

On The Trail Of Timber Rattlesnakes

When wildlife biologist Jennifer Adams comes across a rattle-snake while doing fieldwork, she is having what she considers a very good day. While that prospect may not seem pleasant to others, Adams has been on the trail of the timber rattlesnake (*Crotalus horridus*) since this past spring in the Westvaco Wildlife and Ecosystem Research Forest (WERF) in Adolph, WV.

Her study, funded by a Nongame Wildlife and Natural Heritage Program research grant, is designed to determine the home range and behavior of timber rattlesnakes, as well as their transient ranges and summer ranges in a fragmented forest. It will also identify additional dens, rookeries and stopover points in the WERF.

"This study is providing important baseline data since very little is currently known about home range and behavior of this species in a fragmented forest," says Adams. Her experience with the rattlers has shown that "timbers are really innocuous or secretive; not as threatening as people think," dispelling the old myths of their danger.

Adams is hoping to capture 10 to 12 snakes and equip them with radio transmitters before the end of the field season. So far, nine have been radio-equipped. Snakes are monitored at regular intervals to

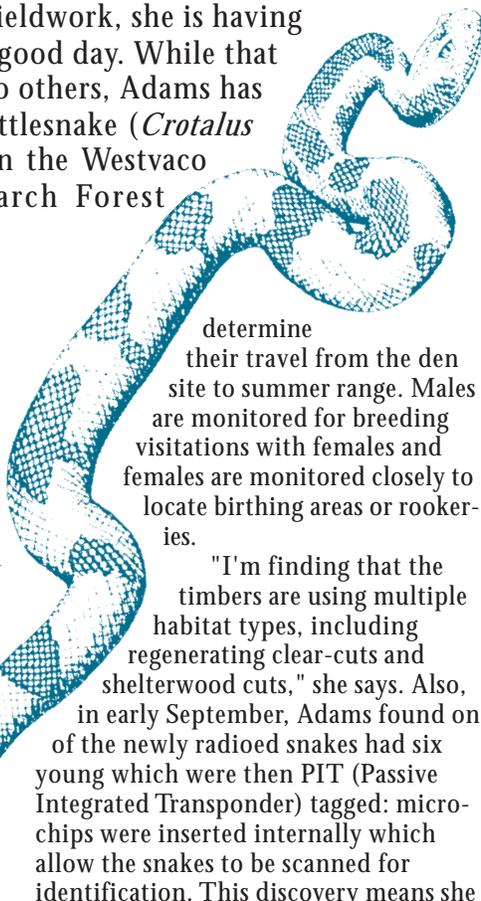


Illustration by Sam Norris

determine their travel from the den site to summer range. Males are monitored for breeding visitations with females and females are monitored closely to locate birthing areas or rookeries.

"I'm finding that the timbers are using multiple habitat types, including regenerating clear-cuts and shelterwood cuts," she says. Also, in early September, Adams found one of the newly radioed snakes had six young which were then PIT (Passive Integrated Transponder) tagged: micro-chips were inserted internally which allow the snakes to be scanned for identification. This discovery means she can potentially monitor a family group.

The location of the snakes with implanted transmitters is being carefully recorded using Global Positioning System technology and plotted on a cover map of the area. Adams spends long days tracking down the snakes, recording general habitat information, temperature, humidity and weather data. Including the hike to the sites, it usually takes about three hours to gather data per snake, she says.

Fortunately, Adams was already
(Continued to page 4)

Time For The Winter Bird Count

Time to grab a pencil and binoculars and begin the 14th annual Winter Bird Count. The tally sheets are on pages 6-7 of this newsletter. This count gives us information on the distribution of wintering birds in West Virginia. The count will again be twelve weeks to allow us to record some early spring arrivals.

Remember to count the highest number of each species that appears around your feeder at any one time during the entire weekend. For example, if you observe nine house finches at the feeder while you're having breakfast on Saturday, and seven are there during halftime of the game on Sunday, simply put down "9" for the weekend, **do not add them**. If you get a very large number of birds--estimate their number. We cannot use descriptive words such as "many" or "few."

Some birds, such as crows and robins, may feed away from your feeders. You can count birds such as these as long as you're consistent. When a species doesn't appear, leave its box blank, don't enter a "0." Please do not substitute another day if you missed a designated day; if you're not home one weekend, simply draw a line through that row.

We welcome any information on bird health, unusual sightings and other interesting happenings in your area. Thanks for the photos and notes that you've sent in the past! **Please try to return your tally sheets by May 1, 2002.**

If you have any questions, phone (304) 637-0245 or email: rtallman@dnr.state.wv.us.

Inside this issue...

- * Barn Owls Sighted, Pg.2
- * Heritage Updates, Pg. 4
- * Gather Native Seeds, Pg. 10

Looking Out For Barn Owls



The WVDNR is interested in determining the status of common barn owls in the state, according to Kieran O'Malley, District II biologist. Despite their name, these birds are anything but common in the Mountain State. Although their numbers are declining, the few nesting records of barn owls in West Virginia and surrounding states suggest that the large open agricultural areas of the state, especially of the eastern panhandle, represent excellent potential habitat.

"These owls are very beneficial to have around open fields and barnyards because they eat a lot of rats and mice," O'Malley said. "We need help locating common barn owls because their habitat exists mostly on farms and other private land."

Barn owls commonly roost and nest in barns, silos, garages, and old buildings. "Two-to-three inch long pellets or large white or light brown feathers on the floor of a building indicate you may have a barn owl living there," O'Malley said. "If an owl nest conflicts with a landowner's activities, we would definitely encourage them to contact us so we can help protect the owls without impeding business."

Common barn owls are medium-sized owls with a pale heart-shaped face and dark eyes. Their undersides are creamy white with light brown spots. Their back and wings are light brown. Barn owls may possibly be confused with snowy owls; however, snowy owls are pure white with black bars. Snowy owls are a northern species which occur infrequently in West Virginia and only during the winter.

Please report common barn owl sightings to Kieran O'Malley at the Romney DNR office (304) 822-3551 or Jim Fregonara, at the Elkins DNR office, (304) 637-0245.

CARA Is Alive and Well And Living in the House

As you may remember, CARA (the Conservation and Reinvestment Act) almost became law in last year's Congress. CARA proposes to reinvest \$3.1 billion, a portion of the revenues from federal offshore oil and gas, into state-based wildlife conservation, coastal conservation and impact assistance, historic preservation, urban parks and the Land and Water Conservation Fund. CARA will mean a little over \$3 million annually for programs that address the unmet needs of wildlife in West Virginia.



CARA will also allow for the reversal of declines in wildlife before they become endangered, an increase in

ecological educational programs and assure an economic future for nature-based tourism.

A major milestone was passed in July when the House Resources Committee voted 29-12 to report this historic conservation legislation to the full U.S. House of Representatives for consideration. West Virginia's Ranking Member Nick J. Rahall was instrumental in moving this bill (H.R. 701) through the committee.

CARA now has 240 co-sponsors, evidence of a groundswell of grassroots support that consists of over 6,000 organizations, businesses and elected officials. Now is the time to contact Reps. Allan Mollohan and Shelley Capito to become co-sponsors of this bipartisan effort that will mean so much to the ecological and economic future of West Virginia.

Contact information for Rep. Capito is 1431 Longworth House Office

Building, Washington, DC, 20515 or phone 202-225-2711. Her Charleston office is 304-925-5964.

Contact information for Rep. Mollohan is 2346 Rayburn House Building, Washington, DC 20515 or phone 202-225-4172. His Clarksburg office number is 304-623-4422.

For more information on CARA, or how you can help, write to the NWNHP, PO Box 67, Elkins, WV 26241 or email kleo@dnr.state.wv.us.



**Don't Forget!!
The Deadline For
Cooperative and Research
Grants and OWLS grants
is November 1.**

Rare Species at a Glance

Clubshell

Scientific name: *Pleurobema clava*

State status: Very rare in West Virginia, with occurrences known from only five streams.

Global status: Federally listed as an endangered species.

General description: The clubshell mussel, as its name implies, resembles the head of a golf club. Its shell is wedge-shaped and can attain a length of 3 inches. The outside of the shell is yellowish brown, with green rays radiating from the inflated area where the shells are joined (umbo). The inside of the shell (nacre) is white.

Habitat: Mussels generally prefer clean, free-flowing water that is well-oxygenated. The clubshell can be found in waters ranging from shallow streams to large rivers, usually embedded in gravel or a sand-gravel mix.

Total range: The clubshell occurs in the Ohio River basin from Illinois east to Michigan, Pennsylvania, West Virginia and Virginia, continuing south to Alabama.

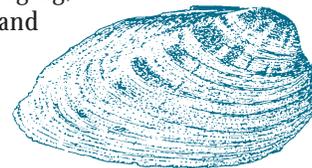
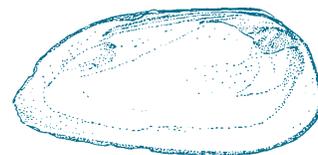
State range: In West Virginia, this species occurs in five streams: Hackers Creek (Lewis, Harrison counties); Elk River (Kanawha, Braxton, Clay counties); Meathouse Fork of Middle Island Creek (Doddridge, Tyler counties); Little Kanawha River (Calhoun County); and South Fork Hughes River (Ritchie County).

Threats to the species:

All freshwater mussel populations can be greatly impacted by activities which change water quality or flow. Dams, dredging, channelization, logging, mining and trampling by livestock can negatively impact mussels by degrading their habitat, suffocating mussels with excess siltation, eliminating food sources, or decreasing fish hosts (mussels are dependent upon fishes and some salamanders for reproduction). Another threat to mussels in West Virginia is the non-native zebra mussel, which can encrust mussels and intercept their food and oxygen supply.

Best time to look: Mussels bury themselves during the colder months, so look for them from May through September. *Remember: It is illegal to collect native mussels, even the empty shells. Be sure to return them to where you found them after handling.*

Source: Rare Species Fact Sheet: Endangered Freshwater Mussels. 1996. WVDNR; Cummings, K.S. and C. A. Mayer. 1992. *Field Guide to Freshwater Mussels of the Midwest*. Illinois Natural History Survey, Manual 5.



Illustrations by Sam Norris

American harebell

Scientific name: *Campanula rotundifolia*

State status: Rare in West Virginia, with twenty-three occurrences, seven of which are historical.

Global status: Common throughout most of its range.

General description: American harebell can reach a height of 3 feet. The basal leaves are rounded, but the leaves on the stem are linear. Its distinctive blue flowers are up to an inch long, and are drooping and bell-shaped.

Habitat: In West Virginia, this plant occurs in open, rocky

areas; typically on limestone.

Total range: American harebell occurs in nearly all of North America, and continues south to Mexico. It has not been recorded in the southeast, nor in Rhode Island, Delaware, District of Columbia, Kentucky, Oklahoma, Kansas and Nevada.

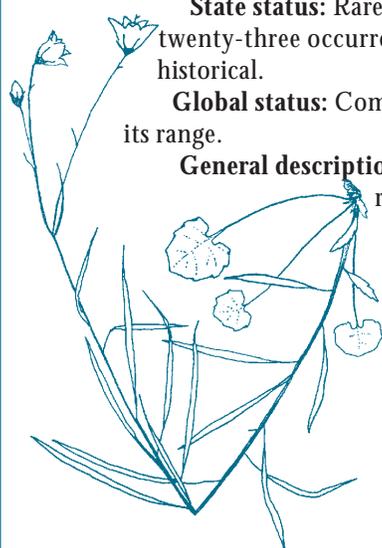
State range: This species is known from five eastern counties: Grant, Hampshire, Hardy, Mineral and Pendleton.

Threats to the species: The major threats to American harebell are the loss of habitat, due to second home development, and competition from invasive species.

Best time to look: Look for American harebell June through September when it is in bloom.

Sources: Gleason, H. and A. Cronquist. 1963. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*; Strausbaugh, P.D. and E.L. Core. 1977. *Flora of West Virginia*; Nongame Wildlife and Natural Heritage Program files.

--Barbara Sargent



Snail Mail Too Slow?

Get Your Newsletter Via Email! Contact
dhale@dnr.state.wv.us

Also check out the DNR website at www.dnr.state.wv.us

Timber Rattlesnakes, Continued From Page 1

aware of three den sites while monitoring grouse in the WERF. She had located those dens by attaching radios to 10 snakes she had encountered last September. "Those dens were critical in doing the study," she says. "It provided a starting point for locating the snakes."

The 8,400 acre tract of land that makes up the research forest is comprised mainly of northern hardwoods ranging in elevation from 2,500-3,500 feet. During the past five years a total of 12 timber cuts have been made in the WERF averaging 35-50 acres in size. The harvest plan over the next five years is to cut an average of four 35-acre blocks per year.

"This is a good opportunity to monitor the snakes' activities to and from the dens and determine their use of various habitats at different stages of growth," Adams explains. "Since cutting takes place throughout the year on the Research Forest, the potential effects on den use after the cuts can be monitored."

The home ranges for rattlesnakes are surprisingly large, Adams points out, with the males having the larger range. Some studies indicate up to 500 acres.

Generally, their reproductive capability is quite low with most females not reaching sexual maturity until four to six years of age and sometimes older.

While females commonly breed and produce an average of seven young at several year intervals, Adams feels that reproduction varies among regions and populations. "This study will allow us to determine these things for snakes of this region."

As Adams explains, this species' survival rate is also complicated by the fact that many states, including West Virginia do not protect the timber rattlesnake. Because of this, snakes are collected and killed.

The study will continue through next year in order to get a good interpretation of their home ranges and habitat uses. Adams is predicting that the results will "provide basic information on the rattlesnakes living on the WERF, and on their welfare and survival. This in turn will allow recommendations to be made that will minimize disturbance or loss of habitat, and provide protection of critical areas needed for their survival."

--Nanci Gross-Fregonara



People and Places

Rob Tallman, nongame wildlife biologist/Partners in Flight coordinator, is a native West Virginian from Vienna. Before coming to the Elkins Operations Center, Tallman served as an instructor in the biology department at Frostburg State University (FSU) and as a seasonal field research assistant for the DNR and the Cornell Laboratory of Ornithology, on both the cerulean warbler and the golden-winged warbler atlas projects.

Tallman received his A.S. in Wildlife Management from Hocking College, his B.S. in Wildlife Management from WVU, and will be receiving his M.S. in Wildlife Biology from FSU this fall. Tallman's research concentration has been on the ecology and habitat preferences of the cerulean warbler, specifically in West Virginia.

Tallman will serve as the Partners in Flight coordinator and will assist with nongame and endangered species research and monitoring.



WV Wildlife Viewing Guide: The New River Gorge

Description: Visitors are impressed by the spectacular views of the New River Gorge. The New River area, portion of which are managed by the National Park Service, is composed of a collection of federal, state and private lands surrounding this national river.

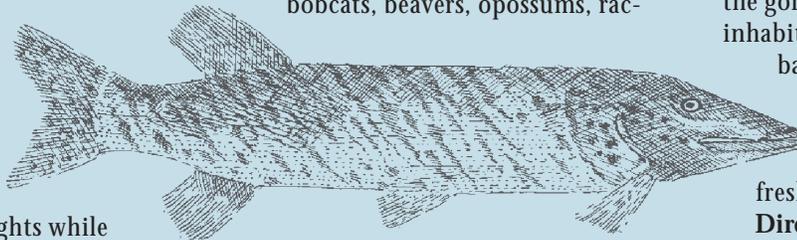
Babcock State Park lies within the area; however, much of the land is still private, so please respect the owners' rights while watching wildlife.

The Canyon Rim Visitor Center on U.S. Highway 19 on the north side of the river affords fabulous views of the gorge as well as the US 19 bridge. This 3,030-foot-long bridge rises 876 feet above the river and is the world's largest single steel arch bridge. Acclaimed for its wildlife viewing opportunities, the river is known for its whitewater rafting, considered to be

some of the best in the East.

The New River is not new in geologic terms—it is the second oldest river in the world after the Nile River in Egypt.

Viewing Information: White-tailed deer are usually seen in forest openings throughout the area. Black bears, bobcats, beavers, opossums, rac-



coons and several species of bats are present, though most are nocturnal. Four male and two female river otters were released in the New River by the Wildlife Resources Section in 1996. Two species of fox, red and gray, inhabit the park. Red foxes prefer more open areas, whereas gray foxes tend to prefer more wooded areas, especially those in early successional stages. Both species feed primarily on cottontails and rodents. In

the woodlands during the day, search for wild turkeys and ruffed grouse, and at night listen for owls—barred, great-horned and eastern screech. A population of river cooters (large turtles) inhabits the New River. West Virginia's largest skink, the broadhead, occurs in the gorge. Many aquatic animals inhabit the river, including smallmouth bass, rock bass, redbreast sunfish, logperch, common carp, muskellunge, whitetail shiners, channel catfish, freshwater sponges and mussels.

Directions: The Canyon Rim Visitor Center is located immediately east of where U.S. Highway 19 crosses the New River Gorge, just north of Fayetteville.

Ownership: National Park Service (304) 465-0508

Editor's Note: The WV Wildlife Viewing Guide by Mark Damian Duda is available at bookstores throughout the state and can be purchased from the WV DNR by calling (304) 637-0245.

Notes From The Field

Surveying Rare Plant Species

The summer of 2001 is coming to a close and the "highlights reel" is being prepared.

Within District IV, in addition to avoiding the floods and landslides, a lot of progress has been made. Some of the field work accomplished this year included additional surveys of the Bluestone River for the federally threatened species Virginia Spiraea (*Spiraea virginiana*). Several new subpopulations have been located and the Bluestone River is now approaching completion of surveys for suitable habitat.

Other field work has focused on locating new rare species populations and monitoring previously located populations. These surveys involved everything from blackbelly salamanders and tall larkspur to Allegheny woodrats and bats.

Additional time will be spent this fall and winter locating, mapping and conducting baseline biological inventories of the caves within the District and in other areas of the state which lack data on their caves. This winter will once again involve bat hibernacula counts and plenty of educational presentations to schools and groups within the district.

Overall, it has been a successful field season with far more surveys, projects and field stories than could be described here. One thing to remember is



Tall Larkspur, *Flora of WV*

that there will almost always be more field work to do.

--Jeff Hajenga, District IV

Monitoring Rare Grasslands

Monitoring rare grassland nesting songbirds continued this June in District I. Henslow's sparrows at Hillcrest WMA in Hancock County have abandoned their old nesting area near old apple orchards probably because of vegetative succession; the area is supporting an increase in woody vegetation and brambles. These sparrows prefer broad expanses of old field habitat consisting mostly of grasses with other herbaceous species such as milkweed and goldenrod and abandon these areas when woody vegetation moves in. Plans to perform a controlled burn on this site is in the works for spring 2002 to rejuvenate the habitat. Currently, Henslow's sparrows at Hillcrest are nesting in native warm season grass plots that were planted by DNR wildlife personnel. They may prefer them to adjoining exotic cool season grass fields. Other grassland and shrubland breeding species found at Hillcrest include yellow-breasted chat, brown thrasher, prairie warbler, grasshopper sparrow, meadowlark, red-winged blackbird, willow flycatcher, ring-necked pheasant and field sparrow.

The high point of monitoring grassland songbirds continues to be at the Ohio County Airport. Each year has shown an increase in bobolinks, grasshopper sparrows and Henslow's sparrows, and this year was no exception. Hayfield and old field habitat at the airport supported breeding populations of bobolinks, savannah sparrows, field sparrows, meadowlarks, grasshopper sparrows and Henslow's sparrows.

Monitoring at the new Cross Creek WMA in Brooke County will start in the spring of 200. A quick trip in mid-July turned up Henslow's sparrows, large numbers of grasshopper sparrows and an old horned lark nest. The northern

panhandle is a very good place to search for, and often find, rare and frequently elusive grassland songbirds. Although comparatively drab in appearance when compared with the more brilliant warblers, their appearance is just as satisfying.

--Sue Olcott, District I

Watching For Shrikes and Shrews

The field season began in January with bat hibernacula surveys in caves, railroad tunnels and old coal mines. By mid February, monitoring activity was underway at eight bald eagle nests in the District. The birds were followed from nest maintenance through egg laying, incubation, feeding and fledging. In June, a Hardy County birder reported a new nest near Moorefield with two chicks. Almost all of the eleven eagle nests in the Panhandle fledged two young each this year. Spring also brought about frog and salamander surveys, bird point counts and loggerhead shrike monitoring.



Historic shrike sites were inactive this year and early spring sightings failed to produce new nests. Finally, in July a new breeding site was discovered along a road in Grant County. These birds rarely foraged more than 25 yards off the road. Unfortunately, it was later discovered that one of the shrikes was killed, a victim of a vehicle collision.

June and July saw Virginia big-eared bat maternity counts, bat mist net projects, water shrew surveys and rare plant monitoring. August is monitoring time for harperella and northeastern bulrush. September and October will bring shale barren rockcress monitoring, woodrat surveys, additional water shrew surveys and crayfish surveys.

--Kieran O'Malley, District II

Allegheny Front Bird-banding Station Final Report In

The 43rd year of bird banding at the Allegheny Front Migration Observatory on Dolly Sods in Tucker County was the second poorest season since there was full time coverage. The number of bandings was only 52% of the long term average. The weather was generally mild but unusually rainy. The station was in full operation from August 13 to October 15, 2000.



A total of 3,007 birds (the average is 5,722) was banded. The station has now banded 184,773 birds of 119 species. No new species were captured this year. The black-throated blue warbler continues to be the most numerous species, but this year's 546 bandings is 21% below the 10 year average. The dark-eyed junco was second with 325 (40% above average) and the black-throated green warbler with 275 bandings (25% below average) was third.

The warblers as a group showed a decline of 42% from the ten year average. The Cape May warbler declined 79%, bay-breasted warbler 65% and Tennessee warbler 33%. Most surprising was the 76% decline of the blackpoll warbler which usually has the most or second-most captures. The blackburnian warbler was down 71%. However Nashville and Wilson's war-

blers were in numbers slightly above average.

The Swainson's thrush had a decline of 22%, the gray-cheeked thrush declined 52% and the veery 44%, however the hermit thrush continued to show increasing numbers (the result of an increasing local population). Another

surprise was the 44% decline in ruby-crowned kinglets.

Visual counts included 229 blue jays, 305 ruby-throated hummingbirds (10 year average is 443), 1,209 American goldfinches (average 3,064), and 831 monarch butterflies.

--George A. Hall

Kids Crafts

Start Your Own Tree Seed Collection

Did you know you can identify a tree by the type of seed or fruit it produces? Pine cones are different than spruce cones and all maple trees have different kinds of seeds kids call "twirly birds" or "helicopters." All you need is a good field guide that shows pictures of the different kinds of cones or fruits trees produce.

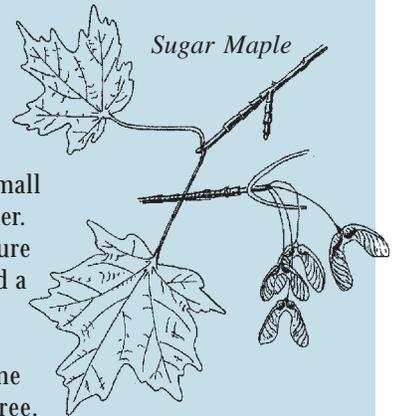
Go outside with your parents or friends and collect as many different kinds of seeds and cones you can find. It may be easier to identify the tree at this time by looking at the bark and leaves and matching these to the drawings or pictures in a good field guide. Once you return to your house you can store your seeds in zip-lock bags, small glass or plastic jars, used film containers

or any other small container. Make sure you add a label stating the name

of the tree, date and where you collected it. Before you know it, you will have quite a seed collection and will be able to identify the tree just by looking at its seeds.

A couple of good references for helping you identify seeds and fruits are: *Fruit Key and Twig Key to Trees and Shrubs* by William M. Harlow and *The Tree Identification Book* by George W.D. Symonds

--Jim Fregonara



Who Wants To Be A Biologist?



Congratulations to our fourth contest winner, *Gordon Wells* of Vienna whose name was picked at random

from all the received correct entries. Gordon correctly answering last issue's question: How many people have died from the bite of a northern copperhead in West Virginia in the last 35 years? The answer is NONE. Most people think there have been hundreds or more reported fatalities from copperhead bites, but in reality

there haven't been any. Gordon will receive a West Virginia Wildlife Viewing Guide. Other correct answers were submitted by: *Dave Plowright, Romney; Bob Groves, Augusta; John Peters, East Bank; Jerry Grady, Given; and Hallie Sims, Ballengee*. Thank you all for playing!

Here's this issue's question.

What is the smallest owl found nesting in West Virginia?

Remember, the postcards must be postmarked by **Dec. 15, 2001**. Good luck! Is that your final answer?

Official Rules:

Clearly print your answer on a postcard along with your name, address and phone number and send it to: WV DNR, Nongame Wildlife & Natural Heritage Newsletter, P.O. Box 67, Elkins, WV 26241, Attention: trivia contest. or email nbrossfregonara@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 **December 15, 2001** and this issue's winners will be sent the **WV Watchable Wildlife Guide**.

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 and search for clues.

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

Heritage Program Has Eventful Year

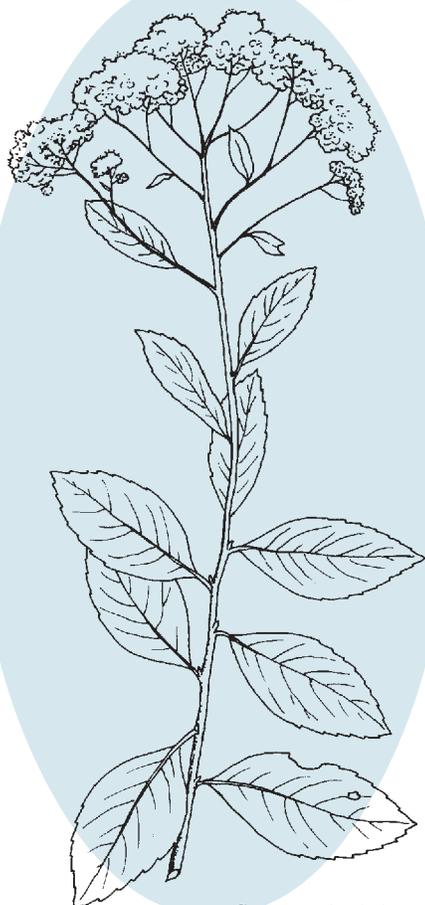
Rare Crayfish Surveys Underway

A survey for a rare crayfish (*Cambarus veteranus*) found only in southern West Virginia and small parts of Virginia and Kentucky is currently underway. The late Ray Jezerinac, author of *Crayfish of West Virginia*, had suggested that this species was at a critical juncture and we should conduct additional surveys to determine its current status in the state.

Tom Jones of Marshall University has been contracted to assist with these surveys.

Naval Base in Pendleton County

The U.S. Navy has a communications base in Pendleton County and we have been contracted to perform rare animal surveys that will assist them in their management planning. Small mammals, including bats, herptiles, and invertebrates are the focus of these studies.



Spirea virginiana

Woodrat Populations Declining?

A decision was made to have the Heritage Program maintain records for the Allegheny woodrat (*Neotoma magister*). This native furry-tailed rat lives in caves and other rocky areas across the state. Unfortunately, the populations of this small mammal have been declining in states north of WV and we are now assisting in determining if this alarming trend is true for our state as well.

We have about 140 location records in the database at this time.

Colonies of *Spiraea* Found

Surveys for the federally threatened plant Virginia spiraea (*Spiraea virginiana*) have been completed along the Bluestone River. This is one of several river corridors known to harbor this plant in the State. Parts of the Bluestone Canyon are rugged and difficult to access. Thirty-seven colonies of this species have been located along the river due to the efforts of Donna Mitchell and Jeff Hajenga over a several year period.

Moss Checklist Coming

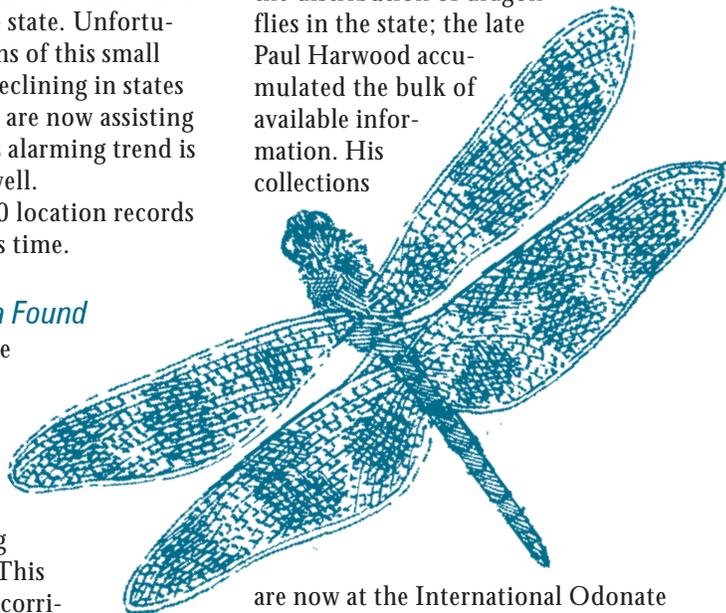
A checklist of the bryophytes of West Virginia has been finalized and will be printed this autumn. This is the first revision of a moss checklist for the state in decades.

Vegetation Mapped at Camp Dawson and New River Gorge

Vegetation classification and a floristic survey of the Camp Dawson Army Base in Preston County have been completed. Mapping and classifying the vegetation of the second third of the New River Gorge National River has been completed and a report submitted to the Park Service. Both of these projects are steps that assist the Heritage Program in building a vegetation classification of the state.

WV Hosting Dragonfly Society

West Virginia will be hosting the 2002 annual meeting of the Dragonfly Society of America. Little is known about the distribution of dragonflies in the state; the late Paul Harwood accumulated the bulk of available information. His collections



are now at the International Odonate Research Institute in Florida.

Long Time, No See

Some interesting finds from this year: Spadefoot toad larvae were discovered in West Virginia for the first time in over 30 years by Marshall University students; the Long-tailed skipper discovered in the Elkins Operations Center butterfly garden was a new state record; and an evening bat was captured at Lewis-Wetzel WMA. This latter species had not been seen in West Virginia for over 40 years.

--Brian McDonald

Did You Know?

Do you know how many vertebrate species there are in the state?

Reptiles & Amphibians	87
Mammals	68
Breeding birds	172
Fishes	178
Humans	1



Plant Lore of the Mountains

Think Spring! Propagate Native Species of Wildflowers

One of nature's most bountiful resources is the annual seed production from native plants. There are over 2,300 species of plants growing throughout West Virginia. Some of these are naturalized and/or invasive exotics, but most are native. Native plants form the major building blocks inter-linking the animal species and detritivores of natural communities into the intricate web of life. Native plants provide the food, cover, shelter and significant biomass that makes life possible for insects, mammals, birds, amphibians, reptiles and us.

Collecting and propagating seed does not require a lot of expensive equipment, but it does require a commitment of time, some basic knowledge and organization. The steps below will provide you with a basic outline.

Basic Equipment: field guides, pruners, lunch sized paper bags, marker, Popsicle sticks, flagging, cleaning sieves (can be homemade), storage envelopes, jars or freezer boxes and a field notebook.

Get to know your wildflowers - Have a plan

If you do not already know your local flora, purchase a field guide and go out into the nearby fields and woods and begin to identify wildflowers by their scientific names. Familiarize yourself with the different plant communities in your area and the environmental characteristics or requirements that the different species of plants in a given community have in common. Then, determine what kinds of wildflowers will fit into the habitats you have in your yard.

You may alter a given space to provide the kinds of conditions that desirable plants require. As an example, say you desire to create a 20' by 40' space for a butterfly garden. You will need an area that is in the open sun, and soil conditions suited to a variety of plants that produce nectar and larval food for butterflies. You will have to do some research to determine what kinds of

native plants attract butterflies and choose among those.

Find out what kinds of seeds plants produce

Find out what is already known about the type of seed produced by the plants you are interested in and the conditions that must be met in nature for the seeds to germinate. Then, do a little research into the method of seed propagation that is recommended for each species. Successful propagation from seed depends on understanding the natural germination requirements. The best time to do this research is before plants begin flowering this spring and summer.

Record the locations and flowering dates

As you identify plant species in the field that you would like to propagate, keep a journal. Tag the plants that you want to collect seed from. You can use Popsicle sticks with the scientific and common names written on them in permanent ink, and/or flagging near the spot for easy identification. Record the date you first observe flowering and the date that seeds begin to form.

Keep this log from year to year. Due to shifts in weather patterns, blooming periods will vary somewhat from year-to-year. You can even begin to construct a timetable of blooming periods for species in your area.

Timing is Everything

Ripeness of seed is almost always indicated by a visual change in the color and/or texture of the seed covering. Many seeds and/or the structures containing them will turn from green to white to tan, brown or black, while the fleshy fruit encasing others may become vivid in color like the brilliant red fruits of spice bush, (*Lindera benzoin*), or Jack-in-the-pulpit (*Arisaema triphyllum*).

Collecting strategies

Collect only from a large, well established population of a given plant, and **do not collect more than 10 % of the seeds.**

Collect only seed that is fully ripe.

Learning to know when a seed is ripe comes with experience, however there are some general guidelines. First look at the fruiting structures (capsules, berries, pods) to see if they have expanded and changed in texture and color. As most fruits ripen, they turn from a lighter to a darker color.

Collect seed bearing structures in paper bags, never plastic bags. At harvest, most seeds still contain large amounts of water and must be dried to avoid potentially lethal bacterial or fungal growth that can destroy a collection in a few days. Paper bags allow the moisture to pass through.

Processing seed for storage
Species that should have the seeds dried

It is best to take the collected seeds and spread them out on a screen or clean newspaper to dry out. The cardboard trays that soda cans are shipped in work well. Run a room fan on low to keep good air circulation. Allow about a week of air drying before processing and storing them. Once the seeds have dried then you can clean them. Some people have had good success just leaving the fruits in open paper bags and clipping them to a clothesline for drying. The main thing is to place them in a cool, dry area with good air circulation.

Species that should not dry out

Plants that produce seeds in fleshy fruits like Jack-in-the-pulpit, twinleaf, the trilliums and bloodroot generally must not dry out or germination will be delayed. Many of the spring ephemeral plants are in this group. The seed produces a small fleshy structure called an aril. Mature seeds are often dispersed onto the ground, or grow very close to the ground. Ants carry the seeds back to their nests in order to feed on the nutritious arils. Once the aril is consumed, the seed will become ready to germinate when temperature and moisture conditions are just right.

Simply store these seeds after cleaning in

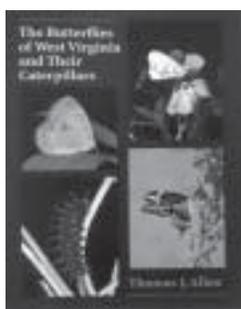
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Holiday Gift Guide

Make your holiday shopping easy this year and support West Virginia's Nongame Wildlife and Natural Heritage Program by purchasing some of the following items that make for perfect gifts!

"The Butterflies of West Virginia and Their Caterpillars"

by Tom Allen



This book describes the 128 kinds of butterflies found in the state, along with their caterpillars and pupae. Each species account includes a description and information on distribution, habitat, life history, nectar sources and larval host plants. It also contains chapters on studying butterflies and butterfly gardening. Mr. Allen's book is the first to have color plates of almost all the caterpillars.

Cost: \$20 for the paperback

Available: Bookstores or by contacting the WV DNR, (304-637-0245).

"West Virginia Wildlife Viewing Guide"

by Mark Damian Duda

This book describes where, when and how to view wildlife at 63 different sites throughout the state. Each description includes details of which species one would likely see, the best time of year to encounter them and the facilities available at each site.

The book also offers tips on how to best watch wildlife, in addition to maps and color photos of many of the state's wildlife species.

Cost: \$8

Available: Bookstores and WVDNR, (304)637-0245.

West Virginia Wildlife Magazine

Add a friend or relative to the mailing list for West Virginia's new wildlife magazine, currently at no cost! If you are not presently on the mailing list to receive this recently started, bi-annual

magazine (if you receive the premier issue by mail, you are already on the list) call 304-637-0245.



West Virginia Wildlife Calendar

The award-winning full color calendar published by the WV DNR features beautiful artwork as well as informative articles, best fishing days and times, daily environmental facts and trivia along with hunting, fishing and trapping regulations.

This makes the perfect gift for anyone who loves the Mountain State's great outdoors!

Cost: \$8.42 for WV residents (\$8 for nonresidents)

Available: WVDNR and limited distribution. Call (304)637-0245.

Seed Propagation, Continued

a vermiculite mix and store in the refrigerator until time to plant in the spring.

Seeds that need to be sown immediately after collecting

Some need to be covered with soil and kept moist throughout the fall season. Others need the presence of light to germinate and do best if broadcast on top of the soil.

Cleaning seeds

It is important to separate the seeds from everything else taken in with the collection. This includes other plant parts, other seeds, soil and especially insects that might feed upon the seeds. Seed can first be liberated by shaking them in a paper bag or by hitting the fruiting head against the paper bag to loosen seeds. With many species you can collect the seed directly from the bag and place in small manila envelopes for

dry storage. Place the envelopes in a zip lock bag or plastic freezer box and place in the refrigerator. If the seeds are in a rigid capsule, like evening primrose (*Oenothera biennis*), you will have to crush the capsule to release the seeds. Then, you will have to screen the material in order to separate the seeds from the chaff.

Seeds encased in fleshy fruit must be removed from the berries as soon as possible. You can soak the berries in water overnight. The next day place the berries in a sieve and hold under a faucet to separate the pulp from the seed. The seed should be immediately sown outdoors and kept moist or placed in a moist medium and stored in the refrigerator until spring.

Seed Storage

The best storage conditions for dried seed are constant temperature and

humidity. Ideally this is at 40 to 50 degrees Fahrenheit and 50% or less humidity. Do not store at or below freezing. Also, keep the seed in the dark or at very low light levels.

Some plant species can be stored in the above conditions for years and still germinate when sown outdoors in favorable conditions. However, some need to be stored moist in dampened sphagnum or vermiculite under the above temperature conditions. The seeds can be stored in plastic freezer boxes, jars or even zip-lock bags. And some species need to be sown outdoors as soon as possible after collecting.

--Emily Grafton

For a list of resources, copies of the WV DNR's Wild Yards booklet or further information contact Grafton at 304-637-0245 or email: egrafton@dnr.state.wv.us

Children's Book Reviews

The Red Wasteland: A Personal Selection of Writings About Nature For Young Readers

Edited by Bruce Brooks

(Appropriate for ages 12 and up)

Bruce Brooks, an award-winning author for young adults, combines his two passions, nature and writing, in this unique collection of essays, stories, poems and excerpts from some of our most noted nature writers. The selections range from humorous poetry to a jarring account of a writer being mauled by a hyena. It is a wonderful introduction to a variety of styles and viewpoints. Brooks makes it clear that his intention is to show young readers how nature writing has evolved over the years. His selection offer plenty of food for thought and is just the right combination for further discussion. Mature readers of all ages will appreciate his message-that the lines between fiction and nonfiction are not so tightly drawn as one might assume when referring to writing about nature.

Appalachian ABCs

by Francie Hall

and illustrated

by Kent Oehm

Pictures of

familiar scenes, recognized and loved by residents of our area, make this book a perfect book to share and cherish together. Its sequential look at our natural surroundings is realistically illustrated and culturally acceptable.

I truly appreciate the attractive borders on each page - each one an illustration of vegetation found in the Appalachian Mountains. The simple rhymed text adds to the pleasure of reading and listening. This book will motivate young, aspiring authors to create their own ABC books. In fact, the only complaint I have about this book is that someone wrote an Appalachian ABC book before I did!

--*Sue Talbott, Vandalia Educational Services, 1-800-637-0566 or email: vandalia@msys.net.*



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