

January/February 2013

Connecticut Wildlife

CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
BUREAU OF NATURAL RESOURCES
DIVISIONS OF WILDLIFE, INLAND & MARINE FISHERIES, AND FORESTRY



From the Director's Desk



Growing up in rural Wisconsin my family enjoyed an intimate, yet utilitarian, relationship with the world around us. We raised chickens for eggs and dinner, and usually had a cow on hand for a ready and constant milk supply. My dad also was an avid gardener with an expansive collection of root and orb vegetables, and the rarely successful rows of sweet corn. Later in life, dad made the most of our grove of apple trees as well, with an unending supply of apple pies, sauce, and even pickled apples. And, it was this agrarian side of the family that set the stage for my first wildlife adventures.

Certainly we suffered the occasional loss of chickens to the errant fox that led to dad mending fencing and patching holes in the coop. And, each spring brought another battle with apple-loving insects – it was the sixties, so we did what all families of the time did, we sprayed. But the most memorable were the nights dad and I worked together, first building, then baiting, box traps to foil the eastern cottontails that would raid the family garden.

We would start with a couple of boards, some pieces of scrap 2" x 2", and a cross cut saw. Dad would reinforce that drawing the saw started the cut, and that nothing should be forced or hurried. That the saw would do the work. Once the boards were cut to length and tacked together – dad was a machinist by trade, so if a 10 penny nail would do, a carriage bolt was even better – we wrapped the sides and back with chicken wire. Putting the notch in the top where the bent coat hanger would go was always his job, and required the specials skills with a drill and chisel. Next came attaching the flapper door with the hinge rescued from the local dump. Securing the coat hanger with the special hooks at either end, to hold the piece of cut apple – the trigger – and the other to hold the flapper door open always felt the most important as it was what made the contraption really work. Last came cutting a length of rubber from an old inner-tube to form the "spring."

The best part came each morning, after the trap had been set, when dad would roust me from whatever had captured my imagination to see if we had been successful.

Today, even more than then, we have opportunities to participate in the world around us, if only we will take the time. It is that much more fulfilling if we share it with a child. Find your way to participate; it's easier than you might think.

Rick Jacobson, DEEP Wildlife Division Director

Cover:

A boldly marked male hooded merganser eats an Atlantic mud crab. Learn more about this fascinating waterfowl species by reading the article on page 12.

Photo courtesy of Paul J. Fusco

Connecticut Wildlife

Published bimonthly by

Connecticut Department of
Energy and Environmental Protection
Bureau of Natural Resources
Wildlife Division

www.ct.gov/deep

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State Land and Private Land Habitat Management

Connecticut Wildlife magazine (ISSN 1087-7525) is published bimonthly by the Connecticut Department of Energy & Environmental Protection Wildlife Division. Send all subscription orders and address changes to *Connecticut Wildlife*, Sessions Woods WMA, P.O. Box 1550, Burlington, CT 06013. Subscription rates are \$8 for one year, \$15 for two years, and \$20 for three years. No refunds. Periodical postage paid at Bristol, CT. Postmaster: Please send all address changes to *Connecticut Wildlife*, P.O. Box 1550, Burlington, CT 06013.

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The Federal Aid in Wildlife Restoration Program was initiated by sportsmen and conservationists to provide states with funding for wildlife management and research programs, habitat acquisition, wildlife management area development, and hunter education programs. *Connecticut Wildlife* contains articles reporting on Wildlife Division projects funded entirely or in part with federal aid monies.



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2013 Is the Year of the Snake



Partners in Amphibian and Reptile Conservation (PARC) is celebrating 2013 as the Year of the Snake, and the DEEP Wildlife Division is participating in this year-long outreach campaign to raise awareness of the status of snakes and the threats and human perceptions that contribute to their decline. PARC strives to conserve amphibians, reptiles and their habitats as integral parts of our ecosystem and culture through proactive and coordinated public-private partnerships (www.YearoftheSnake.org). The Wildlife Division is responsible for the conservation of the 14 native species of snakes found in Connecticut. As part of Year of the Snake, the Wildlife Division will send out monthly press releases on snakes, publish articles in Connecticut Wildlife magazine, and hold several educational events and activities throughout the year. Stay tuned for Year of the Snake events on the DEEP website at www.ct.gov/deep/YearoftheSnake and our Facebook page at www.Facebook.com/CTFishandWildlife.

Snakes are fascinating animals!

They survive in some of the most extreme environments on Earth and occur in a variety of habitats everywhere around the world, with the exception of Iceland, Greenland, Newfoundland, Ireland, New Zealand, the Falkland Islands, Antarctica, and some smaller islands. Some snakes spend most of their time underground, some live in the tree tops and have the ability to glide through the air, and others spend their entire lives swimming in the open ocean.

Snakes are reptiles. They are long and slender, and have no limbs. They do not have fur like mammals, feathers like birds, or moist skin like amphibians. Snakes have dry skin with scales, which come in various shapes and can either be keeled (with a raised ridge down the center) or smooth (without the ridge). The scales on a snake's belly are usually quite wide and are called ventral scales.

Snakes are ectothermic (cold-blooded). Their body temperature changes with the temperature around them. A snake will sit in the sun on a rock or other surface to warm up or it will retreat to a cool, shady spot when it is hot outside. In colder environments, they will hibernate during winter.

Snakes cannot blink their eyes. The eyes are covered with a clear protective membrane called a spectacle.

Snakes are carnivorous. They eat other animals, such as mice, birds, fish, frogs, insects, and even other snakes.

Moving Like a Snake

Snakes can coil, climb, and slither because they have a very flexible spine made up of 100-400 vertebrae, each of which is attached to a pair of separate, thin ribs. Most snakes move in a series of S-shaped curves, pushing themselves along using plants, rocks, sticks, and

other irregularities as shove-off points. Many snakes can also travel in almost a straight line using the wide, overlapping plates, or belly scales, on their undersides. Muscles attached to the ribs pull and lift these scales, creating a series of wave-like motions. As the scales push against rough surfaces on the ground, the snake moves forward. Most snakes use a combination of these two methods, but some also use an accordion-type movement – especially when climbing trees. A few desert snakes move using a complicated series of sideways body twists (known as sidewinders).

Snake Senses

Snakes have a variety of ways to sense their environment. They have good “close-up” eyesight and an excellent sense of smell. Their flicking, forked tongue

and a structure in the roof of their mouth called the Jacobson's organ are responsible for their incredible ability to “smell” their environment. This ability enables snakes to not only locate food, but also identify other snakes and animals that may be attempting to prey on them.

Pit vipers, a type of snake, use special nerve endings in their skin to detect the body heat of prey animals. For many snakes, these nerve endings are in the lips. Pit vipers like rattlesnakes and copperheads have a single pair of more highly-developed heat sensors, called pit organs, at the front of the head. When a prey animal is close enough, the organs alert the snake that its next meal is nearby.

Meat-eating Strategies

Different kinds of snakes attack prey in different ways. Constrictors squeeze their prey tightly until the prey suffocates. Then the prey is swallowed whole. Venomous snakes use venom to catch their food. The venom is located in sacs connected to sharp fangs. When some venomous snakes, such as rattlesnakes, bite their

continued on page 14



Connecticut's longest snake, the eastern ratsnake, has flourished due to reforestation of the state's landscape over the last century.

Assessing the Status of Forest Interior and Shrubland Birds in Connecticut

Written by Min T. Huang, DEEP Wildlife Division, photography by Paul Fusco

For the past three years, the Wildlife Division has been assessing the status of shrubland and forest interior birds throughout the state. A large part of this work stemmed from the need to develop

egy (CWCS), a number of species were targeted for monitoring: prairie warbler, blue-winged warbler, eastern towhee, and field sparrow in shrubland habitats; and cerulean warbler, worm eating warbler,

aged properties, combined with utility right-of-ways, support about 1,700 blue-winged warblers, 2,700 eastern towhees, 550 field sparrows, and 1,200 prairie warblers. These estimated populations were then compared to the population goals set by the CWCS. Currently, less than 20% of the population goals for prairie warbler and less than 10% for blue-winged warbler, eastern towhee, and field sparrow are supported by utility right-of-ways and DEEP managed and protected properties.



The black-throated green warbler is one of several forest interior birds that is being monitored by the Wildlife Division as part of an effort to assess the status of shrubland and forest interior birds in the state.

and refine protocols to monitor trends of breeding bird species of greatest conservation need (GCN). Many of these species were and continue to be poorly represented through the Breeding Bird Survey, and thus targeted surveys needed to be developed. Critical for the development of conservation strategies, as well as for prioritizing areas to focus conservation efforts, is knowledge of how key vital rates, such as survival and productivity, are influenced by habitat condition and habitat distribution across the landscape. Another facet of this effort is to assess productivity of these birds in relation to existing habitat conditions and in response to habitat work that is conducted (i.e., forest management activities).

Monitoring Songbird Populations

In concert with Connecticut's Comprehensive Wildlife Conservation Strat-

egy (CWCS), a number of species were targeted for monitoring: prairie warbler, blue-winged warbler, eastern towhee, and field sparrow in shrubland habitats; and cerulean warbler, worm eating warbler, black-throated-blue warbler, and black-throated-green warbler in forest interior habitats. Statistically robust surveys in both shrubland and forest interior habitats were developed to assess these species. Surveys were conducted annually with the assistance of volunteers, seasonal staff, and Wildlife Division biologists. Habitat variables were measured at each of the survey points so that abundance could be correlated with what is on the landscape.

Over the course of the three years, some preliminary population estimates have been developed for shrubland birds. Division biologists assessed the extent of shrubland habitat on state-managed areas, and then used species abundance projections to estimate the abundance of targeted shrubland species that are supported by DEEP protected and managed areas. It was determined that DEEP man-

Estimating Shrubland Habitat

The Wildlife Division is currently contracting with the University of Connecticut to estimate the total amount of shrubland habitat in the state. The final estimates will allow biologists to better assess how close or far away they are from stated population objectives for these shrubland birds of conservation concern.

This analysis will also include some retrospective analyses. This is key because it is known that the benefits provided by shrubland habitat to specific birds and other obligate species is temporal, typically only lasting 10 years or so. Shrubland habitats must be constantly created or maintained or they will no longer provide suitable habitat for shrubland birds. This is in stark contrast to forest interior habitats that, by and large, can be left alone and still provide benefits.

The three years of monitoring showed that shrubland bird productivity was variable, demonstrating how weather and environmental variables, such as moisture, affect nesting success. For example, the number of broods observed in shrublands ranged from 35 to 216 across the years. Biologists do not have the necessary resources to conduct studies on adult survivorship of shrubland birds. But, the indices of productivity that have been developed show the importance of high adult survivorship in maintaining popula-

tions of songbirds.

Division biologists have also conducted forest interior bird surveys, both traditional point count surveys and also callback surveys. The surveys were conducted specifically in contiguous blocks of forest that are at least 5,000 acres in size. These blocks were identified by The Nature Conservancy. They represent those areas in the state that could best support cerulean warblers, a species that is known to require large blocks of contiguous forest. Abundance of target species varied over time, but generally seemed to decrease.

Comparing Current and Historic Distributions

Of interest, and as a demonstration on the importance of monitoring, biologists assessed the current distribution of each of the four target species and compared them to the distribution of these birds during the creation of Connecticut's Breeding Bird Atlas from 1982-1986. The worm-eating warbler displayed a current distribution that closely mimicked the distribution observed in the 1980s. In the current assessment, worm-eating warblers were detected in the six survey routes that overlap with the Breeding Bird Atlas grids where breeding was either confirmed or probable in the 1980s. With only one exception, no worm-eating warblers were detected along any of the routes situated outside of the areas identified by the Breeding Bird Atlas.

Black-throated blue and black-throated green warblers exhibited similar patterns to one another. The majority of current detections occurred in areas where breeding was confirmed or probable according to the Breeding Bird Atlas, but both also were detected in entirely new areas in Connecticut. Black-throated blue warblers were primarily found in northwestern Connecticut, closely mimicking the Breeding Bird Atlas range. However, birds were detected along two routes in southeastern Connecticut, differing significantly from the Atlas. The black-throated green warbler was clustered in the northwestern and southeastern portions of the state but also was found in central Connecticut, outside of the range of the Atlas.

The most radical difference between current and historic distributions was observed with cerulean warblers. No war-

blers were detected on any of the three survey routes that abut or overlap the Breeding Bird Atlas grids with records of cerulean warblers. The only route where cerulean warblers were detected is located in an area outside of the Atlas range. This may partly be explained by a complete lack of survey routes in or around the largest Breeding Bird Atlas area with confirmed breeding records. The forests that comprise this block did not meet the criteria for listing by The Nature Conservancy and therefore were not included in the survey effort.

Dedicated Funding Is Needed

More research is needed on these GCN birds. However, the Wildlife Division's ability to undertake the necessary research and conservation projects is hampered by a lack of funding and resources. Research and management projects for Connecticut's hunted species receive dedicated funding through the Federal Aid in Wildlife Restoration Program. Nongame wildlife species, such as songbirds, are sometimes secondary beneficiaries of federal aid projects, but rarely receive direct funding. Until a dedicated funding mechanism is established in Connecticut, the future appears uncertain for research and conservation of many of these songbird species and their habitats.



Population assessments by the Wildlife Division indicated that DEEP managed properties with early successional habitat and utility right-of ways support about 1,700 blue-winged warblers.



Cerulean warbler



Worm-eating warbler



Field sparrow

Eight Ways to Be Flat

Written by Penny Howell, DEEP Marine Fisheries Division; photos provided by DEEP Marine Fisheries Division

People commonly think of fish as having a sturdy, bullet-shaped body with various fins, a big mouth, and two eyes symmetrically placed on either side (think tuna or great white shark). However, one of the most advanced and globally diverse groups of fish is the flatfish, or flounders. There are 570 different species worldwide and eight of them can be found in Long Island Sound. Despite their great diversity, at first glance all flounders look much the same – flattened pancake body, dark on the top side and light on the underside, with one long fin running all around the edges. Even though this body shape looks like road-kill, it suits the survival strategy of the group – camouflage rather than speed or strength. All flounder species go through an involved metamorphosis to acquire this body shape. Larval flounder start life with the expected fish shape, but after several weeks begin to laterally flatten with one eye migrating to the opposite side of the body. This configuration gives flounder a complete zenith (180 degrees) of vision on the top side, while the side buried in sand or mud is blind. Such extraordinary vision is of great survival value, both in ambushing



The winter flounder is so called because it spawns in Long Island Sound from January through April. Spawning occurs in shallows over mud bottoms, so the fish are usually colored to match the bottom. Hence, their other name is “black back.”

food and seeing predators before they see the flounder. Many flounder species can also change the coloration of their top side from dark to light to match the blotches and patterns of the sediment in which they are hiding.

To make up for similar appearances, the flounders have been given descriptive

names that make it easier to remember their distinctive characteristics. Two common species in Long Island Sound are winter and windowpane flounder. Winter flounder are named so because they spawn in the Sound from January through April. Spawning occurs in shallows over mud bottoms, so the fish



Windowpane flounder (left) is common in Long Island Sound. The hogchoker (right) is the most adaptable and oddest flounder.

are usually colored to match the bottom. Hence, their other name is “black back.” Winter flounder are well adapted to cold temperatures, having chemicals in their blood that act as antifreeze. Windowpane flounder are also found in the Sound year round, but are light-colored with spots that match their favored sandy bottoms. Windowpanes have such thin bodies that if you hold them up in the sunlight you can see their internal organs.

Winter flounder have two offshore cousins, yellowtail flounder and American plaice, which look very similar and only occasionally enter Long Island Sound from the deeper, cooler waters off Block Island. As its name implies, the yellowtail flounder can be identified by the yellow coloration on its blind side tail, which is white in almost all other species. American plaice are one of the few flatfish that are strong enough swimmers to be able to rise to considerable heights off the bottom to snare their prey, or be caught in commercial nets. Another deep water species that is more common in the Sound is the fourspot flounder. As you can probably guess from its name, you can easily distinguish this elongated species by the four large spots on its top side.

Moving into the Sound as the water warms in late spring are the more southern flatfish, summer and smallmouth flounder. The summer flounder (also called fluke) is named for its habit of spawning offshore in fall and moving in-shore in spring and summer to feed. Compared to the other flounders, the fluke, with its large mouth and teeth and a more muscular body, grows the largest by feeding on other fish. These features make it a highly sought-after prize for anglers from Hatteras, North Carolina, to Massachusetts. The smallmouth flounder, which is in the same taxonomic family, is small in mouth gap (as its name implies) and body size, and very thin with light, thin scales. The largest smallmouth only grows to six inches (15 cm) in length, compared to summer flounder that can reach 36 inches (90 cm) in length and 22 pounds. This remarkable size range within one family demonstrates how selective adaptation can mold species with common ancestry into different specializations.



(Top to bottom, left to right): summer flounder (juvenile), smallmouth flounder, winter flounder (middle), American plaice, and fourspot flounder against a meter stick.



Above: A large adult summer flounder (fluke) captured in the CT DEEP Trawl Survey.



Adult hogchoker



Windowpane flounder on a meter stick.



Smallmouth flounder

Last, but not least, is Long Island Sound’s most adaptable and oddest flounder, the hogchoker. The story behind its strange name is lost in history but relates in some way to the practice in colonial times of leaving hogs to feed on small islands off the coast or in Connecticut’s major rivers. The hogs would forage at water’s edge and attempt to eat this small, rubbery flatfish that easily swims from open saltwater into brackish shallows. This little flounder has rough scales and remarkably strong muscles which are used to clamp down onto any hard surface, a characteristic that apparently made the hogs sorry to have rooted them out of the sand.

Mating Season Movements of Connecticut Cervids

Written by Andy LaBonte, DEEP Wildlife Division

White-tailed deer and moose running across roadways and throughout Connecticut's landscape becomes increasingly more common as summer turns to fall. This increase in activity is an inverse relationship with decreasing daylight. A number of biological and behavioral changes occur in both plants and animals with decreasing light during early fall. In deer and moose, this change triggers an increase in estrogen levels of females, leading to the onset of breeding activity (estrus). At the onset of estrus, females become restless and nighttime activity increases. In males, increasing testosterone levels lead to neck swelling and rutting behavior. Rutting behavior includes sparring with other males to establish an order of hierarchy, leading to courtship and breeding with females. Although many males may participate in courtship, typically only the most dominant ones are involved with tending and breeding. During the rut, males also may expand their range, moving greater distances in search of receptive females, and become less aware of their surroundings. During peak breeding season, which occurs from mid-September to mid-October for moose and mid-November to mid-December for deer, the increase in activity can provide some unique opportunities to view these animals.

In fall 2012, the Wildlife Division received 28 different reports of a male moose with ear tags (#8) moving throughout western Connecticut. This young two-year-old male had been previously captured in downtown Plainville in June 2012, and was tagged, radio-collared, and relocated to the Barkhamsted/Hartland area. Likely in search of a female, the moose traveled over 34 miles southwest from where it was released earlier in the year, before it headed back north again. Movements of this magnitude are not uncommon for moose during the breeding season, especially when population densities are quite low, making it difficult to find a receptive female.

As part of a research project assessing deer survival rates and causes of mortality (see article in September/October 2012 issue of *Connecticut Wildlife*),

Wildlife Division staff is monitoring several radio-collared adult does and fawns in northwest Connecticut on a weekly basis. During a monitoring effort in mid-November 2012, researchers noticed that one doe had moved a great distance from its typical location. Believing the doe may have been harvested that morning by a hunter, they set out in search of it. After traveling around for quite some time trying to pin-point its location, the doe was finally located when it ran in front of researchers' vehicle with two young males chasing right behind her. The three animals returned to the woods where this chasing behavior ensued for nearly 15 minutes, all within view of the road. The collared female had moved more than two miles from her typical home range, either on her own accord or due to the persistent chasing from the young males. By the following day, the female had moved back to her normal location.

This increase in activity and movement during the breed-



COURTESY, M. SCRANTON

Young male moose bearing ear tags (#8) and a tracking collar traversing through northwest Connecticut during the fall breeding period.

ing season raises the risk of a motorist striking a deer or a moose. The months of October, November, and December account for nearly 40% of annual deer vehicle strikes for females and nearly 65% of annual vehicle strikes for males. Similarly, one of the two moose-vehicle accidents documented in 2012 occurred during this same time period. Motorists driving around dawn or dusk, when deer and moose are most active, should always be aware of the potential for a collision with one of these large animals. Motorists are advised to use extra caution during the fall breeding season, as well.

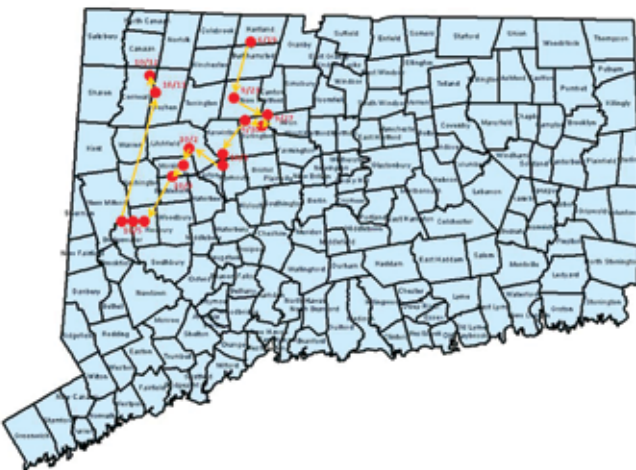


Higher Risk of Human Fatality with Moose/Vehicle Accidents

The risk of a human fatality resulting from a moose/vehicle accident is much greater than the risk associated with a deer/vehicle collision. Adult moose may stand over six feet tall at the shoulders, can weigh over 1,000 pounds, are brownish-black in color, and are most active at dawn, dusk, and after dark. Because of these characteristics, encountering a moose in a vehicle, particularly at higher speeds and in the dark, can be dangerous.

A growing moose population creates a significant road safety problem because moose have large home ranges (about 10-15 square miles), Connecticut's landscape is fragmented, and the state's roads experience high traffic volume. Because of this increased risk, moose sightings or encounters in developed areas of the state are carefully monitored with full awareness of the potential outcomes.

Fall movements of moose #8 based on sightings reported to the DEEP Wildlife Division (September 23 – October 11, 2012).



Mature buck displaying rutting behavior with its nose close to the ground in pursuit of a female in estrus.

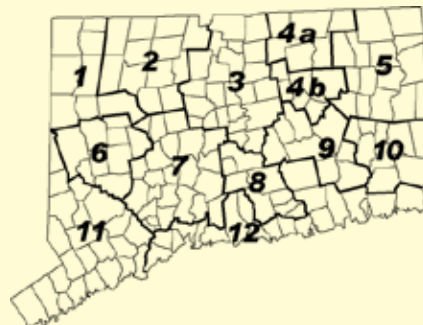
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Deer road kills reported in each of CT's deer management zones, a 5-year comparison, 2007-2011.

| Zone | 2007 | 2008 | 2009 | 2010 | 2011 | Five-year Total |
|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|
| 1 | 86 | 92 | 82 | 69 | 82 | 411 |
| 2 | 63 | 80 | 82 | 68 | 66 | 359 |
| 3 | 173 | 216 | 204 | 136 | 162 | 891 |
| 4A | 92 | 113 | 85 | 64 | 81 | 435 |
| 4B | 137 | 166 | 125 | 100 | 115 | 643 |
| 5 | 220 | 245 | 207 | 170 | 190 | 1,032 |
| 6 | 111 | 119 | 88 | 65 | 71 | 454 |
| 7 | 180 | 269 | 192 | 156 | 214 | 1,011 |
| 8 | 32 | 26 | 40 | 10 | 15 | 123 |
| 9 | 211 | 199 | 190 | 154 | 199 | 953 |
| 10 | 82 | 89 | 80 | 58 | 79 | 388 |
| 11 | 384 | 341 | 313 | 285 | 238 | 1,561 |
| 12 | 196 | 235 | 214 | 121 | 171 | 937 |
| Total | 1,967 | 2,190 | 1,902 | 1,456 | 1,683 | 9,198 |

Connecticut Deer Management Zones



Aphrodite of the Hemlocks

Article and photography by Mike Beauchene, DEEP Inland Fisheries Division

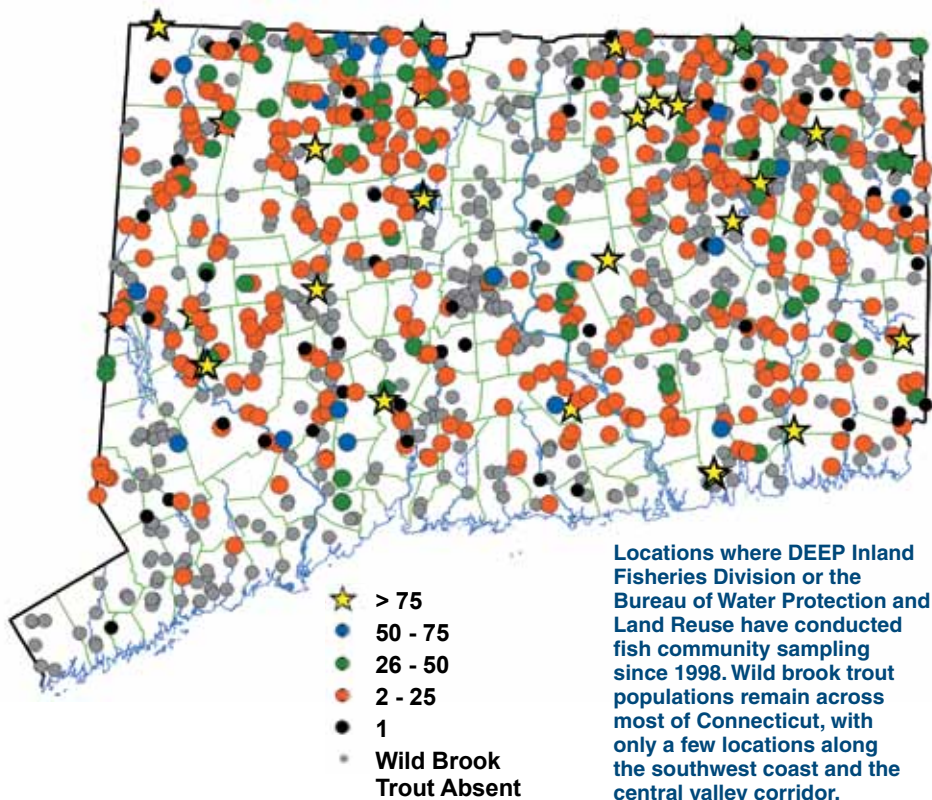
Stones and boulders blanketed by a thick emerald carpet of mosses. Tea-colored water cascading from pool to pool. Sunlight intercepted by a thick canopy of hemlock. A forest floor spongy and soft, slightly darkened, even in mid-day. Is this the realm of the mythical hobbit? Could be, but more likely it is the scene along one of the many small, spring fed headwater streams found across Connecticut – home to the “Aphrodite of the Hemlocks,” our only native, non-migratory salmonid, *Salvelinus fontinalis*, the brook trout.

Although it is called a trout, in reality it is a char. *Salvelinus fontinalis* roughly translates to “char living in springs.” The



Connecticut is fortunate to have many small cold water streams that provide habitat for brook trout. These streams share very cold water supplied from seeps and springs and a thick forest canopy to minimize heat from the sun.

Number of Wild Brook Trout in the Sample



differences between each are subtle. The tell-tale difference is that unlike trout, char do not have teeth on the roof of their mouth. Visually, char have light-colored spots contrasted against a dark background, no spots on the head, and pelvic and pectoral fins with a white outer margin followed by a thin black line. Specific to the brook trout, the dorsal surface has an intricate worm-shaped pattern of dark green lines.

Regardless of trout or char, you may know this fish as a speckled trout, native, square-tail, or brookie. As a child, I was fortunate to spend my formative years living next to a stream and its population of brookies. Days could go by where it seemed my only activity would be to sit streamside and watch as, one-by-one, mayflies, stoneflies, and caddisflies were swallowed by a hungry brookie dashing from the stream bottom to grab the insect just as it was about to leave the surface of the stream. Another favorite activity was to angle by drifting a worm attached to my homemade fishing pole and be amazed at the lightning speed and precision it was inhaled. It was obvious that each pool was a kingdom ruled by the

king or queen who occupied the prime shelter, current, and feeding pathways, leaving less desirable locations to the smaller fish.

Brook trout can be found from northeastern Canada and the Maritime Provinces southward to Georgia along the Appalachian Mountains, provided a stream has enough elevation to be a cold water habitat. The brook trout has a demanding set of standards without which populations will not be successful. Water temperature must remain cold throughout the hottest summer months, rarely exceeding 68 F. Oxygen levels are at the saturation point and the pH of the water can be slightly to moderately acidic. During the November to December spawning season, females seek out a silt-free bed of gravel, preferably with good groundwater input to build a nest or "redd." Once the eggs are laid and fertilized, the upwelling of the groundwater serves to continually aerate the eggs.

Although picky about water quality and habitat conditions, brook trout are fierce survivors and can persist through extreme drought conditions by finding the last remaining pools in which to hold tight until normal flows resume. During my younger years, I witnessed this phenomenon first hand at my homestead stream, where under very dry conditions the brook would turn into a series of isolated pools with no surface flow connecting them. Within each pool, crowded with more individuals than was intended, they waited for rain and a return to normal stream levels. At times like this, I may have taken the liberty to throw a few extra "hook-free" worms into the pool every so often.

As a fisheries biologist, I have sampled, over the years, hundreds of small streams across the state. I am often amazed at how brook trout are not only able to persist but flourish under what appears to be such minimal habitat. Streams with mere inches of water can have hundreds of brookies scattered throughout a 150-meter sample reach. Even more amazing is that a section of stream that had been completely dried up can have some brookies back in action almost immediately after water returns. Such persistence has served the species well and possibly prevented its extirpation from Connecticut during our early history.

Early settlers have written accounts of bountiful numbers of brook trout throughout many streams and rivers

in Connecticut. However, intensive land clearing and damming of streams to harness the power of water for early industrial purposes that followed resulted in an unintended but significant loss of brookie habitat, including increased water temperatures, barriers to migration, and an increase in the amount of sediment reaching the stream. All of these factors together have reduced suitable brook trout habitat to the point where it can only be found in small steep watersheds.

Collaborative work between the DEEP's Inland Fisheries Division and the Bureau of Water Protection and Land Reuse shows that self-sustaining native populations of brook trout are primarily found in streams draining less than six square miles, translating to be about a 13-14 foot wide stream. The good news is that the majority, approximately 54%, of the stream miles found in Connecticut, is in this range and could be suitable habitat for brook trout. The bad news is that the historical land use in Connecticut has extirpated brook trout from many of these streams. The success of future generations of brook trout will be determined through the combination of direct effect by humans (such as residential development, storm water run-off, and ground water extraction for drinking water), and environmental conditions (like changes in precipitation patterns, air temperatures, and stream flow reaching more frequent extreme highs and lows). Perhaps the brook trout is a combination of the Greek gods – the beauty and enticement of Aphrodite coupled with the strength and persistence of Hercules. In the future, it will be important to keep close watch on these populations to prevent loss of Connecticut's native trout . . . I mean char.



The wild brook trout is one of the most colorful native freshwater fish in Connecticut. If you are fortunate to capture one of these fish, you will easily understand the nickname "Aphrodite of the Hemlocks."

Connecticut's Timberland Duck - The Hooded Merganser

Article and photography by Paul Fusco, DEEP Wildlife Division

Beaver swamps are among the best places to find the hooded merganser, the smallest and least common of the mergansers. In spring, they prefer isolated wooded wetland habitat, the quieter the better. Drakes are elegant and boldly marked, yet they blend into their surroundings surprisingly well when encountered in this characteristic habitat with weathered tree trunks and downed branches along the water's edge.

Males have striking black-and-white plumage with rusty flanks, and sport a dazzling fan-shaped white crest that is rimmed in black. Females are drably-colored in soft browns and grays, and have a bushy brown crest. The drake's crest can be inconspicuous when lowered, but when raised, it is most impressive. In late winter and early spring, males start to display for the females. Often times, multiple males will participate in a showy display, all vying for the attention of a female.

Similar to its close associate, the wood duck, the hooded merganser is quiet and secretive during the breeding season. Both species have a strong preference for secluded wetlands and both avoid suburban habitats. They have little tolerance for human disturbance at nesting locations. Although they are hard to find during the breeding season, they are much more visible when migrating or at one of their favored wintering locations.

All mergansers are strong, fast fliers with rapid wingbeats and

direct flight. They fly with their bill, head, neck, and body all held in a straight horizontal line. These flight characteristics make mergansers easy to separate from other duck species. Often described as flying with the velocity of a speeding bullet, the hooded merganser is particularly fast and agile on the wing.

Habitat

Like the wood duck, hooded mergansers prefer to nest in old growth tree cavities, but also will use artificial nest boxes. In fact, mergansers often "dump" eggs in the nests of wood ducks and vice versa. The typical clutch size is 10-12 white eggs, which hatch inside the tree cavity or nest box. The young remain in the nest for about a day after hatching before the hen coaxes them out. Once the young climb up to the nest hole, they will take the fluttery plunge to water or ground, and will not return to the nest. In some cases, the nest cavity may be up to half a mile from water, so the young ducklings follow their mother as she leads them by walking to the nearest body of water.

During migration, hooded mergansers move in small flocks, and normally are not found in large concentrations like many other ducks. In winter, they can often be found close to the shoreline at small freshwater ponds, brackish creeks, and tidal marshes that are not frozen over. They are seldom seen in open salt water.



The bold fan-shaped crest of the male hooded merganser can make this duck highly visible on small ponds and tidal creeks during winter.

Their diet consists mostly of small fish, but crayfish, small crabs, and aquatic insects also make up a large percentage of what they eat. Mergansers catch their food by sight as they dive below the water's surface and swim underwater. Their bills are long and narrow with serrated edges, which are used to hang onto the slippery prey of small fish. When feeding on crustaceans, such as crabs, a merganser will surface with the crab, and shake it violently, breaking off the legs and claws before swallowing the body whole, shell and all.



A hen hooded merganser watches over her young on a small beaver pond in northwestern Connecticut.

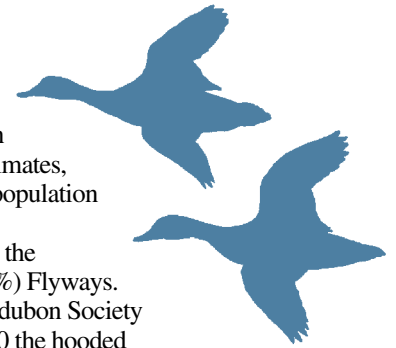
Conservation

Because of their secretive nature, hooded mergansers are difficult to survey. They are found in Connecticut in low numbers during the breeding season. Most occurrences are in the northwest hills and along the lower Connecticut River. Their breeding distribution is expanding, particularly on the eastern side of the state. Annual wood duck box checks indicate that 13% of used wood duck boxes were occupied by hooded mergansers. In winter, hooded mergansers become more common as migrating birds from farther north arrive in Connecticut to spend the winter. Although considered to

be a species with low conservation concern, the hooded merganser has a relatively small overall population, estimated at approximately 350,000, making it one of North America's least common duck species. Historically, hooded merganser numbers were likely highest in precolonial times, then declined drastically as forests were cleared, reaching a lowpoint in the mid-20th century. Since that time, forests have regrown and matured in many areas, forest management practices have improved, and the merganser population has increased. Annual harvest rates for hooded mergansers are significant. According to U.S. Fish and Wildlife Service harvest trend estimates, approximately 30% of the estimated population was reported to be taken in 2011, with most of the harvest coming from the Atlantic (10%) and Mississippi (15.4%) Flyways. In Connecticut, based on National Audubon Society Christmas Bird Count data, since 1960 the hooded merganser winter population in Connecticut has increased steadily, and has remained at a comparatively high level for the last 15 years.



Note the sleek, streamlined flight posture of mergansers (above) as compared to mallards (below).



A hen hooded merganser wrestles with a favorite food, crab. Below: Displaying males congregate in late winter.



Year of the Snake

continued from page 3

prey, they jab their fangs into the prey's skin or muscle. This forces the venom to flow from the sacs through the fangs and into the animal's body. Other snakes, like the garter snake, catch and swallow their prey alive.

Snakes have special jaws for swallowing their prey whole. The lower jaw is actually two halves that can be rotated or moved apart. Also, the entire lower jaw can disconnect from the upper jaw. This allows some snakes to swallow food as wide as their heads. Swallowing prey can take hours, so snakes have windpipes that can move forward over the tongue. This allows the snake to still breathe while it is eating.

Snakes have powerful digestive juices, called enzymes, that completely dissolve prey, including fur, feathers, and even bones.

Because snakes can eat such huge meals at one time and because they are cold-blooded, they do not have to eat as often as other animals. If necessary, most snakes can survive with eating just a few times per year.

Shedding the Skin

Snakes grow throughout their lives. To grow, they must replace their outer layer of skin in a process of shedding (or ecdysis). The entire process takes several days to a week or more to complete. A new outer layer of skin must first begin to form beneath the old one. Then, fluid (from the lymphatic system) spreads between the layers of skin, separating the old from the new. Snakes have no eyelids, but do have clear scales over their eyes, and the fluid gives their eyes a gray or bluish cast and clouds the snake's vision during this period. Within a few days, the fluid is reabsorbed and the snake begins to expand and contract its body and head. Eventually, it rubs its nose or head on a rough surface and the skin begins to peel. The snake then crawls forward, turning the shed skin inside out and leaving it

Snakes Should NOT Be Killed

Hundreds of snakes are needlessly killed by people each year because of mistaken identity, fear, and misunderstanding. Very often, when a snake is found near a home, people panic and may even assume that the snake is dangerous or venomous. Few Connecticut residents realize that they are unlikely to encounter a venomous snake around their home. The two venomous snake species found in Connecticut (timber rattlesnake and copperhead) do not have wide distributions. These venomous snakes, along with the other 12 Connecticut snake species, are NOT aggressive and will only bite if threatened or handled. If left alone, snakes pose no threat to people.

If you encounter a snake in your yard or while out on a walk in the woods, observe and enjoy it from a distance and allow it to go on its way. The killing of any snake is strongly discouraged. All snakes will retreat from humans if given a chance.

behind. The shed skin stretches out during the shedding process, so it is not an accurate indicator of a snake's true size.

Reproduction

Some snakes lay eggs. Many keep the eggs in their body until the eggs hatch and then the live young emerge. Others give birth to live young directly. The newly-hatched snakes are on their own and have to find their own food and take care of themselves.

Threats to Snakes

Habitat Loss and Fragmentation: Habitat loss and fragmentation are possibly the biggest threats to snake populations globally. Direct mortality from roads, behavioral changes, and forced interactions with threats such as humans, farm equipment, and pets put snake populations at serious risk.

Over-collection: Some snake species are so charismatic and unique that they are heavily exploited for the pet and skin trade. Snakes are often not managed appropriately for sustainable use, unlike most game birds, mammals, and fish. Unregulated use and collection of wild snake species can result in undetected declines.

Human Persecution: Human persecution of snakes is rampant (even in Connecticut), particularly against venomous snakes. Many snakes are killed, regardless of whether or not they are venomous, because people tend to have an irrational

fear of these creatures. The extent of human persecution of snakes is demonstrated in a study conducted in Kansas, where eight out of 10 drivers were found to intentionally hit snake-like objects

placed on the road. It is critical to educate people on the value of snakes, to identify venomous and nonvenomous species, how to avoid being bitten and, that when a snake is encountered, to leave it alone.

Global Climate Change: Because snakes are ectotherms (obtaining most of their body heat from the environment), they are great indicators of climate change and how it will affect other species. Studies indicate that snakes will be negatively affected by climate change because they cannot evolve or migrate fast enough to keep up with the changes in suitable habitat. For example, a study conducted by the University of Indiana Bloomington found that, although an initial increase in temperature may expand the range of timber rattlesnakes in the eastern United States, a temperature increase of 6.4 degrees Celsius would eventually displace this species from its range entirely.

More Research/Funding Needed

In order to conserve snake species, we need to learn more about these often secretive animals. Currently, in comparison to research on other vertebrates, very few organizations or institutions do research on snake species. In addition, snakes are one of the most difficult groups of animals to study, and new techniques are needed that will allow biologists to effectively study or monitor snakes, especially small species and young age classes.

To make matters worse, finding funding for research efforts is extremely difficult. The conservation of snakes is seriously overlooked and underfunded.

Some of the information for this article was obtained from *A Guide to Amphibians and Reptiles* by Thomas F. Tynning and the Partners in Amphibian and Reptile Conservation website (www.parcplace.org).

Connecticut's Native Snake Species

| | |
|-------------------------|----------------------------|
| Eastern Wormsnake | Smooth Greensnake |
| Northern Black Racer | Eastern Ratsnake |
| Timber Rattlesnake | Northern Brownsnake |
| Ring-necked Snake | Common Ribbonsnake |
| Eastern Hog-nosed Snake | Common Gartersnake |
| Eastern Milksnake | Northern Copperhead |
| Northern Watersnake | Northern Red-bellied Snake |

Common Gartersnake

Thamnophis s. sirtalis

Background and Range

The common gartersnake is perhaps the most common, widely distributed, and familiar of all North American snakes. In Connecticut, the gartersnake is found throughout the state, from sea level to the highest elevations, and from urban areas to “wilderness.” The closely related common ribbonsnake resembles the gartersnake in appearance and habits. However, the ribbonsnake is less common in the state and is listed as a species of special concern.

In North America, the common gartersnake is found from Maine to central Missouri and from central Ontario to Florida.

Description

The gartersnake is marked with a pattern of three light stripes on a dark body, although the pattern can vary. One narrow stripe runs down the center of the snake's back, with a broad stripe on each side. The stripes are usually yellow, but can be shades of blue, green, or brown. Between the center and each side stripe are two rows of alternating black spots. The scales of the gartersnake are keeled (a raised ridge is found along each scale) and the snake's belly is yellow and pale green. Adults range in size between 18 and 26 inches in length, but can measure up to 42 inches long. Juvenile gartersnakes resemble adults. It is difficult to distinguish between the similar-looking garter and ribbonsnakes in the field. (See the ribbonsnake profile on the next page to learn the subtle differences.)

Habitat and Diet

The gartersnake's success is due to its opportunistic nature in both habitat use and food habits. The snake uses a variety of habitats, such as deciduous forests; forest edges; fields; swamps; bogs; stream, river, and pond edges; hedgerows; overgrown lawns; and grassy areas. Gartersnakes are often seen basking on wood piles, stone walls, hedges, and rocks.

Gartersnakes feed on a variety of small animals. Amphibians (frogs, toads, salamanders) are the main prey, followed by earthworms, mice, small fish, nestling birds, small snakes, leeches, slugs, snails, sowbugs, crayfish, millipedes, insects, and spiders. The saliva of the common gartersnake appears to be toxic to amphibians and other small animals and a bite may produce swelling or a rash in some people. Feeding usually occurs during daylight hours, but gartersnakes will also hunt for food in the mornings or evenings (crepuscular) and at night in hotter months and during the amphibian breeding period.

Life History

Gartersnakes mate upon emerging from hibernation in March or April. It is common to observe a group of gartersnakes wrapped into a “breeding ball,” which usually consists of males with a small



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number of females. Males will mate with more than one female. Gartersnakes do not lay eggs. Instead, the young develop within the female in a thin sac-like membrane that contains a yolk. Gestation lasts between 90 and 100 days, with young emerging from the female anytime between July and October. A typical litter ranges from 10 to 40 individuals. The young receive no parental care and disperse immediately upon birth.

Interesting Facts

The gartersnake derives its name from the resemblance of their stripes to old-fashioned sock garters.

This snake is extremely cold resistant. It is active earlier in spring and later in fall than other snakes, typically from late February through October. Activity is closely associated with weather conditions. Snakes are ectothermic (cold-blooded) and derive heat from outside the body; environmental conditions must be warm enough – between 68 and 98.6 degrees F – for the snake to adjust its body temperature to a preferred range and become active. As winter approaches and temperatures drop, the snakes will group together to hibernate for the season. This grouping is referred to as an aggregation. Hibernacula include muskrat and crayfish burrows, mud banks, rock walls, under stumps and logs, or a burrow in soft earth.

Gartersnakes, particularly young ones, are prey for many animals, such as owls, hawks, herons, bitterns, rails, turkeys, crows, jays, dogs, cats, mink, otter, skunks, raccoons, opossums, foxes, and large predacious fish. Other snake species also prey on gartersnakes, such as milk, black racer, copperhead, and larger gartersnakes. However, gartersnakes are not defenseless. Their body markings help conceal movement, preventing detection. If threatened, they quickly seek cover, concealing themselves in vegetation or hiding under rocks. If captured, they emit a foul musk odor, thrash violently to escape, or will even bite.

Common Ribbonsnake

Thamnophis sauritus

Background and Range

The slimmest and thinnest member of the *Thamnophis* genus (gartersnake group), the common ribbonsnake is less common than its relative, the common gartersnake. It is a species of special concern in Connecticut due to declining numbers and the loss and degradation of its wetland habitats.

The common ribbonsnake occurs in southern New England down the Atlantic Coast to mid-Georgia, west to Mississippi, and a short range up the river valley into lower Indiana. The species is uncommon or localized in southern New England, where it appears to have declined or become extirpated in many areas. In Connecticut, the ribbonsnake has been documented throughout the state in wetland habitats, except in Fairfield County. Some of the largest concentrations of ribbonsnakes have been found in the Central Connecticut Lowland, in and near wetlands associated with basalt (trap rock) ridges.

Description

The small (typically 20-32 inches), slender, and striped ribbonsnake is most commonly confused with its relative, the common gartersnake. The ribbonsnake is boldly patterned with three yellow stripes on a reddish-brown to black background. A distinct dark band separates each side stripe from the belly. One stripe is centered on the body, while the other two stripes run down scale rows three and four. The ribbonsnake also has keeled scales (a raised ridge is found along each scale) and a belly that is pale yellow to pale green. The tail generally accounts for one third or more of the ribbonsnake's total body length. The common ribbonsnake also has two distinct parietal "spots" atop its head, which is unique to ribbonsnakes. The head is distinctly bicolored with the top portion black and the area below the eyes and under the chin pure white. Juvenile ribbonsnakes resemble adults.

In comparison, the similar-looking gartersnake is more heavy-bodied; has a proportionately shorter tail (less than one fourth its total length); is less swift and agile; and has lateral stripes on scale rows two and three. It also can be more variably colored and more blotched or patterned. Some individuals have well-defined striping and head markings, however the majority have poorly defined patterns when compared to ribbonsnakes. Gartersnakes are found in a wide variety of habitats, from dry to wet, whereas ribbonsnakes are usually found in and near shallow water.

Habitat and Diet

The ribbonsnake seldom ventures from shallow aquatic habitats, and favors open, grassy, or shrubby areas bordering ponds, streams and wooded swamps. It may also be found in wet woodlands. Hibernation dens are underground, usually at higher elevations and sometimes near trap rock systems.

This snake feeds on a variety of aquatic creatures, mainly amphibians such as tadpoles, frogs, toads, and larval and adult salamanders. It also will consume small fish and some invertebrates. In turn, this snake is preyed upon by birds, mammals, fish, and large amphibians.

Life History

Ribbonsnakes are active from April through October, and generally mate in spring (April to May) after emerging from hiberna-



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tion. Mating also can take place in the fall. Females give birth to 10-12 live young in July or August. The young receive no parental care after birth.

Interesting Facts

Ribbonsnakes, like their relatives the gartersnakes, are more tolerant of cooler temperatures than other snake species. Both snake species are Connecticut's earliest emerging snakes in spring. Ribbonsnakes tend to be most active during spring, but may become dormant in summer if their wetland habitat dries up. If habitat conditions improve, the snakes will become active again. This snake may be an indicator of high quality wetlands.

Comfortable both in and out of water, the ribbonsnake is an adept swimmer that prefers shallow water. Instead of diving to the bottom as a watersnake would, it swims rapidly along the shore and may disappear quickly into vegetation if threatened. In defense, a ribbonsnake may flatten its head, thrash about, and secrete a fowl smelling musk to deter predators. This snake may often be seen basking on logs, hummocks, or muskrat lodges.

The common ribbonsnake is non-venomous and harmless to humans. It is an important predator in aquatic food webs.

What You Can Do

If you encounter a ribbonsnake, observe it from a distance and allow it to go on its way. You should not try to agitate it by getting too close or handling it. It may try to bite or will release a musky odor. Common ribbonsnakes are protected by Connecticut's Endangered Species Act and persons who kill or collect this special concern snake could be faced with fines or legal action.

New England Cottontail Projects on State and Private Lands

Written by Lisa Wahle, New England Cottontail Private Lands Wildlife Specialist

The New England cottontail is found in southern New England and eastern New York. Over the past 50 years, the range of this once-common rabbit has shrunk to less than one-fifth of its historic size and its population has dwindled, so much so that this unique, native mammal now faces the possibility of being listed as a threatened or endangered species. The most critical threat faced by New England cottontails is the continuous loss of suitable habitat – brush, shrubs, and densely growing young trees, generally described as “young forest.”

In the past, natural factors, such as wildfire, storms, and flooding by beavers, created plenty of young forest habitat in the Northeast. However, development has taken over much of the land once inhabited by cottontails and other wildlife. In addition, thousands of acres that used to be young forest (ideal cottontail habitat) have grown up into mature woods where cottontails cannot live.

Creating Habitat on State Lands

Despite the decline in young forest habitat, research by the DEEP Wildlife Division has indicated that Connecticut



Timber harvester conducting a regeneration project on 20 acres at White Memorial Foundation in Litchfield.

still has widely distributed populations of New England cottontails and a fair amount of suitable habitat. However, the

department is not taking this for granted. The New England cottontail population is in serious decline regionally, and the required young forest habitat is ephemeral in nature. Major storms (like hurricanes) and wildfire cannot be counted on to create new young forest patches on a regular basis, so the DEEP needs to do the work of creating and restoring habitat patches in designated focus areas throughout the state. Biologists are working on the assumption that if good habitat is created, New England cottontails and other young forest wildlife will come... and stay! The DEEP has already created sizable habitat patches on four state properties and has immediate plans for work on six more within designated focus areas.

The Land of Goshen: More than a Temporary Home?

The DEEP recently created a large, 57-acre patch cut at the Goshen Wildlife Management Area (WMA) in Goshen adjacent to existing young forest habitat and a location where New England cottontails have been documented. This patch cut was somewhat complicated because it

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Master Wildlife Conservationists participate in a New England Cottontail Workshop at White Memorial Foundation in Litchfield.

Cottontail Rabbits

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involved work on sensitive wet soils and efforts to avoid impact to a state-listed plant of special concern. Careful timing, planning, and execution of the project were essential. After a long wait for dry weather conditions, the timber harvest was able to proceed in late summer 2012. The dry conditions made it possible for heavy-duty harvesting equipment to move around the project area without damaging the substrate. Logs were hauled out on a tracked forwarder. A two-acre island of undisturbed trees was left in the middle of the site to protect the state-listed plant. Brush piles were made to provide temporary cover for wildlife until regenerating forest and shrubs are large enough to provide more permanent cover.

Regeneration at this site is expected to be excellent for a number of reasons. The understory contained few invasive plant species and a variety of high-quality native plants, including viburnums and winterberry. The dampness of the soil is expected to encourage rapid, dense growth of vegetation. The large size of

the cut, coupled with a layer of slash left on the ground, will prevent deer browsing from impacting regeneration. New England cottontails are fully expected to move into the area within a few years.

Pachaug State Forest: #1!

DEEP biologists have known for a while that the Wyassup Block of Pachaug State Forest, in Voluntown, is a special place for New England cottontails. A number of reports from avid rabbit hunters initially sparked interest in the area. Live-trapping and radio telemetry research confirmed a thriving population of New England cottontails near Wyassup Lake. Rabbits used in a captive breeding program at the Roger Williams Park Zoo in Rhode Island came from this location.

Pachaug State Forest is considered the “number one” location in Connecticut and the region for New England cottontails due to the presence of a healthy population and the large area of permanently conserved land within the forest (about 24,000 acres in all). However, more habitat work is needed to ensure that the forest remains number one. The young forest patch that harbored the healthy population

of cottontails resulted from forestry operations conducted in the 1990s. Unfortunately, the patch was quickly becoming too old to provide good winter cover and forage for New England cottontails. The forest canopy was closing and stem density was declining. These conditions were brought to the attention of the DEEP Division of Forestry, which immediately stepped up to conduct a forest inventory and also update the Forest Management Plan for the Wyassup Block to include habitat work for New England cottontails. The updated plan includes even-aged forest management in two large stands adjacent to existing young forest. Timber harvests in these stands will be conducted in two phases, resulting in more than 200 acres of enhanced New England cottontail habitat adjacent to a 90-acre shelterwood cut done in 2006. The need for continual regeneration of young forest through even-aged management has been written into the Pachaug State Forest Management Plan to guide forest operations in the future. With proper management and cooperation between DEEP biologists and foresters, it is anticipated that this parcel will remain Number One!

Creating Habitat on Private Lands

Clustered around state land projects are projects on private lands. The participation of private landowners in New England cottontail habitat work is critical to the successful conservation of this species, particularly because 90% of Connecticut’s landscape is in private ownership. The DEEP is working with the U.S. Fish and Wildlife Service (USFWS), USDA Natural Resources Conservation Service (NRCS), Wildlife Management Institute (WMI), Northeast Fish and Wildlife Federation (NFWF), and other entities to promote and fund New England cottontail habitat projects on the ground throughout designated

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Connecticut has widely distributed populations of New England cottontails and a fair amount of the rabbits’ required early successional habitat. However, the Wildlife Division is undertaking a number of projects to create and maintain early successional habitats for the benefit of the cottontails and other wildlife species.

focus areas in Connecticut. Eight projects involving over 250 acres of habitat work were designed by DEEP and USFWS staff and funded by the NRCS in 2012. Eighteen additional projects are under consideration for 2013.

White Memorial: Perfect Place for a Project

In the hills of northwest Connecticut, the White Memorial

Foundation in Litchfield and Morris owns more than 4,000 acres that is used for conservation, research, education, and recreation. New England cottontails have been documented on the property, and a major young forest habitat enhancement effort on state land has been undertaken less than a mile away. White Memorial appears to be the perfect place for a New England cottontail habitat restoration project, and fortunately the Foundation staff thinks so too.

The 45-acre site that the Foundation offered for cottontail habitat work consists of old fields and pole-sized forest. Most of the area is overrun with invasive plants, such as Japanese barberry, multiflora rose, bush honeysuckle, and oriental bittersweet. The project involves tree harvest, invasive plant removal, and replacement with native shrubs through natural regeneration and plantings. Because the invasive shrubs and vines in the old fields presently provide usable habitat (though not ideal from a holistic ecological perspective), their removal will be done in two phases. Once native trees and shrubs become established in the initial cleared area, the remaining portion will be cleared. In the forested areas, two constructed brush piles will be left per acre and some tree crowns will remain on the ground to provide cover while the forest begins to regenerate.

Work began on this site in October



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A 45-acre site, called Apple Hill, at the White Memorial Foundation (Litchfield) is being converted to prime New England cottontail habitat. The project involves tree harvest, invasive plant removal, and replacement with native shrubs through natural regeneration and plantings.

2012, just in time for a New England cottontail/shrubland bird seminar at the White Memorial Foundation Conservation Center. Seminar participants were Master Wildlife Conservationists and members of local bird clubs. After learning about the progressive decline of young forest and shrubland habitats in the Northeast and the need to re-create them on the landscape, participants were able to witness habitat enhancement work in action. It was probably the first time many of the participants had seen the likes of a mechanical tree harvester, Fecon mower, and forwarder. While this type of tree harvesting operation can often be upsetting to onlookers, seminar participants were seeing it through the educated eyes of habitat managers. Hopefully they will use this experience to educate others.

Groton Sportsmen's Club: Two Funding Sources for Work

Less than a mile from the region's number one ranked parcel for New England cottontail restoration in Pachaug State Forest lies a privately-owned property with documented occurrences of New England cottontails and a designation as the region's number three ranked parcel. It is the 380-acre Groton Sportsmen's Club property, which straddles the North Stonington and Voluntown border in eastern Connecticut. Management

of the property is overseen by capable stewards Bill Salisbury and Ray Thiel. In 2011, Bill and Ray submitted an application to the DEEP Wildlife Division's Landowner Incentive Program for funds to complete a small wildlife patch cut. DEEP staff and WMI contractors worked together to fund that project and several others on the property, totaling nearly 50 acres.

Bill had been trying to control invasive multiflora rose and autumn olive for years by brush-hogging and mowing several areas of the property. DEEP and WMI staff developed plans to assist the club in eradicating the unwanted invasives and then replanting with native shrubs, thus maintaining cottontail habitat. Three forest regeneration clearcuts also are planned. Brush piles in these new clearings and in a recent shelterwood cut will provide cover while the forest begins to regrow. Habitat work began in September 2012. The Landowner Incentive Program also will fund an eight-acre old field/shrubland restoration project. Through a patchwork of thickets on the property, New England cottontails and other shrubland-dependent wildlife should be able to find plenty of native food and cover to continue to thrive on the property. Find out more about these projects on the Groton Sportsmen's Club website at www.grotonsportsmen.com/hip/index.html.

Snap Shot: Mattatuck State Forest

There is an ironic truth about Connecticut's forests – many of today's most treasured and scenic locales are a product of yesterday's disturbance on a grand scale. Mattatuck State Forest is one of these. The forest began as a concept of Mr. Harley F. Roberts in 1925. It was through his efforts that Mattatuck's initial 723 acres were gifted to the State of Connecticut in 1926. By 1930, through a combination of continued land donations by the Black Rock Association and purchases by the State, the forest had grown to 2,578 acres. Mr. Roberts' vision of land conservation has been well respected, for in the 87 years since his original gift, Mattatuck has grown to encompass 4,510 acres in 20 different parcels within the towns of Waterbury, Plymouth, Thomaston, Watertown, Litchfield, and Harwinton.

But, the Mattatuck State Forest we see today is not the forest Mr. Roberts knew. He saw a landscape that had been cut of its trees time and again to supply cordwood for the furnaces of the Naugatuck Valley's brass industry. Subsequent unchecked recreational use of the area also contributed to the rapid erosion of the hills into the valleys. Frequent forest fire activity also undermined the health of the forests. Fortunately, the forest began to improve under the practices of the Civilian Conservation Corps (CCC). From 1933 until 1942, Camp Roberts was home to hundreds of young men who did much of the work to turn the abused landscape into productive woodlands. Their tree planting and management stabilized the slopes and proved effective in stopping the erosion. Finally, with the protection of Connecticut's state park and forest system, the incidence of fire was reduced and sound long-term forest management practices were put into place.

Signs of the region's industrial history and resource exploitation abound on the landscape, but today's forest hides much of the evidence. Remains of quarries, lime kilns, house foundations, agricultural fields, and charcoal mounds can still be found.

Today, Mattatuck State Forest is managed responsibly and scientifically by the DEEP Division of Forestry for forest products and wildlife habitat, as well as for recreational activities, such as hiking, mountain biking, and hunting. The forest offers

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Raptors, like this red-tailed hawk, are regularly seen at Mattatuck State Forest.

miles of rugged trails with scenic overlooks in convenient proximity to Waterbury and surrounding towns. The forested corridor of Mattatuck lends a woodland aesthetic to a scenic drive along the Naugatuck River and provides a transition from the more industrial/urban landscape of the Naugatuck Valley to the “quieter” countryside of the Litchfield Hills. It also stands as a sure sign of nature's resilience and the determination of resource managers and conservationists to protect the resource.

Mattatuck's many parcels are spread out over several towns, offering a wide variety of forest experiences to the visitor. Various trails lead hikers past interesting topography to excellent overlooks. Of the many land parcels that make up Mattatuck State Forest, the largest – at 1,327 acres – adjoins Black Rock State Park and is accessible from the park's trails. Additionally, the well-marked, 36-mile-long Blue-Blazed Mattatuck Trail passes through several portions of the forest. (More information on the Blue-Blazed Trail System is available from the Connecticut Forest & Park Association at www.ctwood-



The most famous photo of The Old Leather Man taken on June 9, 1885 by James F. Rodgers at the Bradley Chidsey House in Branford.

lands.org.) The two most popular hikes in Mattatuck State Forest are the trails to “Whitestone Cliffs” and “Greystone.”

The Leather Man: The Connecticut Legend of the Leather Man is alive and well in Mattatuck State Forest. This renowned tramp in his baggy, leather suit had a 34 day, 365 mile loop through western Connecticut and eastern New York. He faithfully followed this loop for roughly three decades until his death in 1889. Each day ended 10-11 miles from the last, and his long series of evening rest areas included many cave shelters and rock overhangs. One of these was, and still remains, in Mattatuck State Forest. The Division of Forestry has developed a Letterbox Hike for those interested in following a section of the Leather Man’s hike through Mattatuck State Forest to a rock cave he used for shelter. The cave could be difficult for those who are claustrophobic. Although the distance through it is short, there is a tight squeeze in low light. In order to find the letterbox, one must navigate 40 to 50 feet through the “cave” (which is actually formed from chance placement of overhangs and past ledge collapses, and is not to be confused with limestone caverns). A small flashlight may come in handy if overcast or nearing sunset. It may make your brief spelunking safer and assist you in finding the letterbox. To find directions for the Letterbox Hike, go to www.ct.gov/deep/stateparks, select Mattatuck State Forest and then click on the “Letterboxing” link.

Hunting is permitted at Mattatuck State Forest during the regulated small game, waterfowl, deer, and turkey seasons. Specific details on the season dates and regulations are available on the hunting section of the DEEP website at www.ct.gov/deep/hunting.

Directions to various access points, trailheads, and parking areas in Mattatuck State Forest are provided on the DEEP website at www.ct.gov/deep/stateparks, or by calling the DEEP State Parks Division at 860-424-3200. There are no fees for visiting Mattatuck State Forest. Gravel parking areas are available and the forest is not handicapped accessible.

Black Rock State Park (Thomaston/Watertown) is located on Route 6 near by Mattatuck State Forest. There is a daily charge for admittance to the park (in season) where visitors can enjoy picnicking, camping, swimming, fishing, and hiking. Check the DEEP website for more information about Black Rock State Park at www.ct.gov/deep/stateparks.

Information for this article was obtained from the DEEP website (www.ct.gov/deep/stateparks).



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Turkey vultures have become a common sight over the past 20 years. Look for vultures soaring along the ridgeline that borders the Naugatuck River.



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Hunters have the opportunity to harvest a variety of wild game, including wild turkeys, at Mattatuck State Forest.

Thank You to the Naugatuck Valley Chapter of the Audubon Society

The Naugatuck Valley Chapter of the Audubon Society has installed recycling receptacles for fishing line at Reservoirs 2 and 4 in Naugatuck State Forest in Oxford. This is one example of the benefits of Naugatuck State Forest being recognized by National Audubon as an Important Bird Area (IBA). The IBA designation was granted to the state forest due to the wide diversity of bird habitats – early successional, shrubland, and young forest – created by active forest management, such as timber harvests and prescribed burns.

The Naugatuck Valley Chapter also has donated a backpack propane torch to kill invasive Japanese barberry, and created a Birder’s List for Naugatuck State Forest. The Birder’s List is available on the DEEP website at www.ct.gov/dep/lib/dep/forestry/nsf_bird_checklist.pdf.



DEEP - DIVISION OF FORESTRY



Eagle Feathers and Native Americans

The U.S. Justice Department recently announced that it would allow members of federally recognized Native American tribes to possess eagle feathers, along with feathers of other bird species. Such birds are covered under federal wildlife laws, including the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. These laws prohibit the possession, use, and sale of the feathers or other parts of federally protected bird species, as well as the unauthorized killing of such birds.

Under this new Justice Department policy, tribal members will not be prosecuted for wearing or carrying federally protected bird feathers or bird parts. These tribal members may also pick up feathers found in the wild as long as they do not disturb federally protected birds or their nests. In addition, the policy will allow the giving, lending, or trading of feathers or bird parts among tribe members, so long as such activities do not involve any compensation. The Justice Department will, however, continue to prosecute tribe members and non-members for violating federal laws that prohibit killing eagles and other migratory birds or the buying and selling of the feathers or other bird parts.

Attorney General Eric Holder stated that the new Justice Department policy strikes the right balance between enforcing wildlife laws that protect the birds and respecting the cultural and religious practices of federally recognized Native American tribes.

Currently, the U.S. Fish and Wildlife Service's National Eagle

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Repository, located near Denver, Colorado, holds carcasses of eagles that were killed by contact with power lines or died of other causes. Native Americans may apply to the Repository for a feather or a carcass, but there is currently a waiting list to obtain feathers.

An informative Department of the Interior fact-sheet on the subject is available on the U.S. Fish and Wildlife website at www.fws.gov/home/feature/2012/pdfs/Fact-Sheet-DOJ-Eagle-Feathers-Policy.pdf.

Connecticut Outdoors

Outdoor Users: Thank a Landowner Today!

With the start of the New Year, many are anticipating another year of fishing, hunting, hiking, or wildlife watching adventures.

It also is the perfect time to extend your appreciation to private landowners who offered you the privilege of accessing fishing, hunting, hiking, or wildlife watching opportunities on their properties. If you have been recreating on local land trust or other private non-profit conservation lands, be sure to include those groups on your thank you list as well. Following are some suggestions for hunters, anglers, and other outdoor users when thanking private property owners who allow access for outdoor recreation:

- Be thoughtful and personal in expressing



your appreciation, treating the landowner as you would like to be treated. If you are mentoring a new or junior hunter, angler, birder, or naturalist, include him or her in the process of thanking the landowner.

- Visit the landowner at the end of the season to express your appreciation in person. If possible, provide him or her with some of your fish and game harvest, or share images or a list of the wildlife you saw on the property.
- Send a personal note or card thanking the landowner for the opportunity to use his or her land. Consider giving a small gift such as a certificate to a local restaurant, a gift basket, or a subscription to *Connecticut Wildlife* magazine. In the case of a non-profit landowner, make a donation to their

organization.

- Offer to assist with tasks around the property that would be helpful, or identify, clean up, and properly dispose of any illegal dumping that has occurred.
- Assist the landowner in protecting the property by documenting and reporting suspicious or illegal activities to the DEEP Environmental Conservation Police at 800-842-HELP (toll-free).



www.facebook.com/CTFishandWildlife

Conservation Calendar

Dec. 26-Mar. 13 **Observe bald eagles at the Shepaug Bald Eagle Viewing Area in Southbury.** Observation times are Wednesdays, Saturdays, and Sundays between 9:00 AM and 1:00 PM. Although admission is free-of-charge, advance reservations are required. To make reservations for individuals, families, and groups, call toll-free at 1-800-368-8954 between 9:00 AM and 3:00 PM on Tuesdays through Fridays.

Programs at the Sessions Woods Conservation Education Center

Programs are a cooperative venture between the Wildlife Division and the Friends of Sessions Woods. Please pre-register by calling 860-675-8130 (Mon.-Fri., 8:30 AM-4:30 PM). Programs are free unless noted. An adult must accompany children under 12 years old. No pets allowed! Sessions Woods is located at 341 Milford St. (Route 69) in Burlington.

- Feb. 13..... **Bald Eagles**, starting at 6:30 PM. Laura Saucier, a technician for the Wildlife Diversity Program, will present an informative program on Connecticut's bald eagles. These majestic birds nest in the state and also can be seen during winter in suitable locations. Laura will provide insight on the bald eagle's natural history and the recovery of populations.
- Mar. 10..... **Mushrooms**, from 9:30-11:30 AM. Join the Connecticut Valley Mycological Society during their annual meeting at Sessions Woods for a mushroom presentation suitable for beginners and more seasoned mushroom seekers. The Mycological Society's meeting will include a coffee and refreshments period at 9:30 AM, with the presentation from 10:00 to 11:00 AM. Questions and answers will follow the program.
- April 28 **The Friends of Sessions Woods Annual Meeting with Talons! A Bird of Prey Experience**, starting at 1:00 PM. Attend the Friends of Sessions Woods Annual Meeting at the Sessions Woods Conservation Education Center for an up-close, unforgettable birds of prey experience. Master Falconer Lorrie Schumacher will share her knowledge about these beautiful birds and the audience will get to see the birds fly within inches of their outstretched arms. Traditionally, the Friends of Sessions Woods Annual Meeting also features a potluck dessert extravaganza preceding the presentation at 12:30 p.m. Please bring a dessert to share. Registration will ensure a seat and is greatly appreciated.
- June 23..... **SAVE THE DATE for Snake Day**, from 1:00-4:00 PM. Stay tuned to www.ct.gov/deep/yearofthesnake or www.Facebook.com/CTFishandWildlife for more details as they become available.

USFWS Begins Commemoration of 40th Anniversary of the Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) will honor the 40th Anniversary of the Endangered Species Act with a year-long commemoration of the Act that has been so successful in stabilizing populations of species at risk, preventing the extinction of many others, and conserving the habitats upon which they depend. The bald eagle, brown pelican, Lake Erie watersnake, American alligator, and Maguire daisy are all species that were on the brink of extinction, but have successfully rebounded. The wood stork, Kirtland's warbler, Okaloosa darter, black-footed ferret, and Louisiana black bear are also listed species that are showing significant progress towards recovery. These species are just a few examples of those benefiting from the protections afforded by the Endangered Species Act and the dedicated people who work to ensure their continued existence.

The USFWS has launched a dedicated web site spotlighting the history and accomplishments of efforts to protect and recover America's threatened and endangered species under the Endangered Species Act, found at www.fws.gov/endangered/ESA40/index.html. Throughout this year, leading up to the 40th anniversary on December 28, 2013, the USFWS will celebrate stories of conservation success in every state across the country, provide information on the milestones of this historical law, share images and videos, and provide opportunities for families to participate in free, educational activities together. To connect with the Endangered Species Program throughout the year via social media, join the USFWS on Facebook at www.facebook.com/USFWSEndangeredSpecies, follow the agency on Twitter at twitter.com/USFWSEndsp, watch their YouTube Channel at www.youtube.com/usfws#p/c/7E8264DA432377C9, and download photos from their Flickr page at www.flickr.com/photos/usfws/q/collections/72157629000041201.

America's fish, wildlife and plant resources belong to all of us, and ensuring the health of imperiled species is a shared responsibility. Learn more about the USFWS's Endangered Species Program and explore what endangered species are near you by visiting www.fws.gov/endangered.



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This leucistic red-tailed hawk is an unusual sight. Leucism is a genetic mutation that results in reduced pigmentation in all or part of an animal's fur, feathers, or scales. A leucistic animal is usually all or partially white, while retaining some normal colors. Leucism is not the same condition as albinism, a mutation that prevents melanin (pigment or color) from being produced at all. Although rare, leucism has been reported in Connecticut in a variety of animals, such as squirrels, turkey vultures, snakes, songbirds, waterfowl and, in a few occasions, red-tailed hawks.