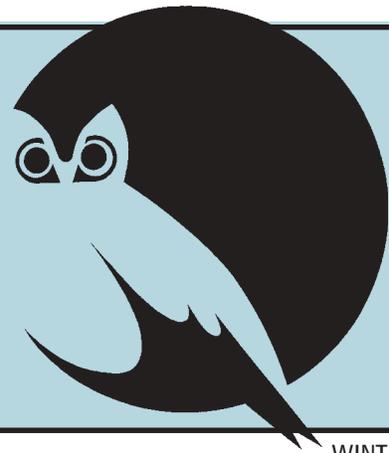


# WV Wildlife Diversity NEWS



Bob Wise, Governor

VOLUME 19, NUMBER 4

WINTER 2003

## New Threats To Mountain State Trees Emerge

Through the years, West Virginia has lost thousands of acres of American chestnut to chestnut blight. A century ago, the American chestnut was the number one provider of food and cover for woodland animals as well as a great timber resource. Dutch elm disease has been another killer which changed the landscape of American neighborhoods and the gypsy moth continues to be a pest in WV, causing defoliation of trees.

Unfortunately, the list of threats is getting longer. In the last decade additional diseases and pests have appeared that threaten the Mountain State's forests.

### **Dogwood Anthracnose**

The disease that is killing flowering dogwoods is probably one of the most well-known diseases that have plagued the Appalachians. It is caused by the fungus *Discula destructiva* and appears as tan blotches on leaves. Later it creates cankers that kill the tree. Mortality is greatest in young trees.

According to Jill Hoff of the WV Department of Agriculture, in a ten-year period (1989-1999), mortality of flowering dogwoods increased dramatically from 8.8% to 44.1%. The disease is more prevalent in cool, wet, high elevation (above 3,000 feet), shaded

sites. Therefore, it may not be wise to transplant a tree from the mountains; instead buy a disease-resistant variety from a reputable nursery.

### **Hemlock Woolly Adelgid**

Hemlock woolly adelgid, *Adelges tsugae*, which arrived here from Asia, is a small aphid-like insect that has decimated populations of hemlocks in Virginia's Shenandoah National Park. The adelgid secretes a waxy, woolly-looking residue as it feeds on sap from the tree. According to the U.S. Forest Service, eighteen counties in WV have hemlocks that are infested with the adelgid. The infestation is found in Greenland Gap as well as Cathedral and Blackwater Falls state parks.

When a hemlock stand dies, the local microclimate may change significantly, with higher temperatures and lower humidity affecting other species that may live there. Starting in 1999, a tiny beetle from Japan, *Pseudoscygnus tsugae*, has been released in WV as a biological control of the adelgid. Insecticides have been used with some success, but treating individual trees is labor intensive. A closely-related adelgid, *Adelges piceae*, from Europe has infested balsam firs in Canaan Valley and elsewhere in the state and threatens to eliminate this already scarce tree from our forests.

### **Beech Bark Disease**

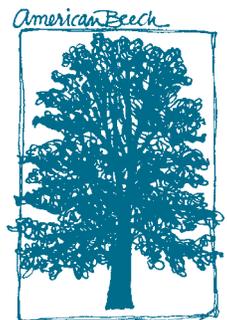
Beech bark disease, introduced from Europe, attacks the American beech, *Fagus grandifolia*. The first indication is the appearance on the bark of *Cryptococcus fagisuga*, a scale insect that secretes a white-woolly wax covering. These insects probably cause little direct damage, but they are soon followed by invading fungi of the genus *Nectria*, which apparently enters the bark through breaks caused by the feeding insects. This fungal infection kills areas of bark and sapwood, eventually killing the tree.

Beech bark disease was introduced to Nova Scotia in 1890 and has been slowly spreading. In 1981, a 70,000-acre area of infestation was found in the northeastern part of WV and this has now increased to over 3.5 million acres.

### **Butternut Canker**

Butternut canker is caused by a fungus that kills patches of the tree's bark. Dead areas, called "cankers," may encircle and girdle the stems and branches, eventually inhibiting the flow of food and water within the tree. As

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## Understanding Nuisance Animal Behavior

Many of us have had a close encounter in our own back yards. I am not speaking of flying saucers or aliens, but of our little friends in the woods. Something as cute and cuddly as a



raccoon or squirrel can quickly become a nuisance when encouraged by our activities. Most of these encounters end as quickly as they begin, with the animal running for cover in the nearest thicket when discovered. Others, however, may take longer to move away or even persist night after night for weeks.

Although annoying, all of these encounters can usually be grouped into three different categories which can then be easily dealt with. These categories are the presence of a food supply, presence of cover or shelter and truly accidental encounters.

The first category is when an animal visits due to a food source. If there is a food supply available in your yard, why would an animal go through the trouble of finding it else-where. Everything from table scraps in the trash, to drip-

pings on the grill, to dog and cat food left in a bowl on the porch, will attract wild animals to our yards. This type of problem is usually the easiest to deal with. All that is needed to be done is to put the food away in an inaccessible area. Keeping trash enclosed in a outbuilding or garage until the night or morning of pickup will greatly reduce the chances of animals becoming a problem. Providing only enough food to pets that can be eaten in one sitting will eliminate the excess food that attracts animals. Once the attractant is taken away from the nuisance animal, regardless of species, it will be forced to go elsewhere to find food.

The second category includes animals that are using your yard or home as shelter. Piles of firewood, old lumber, lawn debris, or a damaged house exterior or foundation can provide animals a place in which they feel safe and protected. Removing these structures or at least rearranging them a couple of times a year will greatly reduce the chances that an animal will use them as shelter. Gaps in your home's exterior or foundation should be repaired as soon as possible, even before an animal arrives. Keep in mind that if an animal can't gain access, it can't become a problem.

The third main reason animals will come into our yards is due to pure accident. Animals, especially in the spring and fall, tend to travel more than

in other times of the year. These travels include the search for mates in the spring, the dispersal of young in the fall, and the search for food sources and den sites through out the year. If a food supply or shelter site is found near our homes, these animals will tend to stay around and may potentially become a nuisance. These types of encounters will usually pass with time, especially if no food or denning sites are found in your yard.

One thing to keep in mind when dealing with nuisance animals is that it is best to deal with the problem indirectly. Direct contact with a wild animal can be potentially dangerous. Wild animals, if pursued or handled, may become scared and defend themselves. In every nuisance situation it is best to remove the attractants (food, shelter, etc) that are present and let the animal leave on its own. In addition, federal and state laws exist which can lead to monetary penalties and possible jail time for harming protected species.

In the situations listed above, the suggested solutions should take care of any nuisance animals you may encounter. However, in the case of a truly persistent animal that appears to have no reason for being there, contact your local WVDNR District office or the USDA's Wildlife Services for further assistance.

--Jeff Hajenga

## Allegheny Front Migration Observatory Fall 2001 Report

*Editor's Note: Due to previous space limitations, we are just now publishing the 2001 results. Results of the 2002 season have not yet been compiled.*

The forty-fourth year of bird banding at the Allegheny Front Migration Observatory was better than 2000, but was still the sixth poorest season since the station was fully covered. The number of bandings was 67% of the long-term average. The weather was benign, with mild temperatures and little rain. Banding was done on 57 days.

A total of 3,826 birds were banded. The average is 5,659. The station now has banded 188,599 birds of 119 species. No new species were captured in 2001.

Eleven birds banded in earlier years

were recaptured. Three were banded in 2000, four in 1999, two in 1998, one in 1996, and the prize of the year: a slate-colored junco originally banded on August 13, 1991. At ten years of age, this may be the longevity record for the species.

The most numerous species was the black-throated blue warbler with 849 captures, which is 20% above the ten-year average. The black-throated green warbler was second with 430 (12% above the average). The blackpoll warbler, the usual leader, dropped to third, with 374 bandings (37% below the average). The warblers as a group showed a decline of 18% from the 10-year average. This improvement from the 42% drop in 2000 was due in part to last year's low total that lowered the 10-year average. The Blackburnian

warbler has been in low numbers for several years, but the low numbers of the common yellowthroat and Wilson's warbler were noteworthy.



Goldfinch

The visual migrant counts listed 844 ruby-throated hummingbirds (highest count), 13,312 blue jays (third highest count), 5,428 American goldfinches (highest count) and 727 Monarch butterflies. Five hundred and forty eight raptors of ten species were counted including two bald eagles, three golden eagles and three peregrines.

During the season, 1,728 people signed the visitor's book. Visitors came from 21 states, Costa Rica, Germany, Honduras, Japan and Switzerland.

--George A. Hall

## Rare Species at a Glance

### Barn Owl

**Scientific name:** *Tyto alba*

**State status:** Rare throughout the state, with only five confirmed breeding records since the 1980s.

**Global status:** Common throughout most of its range, but barn owl populations may be declining.

**General description:** The barn owl is West Virginia's most distinctive owl. The owl's back is predominantly golden-brown with gray. The breast and belly are white to buff and may be speckled with black. Females are usually darker and more heavily speckled than males. The barn owl lacks ear tufts and has dark eyes. Other than its pale color, its most distinguishing characteristic is its heart-shaped face.

**Habitat:** The barn owl is a cavity-nesting bird, utilizing both natural and man-made cavities. It is often found nesting in silos. Foraging takes place in open areas, such as hayfields and pastures.

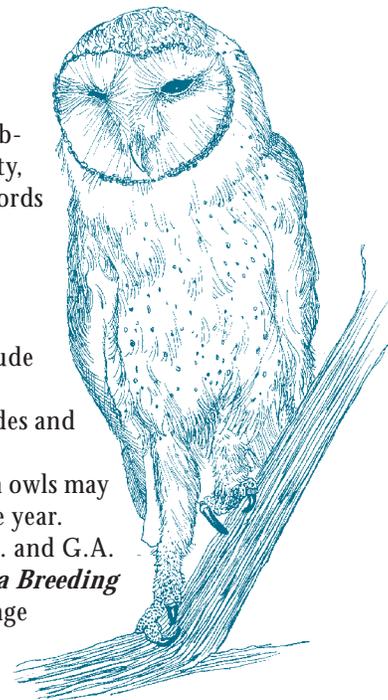
**Total range:** The barn owl is found throughout most of North America, and occurs in nearly every state.

**State range:** In West Virginia the barn owl probably occurs in every county, though recent nesting records have been documented in only Hardy, Mineral and Morgan counties.

**Threats to the species:** Threats to barn owls include loss of habitat, secondary poisoning from rodenticides and vehicular collisions.

**Best time to look:** Barn owls may be spotted any time of the year.

**Source:** Buckelew, A.R. and G.A. Hall. 1994. *West Virginia Breeding Bird Atlas*; Natural Heritage Program files.



### American Barberry

**Scientific name:** *Berberis canadensis*

**State status:** Rare in West Virginia, with records from just five counties.

**Global status:** Uncommon throughout its range.

**General description:**

American barberry is a shrub with slender branches which may vary from brown to purple-red in color. The branches are smooth, but covered with forked spines. The leaves are toothed to nearly entire and are 1-1½ inches long. The small flowers are yellow, and the berries are scarlet.

**Habitat:** This is a species of woods and open fields and is usually found on limestone.

**Total range:** American barberry is known from the southeastern United States, occurring from

Pennsylvania, Ohio, Indiana and Illinois south to Alabama and Georgia. It is believed to be extirpated from Alabama and Pennsylvania.

**State range:** West Virginia is near the northern limit of this species range, and it is found in five southern counties: Greenbrier, Fayette, Mercer, Monroe and Summers.

**Threats to the species:** American barberry is an alternate host of the black stem rust which is detrimental to a variety of agricultural grasses (wheat, oats, rye, barley); therefore, it was a target of the U.S. Department of Agriculture and many populations were eradicated. Loss of habitat due to land development and the invasion of exotic plant species threaten this shrub.

**Best time to look:** Look for the flowers in May, and the brightly colored fruits through the summer and fall.

**Notes:** American barberry is a beneficial shrub providing food and shelter for wildlife, and erosion control in problem areas.

**Sources:** Strausbaugh, P.D. and E.L. Core. 1970. *Flora of West Virginia*; Natural Heritage Program files; NatureServe Explorer: An online encyclopedia of life [web application]. 2001. Version 1.6. Arlington, VA, USA: [www.natureserveexplorer.org](http://www.natureserveexplorer.org).

--Barb Sargent



Flora of West Virginia

## Mark Your Calendar!

Wildlife Diversity Day at Charleston's Capitol Rotunda on Thursday, February 20

Call 304-637-0245 for more information



## BOOK REVIEW

**A Valley Called Canaan: 1885-2002**  
by Edwin Daryl Michael

This is a must read for nature lovers of all ages. This delightful historic novel relates the natural history of the Canaan Valley from 1885 to the present through the most unlikely eyes of the snapping turtle. The wetland wildlife of the area chronicles the changes in the Valley, from logging, fire and recovery, and farming, to develop-



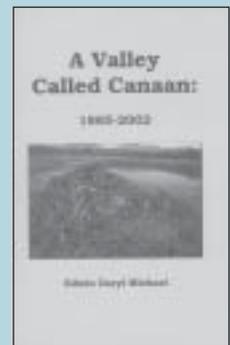
ment and the establishment of the nation's 500th Wildlife Refuge. You and your family will learn all about the natural history of our state's native wetland wildlife, the Canaan Valley and man's association with the Valley. This book will make a perfect gift for all who love the Mountain State.

This book is the result of Michael's 30 years of field research including studies associated with the Davis Power Project. Dr. Edwin Michael, a native of Marion County, taught wildlife management at West Virginia University from 1970 through 1997. Following retirement, in 1998 he was awarded the title

of Professor Emeritus. His forty-year career has produced over a hundred publications, both scientific and popular.

You may obtain this book from:  
W.C.S. Inc.  
374 Horseshoe Dr.  
Morgantown, WV 26508

The book sells for \$14.95 plus \$3.00 shipping and handling. West Virginia residents add 6% sales tax (90¢).



## Tree Diseases, Continued from page 1

the numbers of cankers grow, dieback in the crown increases, sometimes resulting in death. Researchers are hopeful that resistant butternut trees may be found and propagated.

**Oak Wilt**

Oak wilt is caused by a fungus (*Ceratocystis fagacearum*) that is spread by insects or through root contact. It more frequently kills red oak than white oak. In fact, some white oaks recover and may serve as reservoirs of the disease. It is presently found in all WV counties with the exception of Brooke, Ohio, Tucker and Webster, but according to the U.S. Forest Service, the loss of oaks in this state averages less than one tree per square mile per year. In red oaks, wilting appears in the leaves and quickly spreads through the crown a few weeks into the infection. Cutting root grafts between healthy and diseased trees can slow the spread of the disease.

**New Threats**

Unfortunately there are more diseases and pests that have not yet been found in WV but are considered possible future threats to our forests.

Although sudden oak death has not been identified in Appalachia, it is an important potential threat to WV forests; approximately 70 % of the land area in WV is predominantly-oak forest. Sudden oak death is caused by the fungus *Phytophthora ramorum*. The

disease has killed tens of thousands of trees in California and Oregon since 1995, and if it gets to WV it may directly threaten huckleberries, rhododendrons and azaleas as well as red oaks.

White oaks appear to be resistant; the disease may create lesions but further colonization doesn't occur. The USDA's Animal and Plant Health Inspection Service is going to conduct surveys of nurseries and forests next summer to look for infected trees in the eastern forest, WV is considered to be at high risk for the disease based on climate and abundance of vulnerable species. Since Douglas fir is also a host, the importation of contaminated Christmas trees is of concern.



Asian longhorn beetle

The Asian longhorn beetle is another possible threat to WV, as it is now in NJ. Also, the emerald ash borer is now wreaking havoc in Michigan.

**What can you do?**

The trees of our forest are stressed from climate change, periodic drought

and acid rain. These conditions make the trees more susceptible to invasion by exotic diseases and pests. Try to maintain the health of your trees. Minimize tree damage or wounding, as this can invite disease. You can help slow the spread of tree diseases and pests.

Since our economy is global, we need to be thinking in terms of what impact our actions can have on our forests. For example, don't send that beautiful hemlock wreath that you made for Aunt Ethel to New England (New Hampshire, Vermont and other states have a quarantine against such products, as they don't yet have the adelgid). Don't go on that tour of the devastated oaks of California in the same hiking boots you will later wear in WV. You may carry sudden oak death spores.

Buy your trees from reputable nurseries and choose disease-resistant varieties. Use well-seasoned (low-moisture) firewood if there is a possibility it was harvested from an area of oak wilt infestation. Look at the wood chip packing material that your barbells from China came in as possibly harboring a new pathogen. Remember the words of a popular bumper sticker: Everything you do as an individual may have an impact globally.

--Rose Sullivan

*Editors note: For more information on these diseases, call the WV Department of Agriculture at (304) 558-2212. Also check out the USDA Forest Service list of publications at [www.na.fs.fed.us](http://www.na.fs.fed.us).*

# Natural Heritage Program Update



## Bioblitz's, Exclosures and Poison Ivy Adventures

In fall 2001, in partnerships with Canaan Valley National Wildlife Refuge and Canaan Valley State Park, we established permanent plots inside and outside deer exclosures in balsam fir communities to document vegetation changes. The erection of the exclosure at the park was a Wildlife Resources/State Parks cooperative effort. The refuge project was accomplished through a partnership of numerous agencies, organizations and individuals.

- ◆ During the winter, we entered the entire backlog of plot data collected during the tenure of the last 3 (and current) program ecologists into integrated and taxonomically consistent electronic tabular and spatial (GIS) databases. There are now 792 plots entered.

- ◆ The 2002 field season was scheduled around several weeklong visits to sample communities at Panther State Forest (McDowell County) and Chief Cornstalk Wildlife Management Area (Mason County) as part of the Natural Heritage Program's "bioblitzes" for these state lands. On a particularly hot day in July, we established a large permanent plot at the TNC Ice Mountain Preserve (Hampshire County) to establish a baseline for detecting future changes likely to be caused by an insect pest (the hemlock woolly adelgid), global warming, or depletion of the buried "fossil" ice at this unique (and refreshing) site.

- ◆ Other field work included plot sampling of old growth spruce-hemlock forests on Shaver's Mountain (Randolph County), old growth white oak-hemlock at the WV Botanic Garden on Tibbs Run (Monongalia County), red pine forests and woodlands on Pike Knob (Pendleton County), a shale barren and limestone woodlands on Cave Mountain (Pendleton County), spruce and riparian communities along the Upper Shaver's Fork (Pocahontas County), and interesting and extensive (but challenging and painful) floodplain forests dominated by silver maple, pin oak and poison ivy at the recently established J. T. Janes City Park in Parkersburg (Wood County).

--Jim Vanderhorst

## Stream Quality Assessments Continue

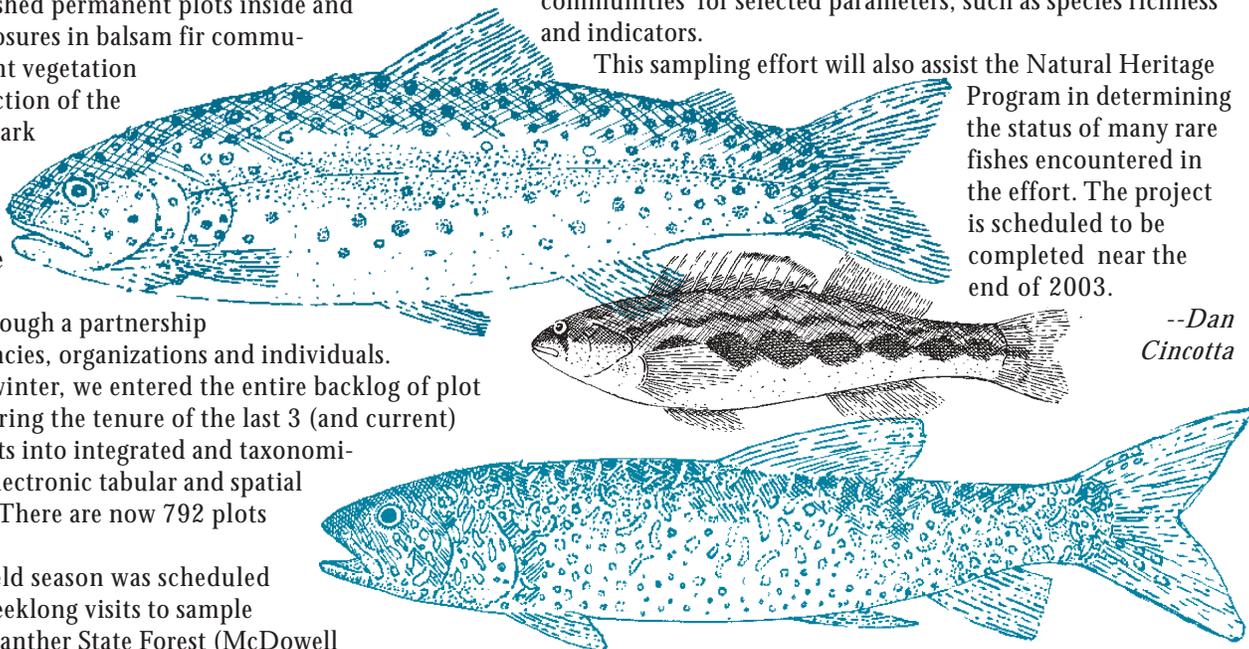
The second field season on the REMAP (Regional Environmental Monitoring Assessment Project) was completed in September. This project was funded (\$400,000) by the USEPA to develop a fish Index of Biological Integrity for

West Virginia's wadeable streams. The index will assist the state in assessing the quality of streams and fish populations.

The basic concept is to collect fishes statewide using probability-based sampling scheme and then evaluate their communities for selected parameters, such as species richness and indicators.

This sampling effort will also assist the Natural Heritage Program in determining the status of many rare fishes encountered in the effort. The project is scheduled to be completed near the end of 2003.

--Dan Cincotta



## Small Mammals Survey Completed

This year a survey for small mammals, herptiles and invertebrates was completed on Sugar Grove Navy Base in Pendleton County after almost two seasons of work. Fourteen species of herptiles and 12 species of small mammals (including seven bat species) were documented on the base.

Of particular interest was the discovery of a spider species to new science! Fifteen additional spider species unknown from West Virginia were also documented.

--Jennifer Wykle

## Rare and Threatened Plant Species Discovered

The *Checklist and Atlas of the Vascular Flora* has been completed and will be printed this winter. Look for an article on this project in an upcoming issue of the newsletter.

- ◆ A second occurrence of the globally rare small whorled pogonia orchid was discovered by Rodney Bartgis (TNC, WV Chapter), in flower in Greenbrier County.

- ◆ Additional populations of the federally threatened plant Virginia spiraea were discovered along the Bluestone River in southern West Virginia.

- ◆ More populations of the globally rare orchid Bentley's coralroot (*Corallorhiza bentleyi*) were discovered in Monroe and Pocahontas counties.

--P.J. Harmon

# AMPHIBIAN SURVIVAL SKILLS

The days are short and the nights are long. Mother nature has covered the landscape in snow and the thermometer has dipped into single digits. Most of us gripe about the cold weather as we turn up the thermostat and dream about warmer days.

Animals have different ways of surviving the harsh conditions of winter. Most of our birds migrate south to warmer latitudes while the remaining birds spend the majority of their waking time feeding, providing their bodies with the calories needed to fuel their internal furnaces.

If an animal stays and to face surviving winter's harsh conditions, it must have special adaptations. These unique features may include adding an extra fat to serve as a layer of insulation, growing a thick winter coat, or by going into a deep sleep, lowering their body's metabolism and temperature. Several insects will produce glycerol, a form of sugar alcohol, which acts as an anti-freeze keeping them from freezing.

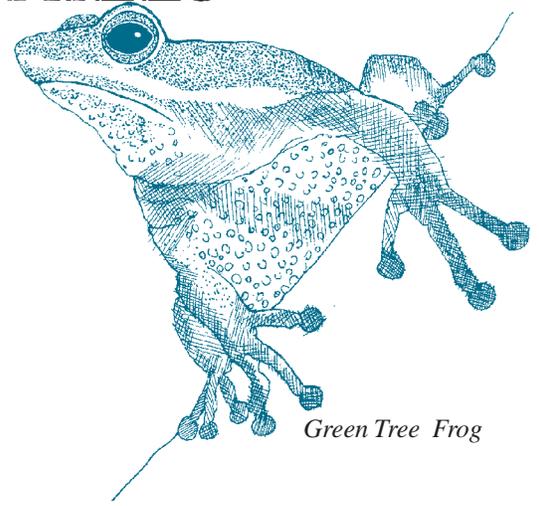
What happens to our amphibians such as frogs, toads and salamanders? These cold-blooded critters have other adaptations enabling them to survive winter's harsh cold weather. Some amphibians, such as the hellbender and

the tadpoles of the bullfrog and green frog, survive winter by remaining active in lakes and ponds that do not freeze solid. The marbled salamander breeds in the fall and their larvae can be found swimming in unfrozen bodies of water. Other salamanders retreat into the ground by using holes and burrows made by other animals. Toads, with their strong hind feet, dig into soil on dry land below the frost line.

Leopard and green frogs swim to the bottom of lakes and large ponds where water will not freeze and may bury themselves in the soft mud. There they remain on the bottom breathing through their skin.

The most unusual winter survival adaptation belongs to the wood frog. Since they can't dig like toads, they will bury themselves under leaves in the forest floor to avoid desiccation from any drying winter winds. To protect themselves from the freezing weather they increase their blood sugar 100 times or higher, converting their blood into a thick sugary solution that doesn't freeze.

Interestingly, humans can't tolerate sugar levels anywhere near this concentration, as a doubling of our normal blood glucose will cause severe health problems, if not death. So this winter, when you think it is really cold outside,



Green Tree Frog

think how nature has developed these various mechanisms to enable wildlife to once again awaken to spring.

--Jim Fregonara



Rose Sullivan joins the staff as the coordinator of the WV DNR's Outdoor Wildlife Learning Sites (OWLS), WildYards and Cooperative Projects programs. She recently worked with mushrooms and plants in the DNR Herbarium. Rose was previously a wetlands scientist with the National Wetlands Inventory and the EPA stationed in Texas, Florida and Virginia.



## Who Wants To Be A Biologist?

Congratulations to our contest winner, **Ed Patterson** of Ravenswood

whose name was picked at random from all the correct entries received. Ed correctly answered last issue's question. On September 10, 1938 the largest white oak tree in the United States was cut down in Mingo County after it was declared dead. (Interestingly, it was cut down with a ceremony.) The question was: How many years old was it when it was cut? The answer is approximately 582 years old! Imagine that this giant tree sprouted from an acorn in the year 1356 which was 136 years before

Columbus set foot in the New World. In Europe, the bubonic plague had decimated the human population and the 100 Years War between England and France was beginning.

Ed will receive a 2003 WV Wildlife Calendar. Other correct answers were submitted by: David Petrosky, *Buckhannon*; Linda Brennan, *Logan*; Laren H. Primm, *Hundred*; Pat Cahill, *Huttonsville*; Hallie Sims, *Ballengee*; Robert Dille, *Beckley*; John Peters, *East Bank*; Ernie Adkins, *Shady Spring*; and Isabel Walden, *Elkins*. Thanks for playing!

Here's this issue's question:

**How many National Wildlife Refuges are there in West Virginia and what are their names?**

### Official Rules:

Clearly print your answer on a postcard along with your name, address and phone number and send it to: Wildlife Diversity News newsletter, P.O. Box 67, Elkins, WV 26241, **Attention: trivia contest.** or email [jfregonara@dnr.state.wv.us](mailto:jfregonara@dnr.state.wv.us).

Only one postcard will be accepted per household, per question.

Postcards for this issue's contest question must be postmarked by **February 15, 2003** and this issue's winners will be sent the **2003 WV Wildlife Calendar**.

Please do not call our office and ask for the answers. That would be too easy, but you can visit our website: [www.dnr.state.wv.us](http://www.dnr.state.wv.us) and search for clues.

Employees of the WV DNR and their families are ineligible. Each winner will be chosen at random from all correct entries received by the postmarked deadline.

## Wildlife Restoration and Conservation Program Projects Planned in West Virginia

**Y**ou may remember that in 2000 Congress appropriated funding for the new Wildlife Restoration and Conservation Program (WCRP) as part of the "CARA Lite" funding. West Virginia's share was about \$480,000, and, with our 25 percent match, there is now \$644,700 available for WCRP projects. Matching money is being budgeted from wildlife license plate proceeds and the annual lottery appropriation from the state legislature. These projects began July 1, and should be finished by July of 2003. Here are some of the exciting new opportunities for wildlife in the state.

### Conservation Projects

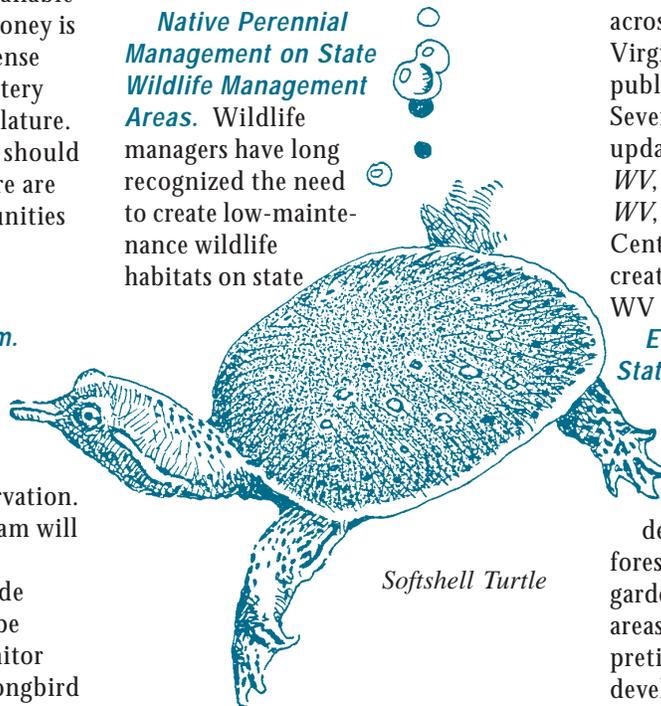
#### Important Bird Areas Program.

Funds will be used to help create a technical committee that will be charged with selecting Important Bird Areas on science-based priorities for habitat conservation. A brochure explaining this program will also be developed.

**Partners-in-Flight.** A statewide system of bird point counts will be established to inventory and monitor trends in avian populations. A songbird management guide for landowners is being prepared for publication. Additionally, a poster featuring some of the state's priority birds of conservation concern will be created and sent to schools.

**Herpetological Surveys.** Dr. Thomas K. Pauley has been working on the state's first herpetological atlas. Funds will be used to survey turtles in the major rivers of the state. Other surveys on selected amphibian and reptile species will be conducted in order to complete information for the atlas.

**Native Perennial Management on State Wildlife Management Areas.** Wildlife managers have long recognized the need to create low-maintenance wildlife habitats on state



managed lands. Planting warm and cool season grasses and legumes will provide nesting cover, winter cover, escape cover and food for a diversity of wildlife species. Native shrubs will also be planted.

### Educational Projects

**Publications.** *The Mushrooms of West Virginia and the Central Appalachians* by William C. Roody, intended to serve as a general identification guide for the mushrooms of the state and surrounding states, will be published and copies donated to school and public libraries across the state. Five issues of the West Virginia Wildlife magazine will be published and mailed to subscribers. Several of our popular brochures will be updated and reprinted, including *Bats of WV*, *Snakes of WV*, *Turtles and Lizards of WV*, and a guide to the WV Wildlife Center. Some new brochures will be created and printed including guides to WV salamanders and tiger beetles.

#### Educational Exhibits and Signs on State Lands.

At the WV State Wildlife Center, interpretive signs will be developed for the various animal enclosures. A system of trails, with an interpretive guide, will be developed through the old growth forest section of the Center. Butterfly gardens and other wildlife demonstration areas will be created. Additional interpretive and educational signage will be developed for selected WMA's.

**Educational Displays and Presentations.** Plans call for updating current educational displays and creating new ones. Power point equipment will be purchased for District Wildlife offices and presentations on the state's wildlife resources will be created.

### Recreational Development

Watchable wildlife opportunities will be enhanced at the Greenbottom Wildlife Management Area in Cabell County. A self-guided interpretive program for the area will be created. The loop trail will be upgraded, and a viewing platform will be constructed at the end of the existing boardwalk to allow visitors a better view of the wetlands and associated wildlife.

If you would like more information, write the Wildlife Diversity Program or email kleo@dnr.state.wv.us.

--Kathy Leo



## Look for Changes in Newsletter for 2003

Beginning in 2003, the West Virginia Wildlife Diversity NEWS newsletter will be published only two times, once in the spring and once in the fall. In order to save costs and staff time, the newsletter will be merged with the *West Virginia Wildlife* magazine in 2004.

In 2004, the spring and fall issues of the magazine will be expanded to include the newsletter, and which will

be in full color. The other issues of the magazine will continue to keep you informed of Wildlife Diversity Program events and feature articles on the Mountain State's rich and varied nongame and botanical resources.

Everyone who currently receives the newsletter should also be receiving the free *West Virginia Wildlife* magazine. Please contact us if you are not; we do not want you to miss anything!

# Kids Krafts

## Snowflakes Upclose

**H**ave you ever seen a snowflake up close and gazed at the intricacies of their six-sided geometric patterns? Here's a simple fun activity that anyone can do during a cold snowy winter's day to really get a good look at snowflakes.

### Materials needed

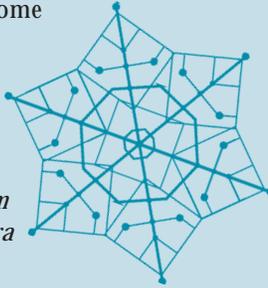
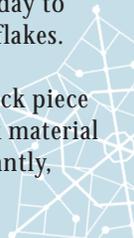
Magnifying glass, small black piece of construction paper or black material such as felt and, most importantly, fresh falling snow.

### Procedure

Place the black paper or material in the freezer overnight to get it nice and cold. The next time it snows, gather your magnifier and frozen paper or material and head

outside. Gently let a few falling snowflakes land on the frozen background. Use the magnifier to view your captures. Can you count the number of sides? Look at the subtle differences between flakes. Can you find two that match? Try this during different types of snowfalls such as a dry soft snow versus a wet snowfall since some will view better than others. Enjoy the wonders of winter!

--Jim  
Fregonara



**WV Wildlife  
Diversity  
NEWS**



is a free quarterly newsletter published by the WEST VIRGINIA DIVISION OF NATURAL RESOURCES (WVDNR) Wildlife Resources Section's Wildlife Diversity Program. This program is dedicated to the conservation and enhancement of the state's non-game wildlife and botanical resources.

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Winter 2003

VOLUME 19, NUMBER 4

West Virginia Division of Natural Resources  
Wildlife Resources Section  
Wildlife Diversity Program  
P.O. Box 67  
Elkins, WV 26241

Presorted  
Standard Mail  
U.S. POSTAGE  
PAID  
Permit No. 67  
Elkins, WV 26241

