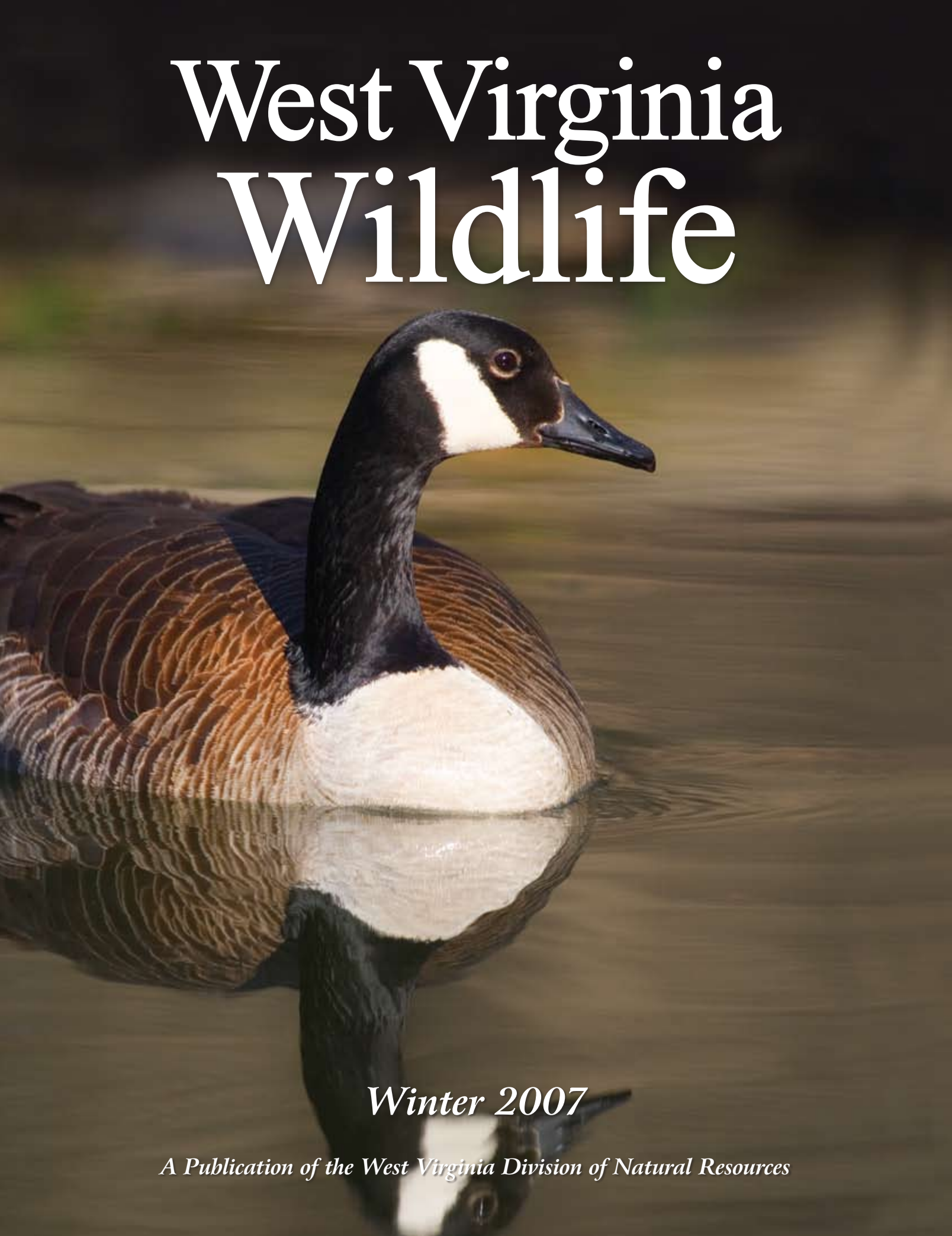
West Virginia Wildlife



Winter 2007

A Publication of the West Virginia Division of Natural Resources

Expanding Opportunities for Hunting and Fishing

Not a week goes by that we don't receive inquiries as to what plans the DNR has to increase hunting and fishing opportunities in West Virginia. These activities add over $1 billion dollars a year into our economy. Governor Manchin has asked us to undertake a study to see what it will take to improve our trout hatcheries to increase production from 750,000 pounds to 1 million pounds a year. Since there has been very few upgrades to the hatcheries over the last 40 years it will be a major undertaking, but well worth the return it will bring.

One of our major priorities is to acquire more land that can be open to the public for hunting and fishing. Over the last few months we have purchased over 4,000 acres in Fayette County with money from the sale of hunting and fishing licenses. We have leased more than 6,000 acres in Logan County. And through the generosity of the heirs of Jim Compton, and after extensive discussions among Governor Manchin, the DNR and Grafton Coal, we received a deeded gift of 80 acres along the Elk River, guaranteeing access to the famous catch-and-release section of that stream. This will be known as the Jim Compton Elk River Public Access Site as a tribute to him.

As our population ages, and more and more senior citizens have free time to roam the outdoors, we must plan to provide what they will need in terms on more, fish, and game. Our costs for gasoline, trout food and everything else we use in our outdoor work continue to increase just as your costs do. To meet these increasing costs, we are working on several programs that will generate the income to provide the best outdoor experiences that our citizens deserve. We are grateful and appreciative for all the support we receive from the hunters and anglers of West Virginia.

Frank Jezioro

Frank Jezioro
Director, WVDNR

West Virginia Wildlife

David Fattaleh

Colorful hummingbird captured in flight.

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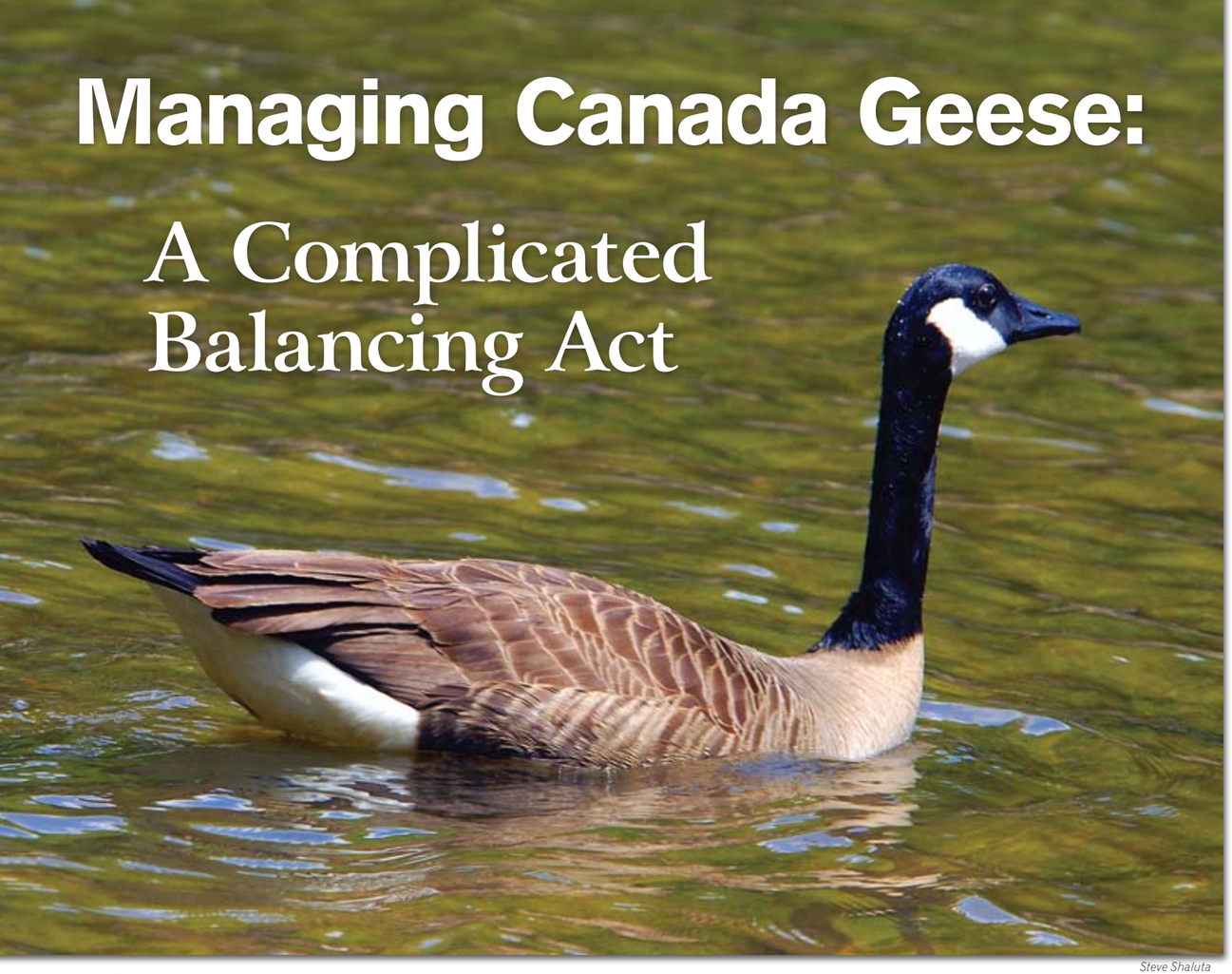
Managing Canada Geese:

A Complicated Balancing Act



Steve Shaluta

By Steve Wilson

What is complicated about managing Canada geese? There are lots of them everywhere! That's probably what most readers thought when they read the title of this article. But did you know that there are at least 11 races (or sub-species) and 13 recognized populations of Canada geese? Since they all look very much alike, the casual observer, hunter or even professional waterfowl biologist cannot tell to which race or population that flock of birds flying overhead belongs. Because of this, managing Canada geese is a complicated endeavor.

The term "race" is applied to a group of individuals of a species that show variation in size or plumage as a result of geographical or ecological isolation. Canada geese exhibit only minor differences in plumage between races, but size variation is significant. Sizes range from 12.5 pounds for adult male giant Canada geese to 3.4 pounds for adult male cackling Canada geese. Culmen (bill), wing, tail and tarsus (leg) measurements are also used to differentiate races, with bill length being the most commonly used feature. Most Canada geese in West Virginia belong to either the giant or interior races.

What population a goose belongs to is much more important to waterfowl managers than race. Canada geese have a strong propensity to use traditional breeding areas, migration paths and wintering areas. Groups of geese using specific areas are known as populations, and biologists manage each population individually. To complicate the matter, multiple races can occur within a given population and more than one population can be in the same area at certain times of the year.

The Atlantic Flyway which covers approximately the eastern quarter of North America, including West Virginia, is used by four different Canada goose populations.

Resident Population Canada geese (RPCG) nest from southeastern Canada southward and westward through most of the United States. They typically do not migrate, but they commonly move for brief periods of time and relatively short distances during the winter. One group of RPCG that does migrate annually is the flock nesting in Canaan Valley. They spend the winter near Durham, North Carolina. RPCG are now the most numerous population in all of North America.

Jeff Craig

Many Resident Population Canada geese nest and raise their young in West Virginia.

Atlantic Population Canada geese (APCG) nest in the tundra zone of northern Quebec along the eastern shore of the Hudson and James bays, across the Ungava Peninsula to Ungava Bay. They migrate south through New York and eastern Pennsylvania and winter in the mid-Atlantic region from southern New York to North Carolina. This population, the backbone of the world famous Eastern Shore goose hunting, was once the largest Canada goose population in North America. APCG numbers declined significantly in the 1980s and early 1990s resulting in the closing of most regular season goose hunting in a large portion of the Atlantic Flyway in 1995. Their numbers have rebounded substantially, and carefully regulated hunting is once again allowed.

Tom Oldham

DNR personnel round up geese to tag them with leg bands when the birds are molting and can't fly.

North Atlantic Population Canada geese (NAPCG) nest in Labrador and Newfoundland, migrate down the Atlantic coast, and winter along the coast from maritime Canada south to New Jersey. This goose population is also relatively small so hunting must be carefully regulated.

Southern James Bay Population Canada geese (SJBPCG), as their name implies, nest along the southern shores of James Bay and on Akimski Island. Most of this population migrates and winters in the Mississippi Flyway, but a portion uses western Pennsylvania and the Ohio River Valley in West Virginia. Like most other migrant Canada goose populations, SJBPCG need to be managed carefully to sustain their numbers.

Let's review briefly. Four distinct populations of Canada geese use the Atlantic Flyway. The three migrant populations are limited in number, requiring careful regulation of harvest levels. The fourth, a resident population, is excessively numerous and needs high harvest levels to keep their numbers in check. Geese from all four populations look alike. And, during the regular hunting season extending from October through January, each population shares migration and wintering areas with one or more of the other populations.

So how do waterfowl biologists manage each of these populations individually? Harvest levels are regulated by manipulating season dates, season length and bag limits. Several important pieces of information are needed for each population to establish population-specific harvest regulations. First, and probably foremost, is a reasonably accurate estimate of the size of each population. This can only be accomplished by conducting surveys on the breeding grounds during the nesting season when geese are segregated by population. Biologists count breeding pairs, assess habitat conditions, and estimate nesting success to produce fall flight (pre-hunt) population size estimates for each population. Once the population size is known, it is relatively easy to determine the percentage that may be safely harvested to maintain, increase or decrease the size of next year's breeding population.

Tom Oldham

Leg bands help biologists determine migration routes and schedules.

After determining the number of birds that may be harvested from each population, biologists select a combination of season dates, length, and bag limits to achieve the desired harvest level. Hunter survey data provides information on the numbers of hunters, days hunted and birds harvested for each season. Sometimes biologists collect tail fans from harvested geese. These tell biologists the age of the birds killed so they can determine the age ratio of the harvest. In addition, leg band recovery data provides a harvest rate (percent of available birds which were harvested). These data are used to calculate expected harvest levels for various combinations of season lengths and bag limits.

The simple approach at this point would be to apply the regulations package required for the smallest population to all populations in the entire flyway, but this approach has a couple of problems. First, it would unnecessarily reduce hunting opportunity for those populations that are more abundant. More importantly, it would severely limit the use of hunter harvest to control the numbers of over-abundant RPCG.

Addressing these problems requires population-specific information on when and where geese migrate and winter. Leg band recovery data, neck collar observations and satellite tracking provides this information. Restricted season lengths and bag limits can then be applied to specific locations and time frames to protect one population, while liberal regulations can be allowed in other areas or times to kill enough PRCG to control the population. Migrant Canada geese typically do not arrive in the United States portion of the flyway until October and most leave by late January or early February. Special early (September) and late (February) seasons allow extra harvest of RPCG when migrant geese are not present. Regular seasons (October through January) vary considerably between, and even within, states to apply restrictive regulations to the specific areas and time slots necessary to protect migrant Canada goose populations. Although a few SJBPCG winter here, West Virginia is considered a resident population area and is allowed the most liberal season. For the 2007-08 season, that included 80 days of hunting with a five bird daily bag limit during the regular season, and a special 13-day September season with a daily bag limit of five.

Clearly, managing Canada geese is no simple task; and this article provides only a basic overview. Several pages would be required to explain in detail all the surveys and data analysis mentioned here. Methods and rules regarding Canada goose nuisance and damage complaints is another facet of Canada goose management not even discussed. Finally, readers should also note that this must all be done cooperatively. The Atlantic Flyway includes 17 state wildlife agencies, five Canadian provincial wildlife agencies and two national government wildlife agencies that all share in the management effort.

Steve Wilson is a wildlife biologist stationed in Elkins.

Field Trip

Beech Fork State Park and WMA

Description: Beech Fork Lake opened for recreational activity in 1978. The area surrounding the 720-acre lake is a complex of federal and state lands. Beech Fork State Park, owned by the state, comprises 3,144 acres while the Beech Fork Lake Wildlife Management Area, leased by the state from the federal government, encompasses approximately 7,500 acres. The U.S. Army Corps of Engineers manages a marina, visitor center, picnic area and campground near the dam. Although open water and shoreline dominate the landscape, other habitats include old farmlands, wetlands and oak-hickory-pine forests.

Steve Shaluta

Boating slowly on Beech Fork Lake affords opportunities for viewing a variety of wildlife.

Directions: To visitor center: take Exit 8 off I-64 onto state Route 152 south and drive 5.3 miles. In Lavalette, at the sign for Beech Fork Lake, turn left onto county Route 13, and go east for 2.2 miles. To state park and WMA: take Exit 11 off I-64 and head south on state Route 10. Turn right onto Hughes Branch Road and follow road to park entrance or WMA access.

Ownership: West Virginia Division of Natural Resources. Beech Fork Lake WMA: (304) 675-0871. Beech Fork State Park (304) 528-5794. Lake & Dam: U.S. Army Corp of Engineers (304) 525-4831.

Closest Town: Lavalette

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

Steve Shaluta

Great Blue Heron

Viewing Information: Several species of hawks can be seen year-round. In open areas and fields look for red-tailed and broad-winged hawks, and for red-shouldered hawks in the woodlands and along timbered wetlands. Listen for barred owls in wooded areas, calling "hoo, hoo, hoo, hoo; hoo hoo hoooo-aw." The "aw" at the end is the signature sound.

In spring, look for wood ducks in small secluded ponds and wetlands around the lake, and in May search the lake for blue-winged teal. Also listen for the "drumming" of ruffed grouse as the male flaps his wings in search of a mate. April to early May is an excellent time to see ospreys near feeder streams and headwaters. Bald eagles have been observed the last two years near the state park office and boat ramp area. This is also an excellent time to listen for gobbling wild turkeys as they attempt to attract hens on miles of hardwood forest ridges. Green herons are sighted between April and October. Between July and September, numerous butterflies are present, including swallowtails, monarchs and skippers.

West Virginia DNR photo

Barred Owl

Large flocks of wild turkeys are commonly seen in fields during the fall and winter months. From August to April, great blue herons are present around the shoreline and along feeder streams.

Amphibians are abundant: spring peepers, American and Fowler's toads, gray tree frogs, mountain chorus frogs, wood frogs, pickerel frogs, and bullfrogs. Several species of snakes live on the area. Observant visitors might find an eastern box turtle on land, and red-ear sliders, eastern spiny softshell and snapping turtles in the water or sunning themselves on partially submerged logs.

Mammals include deer, squirrels, cottontail rabbits, raccoons, skunks, and flying squirrels. Several predators, including coyotes, red and gray foxes, and bobcats live on Beech Fork.

Beech Fork Wildlife Management Area is open to hunting and fishing. Special regulations geared toward older-aged deer management are in effect on the area. Please check with the area wildlife manager or the West Virginia hunting regulations booklet or on the DNR website to see when seasons are open.

Dave Fatalleh

Strong west winds may have blown seeds of false heather to start an isolated population atop North Fork Mountain.

Elizabeth Byers

False heather.

PJ Harmon

Bog rosemary is found in West Virginia only in Cranberry Glades.

Ron Snow

Cranberry Glades

Forestry Commission, England, UK

American larch, also known as tamarack.

Living on the Edge

By Paul J. Harmon and Larry E. Morse

High atop the southern ridge of North Fork Mountain in Pendleton County lives false heather, also called sand heather or woolly hudsonia. It's a dark grey-green, densely woolly, low-mounded shrub with bright yellow flowers. False heather thrives only in soil that is mostly sand, and it is shade intolerant so it needs lots of sun. It is most abundant on coastal and lakeshore sand dunes and inland sand plains from North Carolina to Labrador, and west through the Great Lakes region well into central Canada.

False heather grows on North Fork Mountain in two nearby sites in sandy soil in crevices and depressions on the eroding surface of a nearly flat outcrop of Tuscarora quartzite, a rock that weathers to white sand. On North Fork Mountain, prevailing westerly winter winds blast through gaps in the rocky cliffs, keeping woody vegetation dwarfed. It even scours some of the false heather plants with sand or ice crystals. Where the plants find white sand with little vegetation between blocks of quartzite rocks, they find conditions similar to shifting beach dunes. Botanist Larry Morse, one of the authors, studied false heather (and the two other species of sand heather) while at Harvard University. He found this small, isolated population on North Fork Mountain to be the most peculiar of all.

Ecologist Rexford Daubenmire, in his 1978 book Plant Geography, defined disjunction as "the occurrence of potentially interbreeding populations separated by a distance exceeding the extreme limits of gene flow." That means that this disjunct population of false heather is too far from the next nearest occurrence of the species for its seeds or pollen to make contact. So how far away are the next nearest false heather populations? The two small patches on North Fork Mountain are only 2.5 miles apart, close enough for seeds to travel on rare occasion. In a geographic distribution map of the species, Morse shows the small outliers there are more than 186 miles from plants on the Virginia coast, and more than 331 miles from the next closest record in northwestern Ohio, near Lake Erie. There's little likelihood that regular gene flow is occurring with those populations!

Why is such a specialized plant growing so very far from its next nearest populations? What are the odds that the seeds of a species with such specific growing requirements found their way to the isolated patches of exposed sand on North Fork Mountain? False heather's fruits are deciduous, dropping unopened capsules that are somewhat wind-borne. In open areas, Morse found that the fruits are blown short distances in mild weather by air currents near the ground. Later, the capsules open, releasing the rounded seeds, each about the size of a large sand grain but much lighter than sand. These seeds can be further dispersed by the wind, since they are moved even more readily than dune sand. It's presumed that the long-distance dispersal of false heather is possible. During tornados, hurricanes, or other large storm events its seeds could be dispersed hundreds of miles away from the parent plant.

Part of the explanation for false heather's distribution involves the 15 or more advances and retreats of continental glaciers across North America during the Pleistocene ice ages. During mid-glacial periods, climates were cooler, winds increased, and snowfall in Canada and other boreal regions exceeded snowmelt for thousands of years, producing great continental glaciers that spread outward, reaching central Pennsylvania in our region. As the ice sheets advanced, vegetation under the ice was destroyed, and vegetation near the ice was greatly altered, with some highly dispersible species spreading ahead of the advancing ice. Following each glacial period, there was an inter-glacial period when the glaciers retreated due to thousands of years of higher temperatures that melted the ice. As the leading edge of the ice sheet melted, streams carried rock, sand and mud, depositing them in vast open areas that undoubtedly were good

habitat for the false heather.

While none of the ice sheets covered what is now West Virginia, there certainly were impacts upon the flora and vegetation south of the edge of the ice sheets as the climatic changes occurred. Plants responded to the climatic changes, many retreating south in mid-glacial periods, and migrating north during interglacial periods. In the Southern Appalachians, mid-glacial climates were more severe than present conditions, and areas of tundra with intense frosts existed on many Appalachian summits as well as in some lower areas.

Leah Ceperly

Balsam fir trees may have been pushed south from Canada by the advance of glaciers.

It's likely that false heather may have occurred in numerous places in mid-glacial times where it does not now grow. It may have arrived on the West Virginia mountain ridge relatively recently during a mid-glacial period, or, it may have persisted there since before the ice ages. One good possibility is that the seeds of false heather arrived at the isolated sandy patches on North Fork Mountain on strong west winds from false heather populations at the margin of the melting Wisconsin glacier north of what is now Cincinnati, Ohio.

What other vascular plants of West Virginia have disjunct populations in our state? American larch or tamarack is another predominantly northern species, native to West Virginia at Cranesville Swamp in Preston County. This frost-pocket wetland is the southernmost locality for larch, the next nearest being approximately 60 miles northeast at Finzel Swamp in Maryland. Balsam fir, also called "blister pine" by mountaineers, is a widespread cone-bearing tree (conifer) of central and eastern Canada, occurring southward in the Appalachians to Blister Run Swamp in Randolph County, West Virginia. Both larch and balsam fir were once very abundant in the Ohio Valley, based upon the amount of their pollen seen in layers of peat that date back to the time the last ice sheet withdrew. Current Appalachian populations of these conifers may have established during a glacial period; or they might be even more ancient.

Elizabeth Byers

Mountain Holly

Bog rosemary, known in West Virginia only from Cranberry Glades, is a remarkable shrub with pink bell-like flowers and tiny leaves with short, soft hairs on their lower surfaces, The small leaves and hairs help to slow water loss in dry winter winds. It's widespread in boreal habitats across Canada, occurs south to northern Illinois, Indiana, Ohio and Pennsylvania, then jumps to the isolated population at Cranberry Glades in southern Pocahontas County.

Several species which are similarly widespread in the boreal habitats of Canada and the glaciated Appalachians, skip most of Pennsylvania, and reappear in the High Alleghenies, with their southernmost populations in Pocahontas County. These include oblong-fruited service-berry, creeping snowberry, small cranberry, and swamp red currant. Mountain holly, also predominantly a northern boreal species, is known especially from higher elevation sites in the northern mountain counties of West Virginia and is at its southernmost distribution in Pendleton County.

Throughout the Pleistocene glacial and inter-glacial periods, plant species responded at different rates to changes in environmental variables. As a result, there are some species whose primary distribution is to the south of West Virginia, and whose occurrence in the Mountain State is the species' northernmost extension of its range. For example, Ohio botanist Alison Cusick found southern mountain cranberry along the Cheat River in Preston County, making this the northernmost known occurrence for the species.

Species on the edge of their ranges are of conservation interest because they often have unique genetic makeup worthy of conserving, and because the communities they live within are some of the most fascinating pieces of our inherited natural diversity!

P. J. Harmon is a Wildlife Resources Section botanist stationed in Elkins.

Dr. Larry Morse, formerly chief botanist for The Nature Conservancy and NatureServe, is a consulting botanist and environmental educator in Washington, D.C.

Wildlife Diversity Notebook: Freshwater Drum

By Scott Morrison

Common Name: Freshwater drum, white perch, sheepshead, drum, croaker, and grunter.

Scientific name:
Aplodinotus grunniens

West Virginia Status:
Healthy populations of freshwater drum can be found in most medium and large streams and rivers within western West Virginia. These include the Ohio River, the Kanawha River, the Little Kanawha River, and their major tributaries.

Description: Freshwater drum are pearly-gray in color with bronze, blue and silver reflections. Fish from our clearest waters are bronzy, and those from more turbid streams and rivers are yellowish white. Their body is oblong with a somewhat humped or elevated back. They have a rounded tail and a long dorsal fin that extends from the peak of the humped back almost to the tail. They are the only member of the drum family found in freshwater, however there are over 30 saltwater species, including the highly sought-after redfish.

Dave Fattaleh

Two sides of otolith. Notice L-shape on image on left.

Their pearl-like otoliths, (ear bones) are very large. These hard circular shaped bones have an "L" on one of their flat surfaces. Because of this "L," some people feel these are "lucky bones" and they have a long history of superstitious folklore connected with them. Native Americans are believed to have used them for wampum, ceremonial purposes, and as neck charms to prevent various sicknesses. To this day large freshwater drum otoliths are considered treasures by many Mountain State anglers.

Another notable feature of the freshwater drum is its ability to produce sounds. Grunting or drumming, (from which its name originated) comes from the rapid contractions of abdominal muscles that are connected to the fish's air bladder. Rubbing your fingers on an inflated balloon can produce the same type of sound produced by these fish.

Freshwater drum get quite large. The state record length is 37 inches and the weight record is 27 pounds. A drum must weigh at least 10 pounds or be at least 27 inches long to qualify for a West Virginia trophy fish citation.

Habitat: Freshwater drum normally frequent the deeper pools of rivers and streams. During twilight hours they move into shallow water to feed. Although they can tolerate turbid water, they prefer clear water with a silt-free substrate. These fish are almost always found near the bottom. They occur only rarely in West Virginia lakes, ponds or reservoirs and do not thrive in our still-water environments.

Range: Freshwater drum are found over a broader latitudinal range (north-south) than any other freshwater fish found within North America. They occur in most river drainages east of the Rockies from Canada down to Mexico.

Diet: Like most young fish, small drum eat zooplankton. Larger fish, depending on food availability, will eat aquatic insects, mollusks (clams and mussels), crayfish and minnows. Anglers seeking freshwater drum can use a variety of lures and baits. Lead-headed jigs, tipped with either minnows or soft plastic baits, are very popular along our major river tailwaters (the area just downstream of locks and dams). Small-to medium-sized spinners and spoons also work well. Bait choices include minnows, night-crawlers and any small worm. Remember, freshwater drum are almost always found near the bottom, so all baits and lures should be fished deep.

Scott Morrison

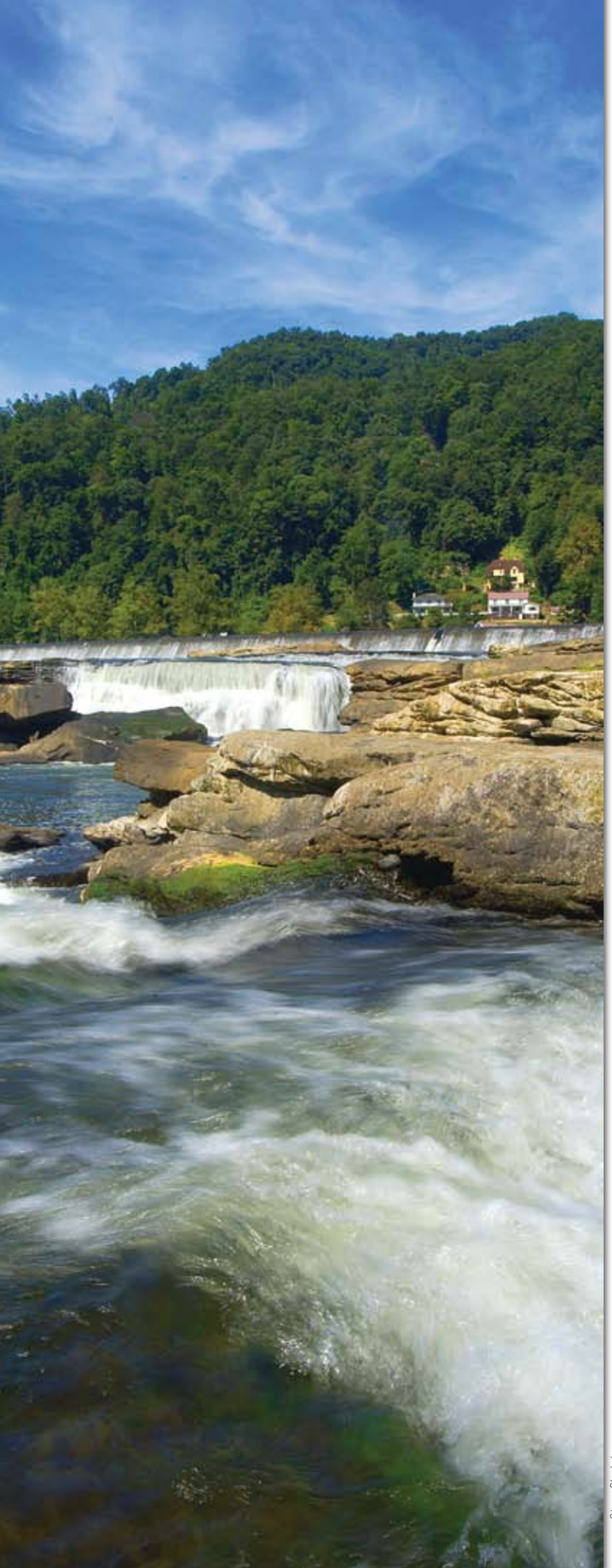
Angler holds a drum caught in Middle Island Creek.

Life History: Freshwater drum spawn over shallow gravel and sandy areas along the shore. West Virginia spawning generally occurs in June when water temperatures range between 65 and 70 degrees. Young fish grow to about four or five inches during their first year, and a 10-inch drum will be between three and four years old. A 20-inch drum can be anywhere from six and 11 years of age. Females mature at four or five years, while males generally mature one year earlier. Drum can generally be found in large "schools" during the winter and sometimes "school" during the summer.

Conservation and Potential Threats:
No threats within the Mountain State.

Scott Morrison is the district fisheries biologist stationed in Parkersburg.

Illustration by Duane Raver



Steve Shaluta

Restoring West Virginia's Riverine Fishes

By Chris O'Bara

West Virginia is blessed with an abundance of rivers and streams providing a great diversity of habitats in which aquatic life can prosper. Unfortunately, over the last century these rivers and streams were often abused. With the increased awareness of our environment, and more importantly, a willingness of industry, government and the general public to improve these water bodies, the conditions are now in place to restore several fish species to many of these previously degraded rivers.

Since the late 1990s the West Virginia Division of Natural Resources has embarked on endeavors to restore several fish species to rivers and streams throughout the state. These efforts has been recently accelerated because of increased knowledge of our state's fish populations, new techniques in spawning and rearing fish, increased capacity of the state's warmwater hatchery system, and a partnership among several neighboring states.

Why should we care about restoring these once abundant species? This can be summed up in a few easily understood concepts. When asked, "Why climb Mt. Everest?" the first truly great mountaineer George Mallory clearly answered, "Because it is there!" We too can exclaim, "Because they were here!" The fish species DNR Wildlife Resources Section personnel are actively restoring were once abundant in many of our rivers, but were lost because of degraded conditions.

The species being restored also represent a real or potential benefit to all of us in providing unique angling opportunities. This also translates into new dollars to local and regional economies. A recent survey of wildlife enthusiasts reported that West Virginia anglers provided over $450 million to the state's economy, as well as more than 4,500 jobs, mostly to rural regions of the state. New angling opportunities will only expand these economic inputs, especially in these rural areas. Consequently, it is easy to understand why these species should be restored.

Chris O'Bara

DNR personnel prepare to spawn shovelnose sturgeon at Palestine Hatchery. The resulting young are stocked in larger rivers like the Kanawha at Kanawha Falls (opposite page).

Now that I've explained the when and why of fish restoration in West Virginia, let's look at the "what" aspect of the question. DNR biologists are actively involved with restoring the majestic paddlefish, West Virginia's largest fish species, the ancient shovelnose sturgeon, the big blue catfish and the native river walleye. In addition, efforts are underway to enhance muskellunge, smallmouth bass and sauger populations in rivers where these prized game species once thrived.

Restoration

Paddlefish, shovelnose sturgeon and blue catfish are truly the "great river" species of West Virginia and once inhabited the Ohio and Kanawha rivers, as well as many of the larger tributaries such as the Little Kanawha River and lower Middle Island Creek. The paddlefish restoration has been ongoing for several years through a multi-state cooperative effort. Paddlefish are now frequently encountered by fisheries biologists and are reported annually by anglers. "Hot spots" for paddlefish are the Winfield Pool of the Kanawha River, and the Greenup and Belleville pools of the Ohio River. Currently, this protected species must be immediately returned to the water if caught by anglers, but if restoration efforts continue to be successful, someday anglers will be allowed to actively seek these true giants of our great rivers.

The shovelnose sturgeon restoration program was initiated in 2005. Since then, DNR personnel have been working with biologists from the Indiana Division of Fish and Wildlife in collecting large mature shovelnose sturgeon from the Wabash River. Once collected these fish are transported to Palestine State Fish Hatchery near Elizabeth, West Virginia and spawned. The resulting fry are reared at both the Palestine and the Apple Grove State Fish hatcheries, and ultimately released into the Kanawha River just downstream of Kanawha Falls and the Little Kanawha River. In 2007, more than 20,000 shovelnose sturgeon were stocked into these rivers. In addition, surviving adults are released into both rivers. Since the initiation of the program, a few surprised Kanawha River anglers have caught these ancient fish. As with paddlefish, shovelnose sturgeon are protected species and must be released immediately. But as early success of this program suggests, anglers will be able to catch these ancient fish once again in West Virginia waters.

The final species involved with these large river restoration efforts is the blue catfish, the largest catfish species known from North America. DNR restoration efforts are concentrated in the Winfield Pool of the Kanawha River, and the R.C. Byrd, Racine and Belleville pools of the Ohio River. Since 2004, Wildlife Resources Section hatchery staff have acquired fry from the Kentucky Department of Fish and Wildlife

Resources and reared these riverine fish at both the Apple Grove and Palestine State fish hatcheries. In addition, hatchery staff are developing broodstock fish, so the DNR will be self-sufficient in spawning and rearing blue catfish. Already, anglers are catching blue catfish up to 20 inches long. With continued wise management and stocking efforts, this species will again be common in West Virginia's large rivers.

Many of us know the walleye from our reservoirs and large river tailwaters, but walleye were once fairly abundant in many of our rivers and streams. Through a cooperative project with the Virginia Department of Game and Inland Fisheries, Ohio University and Virginia Tech, a native strain of walleye is now being introduced into the New River, Cheat River, as well as the Ohio and Kanawha rivers. Already these efforts are showing promise. Increased numbers of walleye are being reported from the New River during Wildlife Resources Section electrofishing surveys. In addition, Ohio River anglers are reporting catching an increased number of small walleye. With the more protective angling regulations, increased rearing by Wildlife Resources Section hatchery staff and stocking into our suitable rivers, as well as continuing improving habitat quality, anglers will once again be seeking walleye in rivers such as the New, Cheat and Kanawha.

Chris O'Bara

Native river strain of walleye raised at Palestine Hatchery.

Enhancement

Muskellunge and smallmouth bass are two of the "keystone" fish species inhabiting the state's rivers. Many of our notable muskellunge and smallmouth bass fisheries are actually the product of past DNR programs. Now, Wildlife Resources Section staff are expanding these programs to include new rivers where these species were once found.

Muskellunge are now being stocked in the Coal River (Lincoln, Kanawha, and Wayne counties) and Fishing Creek (Wetzel County). Improved and expanded rearing facilities at the state's warmwater hatcheries and more efficient use of advanced fingerlings have provided opportunities for these restoration efforts.

The same is true for smallmouth bass. This familiar species is now being restored in the Middle Fork of the Buckhannon River and the Tug Fork River. Again, increased hatchery capacity and a better understanding of rearing techniques have provided this opportunity.

Until the early 2000s sauger were not reared in West Virginia's warmwater hatcheries. Since then, through a cooperative project with the Kentucky Department of Fish and Wildlife Resources, sauger reared in our state's hatcheries have been introduced into the Tug Fork, Kanawha, Little Kanawha and Monongahela rivers. The introduction of these three species and the resulting restored fish populations will not only amend past habitat degradation, but more importantly provide increased angling opportunities in many of the state's more productive river systems.

Restoration does take time; and patience, as we are told, is a virtue. But with continued demonstrated success of these programs, West Virginians may once again catch native walleye in the Cheat River, the noble muskellunge in Fishing Creek, the prized sauger and smallmouth bass in the Tug Fork, and observe and catch West Virginia's truly "big river" fishes, the paddlefish and shovelnose sturgeon, in the Ohio and Kanawha rivers. This will leave a legacy of which we all can be proud.

Chris O'Bara is a fishery biologist located in the Parkersburg office.

A Sense of Wonder...

Nature Note - The Colors of Nature

Have you ever wondered what causes the cardinal to be red, the bluebird blue or the ruby-throated hummingbird to be iridescent scarlet and emerald green? The brilliant feather coloration of these birds results from the interaction of several different factors.

Feather color may be caused by the pigment present in the feather and the specific wave lengths of light it absorbs. The color we see is determined by the wave length of light reflected by the pigment. The attractive red feathers of our state bird, the cardinal, are the result of a pigment called zoonerythrin. Although zoonerythrin reflects red light in cardinals, in its various other forms this pigment reflects the bright yellows of canaries, the oranges of orioles, as well as combinations of these colors in other birds.

Ron Snow

Indigo bunting

On the other hand, the blue of the bluebird is not the direct result of a pigment. Blue coloration in birds results from a scattered reflection of blue light within the structure of the feather itself. The sky derives its blue color from the same scattering phenomenon which occurs in the earth's atmosphere.

The shimmering iridescence of our jewel-like hummingbird is also the result of an unusual type of feather structure. This structure interferes with the light rays striking feathers from different angles. Thus, the light rays are scattered, producing the brilliant greens and reds seen in hummingbirds. This same phenomenon produces the colors seen on soap bubbles and the rainbow seen when oil is mixed with water.

Steve Shaluta

Scarlet tanager

Ron Snow

Ruby-throated hummingbird

What the DNR is Finding Out About West Virginia Black Bears

By Chris Ryan

Jeff Craig

A mother with her yearlings.

It seems that all West Virginians have a few things in common -- they are generally polite, hospitable people -- and everybody has a bear story. Whether they've seen one on a visit to Canaan Valley, sitting on their porch in Marshall County, driving down Route 19 through Nicholas County, or on a trip to our State Capitol, most everybody has a tale of seeing our state animal.

I always get excited, but am rarely surprised, to see a black bear. However, when my wife, Beth, asked me to go to the grocery store last summer in Charleston I gladly obliged, but was taken back when I heard someone talking about a bear behind the store. I just had to investigate the report of the excited individual. Sure enough, on a dark, rainy Saturday night there sat a large male bear behind the Wal-Mart next to the movie theater. I raced home to gather my equipment and returned quickly to the scene. The bear had two orange ear tags, meaning that it had already been captured as a nuisance animal. While I was unable to capture the bear that night, Eric Richmond, a wildlife manager in District 5, ending up capturing the bear four days later at the same location. The sad fact is that this bear had to be destroyed for repeated nuisance activity because people would not secure their garbage or stop feeding birds when a bear visited their feeders.

Steve Rotsch

Lip tattoos are used to identify individual bears.

The West Virginia Division of Natural Resources receives approximately 1,000 nuisance bear complaints a year. The disappointing fact, however, is that if people just put up their bird seed and trash, and fed their outside pets before dark and picked up the leftovers, many of these calls could be eliminated. It is illegal to feed bears in West Virginia, but many people continue to inadvertently feed animals by placing food items outside. If a bear continues its nuisance activity or is a threat to human safety, DNR personnel have no option but to humanely kill the bear. While DNR Wildlife Resources and Law Enforcement sections handle bear calls in appropriate manners, it is difficult for an agency on a limited budget and one that is often understaffed to effectively communicate the message that if a bear repeats its nuisance activity it will ultimately have to be destroyed.

The common sightings of black bears, the tremendous increased interest in black bear hunting and, yes, even the increased number of nuisance calls is a result of a tremendous success story here in West Virginia. Our state animal has gone from an estimated low population of 500 in 1970 to a population estimate of 10,000 to 12,000 in 2007. Hunting seasons that are based on sound wildlife research are the primary reason for the tremendous increase in our bear population. Joe Rieffenberger, the "Grandfather of Bear Management" in West Virginia, led a project with other wildlife managers and biologists in the 1970s. They discovered that bears typically go to their winter dens in a predictable order. His research showed that pregnant females are normally the first bears to enter their dens. By adjusting hunting seasons accordingly, biologists were able to protect a larger segment of the population but still allow hunting. Thus, a slow growth of the bear population began.

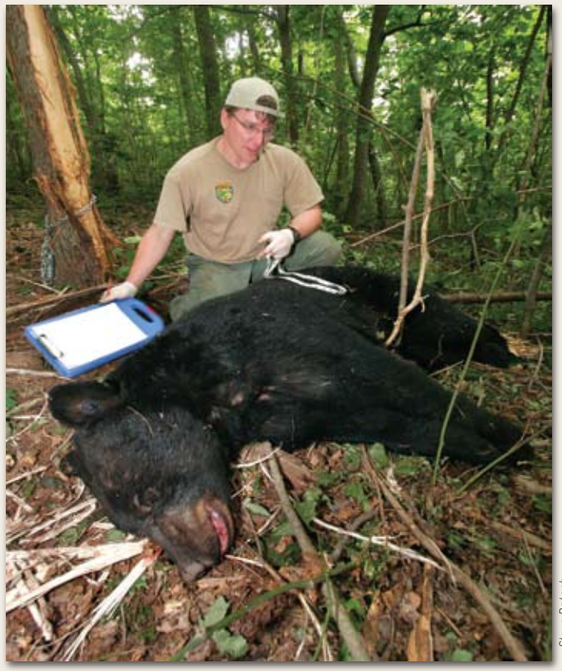
The DNR continues to have a large black bear research and monitoring program; however, much of that research has shifted from the area of protection to managing black bear populations at sociologically acceptable levels. Cultural carrying capacity -- the number of bears that people will tolerate -- is generally determined by the DNR through public surveys or the number of nuisance complaints received at its District offices.

At the heart of the bear research and monitoring program is the demographic (reproductive and survival rates) data that wildlife managers and biologists collect. The DNR has two study areas: one in the mountain counties primarily centered in Randolph and Tucker counties, and a southern study area in Kanawha, Boone, Fayette and Raleigh counties. Data from this project has lead to changes in hunting seasons in southern West Virginia and future recommendations will likely be based on these valuable data.

Black bears breed from May through September and have what is known as delayed implantation. This means that the fertilized egg does not implant in the female's uterus until approximately the second week of December. With a "true" gestation period of only about 6 to 7 weeks, a female bear will give birth to her cubs in late January. At birth the cubs only weigh 6 to 8 ounces, have their eyes shut, have very little hair, and are totally dependent on their mother. The cubs open their eyes at 42 days and emerge from the den with their mother in late March through early April. At that time the cubs normally weigh about five pounds, can climb trees by themselves, and start exploring our West Virginia hills. They remain with their mother for 18 months, at which time she chases them off and breeds again. This means that the normal cycle between litters is two years.

Our research has shown that bears typically start having cubs at three and four years of age in the southern and northern study areas, respectively. In addition to reproducing at an earlier age, bears in the southern study area typically average 2.8 cubs per litter; whereas, bears in the mountain counties average 2.3 cubs per litter. Nearly every female on both study areas that were available to reproduce (that is they did not have yearlings with them) produced a litter of cubs. The higher reproductive rates in southern West Virginia are likely a combination of greater food supplies and shorter, less severe winters.

Research has also shown that the survival rates of female bears remain very high -- between 83 to 87 percent across the study areas. It is the high female



Steve Rotsch

The author records data collected from a tranquilized bear.

Jeff Craig

survival and strong reproductive rates that have enabled the expansion of the bear population. Where bear populations are above the cultural carrying capacity, reducing adult female survival is the key to controlling and managing bear populations and reaching management goals.

While one of the primary purposes of the bear project is to gather demographic data, the DNR works on many other aspects to best manage the state's bear population. Last year the Wildlife Resources Section contracted a private research firm to conduct an extensive survey of West Virginia residents to primarily find out their opinion of the black bear population in the state and in their respective regions. While many residents thought the bear population was about right, people from different regions had varying opinions. For instance, a greater number of residents in the mountain counties thought the bear population should be reduced, but more residents in the western part of the state thought the population should be increased. Managers have used this valuable survey information to help set management goals based on a cultural carrying capacity, or what the public wants.

DNR personnel also conducted a survey of West Virginia bear hunters in 2007 to determine success rates, distribution of hunters across the state, the effectiveness of special hunting seasons, and to determine the economic impact of bear hunting. West Virginia hunters that specifically target bears while hunting spend nearly $31 million a year on their sport. This significant financial impact helps to support many local businesses in our state. Additional analyses are being conducted by the economics faculty at West Virginia University to determine the total economic impact on the state's economy. This important data also helps to identify the number of bear hunters who primarily use archery equipment, gun hunt without dogs, or use dogs while gun hunting as well as information on where they hunt.

Black bears are typically immobilized with Telazol before being handled. Federal guidelines suggest that bears should not be immobilized within 45 days of hunting season so that the meat would not be consumed until after the drug was out of the bear's system. However, the amount of time the drug remained in the bear's system had never been tested anywhere in the world until Wildlife Resources Section biologists took the lead and designed a project that examined this retention time. The results from the test, just finished in 2007, showed that the drug was gone from a bear's muscle and liver within 14 days and was completely gone within 21 days. These results should enable managers to handle bears closer to hunting season, whether it's a nuisance situation or on a research project.

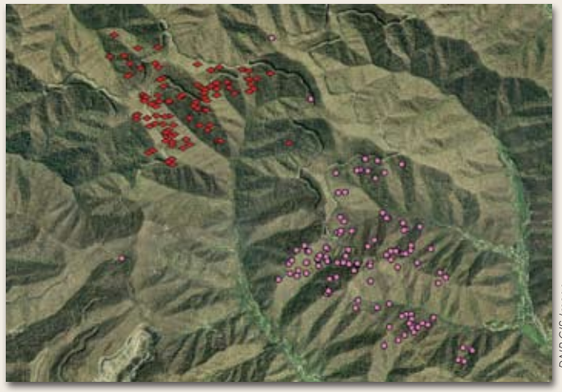
DNR wildlife biologists have also designed a new method that will serve as the basis for a new black bear management plan. It uses a ranking system to evaluate the feasibility of different hunting methods within each county and then assigns each area into a management strategy. By quantifying how the season structure is set, it helps to better explain why management decisions are made and helps to take opinion out of the decision.

Steve Rotsch

Biologists have discovered a correlation between front paw width and weight.

One of the new, exciting aspects of the bear project started in August 2007 was the purchase of 23 GPS (Global Positioning System) radio collars for our southern study area. Wildlife managers and biologists in Districts 4 and 5 were able to capture an incredible 49 black bears in 10 days and place 21 GPS collars on female bears. The collars are designed with a VHF radio beacon (the method typically used to track bears), a GPS unit to record locations, and a drop-off device. The GPS unit is set to record one location every 19 hours from January 1 through April 30, and one location every four hours from May 1 through December 31. A built-in computer system records the locations along with air temperature, activity patterns and other important data. The drop-off unit, counting on an internal clock, is designed to break apart in 100 weeks if the collar is not removed by managers, thus ensuring that the data will be collected if the managers were unable to change the collar in their winter den. Wildlife Resources Section personnel hope that the data from these collars will help supply information on home ranges, habitat selection and activity patterns of female bears. In addition, the project was designed to evaluate movements of bears in hunted versus non-hunted areas.

DNR personnel also have cooperated with West Virginia University faculty and students to evaluate the effectiveness of aversive conditioning on bears. Aversive conditioning is defined as harassing a bear captured in nuisance situations to deter them from repeating the same behavior, and then releasing the bear at the same location. Wildlife managers captured 12 bears, put radio collars on them, and released them using aversive conditioning. All 12 bears, however, repeated their nuisance behavior in a short period of time. Similar research in other states has also demonstrated that once a bear is habituated to human food sources it is nearly impossible to stop their nuisance behavior.



DNR GIS Image

Using GPS technology, biologists easily track movements of two bears.

Wildlife Resources Section personnel continue to analyze long-term data sets to better understand West Virginia black bears. Biologists have published these results as scientific articles that explained the relationship between food conditions and non-hunting deaths, and between food conditions and hunter harvested bears. These results have received numerous positive comments from the scientific community who are using these long-term data sets to help better manage their state's wildlife resources.

Ultimately the future of the black bear lies both in the hands of the DNR and you, the state's citizens. By taking down and storing bird feeders from April 1 through January 1, by not placing trash outside, and by not leaving pet food out at night you will help protect the black bear for generations to come. While the DNR can conduct sound wildlife research and make recommendations, we need your help to make sure our state animal remains wild and in our West Virginia hills and mountains where it belongs.

Chris Ryan is a wildlife biologist stationed in Charleston.

Mountain State Flora

Riverscour Woodlands and Prairies

By Jim Vanderhorst

The shores of West Virginia's fast rivers support unique natural plant communities called riverscour prairies and riverscour woodlands. These vegetation types thrive under conditions of repeated flooding which prevents the establishment of forests. High- energy floods can break tree tops and branches and may uproot entire trees. Depending on the frequency and energy of flooding, the structure of vegetation is maintained as prairie (herbaceous vegetation dominated by grasses and forbs) or woodland (scattered trees forming an open canopy).

Prairies occur in positions subject to frequent high-energy floods, often adjacent to rapids, where trees cannot become established or are quickly knocked down. Woodlands occur in positions subject to somewhat less frequent or less high-energy floods. Prairies and woodlands are both relatively sunny habitats which support plants, including many rare species, which cannot tolerate the shade of closed-canopy forests.

Some of West Virginia's riverscour prairies resemble the tallgrass prairies of the Midwest. It has even been suggested that warm-season tall grasses first evolved along Appalachian rivers and later colonized the Midwest following the retreat of the glaciers. Common warm season grasses in these habitats include big bluestem, switchgrass and Indian grass, the same species which dominated the once extensive tallgrass prairies from Indiana west to Nebraska. A different kind of riverscour prairie in West Virginia occurs at high elevations along the Shavers Fork River where they are maintained by ice scour. Warm-season grasses are uncommon here due to short growing seasons.

Jim Vanderhorst

Riverscour woodland along New River with flood-battered sycamores.

Flood-battered trees are often short, gnarled and lean downstream. In riverscour woodlands it is common for the oldest trees to be the shortest because they have been subjected to more floods than younger trees. Common trees in these habitats include sycamore, river birch, green ash and persimmon. These species are adapted to germination in soil newly exposed by flooding, and are tolerant of fluctuating soil moisture and frequent physical damage caused by flooding.

The grouping of plant species living in riverscour communities is related to environmental conditions and the history of migration and evolution of each species. For example, plant communities along whitewater sections of the Gauley and Tygart Valley rivers are remarkably similar despite their separation by more than 80 air miles (over 500 river miles!). Riverscour vegetation along both rivers is shrubby prairie characterized by an abundance of winterberry holly, royal fern, Barbara's buttons, riverbank goldenrod and balsam groundsel. The similarity of these communities may be attributed to similar climate on the west slope of the mountains (moist), similar river gradient and energy (fast and powerful), and similar substrate (bedrock, boulders, cobble and sand derived from acidic sandstone).

Craig Stihler

Virginia spiraea

An example of a plant that is not found in both river systems is Virginia spiraea, a shrub on the federal threatened species list. It grows along the Gauley River but is missing along the Tygart Valley River farther north in the state, possibly reflecting the migration history of this more southern plant species. Virginia spiraea is also missing from the New River although it is known nearby upstream along the Bluestone River. Its absence from the New is probably not due to migration history but is more likely related to flooding energy; the New is a bigger river than the rivers where Virginia spiraea grows today. It is thought that the plant can't withstand the energy of floods along larger rivers. In similar fashion, false blue indigo is abundant in prairies along the New and Greenbrier rivers but is missing from the Gauley and Bluestone rivers. Its presence possibly reflects the higher pH and nutrient levels of the soil due to an abundance of limestone in the New and Greenbrier river basins.

Brian P. Streets

Riverscour prairie along the Tygart Valley River.
Inset: Big Bluestem is often the dominant grass in riverscour prairies. Photo by Jim Vanderhorst

Jim Vanderhorst is a Wildlife Resources Section ecologist stationed in Elkins.

Craig Stihler

Barbara's buttons

Questions and Answers on Chronic Wasting Disease

What is Chronic Wasting Disease (CWD)?

CWD is a neurological (brain and nervous system) disease of deer and elk known to occur in limited geographical locations in North America. The disease belongs to a family of diseases known as transmissible spongiform encephalopathies (TSE). These diseases are caused by an abnormal form of a protein called a prion. CWD is a slow accumulation of abnormal prions in the brain and lymphatic tissues of deer and elk that ultimately results in the death of the animal. While CWD is similar to mad cow disease in cattle and scrapie in sheep, there is no known relationship between CWD and any other TSE of animals or people. In deer and elk there is no practical test of live animals to detect CWD and there is no known treatment or vaccine.

How is it spread?

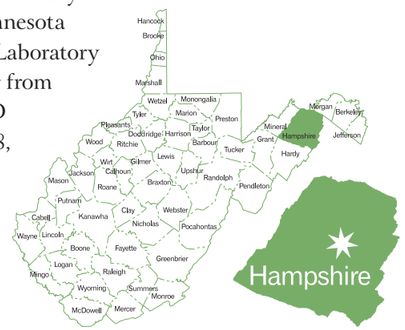
It is not known exactly how CWD is spread. Experimentally, the disease can be spread both directly (animal to animal contact) and indirectly (soil or other surface to animal). It is thought that the most common mode of transmission from an infected animal is via saliva, feces and possibly other body secretions. There is evidence that people moving live infected animals have spread the disease over long distances.

Is it dangerous to humans?

There currently is no evidence that the agent of CWD affects humans. However, public health officials recommend that human exposure to the CWD agent be avoided as they continue to research the disease. This includes not eating meat from known infected animals, or animals that appear sick, and avoid eating the brain, spinal cord, eyes, lymph nodes, spleen, and tonsils where the abnormal prion accumulates.

Where has it been found?

As of January 2008, CWD is known to infect free-ranging deer and elk in portions of Colorado, Illinois, Kansas, Nebraska, New Mexico, New York, South Dakota, Utah, Wisconsin, West Virginia, Wyoming, and Alberta and Saskatchewan, Canada. In addition, CWD has been found in captive/farmed elk and white-tailed deer in Colorado, Kansas, Minnesota, Montana, Nebraska, New York, Oklahoma, South Dakota, Wisconsin, and Alberta and Saskatchewan, Canada. CWD has been found in twenty white-tailed deer in West Virginia. The first deer was a road-kill in Hampshire County. An additional nineteen deer have been confirmed CWD positive from the same area in Hampshire County. One of these deer was hunter harvested in 2006 and six more hunter harvested deer in 2007. The remainder were collected by West Virginia Division of Natural Resources (WVDNR) personnel in cooperation with local landowners to monitor the disease. Since 2002, the WVDNR, Wildlife Resources Section, in cooperation with the SE Cooperative Wildlife Disease Study at the University of Georgia and the Minnesota Veterinary Diagnostic Laboratory has sampled 6,903 deer from West Virginia for CWD and, as of January 2008, the twenty Hampshire County deer are the only animals found thus far to have the abnormal protein associated with CWD.



What is being done about CWD in WV?

The discovery of CWD in Hampshire County, West Virginia represents a significant threat to the state's white-tailed deer. The disease does not cause an immediate widespread die-off of deer but if allowed to spread will cause long-term damage to the herd. Those that have tried to predict the outcome of the disease on a deer population have described the disease as a 30- to 50-year epidemic. Due to the uncertain ramifications that CWD may have on the white-tailed deer resource in West Virginia, the WVDNR is taking actions to gather more information on the prevalence and distribution of the disease in the area surrounding the known infected deer. This goal will be accomplished by increasing the number of deer tested with the help of other state and federal agencies, deer hunters and local landowners. To detect CWD that may be present in only a few animals, a large number of samples need to be tested. Because of the many scientific uncertainties regarding the basic biology and ecology of CWD, there are no proven solutions to combating CWD once present in free-ranging deer. However, baiting and feeding deer is known to increase the spread of diseases transmitted directly from deer to deer so these actives have been banned in Hampshire County. In addition, experiments with heavily infected mule deer carcasses in close quarters with live mule deer have produced infections, thus restrictions on the disposal and transport of deer carcasses from within Hampshire County have been implemented. Other management actions will be adaptive and based on the findings of future surveillance and research.

How can you tell if a deer has CWD?

Infected animals may not show any symptoms of the disease. In some stages of the disease, however, infected animals begin to lose control of bodily functions and display abnormal behavior such as staggering or standing with very poor posture and lose fear of humans. Infected animals become very emaciated (thus wasting disease), appear in very poor body condition, and often stand in or near water and drink excessively. Drooling or excessive salivation may be apparent. However, these symptoms are not unique to CWD and are also characteristic of diseases other than CWD.

What Can Hunters Do?

- If you kill a severely emaciated (very skinny) deer or a deer that is obviously sick contact the WV DNR Wildlife Resources Section office nearest you.
- Don't feed or bait deer. These practices concentrate deer, increase the likelihood of spread of any disease present in the deer herd, and may introduce foreign contaminates via the feed or bait.
- Harvest adequate numbers of antlerless deer to maintain deer populations in balance with natural food supplies. A deer population in balance with available habitat is healthier and better able to fight diseases.
- Use caution in spreading urine based lures in the environment and avoid placing deer lures on the ground or on vegetation where deer can reach them. Placing them out of reach of deer still allows air circulation to disperse the scent.
- If you plan to hunt deer or elk in a state known or suspected to harbor CWD follow that state's rules on removing animals from the area. Bring back only boned out meat and thoroughly cleaned skull plates and antlers.
- If you deer hunt in Hampshire County, please see special WV regulations regarding carcass transport and baiting in the Hunting and Trapping Regulations Summary or online at www.wvdnr.gov. Also, please cooperate with WVDNR requests for information and samples needed for CWD testing.
- If you observe live deer or elk being transported in a truck or trailer notify your local DNR office as soon as possible.

DNR photo

Biologist taking sample of lymph node tissue for testing.

Table of Contents

How to Build a Better Bluebird House

By Sue Olcott

Perusing a home and garden catalog or walking down the "bird" aisle at a garden center can present you with a bewildering array of nestbox designs for cavity-nesting birds -- especially bluebirds. Which one is better?

First, one must define "better". Should better be what a bluebird prefers, or should it mean the box design in which a bluebird pair successfully raises their young to fledging (flying) stage in today's challenging environment? The health of your local population of bluebirds depends on them successfully raising their young, so the second definition is the most sound.

Four researchers in Wisconsin made a start in answering the question, "Which is the best bluebird house?" Between 1968 and 1994, they tested four different types of bluebird nestboxes by collecting data on preferences and adult/egg/nestling survival on a total of 2,600 nesting attempts. Bluebirds preferred the standard wooden nestbox with a sloping roof. The researchers discovered, however, that this style of nestbox did not protect the nestling or adults from predators (if no predator guard was used) or especially nestbox competitors, such as house wrens and house sparrows.

Keith Weller / NRCS Photo

Monitoring bluebird boxes is a great educational activity.

Mark Shock

Male eastern bluebird babysitting a newly fledged youngster.

Their data showed that a wooden design with an open top covered with screening, dubbed the Bauldry nestbox, fledged more young because of less predation and competition. This box design mimics rotted-out wooden fence posts which bluebirds frequently used for nesting during the first half of the 1900s before many were replaced by fence posts made of metal or pressure-treated lumber. Researchers concluded that the open top deterred house wrens and house sparrows. The entrance hole was also higher on the side, deterring predators by making the nest too far away for them to reach. The other two artificial nestbox designs – tin can and hollow post – were not used as much in the study and generally had lower production than the open-top design.

The story doesn't end there, however. Other bluebird researchers tried to replicate this team's results without success. Kevin Berner, a wildlife researcher in New York, studied the open-top box along with several other bluebird box designs. He documented that house wrens readily used open-top boxes. Researchers in Minnesota, Wisconsin and Missouri also found fault with the open-top design, especially in regards to higher mortality from wet and cold nests, and from the fact that it did not deter use by house sparrows and house wrens. Even though Bauldry used the open-top design with significant success, that success could not be replicated elsewhere.

So what is the best bluebird box to install on your property? Based on the results of these studies, consider these guidelines …

1. Use a traditional wooden box design sized for bluebirds with a predator guard on the post or at the opening. Make sure it is well constructed using wood at least ½-inch thick.
2. Position the box well away from shrubby and brushy areas preferred by house wrens.
3. If you live in an area with house sparrows, consider using the Gilbertson box design. It is made from four-inch PVC pipe, and is constructed to deter house sparrows by making the box too shallow for them. A predator guard is required for it. This design has been used with good results near a shopping mall in Morgantown, West Virginia.

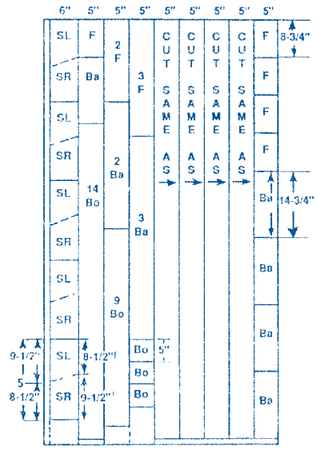
Plans for these boxes may be obtained at www.audubon-omaha.org/bbbox. Plans for traditional boxes for bluebirds and other cavity nesters may be obtained from the WVDNR Wildlife Diversity Program by writing to them at: P.O. Box 67, Elkins, WV 26241 or send an email request to wildlife@wvdnr.gov.

Sue Olcott is a wildlife biologist stationed in Farmington.

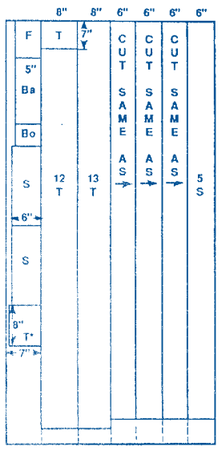
Mark Shock

Female bluebird inspects a potential nestbox.

Bluebird Nest Box



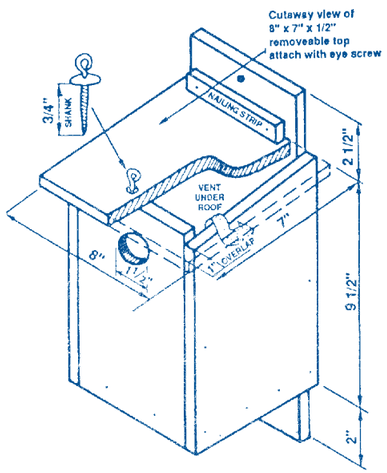
Plywood Sheet 1

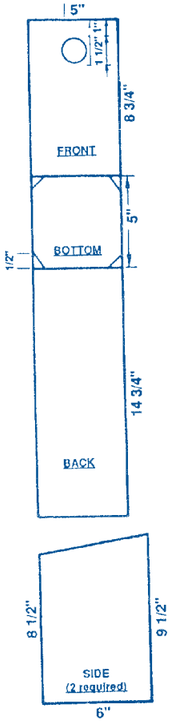


Plywood Sheet 2

- F = front
- Ba = back
- Bo = bottom
- T = top
- S =Sl + SR +Side pair
- T* = this top turned 90 degrees to all other tops

Note: 1/8-inch kerf allowed for each cut.





WRS Upgrades Trout Hatcheries

This past summer, the Wildlife Resources Section upgraded and made repairs at two of the state's seven trout hatcheries. Major work was done at Spring Run Hatchery in Grant County which was built in 1952. In those days people really didn't think about the need to treat wastewater from a hatchery. For many years leftover fish food and fish wastes flowed directly into Spring Run, a beautiful limestone trout stream. At hatcheries built in later years, including Reeds Creek and Tate Lohr, the wastewater flows into settling ponds, before entering the receiving streams.

DNR officials spent approximately $3 million to correct the problem. A "batch clarifier" was built which allows the wastewater to be piped to a tank where the waste settles out. The clear water is then drained off. The waste sludge which settles out is pumped into a storage tank. Periodically, the sludge is loaded into tanker trucks and is sprayed onto fields as fertilizer. As a result of the construction, the effluent from the hatchery now meets state water discharge standards.

Besides solving the wastewater problem, DNR officials also built 12 new raceways to help improve production efficiency at the hatchery. The 80-foot-long raceways will be a marked improvement over the old square concrete ponds for raising trout. In addition, numerous cracks in the old raceways were repaired.

Rick Backus

New raceways at Spring Run Hatchery.

Raceway improvements were also completed last fall at Reeds Creek Hatchery in Pendleton County. Workers replaced the lower sections of all eight raceways to repair leaks caused by ground subsidence. The leaks were causing the amount of water available for recirculation through the hatchery to decrease. That problem is now fixed.

The state's trout hatcheries were constructed in the 1930s, 1950s, 1960s and 1970s. All of them need improvements to continue producing trout for West Virginia's anglers. For this reason a statewide study of all DNR hatcheries will begin this year to look at infrastructure needs, effluent treatment requirements, and the potential to increase trout production.

Rick Backus

Spring Run Hatchery: before (left) and after improvements.

Steve Shaluta

Channel catfish

Catfishing - State Park Style

In an effort to highlight fishing opportunities in West Virginia's state parks, the Division of Natural Resources has initiated a catfish stocking program for selected state parks. The stockings are intended to provide family-based fishing opportunities for catchable-sized channel catfish during the late spring and mid-summer, especially highlighting National Fishing and Boating Week and West Virginia's Free Fishing Days on June 7 and June 8 this year. Catfish will be stocked in lakes at Cacapon, North Bend, Pipestem, Blackwater Falls, Watoga and Chief Logan state parks.

Fisheries biologists will insert a green spaghetti-like tag close to the dorsal fin of the catfish. Anglers catching a tagged fish are asked to remove the tag and return it to the DNR Parkersburg Office (2311 Ohio Ave Parkersburg, WV 26101) by mail, call in the catch information (304-420-4550), or report the catch via e-mail (fishtags@wvdnr.gov). DNR personnel want to know your name and address, the tag number, date of catch, and if the fish was released or kept. A reward will be given for all returned tags.

As part of a pilot study in 2007, DNR personnel stocked tagged catfish into ponds at Cacapon , North Bend and Pipestem state parks. Anglers reported catching more than 25 percent of the catfish. Successful anglers kept over 50 percent of the fish they caught. More than 60 percent of the anglers who reported catching a tagged catfish were fishing as a family group. Most anglers also reported participating in several other state park-based activities during their fishing trip.

Calendar of Events

April

18-20 BOW Weekend
North Bend State Park
Full weekend of Becoming an Outdoors-Woman activities. Thirty different classes to choose from. Contact Billie Shearer, 304-558-2771, billieshearer@wvdnr.gov or go online.

19 Spring Bird Walk
Prickett's Fort State Park
Celebrate the joys of spring with a morning bird walk. DNR staff will lead the public. Programs begin at 8 am. Wear sturdy walking shoes and bring binoculars. Call 304-363-3030 or email info@prickettsfort.org.

May

8-10 47th Annual Wildflower Pilgrimage
Blackwater Falls State Park
Activities include bird walks, wildflower tours, nature programs, beginner wildflower and bird identification workshops, craft exhibits and sales. Call 304-259-5216 for more information.

10 Migration Celebration
Little Beaver State Park
Three Rivers Avian Center presents a festival of WV natural heritage and birds. Featurning live birds, wildlife displays, kids' activities, door prizes and more. Begins at 9 am. Call 304-763-2494 for more information.

10 Spring Migration Bird Count
Pipestem Resort State Park
Novice and experienced birders alike search for 100 species of birds in one day. Bring lunch and binoculars. Contact Jim Phillips at 304-466-1800 Ext. 344 for more information.

June

6-8 2nd Annual Southern Boreal Bird Festival
Canaan Valley State Park
Canaan Valley is ideal habitat for many species of birds found further north in North America, including the Northern saw-whet owl, yellow-bellied sapsucker, alder flycatcher and bobolink. Includes daily walks, workshops and guest speakers. Call 304-866-9126 for more information.

7 Kid's Fishing Derby
Little Beaver State Park
Bring out the kids during the state's free fishing days. Begins at 9 am. All participants receive lunch, t-shirts and prizes. Call 304-763-2494 for more information.

Hunters Harvest 145,577 Deer in 2007

Steve Shaluta

Bowhunters took 26,965 deer during the archery season which runs from mid-October until December 31. This represented a seven percent increase over 2006. The top 10 counties were: Preston - 1,167; Randolph - 989; McDowell - 941; Greenbrier - 894; Wyoming - 871; Nicholas - 850; Fayette - 826; Mason 792; Raleigh - 778 and Wood - 703.

The two-week-long traditional firearms season saw hunters kill 67,505 deer throughout the state. Twenty-nine counties reported an increase while the other 22 counties open to firearms hunting reported a decrease. The decline in those northern and western counties may be related to an outbreak of Epizootic Hemorrhagic Disease that occurred last fall, killing numerous deer. The bucks taken around the state appeared to be in good health and had larger antlers, evidence that the deer population is more in line with the carrying capacity of the habitat. The top 10 counties were: Preston - 2,323; Hampshire - 2,235; Greenbrier - 2,215; Hardy - 2,104; Mason - 2,083; Jackson - 2,070; Braxton - 1,986; Randolph - 1,960; Monroe - 1,952, and Roane - 1,903.

The 2007 antlerless deer season, which includes the youth deer hunts, was 11 percent above 2006 due to the increase in bag limits and the number of counties open to antlerless deer hunting. The top 10 counties were: Preston - 2,171; Mason - 2,171; Monroe- 2,123; Jackson - 2,000; Ritchie - 1,914; Wood - 1,789; Harrison - 1,615; Lewis - 1,450; Upshur - 1,371 and Wetzel - 1,363.

Muzzleloader hunters killed 7,423 deer during the one-week season. This represented an eight percent increase over the 2006 harvest. The increase is attributed in part to the increased number of counties open to either-sex muzzleloader hunting. The top 10 counties were: Braxton - 394; Lewis - 354; Preston - 320; Greenbrier - 307; Monroe - 304; Upshur - 270; Fayette - 264; Jackson - 246; Grant - 239 and Mason - 232.

Wildlife biologists will analyze data from the combined 2007 deer seasons for each of the state's 55 counties before making recommendations for this fall's deer seasons.

West Virginia
Wildlife