biology

Wood turtles primarily mate underwater during the fall. From late May to early July, the females dig a nest on communal gravel or sandy sites along banks and lays between 8 to 17 smooth, white eggs. Having tiny bodies and oversized tails, the small, gray hatchlings emerge from the nest around August.

Current Status and Threats

The most significant threats to wood turtle populations are habitat destruction and pollution of their stream environment. The removal of forested buffers along streams destroys the wood turtle's summer habitat and allows sediment and pollution to enter the stream. The continuing construction of roads into wood turtle habitat has resulted in an unknown number to be killed each year by vehicles. The increase number of raccoons, skunks, opossums, feral cats, and dogs associated with human settlement has become as serious threat to the survival of wood turtle eggs and hatchlings.

Before wood turtles obtained threatened status on Virginia's endangered species list in 1992, many were taken from the wild and sold to biological supply houses and pet stores. Today, wood turtle possession is illegal without a permit, so any found should be left in their natural environment.

To learn more about wood turtles and other Virginia reptiles we suggest the following:

Conant, R., and J.T. Collins. 1991. The Peterson Field Guide Series - A Field Guide to Reptiles and Amphibians of Eastern and Central North America. 3rd edition. Houghton Mifflin Company, Boston. 450 pages.

Ernst, C.H., and R.W. Barbour. 1989. Turtles of the World. Smithsonian Institution Press, Washington, D.C. 313 pages.

Linzey, D.W., and M.J. Clifford. 1987. Snakes of Virginia. 2nd printing. University Press of Virginia, Charlottesville. 159 pages.

Mitchell, J.C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 325 pages.

Editors Note:

Fact sheet modified with permission from the Wisconsin DNR, Bureau of Endangered Resources. This is a draft copy of what will eventually be an information fact sheet for the wood turtle in Virginia. Any suggestions on how to improve the fact sheet and corrections should be sent to the editor.

Literature Review

The purpose of this column is to inform members of recent herpetological research pertinent to Virginia or of special interest to the Society's membership. Papers or notes from professional journals, new books, "gray literature" reports and popular magazine articles are acceptable for inclusion in the column. Members are encouraged to send recently published items of interest to the editor. Submissions will be accepted subject to the approval of the editor.

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NEWS UPDATE.....**The Fish and Wildlife Diversity
Funding Initiative**

Over 100 conservation and recreation groups and businesses are championing a national effort to prevent declines of fish and wildlife, to ensure high quality outdoor recreation, and to meet the rising demand for conservation education.

The Fish and Wildlife Diversity Initiative offers a single, proven mechanism to raise \$350 million annually that will return to state fish and wildlife agencies for the three-fold purpose of conservation, recreation, and education.

It is a natural investment. By paying very small user fees on a wide range of outdoor equipment, from binoculars to camping gear, everyone who has a stake in a wildlife-rich outdoors will benefit.

With your help, we can achieve a vision of wildlife watching experiences across America, from backyards to refuges; of proactive conservation that reverses declines of wildlife before they reach the endangered state; and of an informed citizenry who cares about the future of wildlife and habitats.

JOIN TEAM WILDLIFE! You can help by using your buying power as a consumer. Write letters to outdoor equipment manufacturers and retailers, such as REI, LL Bean, Coleman, and Pentax. Tell them you want to invest in conservation through a dedicated user fee.

For more information on the initiative and a list of companies, please contact the International Association of Fish and Wildlife Agencies, 444 N. Capitol Street, NW, Suite 544, Washington DC 20001. or call (202) 624-7890.

**WELCOME
NEW MEMBERS***Michele Thorne**Timothy & Michele Brophy**Konrad Mebert**Daniel C. Harvey**Dirk Stevenson**Cindy Schultz**John M. Boswell, Jr.**John M. & Lynne J. Boswell**Scott R. Klinger**Seth Craig JV**Todd Georgel**Dan Dombrowski***Official State Reptiles and Amphibians**

Alabama	Redbellied turtle
Arizona	Arizona treefrog
	Arizona ridgenose rattlesnake
California	California desert tortoise
Florida	American alligator
Georgia	Gopher tortoise
Kansas	Ornate box turtle
Louisiana	American alligator
Nevada	Desert tortoise
New Hampshire	Spotted newt
North Carolina	Eastern box turtle
Oklahoma	Collared lizard
South Carolina	Loggerhead seaturtle

BOOKS

Reptiles of Virginia By Joseph C. Mitchell

Beginning with Captain John Smith's observations of the region's reptilian fauna, this book offers the first complete catalog of the reptiles of Virginia, from the sea turtles of the Atlantic Coast to the snakes, turtles, and lizards of the Piedmont and Blue Ridge Mountains.

Including full-color illustrations of numerous habitats and thirty-two of the species, distribution maps for each species, and easy-to-use keys for quick identification (with a separate key for young snakes), *The Reptiles of Virginia* is a practical resource and an essential overview of this faunal group and its habitats.

The book is based on data derived from examination of some 10,000 Virginia specimens, yielding a wealth of new information on the ecology, life histories, and biogeography of reptiles in the state. Each of the 62 individual species accounts provides local common names, the historical context for scientific names, present habitat affinities, and information about geographic variation in color, pattern, and morphology, as well as reproduction, predators, and prey. The book also explores the human impact on Virginia's natural habitats and species' distribution patterns, presenting a historical perspective on the conservation of these animals.

Amphibians and Reptiles of Assateague and Chincoteague Islands

By Joseph C. Mitchell and John M. Anderson

Assateague and Chincoteague islands are among the best-known barrier islands off the Atlantic coast of North America. Millions of people visit them every year for recreation.

Most visitors are well acquainted with the famous Assateague ponies, but few know that these islands are home to unique assemblages of plants and animals.

This book provides information on some of the islands most secretive inhabitant, the amphibians and reptiles. Most of the frogs, salamanders, turtles, lizards, and snakes have occupied these islands since they were formed thousands of years ago. The reptiles and amphibians have learned to live in a harsh environment characterized by hot and dry sand, scarcity of freshwater, and periodic overwash by saltwater. Each of the seven species of amphibians and eighteen species of reptiles can be readily identified using the keys, color photographs, and descriptions in this book. Many interesting aspects of their biology are summarized in highly readable form.

Within these pages we discover why the islands are inhabited by far fewer species than are known to occupy the Delmarva mainland. We also learn about measures proposed to insure their longterm conservation, and how to observe these animals in their natural habitats. This book is the only source available that provides a window into the biology and ecology of two fascinating groups of animals on these barrier islands.

About the Authors

Joseph C. Mitchell is an adjunct professor of environmental and conservation biology at the University of Richmond and is a research associate of the Virginia Museum of Natural History. John M. Anderson, a curatorial assistant at the Virginia Museum of Natural History, participated in a herpetological survey of Assateague Island funded by the National Park Service.

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