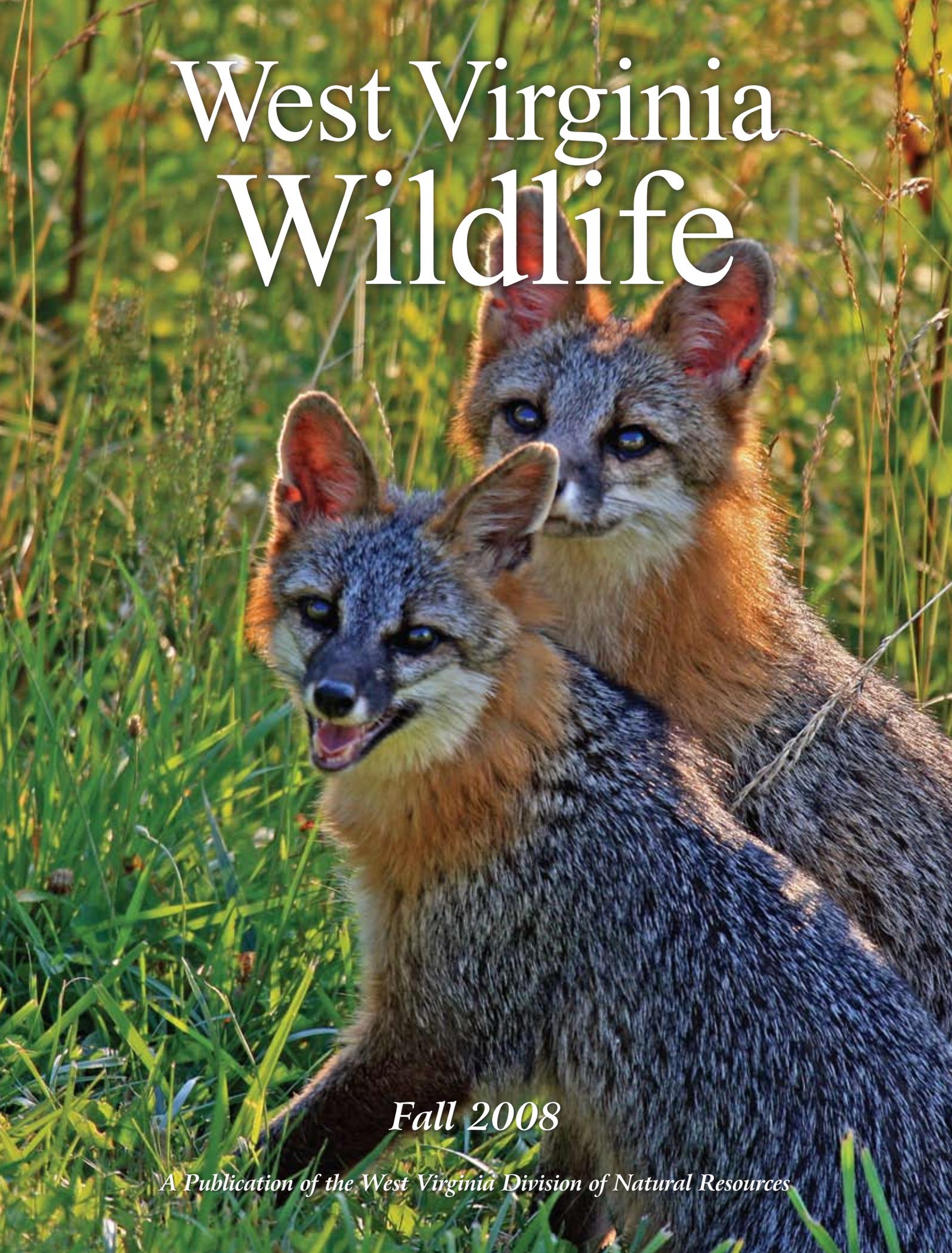


# West Virginia Wildlife

A photograph of two gray foxes in a field of tall grass. The fox in the foreground is looking to the left with its mouth slightly open, showing its teeth. The fox behind it is looking towards the camera. The grass is green and tall, and the lighting suggests a bright, sunny day.

*Fall 2008*

*A Publication of the West Virginia Division of Natural Resources*

## Land for All – Wildlife Management Areas

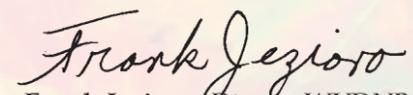
In reading this issue, you'll discover that the concept of wildlife management areas had its origin in the purchase of state game refuges in the early 1920s. Bought in a time when wildlife was scarce, no hunting was allowed on these areas with the idea that game animals would reproduce and spread to neighboring lands. Wildlife populations eventually rebounded and many of the areas were opened to hunting. Additional public hunting lands were bought by the state with funds from the sale of hunting and fishing licenses. Beginning in the 1940s, cooperative agreements with the U.S. Forest Service opened more than one million acres of land in West Virginia to the public. The purchase of public lands received a big boost in 1989 with the creation of the Conservation Stamp, the proceeds from which can only be used to buy land. Access to all this land is provided to residents and nonresidents at no cost to the taxpayer.

Wildlife management area lands are either owned by the state (13 percent), the federal government (73 percent), or made available by a private company through a no-cost lease agreement (14 percent). I wish to extend my deepest appreciation to the landowners who have leased their lands to the DNR over the past 80 years.

These areas were bought or leased to conserve wildlife habitat and to provide opportunities for public recreation, whether by hunters, anglers, hikers, boaters, or wildlife watchers. Serving as public land manager, the DNR protects unique areas and improves habitat through active management to benefit wildlife. Wildlife management areas not only serve as places for public recreation and habitat enhancement, but also research. DNR personnel conduct numerous studies and surveys to determine the populations of unique animal and plant species on these areas.

Access to most private land is understandably strictly controlled or even denied. The need for public lands is especially important to nonresidents who come to West Virginia to enjoy the bounty of wildlife and the beauty of our scenery. Nonresidents have little opportunity to establish a relationship with a landowner on whose property they wish to hunt or fish. Without the more than 1.4 million acres of public land in West Virginia, hunters, anglers and other outdoor enthusiasts would have a hard time finding a place to experience the joys of being outdoors.

I think we all would have to agree that West Virginians are lucky to be blessed with so much land available to enjoy our wild, wonderful natural resources.

  
Frank Jezioro, Director WVDNR



Male American goldfinch

Steve Shaluta

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Fall, 2008  
Volume 8, No. 2

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# West Virginia Wildlife

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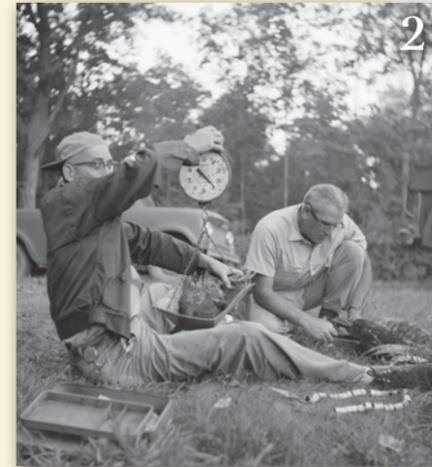
By Terry Jones  
The basics of managing your woodlands for wildlife.

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Wild turkey research in early 1960s

DNR Collection, West Virginia State Archives



Oak savannah at Calvin Price State Forest

Terry Jones

# History of Wildlife Management in West Virginia

*This article is a synthesis of two documents: a popular article for Wonderful West Virginia magazine written by Walt Lesser in 1996 and a comprehensive Historical Review of Game Management written by Jack Cromer in 2002. Both authors are retired wildlife biologists from the DNR Wildlife Resources Section.*

From time to time, a look at the past prevents repeating mistakes or, at least provides satisfaction in seeing progress. In retrospect, the wildlife management profession in West Virginia experienced the same ills and shortcomings that were typical elsewhere. Human population expansion, industrial growth and development of steam power all led to the exploitation of this state's timber and wildlife resources following the Civil War. Such settlement and exploitation led to critically reduced numbers of some species, causing much concern to some people searching for means to change the course of events. History has shown that wildlife management usually started with the control of hunting followed by refuge establishment, "vermin control," restocking (game farming), and environmental controls (habitat protection and enhancement).



WVDNR Archives

*Game protectors patrolled on horseback in the early 1900s. WVDNR Law Enforcement Section*

*Facing page:  
Wildlife manager Eric Richmond photographs bear den site.*

## Laws and Law Enforcement

Several species of large animals native to West Virginia were all killed off before hunting laws were passed. Elk, woodland bison and gray wolves were among the casualties. When West Virginia assumed statehood in 1863, it adopted a code of game and fish laws that had been enacted in the State of Virginia in 1849. The West Virginia Legislature passed its first law protecting wildlife in 1869 – killing game between February 14 and September 15, and killing certain species of birds was prohibited. A couple other laws were passed in ensuing years, but no state organization with authority to enforce the laws was established until 1897, when the legislature created the office of Game and Fish Warden. In 1901, the legislature passed a law that allowed the Warden to select deputy game and fish wardens to be paid by the fines they collected. It was not until 1909, however, until the first full-time wardens were hired by the Chief Forest, Fish and Game Warden. That same year, a law was passed that prohibited the shipment of game out-of-state. This law, combined with the federal Lacey Act of 1900, spelled the end for market hunters who killed large quantities of game to sell to people outside the state and country.

Steven Wayne Ratsch



## Game Refuges and Management Areas

While most of the early timber cutting took place between 1880 and 1930, the logging peak occurred in the period 1902 to 1925. The cutting was then followed by uncontrolled fires, some of which burned for years. These habitat-destroying factors did more to eliminate certain species of wildlife than did unregulated hunting. Early forest, game and fish wardens had ideas to restore populations of deer, turkeys and bears, but had very limited funds to carry out programs.

Following the purchase of the first sections of the Monongahela National Forest in 1911 by the federal government, six refuges, also called “game breeding areas,” were established on these lands. The primary reason for purchase of these refuges was “protection to the wild turkey,” yet they were open to controlled public hunting when game populations such as deer were in need of control. Ironically, the last such federal refuge, called the Beaver Dam Refuge in Randolph County, was abandoned as late as 1963, when the area was opened to hunting. Regulations remain a very important wildlife management tool. Refuges, however, have rarely been successful in accomplishing wildlife management objectives, and their use for other than migratory species is seriously questioned.

In 1915, the state legislature passed a law giving the Forest, Game and Fish Warden authority to set aside certain tracts of land “...to be used as refuges for wild game and birds and on which no hunting shall be allowed.” The first areas were joint state/private landowner cooperative game refuges. In 1922, the Game and Fish Commission established the following refuges on privately owned lands: Beech Run, Paint Creek, French Creek, Tibbs Run, Jackson’s Mill,



Begun as a refuge and game farm in 1922, the West Virginia State Wildlife Center now offers visitors the opportunity to see native wildlife.

Petersburg and Lakin State. Boundaries were posted and game protectors were authorized to control vermin on these areas.

In 1923, the Game and Fish Commission bought the first state forest and game refuge. This 10,487-acre tract of cut-over forest land located near Marlinton became known as Seneca State Forest and Game Refuge. Other purchases in the 1920s included areas now known as Nathaniel Mountain and Short Mountain Wildlife Management areas, Kumbrabow State Forest, and Holly River and Watoga State parks. Early management efforts on these lands were again centered on the development of wild turkey habitat. These lands were reportedly managed for turkeys by the creation of refuges, development of wildlife food plots by creation of forest openings, development of springs, trail maintenance, and “coordinated winter feeding.”

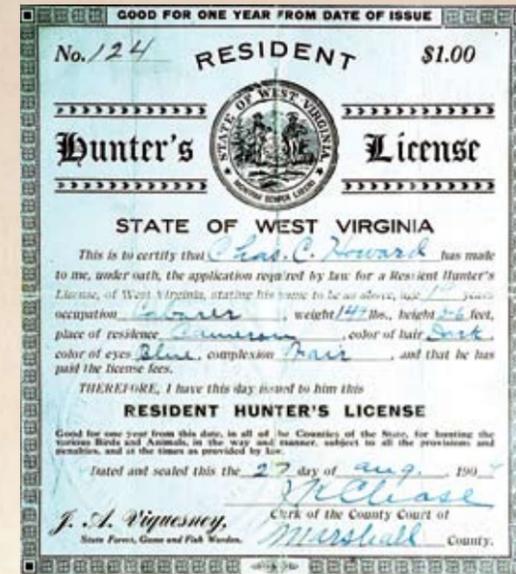
The last state-owned “game refuge” was the Horner Game Refuge in Lewis County that was disbanded in 1981. Some of the game refuge lands became known as public hunting and fishing areas, a title which was changed to wildlife management areas in 1989 to represent the variety of wildlife-associated recreation available on the areas.

Seneca State Forest, the first state-owned game refuge.



Steve Straluta

## Hunting Licenses Over the Years



The first resident hunting licenses were sold in 1909.



Since 2002, hunters could buy and print their licenses from their home computer.

## Hunting Licenses

The first hunting license requirement was passed in 1899 and was for nonresidents only. The cost was \$25 - a huge investment at that time. The high cost along with lack of transportation and roads resulted in very little nonresident hunting. The fee was reduced to \$15 fee in 1906. The license was obtained from a game warden who kept \$1 of the fee for writing up the license. The license was effective for 12 months from the date of purchase.

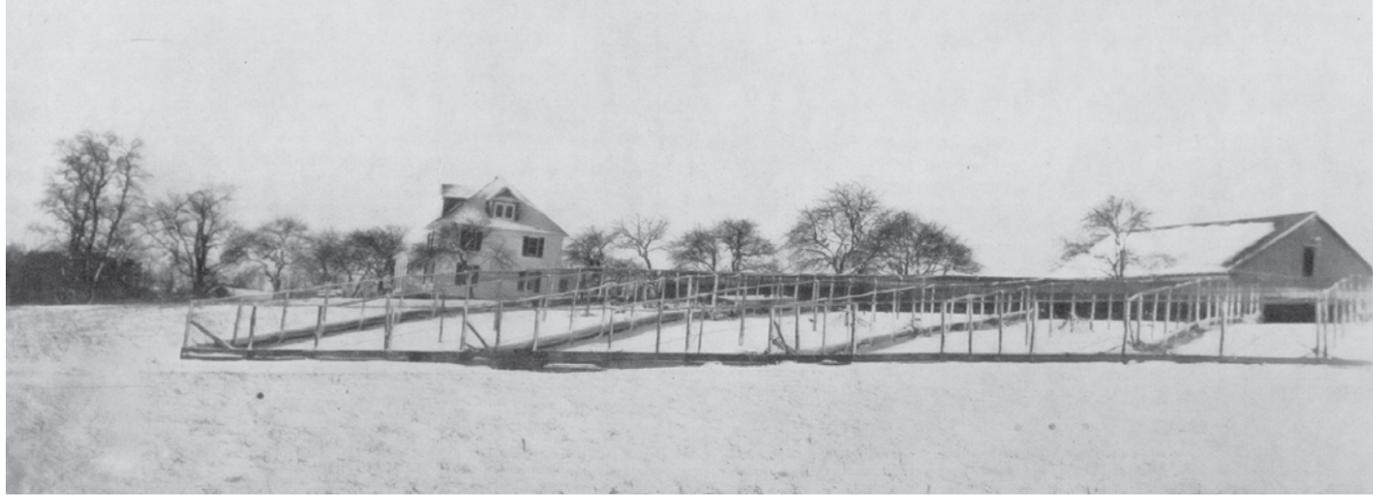
In 1908, State Game and Fish Warden J.H. Marcum wrote, “I would most respectfully and earnestly recommend that the Legislature, at its coming session, pass an act making it a law that no person hunt in this State without a license.” In the first Biennial Report of the Forest, Game and Fish Warden of West Virginia, 1909-1910, it was stated, “No state, after adopting the license system, has ever repealed the law, which proves that in all the different methods that have been inaugurated to provide ways and means for this work the only fair and successful one is by the License System.”

These statements must have been effective because in 1909 the West Virginia Legislature passed an act

authorizing the first resident statewide hunting license. The license cost 75 cents with an additional fee of 25 cents to go to the county clerk issuing the license. The 1909-10 Biennial Report shows that for the year beginning December 1, 1909 and ending November 30, 1910 a total of 24,119 resident and 43 nonresident licenses were sold. Landowners were authorized to give reciprocal privileges to adjoining landowners to hunt on their property without a license. Minors under the age of 15 could not obtain a license without written permission of their parents.

This new funding source was short-lived. In 1911 the Legislature repealed the statute requiring residents to buy a license, believing the requirement was a detriment to the protection and propagation of game and fish.

In 1915, the legislature reauthorized a statewide hunting license which cost \$3. Hunting licenses were offered free to persons wishing only to hunt in their county of residence. County tags were red, statewide tags were white, and nonresident tags were blue. All licenses tags had to be displayed prominently on the arm. Nonresident hunting license fees rose to \$16.



Ring-necked pheasant pens at the French Creek Game farm in 1927.

WV DNR Archives

## Game Propagation and Restocking

The first mention of restocking of game was in the First Biennial report of the Forest, Game and Fish Warden in 1909-1910. Although it was believed that there was a sufficient amount of game left in the state for restocking purposes, it was stated, "...there should be an effort made to get this game distributed more evenly over the state." Further thought was given to experimenting with importing foreign game birds, purchasing deer, and restocking wild turkeys. Thus game propagation and purchasing for restocking had its breath of life in West Virginia.

According to known records, it is believed that the first importation of game animals by the state of West Virginia was in February 1913. Fifty head of elk were secured from the federal government and shipped from Yellowstone National Park to Marlinton, West Virginia and then taken to Allegheny Sportsmen's Association fenced enclosure at Minnehaha Springs. After being acclimated to their new area, they were then released in the surrounding mountains of Pocahontas County. In April 1913, 105 pair of English ring-necked pheasants and 65 pair of Hungarian partridges were released



Live trapping and releasing deer in 1955.

DNR Collection, West Virginia State Archives

in different sections of the state. The same summer, 3,382 ring-necked pheasant eggs were distributed to individuals throughout 23 counties.

No further mention of propagation or restocking was found in the Biennial Reports until 1922 when it was noted that early in the spring of that year the state began raising pheasants at the then privately owned land at French Creek. The next year, the State Game Farm, known today as the West Virginia State Wildlife Center, was established at French Creek. It was at the State Game Farm, and subsequently other locations around the state, where game species such as quail, turkeys, raccoons, rabbits, deer and pheasants were raised for distribution throughout the state.

It is interesting to note that in 1933 the director of conservation questioned the continued production of game birds and animals at the State Game Farm, claiming it never produced game in sufficient quantities to justify its existence. The same director's report questioned the wisdom of funding this propagation program compared to "managing native breeding stock to provide our much needed and desired increase of game of all species." It was further reported that the propagating facilities were totally inadequate to supply game needs for stocking purposes and that all birds and animals to be distributed were being purchased from dealers in other states. Obviously, by the early 1930s, the director of conservation wisely recognized that available funding could better be directed toward the protection and enhancement of wildlife habitat and the natural propagation of game using this habitat as opposed to the release of artificially produced animals incapable of surviving in the wild.

Continued on page 14

## Field Trip

## Watoga State Park



Tree trunks form an arch over a side channel of the Greenbrier River.

Steve Shaluta

**Description:** Sheltered on three sides by the Monongahela national Forest and the Calvin Price State Forest, Watoga was the first, and is the largest state park in West Virginia. This 10,100-acre park derives its name from the Cherokee word Watauga, which means "river of islands," because of the numerous islands and sandbars in this wide, shallow stretch of the Greenbrier River. The river forms several miles of the park's boundaries.

**Directions:** From Hillsboro, take U.S. Route 219 for 0.9 miles, then turn right onto county Route 27. Follow CR 27 for 2.3 miles to the park entrance. From state Route 39, turn onto county Route 21 and travel nine miles to the north entrance of the park.

**Ownership:** WV Division of Natural Resources. For more information on recreational facilities, call (304-799-4087) or 1-800-CALLWVA or visit [www.watoga.com](http://www.watoga.com).

*Excerpt from West Virginia Wildlife Viewing guide by Mark Damian Duda. For a free copy (plus shipping and handling), call 304-637-0245.*

**Wildlife Viewing Information:** In summer, many excellent interpretive programs orient visitors the nature of Watoga. Beavers are sometimes seen during late evening in the spring, summer and fall. Look for beaver dams, which consist of large piles of sticks, twigs, mud and even small logs across streams, or large conical mounds of sticks and mud at the water's edge. Beavers are easily distinguished from West Virginia's other semiaquatic mammals – muskrat, mink and river otter – because of their large size (adults weigh between 30 and 60 pounds) and in their flat, paddle-shaped tails.

Wild turkeys are abundant here in the woods along the river to your right as you enter the park. Rare is the occasion when you visit Watoga and don't see white-tailed deer; watch for them in the early morning or late evening in forest clearings. Raccoon, red and gray fox, squirrels and woodchuck are among the more common wild inhabitants.

In spring, listen for the drumming of the male ruffed grouse, as its wings rapidly beat the air. Chiefly a ground and understory bird, ruffed grouse grow "snowshoes" in the winter, rows of bristles on their goes that help them get around in the deep snows that blanket this area. This is one of the few areas where the mountain earth snake occurs.

A scenic 11-acre lake provides fishing for bass, catfish, bluegill and trout. A handicapped-accessible fishing pier is available.



Beavers are one of the numerous wildlife species visitors can see at Watoga.

Steve Shaluta

# Timber Management for Wildlife 101

By Terry Jones

Often landowners don't associate timber harvesting in a positive way with wildlife. What they fail to realize is that they have the power to decide how their timber is to be cut, and that it can be accomplished in a positive way through applying sound forest management with wildlife considerations. Landowners have the best opportunity to increase wildlife populations by wisely using their forest resources. Timber can be used as the monetary tool to create wildlife habitat while paying the mortgage and college education, and keeping up with inflation. Unlike oil and gas exploration, coal mining and commercial development, logging is harvesting a renewable resource. This means that after the resource is used, it will regrow if management is done correctly.

To effectively apply forest management to their woodland, landowners must first deal with their own perceptions. They must understand that forests are dynamic systems that change. They should not be naive and believe that trees will maintain good health forever. Humans have had an impact on nearly all forestland,

whether by forest clearing for agriculture, mining and development, logging, introducing nonnative invasive species or burning. Even with all of man's intrusion into the forest, West Virginia remains over 78 percent forested.

One of the most productive uses of the forest resource is to create and maintain wildlife habitat. Prior to harvesting timber, a landowner needs to prepare a pre-harvest plan which includes wildlife considerations. All too often, wildlife management is considered as an afterthought, only because most people are enthralled with the revenues they are anticipating to receive from the sale of their timber. When contemplating a timber harvest, landowners need to decide what type of forest management, or silviculture, will give them the biggest bang for their buck. Silviculture may be defined as the theory and practice of controlling forest establishment, composition and growth. They will then have to decide on an even-aged silviculture system under which nearly all the trees are the same age, or an uneven-aged silviculture system which includes a variety of age classes.

In a landowner's pre-harvest plan, an inventory of tree species, forest types, and sizes and ages of trees need to be determined. Using the existing inventory, landowners must decide what species of wildlife they would like to benefit most and the silvicultural system that would most efficiently and economically address the objectives of the timber sale.

Even-aged management in West Virginia for wildlife usually involves clearcutting and shelterwood methods. The clearcutting method removes all trees in an area to allow the growth of tree species that are intolerant of shade, such as young oak and black cherry seedlings. Clearcutting will provide early successional forest habitats so important for species such as the golden-winged warbler and many other songbirds, ruffed grouse, woodcock, white-tailed deer and snowshoe hare. An early successional forest is the initial growth after the trees are cut and typically consists of tree sprouts, grasses and shrubs.

If there are high populations of deer on your property, you should plan clearcuts to be at least 10 acres in size so as to overwhelm the deer with available browse. Otherwise your tree seedlings will not survive. The logging slash (logging debris and tree tops) left in the harvest area, which arouses criticism from uninformed spectators, actually protects seedlings from deer browsing, adds nutrients to the soil, and provides shelter beneficial to many critters. Also consider liberalizing the deer hunting opportunities on your property. Sometimes you may need both to successfully regenerate a timber stand. It is important for landowners to understand that if adequate numbers of preferred seedlings are already established prior to logging, a clearcut should produce a new stand with the landowner's desired species.

The other important even-aged system of cutting

for wildlife-conscious landowners is the shelterwood method. This is the most applicable cutting method to establish wildlife friendly and mast-producing trees when seedlings are not already established before the timber harvest. All too often, in West Virginia, due to past cutting practices and scattered overpopulation of deer, among other reasons, we don't have desirable species established in the understory (lowest level of vegetation in the timber stand).

To compensate for this lack of desirable plants close to the ground we need to remove the trees by partially cutting the stand two or more times. To accomplish this, superior trees must be left, evenly dispersed across the cutting area. These trees will provide seed and shelter for the establishment of seedlings and the eventual regeneration of the forest. Once the new seedlings are established (usually three to ten years, depending on the species), it will be time to remove the trees that were initially left during the first cut. Shelterwood cuttings are applicable to the mixed oak and northern hardwood (with black cherry trees) forest types in West Virginia, in addition to other forest types. Black cherry has become more important at higher elevations within West Virginia because another important wildlife species, American beech – a favored mast producer – is succumbing to beech bark disease and is rapidly disappearing from the forest.

The alternative to even-aged management is uneven-aged silviculture, which primarily consists of single-tree and group selection. The single-tree method involves individually selecting trees based on pre-set criteria established by the landowner, which may involve timber value, species and tree vigor.

Group selection removes a group of trees, again designed by pre-harvest criteria. The most common



Huttonsville WMA – A new forest stand three years after being clearcut. Stand has strong oak component. View is looking down reclaimed skid road.



Bluestone WMA – A clearcut in an area with a high deer population. Heavy logging slash left to help protect new seedlings and sprouts from deer browsing.



Chief Cornstalk WMA – A log skidder pulling a log carefully passes between leave trees to prevent damage to them. Leave trees are marked with an orange ring.

harvest covers a ¼-acre to two-acre stand. Because there will be considerable number of tall trees left after each cut, shade tolerant species such as sugar maple and birch can become established. These offer limited benefit for wildlife. The selection method can be modified into a “conditioning cut” system, which will thin stands in order to optimize mast conditions for high value wildlife trees such as red, black and white oak. Gray squirrels and scarlet tanagers may benefit from the selection method. The continuity of the forest canopy will exhibit minimal changes under this method.



Bluestone WMA – Active tree cavity used by squirrels. This tree would not be cut in a timber harvest planned with wildlife considerations.

Landowners need to know that there are many modifications to even-aged and uneven-aged forest management that are beneficial to wildlife. Many wildlife management practices may be used to supplement the harvest methods previously mentioned. Log landings can be converted into wildlife clearings and planted in clover and annuals (oats and winter wheat) to create turkey and grouse brood habitats. Shelterwood cuts can be modified into oak savannahs, which are heavily thinned oak stands with herbaceous understories maintained by prescribed fire or mowing. Logging equipment can be used to construct small water holes, used by many species of wildlife. For example, bats frequent water holes to feed on the abundant insects flying above the water’s surface. Leaving snags (dead trees) and cavities will benefit wildlife such as woodpeckers, raccoons as well as West Virginia endangered species such as the Virginia northern flying squirrel and Indiana bat. Cutting back woody growth on field borders to encourage saplings and shrub growth to revitalize edge habitat is another beneficial wildlife practice. Many other ways exist to help wildlife with timber dollars. Study your favorite species and be creative with habitat.

Applying the concepts of diversity and interspersion is basic to wildlife habitat improvement. Diversity refers to the amount of variation in plant communities. High plant diversity results in a high diversity of animal populations. Diversity can be created by applying either even-aged or uneven-aged harvest methods, or

a combination of both. The result will be a habitat with different tree species and ages melding together to create edges. A diversity of forest age classes will appeal to a variety of wildlife species.

Applying interspersion involves creating a diversity of successional stages and vegetation types within the travel range of the wildlife species under consideration. An example would be the dilemma of cutting a 40-acre clearcut block versus four smaller 10-acre cuts. The smaller cuts would intersperse open areas with forests in four places within the property.

Diversity and interspersion can be combined to create wildlife habitat where many species of wildlife find places to forage, escape from predators, nest and breed.

Before attempting a timber harvest, a landowner needs to realize that no silvicultural system is universally good or bad for all wildlife species within a property. First prioritize your preferred wildlife species for management purposes. Then review what the property offers in the way of forest types, tree species present and availability of markets to handle certain tree species and tree diameters. To complete your pre-harvest plan, think about what possible detrimental effects your actions may have upon your woodland and surrounding properties. Two important cautions a landowner needs to exhibit when contemplating a timber sale is whether non-native invasive species are present on the property and whether there is a possibility that the planned harvest will introduce or help establish such species from areas adjacent to the property. Japanese stiltgrass, garlic mustard, tree of heaven, tartarian honeysuckle and asiatic bittersweet are some of the invasive species that will displace native vegetation and literally take over your woodland if not controlled.

Remember, harvesting your timber is not the removal or eradication of the forest. With the application of sound forest management, it is the regeneration or renewal of the forest.

Terry Jones is a certified forester with the DNR Wildlife Resources Section stationed in Elkins.

## Wildlife Diversity Notebook: Red-spotted Newt

**Common Name:** Red-spotted newt

**Scientific Name:** *Notophthalmus viridescens*

**West Virginia Status:** Widely distributed throughout West Virginia; one of the most common salamanders in the state.

**Description:** The adult is a small aquatic salamander from 2-1/2 inches to 5 inches long. The color of the back is greenish brown with a scattering of black dots and a series of small, black-bordered red spots along each side. The belly is yellow with many scattered, small black spots. Two features which separate newts from other salamanders are the lack of costal grooves (vertical grooves on the sides of the body) and the presence of two ridges on top of the head. During the mating period, the male has enlarged, horn-like growths on the lower surface of the hind legs and a flattened tail with a sharp keel.

In West Virginia, there are three distinct stages during its life history: a larva, a terrestrial sexually immature subadult, and an aquatic sexually mature adult. The immature subadult, often called a red eft, has rough, granular skin that is bright orange-red with a row of black-bordered red spots along each side.

**Habitat:** Adult newts are found in a wide range of aquatic habitats, particularly in quiet pools, ponds and swamps. While they may occur in streams, they are seldom abundant there. The mature adults can be seen floating or drifting near the surface of the pond at any hour of the day or night. They are active throughout the year and may be observed swimming beneath the ice during winter months. During late summer and fall, when their ponds may dry up, they burrow into the mud and remain there until the water level is restored.



The terrestrial subadult, called the red eft, is best seen after warm summer rains.

**Diet:** The food of the newt is limited only by size and availability. Throughout most of the season it consists of various worms, adult and larval insects, crustaceans, slugs, snails and small vertebrates. In the early spring, the cycles of the various animals in the area may determine the newt’s diet. Thus it may feed on the eggs of the spotted salamander, then shift to the fairy shrimp as they increase in number, then to mosquito larvae, and finally to eggs of one of the frogs breeding at this season. They can often be seen foraging in shallow water.

**Life History:** Most mating occurs in the spring, although there may also be a fall mating period. After mating, the female deposits the eggs one at a time, attaching them to leaves and stems of aquatic vegetation. She may lay 400 eggs or more. In West Virginia, eggs are deposited in April, and usually hatch within two or three weeks. Newly hatched larvae average 3/8-inch in length. They soon develop gills and limbs. In late summer or early fall they transform into the red eft (terrestrial) stage. The eft wanders over the forest floor and is most conspicuous following warm summer rains. After a period of up to two or more years, the subadult returns to the water and takes on the adult coloration. In the fall mating period, fertilization may occur but there is no evidence that the female lays eggs.

Newts secrete toxic substances through the skin and so are avoided by fish and other predators.

**Range:** The red-spotted newt is found from Nova Scotia in Canada west to the Great Lakes region and south to central Georgia and Alabama.

**Threats and Prospects:** none.

Information compiled by Art Shomo, editor.



Red-spotted newts live out their adult life in water.





Jeff Craig

*Bobcats and other predators were considered “vermin” in the first half of the 1900s.*

## Predator Control

In the 1920s it was believed that to maintain and increase populations of game species, predators must be reduced and total “vermin” numbers held in check. Game wardens and managers of the state refuges were requested to destroy all predators possible while on patrol. In addition, the Commission employed a vermin exterminator in 1923 who would devote full time to trapping and hunting vermin. At that time the Conservation Commission (forerunner of the Division of Natural Resources) paid a bounty of \$2.50 per bobcat killed with the intention of increasing the bounty to \$3.50.

In the 1930s, vermin-killing contests were conducted by organizations in many counties and resulted in the elimination of hundreds of thousands of animals. During the 1934-35 fiscal year, 40 counties sponsored and conducted such contests believed, at that time, to be “beneficial.” Vermin animals included hawks, rats, snakes, foxes, crows, mink, waterdogs and turtles, among others.

Bounties on several predators were paid by counties at various times in history. Pendleton County, for example, paid a bounty on bears at various times beginning in 1928. Randolph County permanently discontinued the bear bounty system in 1953. The black bear was finally designated a game animal by the 1969 legislature, at which time Pocahontas County discontinued its bear bounty system. Bounties were also paid on bobcats and foxes.

Control of predatory wildlife continued through the 1940s, 1950s and into the early 1960s. Predator control efforts eventually were eliminated as officials realized that the need for habitat management was more critical than the wasteful practice of predator control.

## Beginnings of Modern Wildlife Management

The United States Congress boosted financial support to state fish and wildlife agencies in 1937 when they passed the Federal Aid in Wildlife Restoration Act, or Pittman-Robertson Act. This act placed a tax on the manufacture of all firearms and ammunition. The revenue from this tax would be apportioned among the state wildlife agencies according to the number of licensed hunters and a state’s acreage. To be eligible for this federal aid, state agencies were required to have a professionally trained staff and the funds had to be dedicated to biologically sound wildlife management programs. This act, whose preparers had extraordinary foresight, resulted in hunters supporting the funding of many fine programs, some of which led to great wildlife management success stories.

After decades of raising wild turkeys on farms and trying to mate farm-raised hens with wild gobblers failed to increase the population significantly, efforts were redirected toward live-trapping and transplanting wild birds with funding from the Wildlife Restoration Act. The first transplant occurred in 1950 when six turkeys were released on Coopers Rock State Forest. This was followed in 1953 by the release of nine birds on Bluestone Public Hunting Area. The results of these two releases were so exceptional that a full-time trapping and transplanting project was initiated in 1953. This program was expanded and continued until the program was terminated in 1989 when it was believed that all suitable range in the state was occupied by wild turkeys. The huge success of this program was primarily attributed not only to the trapping and transplanting of wild birds but also to maturation of the forest following a period of intensive logging and burning in the early 1900s.

The 1911-12 report of the Forest, Game and Fish Warden states, “Beaver (*Castor canadensis* sp.), once common, but probably long since extinct within our limits.” The many streams, mountains and other natural features within the state that have the word



DWR Collection, West Virginia State Archives

*Wild turkey studies and trapping and transplanting programs were in full swing in the 1960s.*

beaver as a part of their name indicates the general distribution of the mammal here in earlier days. The severe drought of 1930 caused the agency to initiate a beaver restocking program in consideration of the water conservation abilities of the beaver. Beavers were obtained from Michigan and Wisconsin and relocated primarily in areas of Tucker, Randolph and Pocahontas counties. The transplanted beavers resulted in a population increase in a relatively short period of time. Descendants of these stockings were live trapped and released at new sites, resulting in scattered colonies all over West Virginia.

A pioneer effort in squirrel research was launched in 1949 and ended in 1955. Every survey of hunter preference conducted in West Virginia ranked squirrels as the most popular game species in terms of hunter effort. It followed that long-term research was needed to answer the many questions cast upon state wildlife officials annually in order to do the best job of managing the state’s squirrel populations.



Steve Shaluta

*Beaver*

During the late 1940s and early 1950s, the game management program consisted largely of an inventory of the state’s wildlife resources. In order to formulate sound biological management programs, it was first necessary to gather soil, timber and wildlife data on forested and non-forested plots throughout the state. Biologists, therefore, initiated the wildlife cover mapping and habitat analysis project in 1946. The project’s objective was to determine the extent of various vegetative types and the suitability of these various types for wildlife. The end result was a complete forest and land-use vegetation cover map of the state along with wildlife management recommendations based on like areas of soils and vegetation types.

In 1948, a survey of West Virginia mammals was initiated to obtain practical management information on game and furbearing species. Particular attention was given to each mammal’s life history, range, abundance, habitat preference, economic importance, and effects of land

use on the species. Information was also obtained on the history of West Virginia mammals, and specimens were collected for a taxonomic study for available reference collections of hair, fur, skins, skulls and skeletons at West Virginia University.

A statewide farm-game management program also was launched in 1948. Through this program the Conservation Commission helped private landowners interested in having more game on their lands improve the available wildlife food and cover. Once a landowner expressed interest, a field survey was conducted to determine wildlife habitat limitations. A plan was then prepared showing needed practices the landowner agreed to establish. The Conservation Commission Game Division furnished all of the plants and some of the materials needed to carry out the landowner’s plan. In addition, technical assistance was provided to the landowner by qualified biologists. In turn, the landowner was responsible for planting and maintaining the trees, shrubs and grain food patches by protecting them from fire and grazing. This project, except for technical assistance offered by biologists, was terminated in 1963 when the Game Division’s management emphasis was shifted to state-owned lands.

A memorandum of understanding between the Conservation Commission and U.S. Forest Service was signed late in 1945. This cooperative agreement provided for a united approach to wildlife management on 303,600 acres of the Monongahela National Forest, which was divided into 10 individual areas with a resident wildlife manager assigned to each area. These management areas originally included six “game breeding areas,” or refuges, open only to controlled public hunting when needed for species such as deer.

Ultimately, wildlife management area boundaries were extended to include all national forest lands in the state. The cooperative agreement was also modified to include portions of the George Washington and Jefferson national forests in West Virginia for a total national forest acreage of 1,032,000 – all of which was and still is available for public hunting. A state wildlife manager is responsible for habitat development and maintenance projects on each of the 12 national forest wildlife management areas. These managers develop and maintain wildlife openings, water sources, nesting structures, plantings, and roads and trails for hunter access. Biologists working on this national forest program, with the help of the managers, provide wildlife technical assistance and assist in the design of all projects conducted on these lands. Projects include forest plans, timber sales, special-use permits and wildlife habitat development. Wildlife management activities are primarily directed at forest game such as turkeys, bears, deer, grouse and squirrels, along with providing hunter access.



DNR personnel seeded abandoned logging roads in the national forest with plants eaten by wildlife.

## Wildlife Diversity Program

Until the 1980s, the terms wildlife management and game management could be used interchangeably around the country. All funds for wildlife research and management were paid by hunters through license sales and the manufacturer’s tax on hunting equipment mentioned earlier. With game species representing approximately 10 percent of the state’s wildlife species, it was obvious that little was known about the status of the majority of the wildlife in the Mountain State.

Any information collected on nongame species was done by the DNR Natural Heritage Program which began in the late 1970s. The 1979-80 DNR annual report stated, “The Natural Heritage Program is set up to collect and put into one file as much data and information on biological diversity and natural features in the state as is available. With this information the program routinely provides environmental data for the preparation of environmental reports, for review of regulatory permits ..., for scientific research and to identify significant natural areas in the state. The data base for the program contains site and background information on rare, threatened and endangered plant and animal species....”

In 1981, the program was incorporated into the Wildlife Resources Division. Considerable effort was made to update the occurrence and biological information for many species. To provide a dedicated funding source for the program, the state legislature passed a bill allowing taxpayers to donate a portion of their state tax refund to the program. The first year saw donations of \$167,000. In coming years, additional tax refund checkoffs were added to the state’s tax form, resulting in a decrease down to \$15,800 in donations in 1989. The checkoff was eliminated by the legislature in 1991. Alternative sources of funding include the sale of the annual wildlife calendar, proceeds from the wildlife license plates, the sale of books, pins and other various items, federal grants and matching funds, and beginning in 1994, general state revenue funds (later derived from the lottery revenue).

Since its inception, the Nongame Wildlife and Natural Heritage Program has focused on education and outreach, research, monitoring and management. In 2002, the program was renamed the Wildlife Diversity Program to better reflect the mission of the Wildlife Resources Section to manage all species of wildlife for the use and enjoyment of all the state’s citizens.

Wildlife Diversity Program biologists have spent



Wildlife biologist places osprey in artificial nest box along Potomac River. Note second osprey in upper left corner.

much time afield at all hours of the day and night conducting population inventories to determine baseline population numbers. They then conduct chronic surveys in the years that follow to compare population levels with those baseline numbers. Bats, freshwater mussels, dragonflies, salamanders, bald eagles and northern flying squirrels are among the numerous species which biologists have inventoried. They monitor 16 sites for the Northern flying squirrel in a long-term study to detect population trends of this mammal.

Various survey methods are used, including listening for frog calls, estimating hibernating bats by sight, catching and banding birds and bats in mist nets, and recording mussel populations underwater using scuba gear. Research projects have involved attaching radio transmitters to species as diverse as bats and rattlesnakes to learn more about their behavior and habitat requirements. For the endangered Northern flying squirrel, biologists conduct food habit studies, and movement and habitat use studies through the use of radio telemetry.

Biologists have been actively involved in the reintroduction of the peregrine falcon and osprey. They have installed 18 gates across cave entrances to protect endangered bats from human disturbance. Working with partners, Wildlife Diversity personnel



Wildlife biologist scans stream bottom for freshwater mussels.

are rearing juvenile mussels to supplement populations of rare mussels and to reintroduce species that have disappeared from the state. They work with federal and state land managers as well as private landowners to conserve imperiled species on their land.

Wildlife Diversity personnel developed a detailed, extensive Wildlife Conservation Action Plan in 2006. The goal is to conserve the diversity of West Virginia fish and wildlife resources by emphasizing those species in greatest need of conservation.

The Diversity program enlists the help of the public, be they graduate students or pure volunteers, in a variety of ways. The DNR Wildlife Resources Section has provided grant money to conduct surveys on animals as diverse as crayfish and golden-winged warblers, and to study the effects of various timber management practices on songbirds. Atlas projects to determine the location of breeding birds and amphibians and reptiles throughout the state have been initiated and funded by the Wildlife Resources Section and assisted by wildlife personnel. They established the Master Naturalist Program which trains volunteers to teach others about wildlife along with assisting with wildlife management, outreach and research projects. More than 110 schools in 41 counties have received grants to develop Outdoor Wildlife Learning Sites which focus on enhancing wildlife habitat on school property.

## Conclusion

With the state nearly 80 percent forested, it is no wonder that forest wildlife species have done so well considering the management applied and the natural maturation of our forests. On the other hand, those species that prefer early successional or young-age-class vegetation declined in numbers. Examples of such species include ruffed grouse, cottontail rabbit, bobwhite quail, woodcock and many songbirds.

Long before settlement by Europeans, this country's forests were destroyed by lightning-caused fires, insect damage and climatic factors. The woodland bison and elk which once roamed our hills caused considerable disturbance to soils and vegetation on the forest floor. Native American people were also known to affect vegetation by doing a considerable amount of burning. Recognizing the considerable values derived from this practice, Native Americans burned for numerous purposes including land-clearing, keeping woods in an open condition, and driving game. Wildlife species that need young vegetation to survive and regenerate did so with the aid of such vegetative disturbances.

Serious protection of our woodlands started in the 1930s following the widespread logging and subsequent wildfires which took place until about 1928. This protection from both natural and artificial forces changed forests from what was once a diverse habitat situation, to that of mature forests presently 60 to 80 years of age. Mature timber, with open understories, benefit such species as turkeys, bears and squirrels but is of little value to those species requiring young plants. An example of this can be seen by examining



*DNR biologists head to the field with live traps used for monitoring Allegheny wood rat populations.*

forest inventories conducted for the state in 1975 and again in 1989. For example, the amount of saw timber inventoried between these two years increased by 34 percent, while seedling/sapling-sized stands -- habitat for early successional species -- decreased by 62 percent. It is no small wonder that we are presently blessed with good populations of turkeys, bears and squirrels, while many of our songbirds along with grouse and rabbits are experiencing population lows.

For a variety of wildlife we should encourage the management of habitat for species that prefer mature woodlands as well as those that like young forest growth. This situation can usually be accomplished through a well-rounded forest management program such as that presently conducted on some corporate and state-owned forests and wildlife management areas. Perhaps the next time you see a cutover area, you will recall that the resulting habitat will favorably affect many wildlife species. For more information on timber management for wildlife, see the feature story in this issue.

Wildlife management over the years has consisted of numerous techniques, some effective, some not so effective. These techniques manage either wildlife populations directly or their habitat. The end result has been an abundance of wildlife for all people to enjoy.

Craig Stihler

## Mountain State Flora

# Beechdrops

By Emily Grafton

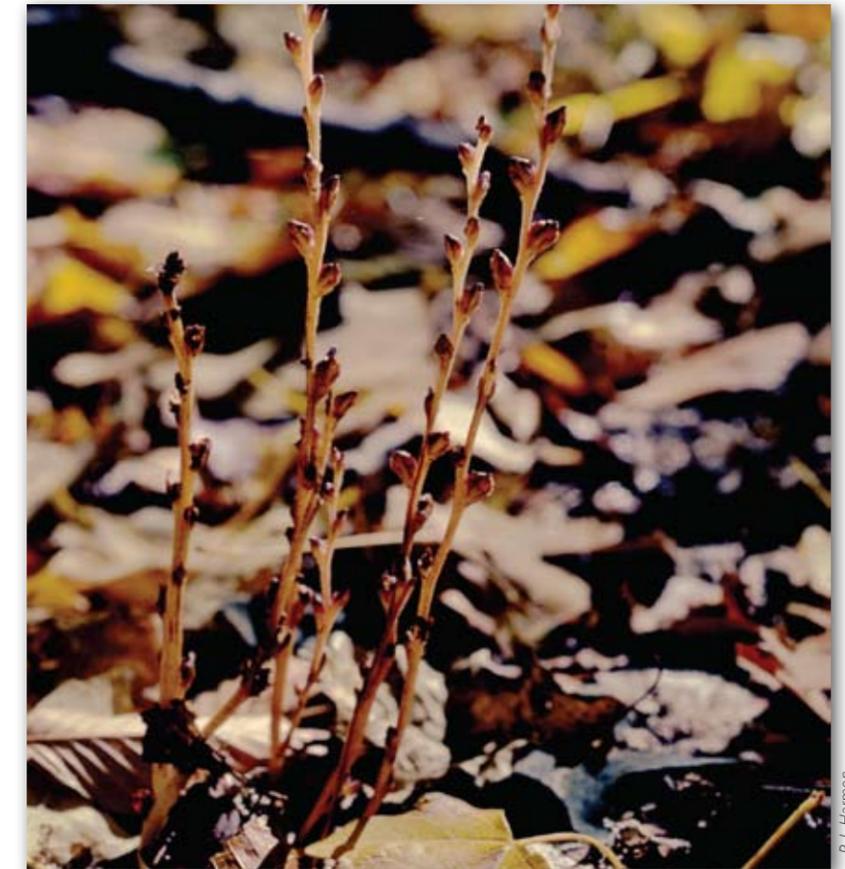
From late fall through early spring one is likely to walk by, but overlook a colony of branched, slender-brown stalks growing at the base of a beech tree. Sometimes only one or two stalks may be present. In late summer, these curious little plants called beechdrops (*Epifagus virginiana*) have a spongy texture with a dull-purplish to brown color. Even during their growing season, people often overlook these obscure flowers.

This herbaceous, annual plant makes its living parasitizing the roots of beech trees. It will grow on a tree of any size and has been known to parasitize one-year-old seedlings. A growing plant inserts a root-like structure called a haustorium into a beech root, absorbing enough nutrition to sustain itself. The genus *Epifagus* is derived from the Greek word "epi" which means upon, and the Latin "fagus" meaning beech.

Beechdrops belong to a whole family of plants that live as root parasites. They do not produce chlorophyll, so consequently they lack any green color. This lack of "greenness" is one reason that many people overlook them. When first observed, many people think beechdrops look like a fungus.

Beechdrops range in height from about five inches to 18 inches. The skinny, tubular branches bear small, scale-like leaves pressed flat against the stem. Tiny flowers occur singly or in spikes. Looking through a hand lens, an individual flower is quite beautiful. The flowers are tubular and bear two lip-like projections. The flowers produce nectar to attract winged pollinators, but only the upper flowers produce seeds.

It is believed that raindrops disperse the seeds and that they germinate in spring. Plant development moves



*Lacking the showy flowers and bright colors of most plants, beechdrops often go unnoticed by people.*

P.J. Harmon

slowly through the growing season. By July, the whole plant is still only a half-inch in height and appears on the surface of the ground as a small white tubercle. Beechdrops do not fully mature until the last half of August. They bloom from August to October, and by the end of November the plant turns dark brown and brittle.

Beechdrops occur in every county in West Virginia. The Peterson Field Guide, Eastern/Central Medicinal Plants by Steven Foster and James Duke states that the species ranges from Ontario south to Florida, and as far west as Louisiana. They indicate that this plant was once used medicinally to treat diarrhea, dysentery, mouth sores and externally on cold sores. Native Americans steeped the whole plant in hot water for a tea. Beechdrops tea tastes bitter,

so people dried the plant before using it to lessen the bitterness.

Although beechdrops live as a parasite on beech trees, they do not damage the trees. Each plant dies at the end of the growing season. This is a good thing considering the fact that the underground portions of beechdrops grow throughout the life of the plant, sometimes encasing and constricting the root it is parasitizing. If beechdrops were a long-lived perennial, it could eventually kill its own source of food.

Beechdrops and its relatives in the Broomrape family are one of nature's many anomalies. New things may yet be discovered about the pollination mechanisms, seed dispersal and the genes that control its growth. The next time you see a beech tree look at its base for beechdrops.

## Hide and Squeak

This is a simple activity for younger kids which explores the concept of camouflage and can be done with any size group.

### Materials

Beans, toothpicks or similar item of about 4 to 5 different colors, approximately the same size, evenly divided by color (about 10 -15 total for each child); small plastic bag or envelope in which kids can place the items they collect

### What to do

Scatter the beans or toothpicks randomly over a mowed grassy area (size of area depends on number of children participating). Explain to your kids that they are “hawks” looking for “mice,” and the mice in this population are a variety of different colors. Show them samples of the mice so they know what to look for.

On your signal, have the children search for as many mice as they can find in a minute. Have the kids count the number of each color they found, and then total up all the mice of each color picked up



Graph illustrates the effect of camouflage. Few brown “mice” were found.

by all kids. This would make a great graph. Some colors will be found more easily than others.

Discuss with the children how camouflage protected some of the mice. Relate this to protective coloration of animals, explaining that if

this were a real population of mice, the mice that remained in the population would be more likely to have babies of the same color. Ask the children what they think will happen to the number of mice of each color over time. (Note: if you use toothpicks or other sharp items, you probably should send your “hawk-eye” children to clean up the rest of the mice to prevent potential safety hazards in the future.)

You might want your kids to look around the area for insects or other small animals which have protective coloration. You could have them think of animals which are camouflaged against their surroundings and discuss their adaptations. Another option is to search the Internet for examples of camouflage or have them look through magazines or library books with examples of camouflage.



Human “hawks” search for mice in a field.

## Nature Note: Camouflage

Most people like to be noticed. But to go unnoticed is of utmost importance to many animals. Camouflage helps wildlife escape detection and possible death.

Protective coloration is the most common type of camouflage. Many female birds, particularly ground-nesting birds like the quail and mallard duck, are mottled brown and white. They become almost invisible while sitting in grasses and reeds. Grasshoppers are generally green and brown. Mice and other small mammals are shades of brown which helps them blend in with their natural surroundings.

Many aquatic animals are also camouflaged. Fish possess protective coloration on top and bottom. Most have light bellies which, when viewed by predators from below, blend in with the water’s surface and the sky. If you look down at most fish, the dorsal side (top) is usually a darker color or has a pattern which matches the stream or lake bottom. The brook trout, our state fish, is well disguised by the dark green and olive markings on its back.

Color patterns are also an effective form of camouflage because they help break up an animal’s profile. The white spots



The copperhead’s color pattern blends in well with leaves on the forest floor.

on a fawn or a young wild boar mimic the scattered rays of sun reaching the forest floor through the trees. The indistinct rings and spots exhibited by some snakes break up their solid color and allow them to lie undetected among leaves and rocks.

Camouflage provides many animals with their first and often best line of defense – the ability to avoid detection by predators. On the other hand, it may also benefit predators which depend on stealth to catch their prey.



The winter pelage of the snowshoe hare provides camouflage in the higher elevations of West Virginia.



Coloration and vertical pattern of the barred owl’s feathers lets the barred owl hide in the trees.



courtesy of Ruby Jones

## Didyaknow About Didymo?

The invasive algae known as didymo has been found in several streams in the central mountain counties of West Virginia. Samples collected this summer from the Elk River near Webster Springs, lower Glady Fork north of Alpena, and Gandy Creek near Whitmer were sent to the Maryland Department of Natural Resources for confirmation. All samples contained Didymo.

Didymo is a common name for *Didymosphenia geminata*, a freshwater diatom species that can form extensive mats on stream beds. The thick mats can cover native algae and aquatic insects, making fishing very difficult and killing the insects which make up the base of aquatic food chains.

The algal mats are also called “rock snot” and can be white, yellow or brown in color. The algae form stalks that attach to rocks. While the algae eventually die and break off, the stalks persist and may impact stream habitats and aquatic organisms for weeks or months.

### What You Can Do

Didymo can be attached to waders, paddles and boats. Felt-soled boots and waders are likely the worst culprit in the spread of these algae. The porous material stays damp and the algae cells can remain alive in the damp felt bottoms.

Boaters and anglers are the most important line of defense in minimizing the spread of aquatic invasive species by following a few simple steps.

- Before leaving a stream, scrub mud and debris off of boots and fishing gear.
- Disinfect boots and equipment by scrubbing or soaking in five percent salt solution (two cups of salt in 2.5 gallons of water) for one minute and then let dry completely. You may also scrub equipment with dishwashing detergent and rinse well.
- Allowing equipment to completely dry for at least 48 hours will also kill Didymo, but realize that felt bottoms of boots may require longer drying times.
- Soak items in very hot water (140 degrees).
- Freeze overnight.

Once in a stream, there is unfortunately no way to prevent the downstream spread of Didymo. Anglers are encouraged to report unusual algal mats that may be Didymo to DNR district offices and the Elkins and Charleston offices.

## Calendar of Events

### November

- 1 **Small Game Hunting Seasons Open**  
See Hunting Regulations for complete details or go to [www.wvdnr.gov](http://www.wvdnr.gov)
- Youth/Class Q and QQ Antlerless Deer Hunt**  
Open on private land in all counties except Logan, Mingo, McDowell, and Wyoming, and on specified wildlife management areas and state forests. See Hunting Regulations for complete details or go to [www.wvdnr.gov](http://www.wvdnr.gov)

- 24 **Traditional Buck Firearms Season opens**  
See Hunting Regulations for complete details or go to [www.wvdnr.gov](http://www.wvdnr.gov)

### December

- 20 **37th Annual Audubon Christmas Bird Count**  
*Pipestem Resort State Park*  
Contact Jim Phillips, Park Naturalist at (304) 466-1800.

### January

- 3 **Eagle Survey**  
*Pipestem Resort State Park*  
Contact Jim Phillips, Park Naturalist at (304) 466-1800.

### January 30 – February 1

**West Virginia Hunting and Fishing Show**  
*Charleston Civic Center*  
Log on to: [www.wvtrophyhunters.com](http://www.wvtrophyhunters.com) or call (304) 768-9999.

## Access Improved to Buckhannon River near Buckhannon

The Division of Natural Resources has completed construction of a new public fishing and boating access site on the Buckhannon River in Upshur County. The new area consists of a 14-foot-wide concrete boat launching ramp, parking spaces for seven vehicles with trailers, and four regular vehicle parking spaces. The site is located approximately three miles north of Buckhannon on county Route 4/13.

The “green” boat ramp was also poured at the boat launch site using pervious concrete. This environmentally friendly concrete contains very little sand. As a result, water passes through the gaps between the aggregate (rocks) into the ground. This will reduce the amount of stormwater runoff from the concrete, often containing motor oil and other pollutants, going directly into the Buckhannon River.

Development of the site was accomplished through a joint effort by the Upshur County Commission, Federal Emergency Management Agency (FEMA) and the DNR. Construction assistance was provided by the Tygart Valley Conservation District. “The DNR counts on the support of other federal, state and local government agencies as



Jim Walker

*New boat ramp 3 miles north of Buckhannon built with pervious concrete to reduce water pollution.*

well as private organizations in helping to make these projects happen,” said DNR Director Frank Jezioro.

The DNR, in cooperation with the City of Buckhannon and the Tygart Valley Conservation District, also improved an existing fishing and boating access site on the Buckhannon River. The site was cleaned of silt and a new concrete launching ramp was built. The parking area was also upgraded.

“These sites provide excellent opportunities for smallmouth bass, rock bass and muskie fishing on the river,” said Jezioro. The projects were funded

by the sale of hunting and fishing licenses through the DNR and matching funds made available through the Federal Aid in Sport Fish Restoration program. The matching funds come from a tax on the manufacturing of fishing equipment and the sale of motorboat fuel. In the end, the cost is passed on to the anglers and boaters when they purchase the equipment and fuel. “Anglers and boaters are to be commended for providing the funding for projects such as these around the state,” Jezioro said.

## West Virginia Bald Eagle Nests

West Virginia's nesting bald eagle population hit an all-time high in 2008 with 30 reported nests in the state. Twenty-seven of these nests remained active producing 32 fledgling eagles.

The first bald eagle nest in the state was documented in 1981 along the South Branch of the Potomac River in Hardy County. Although the Potomac River drainage is still the center of eagle activity in the state, nesting eagles are expanding south and west along the Ohio, Cheat and Greenbrier river drainages. Nesting occurred in nine different counties in 2008. Since 1981, nesting has been documented in 12 counties with an impressive 294 fledglings produced during that time.

Even though the bald eagle was removed from the Endangered Species List in August 2007, DNR biologists are still charged with monitoring nesting populations in the state. Certainly, several undiscovered or unreported nests exist in the state. Wildlife biologists suspect nesting activity along the following rivers: Ohio, Kanawha, Cheat, Greenbrier, New and Potomac. If you are aware of bald eagle nesting activity in these or other areas of the state, please contact DNR wildlife biologist Rob Tallman at (304) 637-0245 or [robtallman@wvdnr.gov](mailto:robtallman@wvdnr.gov).



Steve Straluda

*Bald Eagle nest in West Virginia*

## White-nose Syndrome Killing Bats in Several States

No bats in West Virginia have died from a mysterious disease called White Nose Syndrome which has killed thousands of bats in the Northeastern United States the past two years. Lab results from two bats found dead in Trout Cave last spring were inconclusive. These bats, however, did not exhibit the classic symptoms of the condition.

The disease was first noticed when approximately 8,000 bats died during the winter of 2006-07 in upstate New York. Since that time, confirmed cases have been found in Connecticut, Massachusetts, New Hampshire, New York and Vermont. It is not known whether the white fungus growing on the face of infected bats causes the disease or is just a symptom. Because the disease has shown up in hibernation sites that have been closed to human access for years, it is assumed that the condition may be spread from bat to bat. Several studies are underway to unlock the secrets of the disease.

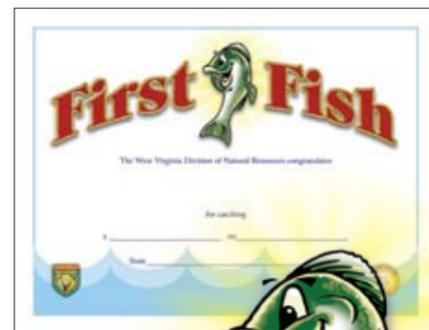
The West Virginia DNR Wildlife Resources Section, along with the U.S. Fish and Wildlife, has closed numerous caves in the state to human access. This is a precaution to prevent the spread of the disease in case the disease could be passed on to bats from contaminated clothing, footwear or caving gear. The agencies also ask cavers to clean and disinfect all gear before entering caves known to shelter bats. DNR officials are particularly concerned about caves containing the endangered Virginia big-eared bat because the spread of the disease to a few caves could threaten the majority of the world's population of this bat.

For updated information on the disease, check online at: [http://www.fws.gov/northeast/white\\_nose.html](http://www.fws.gov/northeast/white_nose.html). A list of cave closings in West Virginia as well as other states can be found on the web at [www.VAR-caves.us](http://www.VAR-caves.us).



Hibernating Indiana bats in New York showing White Nose Syndrome.

Nancy Heaslip, NY Dept. of Environmental Conservation



### First Fish Certificate Available Online



Seeing the bobber dip down in the water. Feeling the tug on the line as you reel in the fish. Images of the first time you caught a fish stay in your mind a lifetime.

Proud parents or relatives can now present a First Fish Certificate to a young angler to commemorate that memorable first catch. The eye-catching certificate is available on the DNR website. The online certificate is a colorful, tangible way to record a youngster's first fish. The certificate is easily completed with the angler's name, species of fish, and date and place of catch. The certificate can then be printed at home at no cost. The design is suitable for framing or placing in a scrapbook for posterity.

The First Fish Certificate can be found online at [www.wvdnr.gov/Fishing/First\\_Fish.shtm](http://www.wvdnr.gov/Fishing/First_Fish.shtm).

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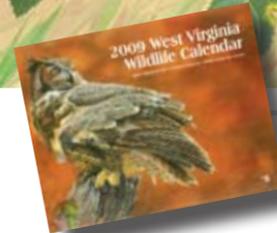
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