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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



Celebrating 75 Years of Partnership for American Wildlife

On September 2, 1937, with the country still reeling from an economic crash, President Franklin D. Roosevelt signed the Pittman-Robertson Wildlife Restoration Act into law. The bill, co-sponsored by Senator Key Pittman of Nevada and Congressman A. Willis Robertson of Virginia, catalyzed a radical transformation in wildlife conservation across the nation, by diverting an excise tax on sporting guns and ammunition to fund future wildlife restoration. This Act fostered partnerships between federal and state fish and wildlife agencies, the sporting arms industry, conservation groups, and sportsmen and sportswomen to benefit wildlife, and has been key to implementing the North American Model of Wildlife Conservation.

In 1950, the Dingell-Johnson Sport Fish Restoration Act was signed into law. Together, the Wildlife and Sport Fish Restoration Programs have contributed more than \$14 billion to fish and wildlife conservation in the United States — more than any other single conservation effort.

In 2012, we proudly observe 75 years of the Wildlife and Sport Fish Restoration programs and the success of working through partnerships to conserve and manage fish and wildlife and their habitats for the use and enjoyment of current and future generations. With your support, the Wildlife and Sport Fish Restoration programs will continue to conserve habitat for fish and wildlife, and recreational opportunities for anglers, boaters, hunters, and shooters for the future. By purchasing your license you are contributing to this important work and we thank you.

Rick Jacobson, Director, Wildlife Division

Cover:

Sometimes known by the descriptive but unflattering name of “skunkhead,” the surf scoter is the largest of the three scoter species that inhabit the waters of Long Island Sound during winter. To learn more, see page 12.

Photo courtesy of Paul J. Fusco

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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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Celebrating 75 Years of Partnership for American Wildlife

In the mid-1930s, at a time when Congress was in the process of abolishing excise taxes on some goods, sportsmen groups and other conservationists saw an opportunity to use the excise tax on guns and ammunition to fund wildlife restoration projects. Ammunition companies supported the proposal, and Carl Shoemaker, former chief of the Oregon Department of Fish and Game, drafted the legislation. Shoemaker enlisted the support of Senator Key Pittman of Nevada to introduce the bill in the Senate, and approached Congressman A. Willis Robertson for support in the House of Representatives. The Pittman-Robertson (P-R) Federal Aid to Wildlife Restoration Act sailed through Congress. President Franklin D. Roosevelt signed the bill into law on September 2, 1937, turning a deaf ear to protests that earmarking funds from excise taxes was not in the country's best interest. Today, on its 75th anniversary, the program has proved without a doubt that it has been in the very best interest of the country.

From the outset, P-R projects included improvement of wildlife habitat, wildlife research, and the purchase of land for wildlife restoration. The P-R program also gave birth to scientific

wildlife management in this country. It has turned into one of the most successful federal-state-conservationist-sportsmen partnerships in history.

Following the success of the P-R Program, sportsmen and other conservationists sought to establish a stable and secure mechanism to fund the restoration of America's fisheries. In 1950, the United States established a Federal Aid in Sport Fish Restoration Act that generates funding for fisheries research, habitat restoration, recreational boating access, construction of fish hatcheries, and aquatic education.

Sportsmen have contributed more than \$14 billion to conservation through license revenues and the Wildlife and Sport Fish Restoration (WSFR) Programs, annually providing more than 80% of the funding for most state fish and wildlife agencies. For 75 years, WSFR has been driving the restoration and management of our fish and wildlife resources. It has been justly called the most successful conservation management program in the world. America's hunters, shooters, anglers, and boaters should be proud that they have held the program on their shoulders for 75 years.



With the help of Pittman-Robertson funding, Connecticut has been able to acquire thousands of acres of conservation land, including key wetlands along Long Island Sound and the Connecticut River.



Senator Key Pittman



Representative
A. Willis Robertson



President
Franklin D. Roosevelt



The Wildlife & Sportfish Restoration Program is celebrating its 75th anniversary in 2012. *Connecticut Wildlife* will highlight the accomplishments of this extremely successful program throughout the year. Go to www.wsfr75.com and www.ct.gov/deep/wildlife to learn more.

Migratory Game Bird Management Throughout the Years

Written by Min T. Huang, DEEP Wildlife Division

The Pittman-Robertson (P-R) Program is truly a success story of monumental proportion. The Program, initiated in 1937 at the behest of sportsmen, provides funding to protect critical habitats and conduct needed research and management activities throughout the United States, benefiting a myriad of species, including hunted and non-hunted species.

The P-R Program gave birth to scientific wildlife management in this country. The influx of a stable source of funding for wildlife management transitioned the management of wildlife from a game-oriented emphasis to the more encompassing discipline that it is now. Stable funding made it possible to focus not only on habitat acquisition, but on key research that would better inform management. The Program focuses on “can-do” projects that have provided critical information for guiding sound management of all wildlife species.

The P-R Program has also made

partnering with sportsmen’s groups, like the National Wild Turkey Federation and Ducks Unlimited, a priority. These partnerships provide matching funds and support for research projects which embody the North American Conservation Model’s philosophy of public responsibility and ownership for wildlife. Beyond the foundation of the public trust doctrine for wildlife, the North American Model is based on the concept of a user pay system for conservation. Under the P-R Program, this model has worked well for game bird species – a vast majority of the migratory game birds in North America are doing well and are above stated population goals. This is an unprecedented success story. It is because hunters have provided the funding and political influence to make migratory game birds and their habitats a conservation priority that most of these populations are doing well. The P-R Program has provided funding for habitat acquisition and, just as importantly, targeted research that provides information

for managing migratory game birds.

Focusing on Woodcock

One important P-R funded project in Connecticut that focused on migratory game birds was the woodcock habitat use and survival project, which was initiated by the Wildlife Division in 2005. This project embodied all of the positive aspects of both the P-R Program and the North American Conservation Model. The project was funded by the P-R Program and through partnerships with sportsman’s groups and others who were concerned about the well-being of American woodcock.

The study looked at habitat use and survival of woodcock. Study sites were either excellent quality (large, contiguous blocks specifically managed for young forest habitat) or lower quality (disjunct, patchy, suburban interface). Researchers hypothesized that survival rates and habitat use would differ between woodcock inhabiting large, high quality blocks of habitat and those found in more patchy, fragmented, lower quality habitats.

Over the course of a three-year period, it was found that habitat quality and quantity are largely governing survival rates of male woodcock in Connecticut. Higher quality habitats in the study were characterized by higher standing basal area, fewer stems per acre, and fewer and larger openings than lower quality sites. This is a bit contrary to what was expected going into the study. Woodcock in Connecticut primarily seem to be using forest stands that are more mature than was thought. Researchers in the Mississippi Flyway found that migrating woodcock used mature forests more than expected. In both cases, this was likely a function of availability. Quantity of woodcock habitat in Connecticut is lacking, as demonstrated by the large home ranges used by Connecticut birds.

It seems clear from our research that the fragmentation of young forest habitat in Connecticut serves as an ecological sink. In low quality sites, which represented most of the existing woodcock habitat in the state, survival rates in two of three years were lower than would be

What is the North American Model of Wildlife Conservation?

The North American Model of Wildlife Conservation is the world’s most successful system of policies and laws to restore and safeguard fish and wildlife and their habitats through sound science and active management.

Hunting and angling are the cornerstones of the North American Model with sportsmen and women serving as the foremost funders of conservation. These activities continue to be the primary source of funding for conservation efforts in North America. Through a 10% to 12% excise tax on hunting, angling, and shooting sports equipment, hunters and anglers have generated more than \$14 billion toward wildlife conservation since 1937.

How does the model work? The excise taxes, combined with a tax on motorboat fuels, are collected by the federal government and distributed to each state’s fish and wildlife agency. State fish and wildlife agencies then combine these funds with monies collected through the sale of hunting and fishing licenses to conserve, manage, and enhance fish and wildlife and their habitats and to create fish and wildlife recreational and educational opportunities.

Although sportsmen-funded conservation efforts have focused on wildlife that is legally hunted and fished, the emphasis of the management is on restoring and conserving habitats that benefit a wide range of fish and wildlife, including non-hunted species. This also benefits everyone who enjoys nature. Regardless of whether one chooses to actively participate in hunting or angling, it is important that people interested in wildlife and its future understand the conservation role sportsmen play.

Currently, there are no alternative, dedicated funding systems in place (beyond excise taxes and license fees) to help support fish and wildlife conservation. Without the most traditional outdoor users’ contributions or new funding streams, America’s conservation legacy could be in peril. Go to www.wsfr75.com to learn more about the North American Model of Wildlife Conservation.

required for population maintenance and growth. Differences between size of core use areas and the corresponding higher survival rates that were detected in birds using high quality sites were indicative of the influence that habitat across the landscape has on these birds. Although we were unable to fully assess nesting success and female survival, the low survival rates of males and the downward trend in statewide surveys indicate that the current habitat condition in most of Connecticut is unlikely to result in a positive growth rate for woodcock in the state.

Applying Lessons Learned

This work has led to changes in the way land management is conducted for woodcock and other avian species that rely on young forest habitat. The traditional mantra that numerous small openings within a matrix of younger-aged forest stands represent the most beneficial

management for woodcock may not apply to urbanized states like Connecticut. This work also indicated that woodcock habitats containing fewer, larger-sized openings result in higher survival rates for birds than habitats containing more smaller-sized openings. This has had a profound effect on how habitat projects for woodcock and other obligate young forest habitat species are conducted.

The Wildlife Division has already been applying the lessons learned from this study to on-the-ground habitat work. For example, we are no longer clearcutting small areas to create young forest or shrubland habitat. Recent habitat work for shrubland species has involved large scale habitat manipulation, on the order of 20- to 25-acre cuts. These cuts should result in an increase in nest survival for all of the bird species using the areas. The cuts are also benefitting New England cottontails.

Looking to the Future

Historically, hunters have borne the cost of the P-R Program ostensibly for the perpetuation of hunted species and the habitats they require. As an intended, but often overlooked bonus, non-hunted species have also benefitted from this stable source of funding. Whenever we are enjoying wildlife and natural places, we should be thanking hunters and anglers for their continual contributions towards conservation. Furthermore, now is the time to develop and implement a program similar to the P-R Program where all wildlife enthusiasts can contribute to projects that benefit non-hunted species. Whether this program is federally-based or legislated through state government, it is critically needed if we are to perpetuate the natural world for future generations to enjoy.



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One important migratory gamebird project that received funding from the Pittman-Robertson program in Connecticut was the woodcock habitat use and survival project, which was initiated by the Wildlife Division in 2005.

CT's Role in Restoring the New England Cottontail

Written by Paul Rothbart, DEEP Wildlife Division

The New England cottontail is listed as a priority species in Connecticut's Comprehensive Wildlife Conservation Strategy and is one of nine spotlight species within the U.S. Fish and Wildlife Service (USFWS) Region 5 area. It also has been designated as a candidate for threatened or endangered status by the USFWS. The species has experienced an 86% decline in its historic range and, within these areas, 60% of occupied habitats are considered population sinks. The New England cottontail is the only rabbit native to Connecticut, and its population continues to be jeopardized by human disturbance, habitat fragmentation, and natural plant succession.

State, federal, and non-governmental wildlife organizations have implemented a region-wide effort to study New England cottontails and restore their habitat. Suitable habitat can be targeted and managed with rapid benefit to the rabbit, along with 46 other greatest conservation need species.

Initial Restoration Grant

The Wildlife Division has been surveying the distribution patterns of New England cottontails since 2000 and has been actively engaged in recovery efforts since 2009. The Division obtained a USFWS grant in 2009, in conjunction with New Hampshire, Massachusetts, New York, and Maine, that targets regional efforts, including habitat management, research/monitoring, and outreach, to preclude federal listing of the species. Under this grant, Connecticut committed to restoring/enhancing a minimum of 150 acres of habitat on state-owned lands; conducting pre-management habitat assessment surveys; and continuing ongoing New England cottontail distribution surveys.

Such management will provide secure critical habitat, as well as demonstration areas that can be used to educate private landowners and engage them in future habitat activities. Connecticut's land is 90% privately owned and participation by private landowners is essential if restoration efforts are to be truly successful over the long-term. The restoration initiative has grown into a multi-agency effort led by several state wildlife agencies, the USFWS, Natural Resources Conservation Service (NRCS), and Wildlife Management Institute.

Specific habitat practices are being conducted to create early successional young forest/shrubland sites that are ideally 25 acres in size, along with dense thickets consisting of 20,000 stems per acre, all within one mile of other suitable habitat. The practices include forest clearings, shrub and tree plantings, and associated non-native invasive plant control.

The properties selected for restoration through the 2009 grant met a variety of screening criteria, including proximity to recent or historic New England cottontail locations, soil types, wetlands, and proximity to other conservation lands. The screening process led to the development of 12 Focus Areas throughout the state that have specific New England cottontail habitat (24,000 acres) and population (12,000) goals. These designations are valuable tools in setting management priorities that are necessary for conducting activities in a systematic and cost-effective manner over the long-term period of this initiative.

Second Restoration Grant

In 2011, Connecticut partnered with Massachusetts, New Hampshire, and the Wildlife Management Institute in another successful USFWS grant application. The

Wildlife Division was awarded funds to 1) enhance 150 acres of New England cottontail habitat on state-owned lands; 2) monitor vegetation and New England cottontail population response to management treatments; 3) continue ongoing distribution surveys; 4) participate in regional planning/coordination efforts; and 5) participate in a newly established breeding population project at Roger Williams Zoo in Rhode Island.

The process of selecting sites and conducting inventories and surveys associated with these potential new projects are currently underway. Preliminary site reviews have resulted in the selection of eight state-owned parcels: Spignesi Wildlife Management Area (WMA; Scotland), Bear Hill WMA (Bozrah), Pease Brook WMA (Lebanon), Bartlett Brook WMA (Lebanon), Sessions Woods WMA (Burlington), Roraback WMA (Harwinton), Camp Columbia State Forest, and Pachaug State Forest. These potential project sites total 437 acres, with individual projects ranging in size from four acres to 128 acres. Treatments and monitoring activities will remain consistent with those carried out under the first grant (i.e., creation of young forest habitat approximately 25 acres in size, non-native invasive plant control, and monitoring the response of vegetation and the New England cottontail population).

Engaging Private Landowners

Actively engaging private landowners in this recovery effort is essential if it is to be successful. Although the Wildlife Division's Landowner Incentive Program has been conducting habitat management on private lands for the past several years, projects were not specific to New England cottontails, and unfortunately funding has not been allocated for the

Habitat Restoration Funded by 2009 Grant on 184 Acres of State-owned Lands

Parcel	Town	Habitat	Treatment	Acres	Completed
Roraback 1	Harwinton	Sawtimber mixed hardwoods	Commercial clearcut	24.17	Feb. 2011
Roraback 2	Harwinton	Mixed hardwoods/old fields	Non-commercial clearcut	27.73	Feb. 2011
Housatonic 1	Kent	Aspen/mixed hardwoods	Commercial clearcut	33.73	March 2011
Housatonic 2	Kent	Old field/invasives	Brontosaurus/mowing	24.24	March 2011
Goshen 1	Goshen	Mixed hardwood sawtimber	Commercial clearcut	57	Scheduled Jan. 2012
Goshen 2	Goshen	Hardwood pole	Brontosaurus/feller buncher	13	March 2011
Camp Columbia	Morris	Hardwood pole stand	Brontosaurus/tree sheer	4	March 2011

program to continue. Recently, the Division, in partnership with the Wildlife Management Institute, received a third related grant from the National Fish and Wildlife Foundation. This award, entitled "Connecticut Shrubland Habitat Technical Assistance Program," has provided funding to hire one licensed forester and one wildlife resource specialist to work with private landowners on New England cottontail and other early successional habitat efforts.

Program staff is committed to: 1) creating and enhancing 200 acres of habitat over a two-year period; 2) developing forestry and wildlife plans required by the NRCS to facilitate habitat projects funded through Farm Bill programs, such as the Wildlife Habitat Incentives Program (WHIP), Environmental Quality Incentives Program (EQIP), and Wetlands Reserve Program (WRP); 3) conducting workshops and other outreach programs to develop a knowledgeable and engaged group of private landowners; and 4) tracking measurable results.

Efforts have been progressing well since the program officially began in August 2011. Staff has conducted two outreach workshops, made several presentations to sportsmen's organizations, provided technical assistance to the NRCS, initiated four private land projects totaling 110 acres, and assisted in the development of regional management guidelines that will serve as Best Management Practices.

Connecticut is a critical player in the region-wide New England cottontail recovery initiative. Over a decade of work by Wildlife Division biologist Howard Kilpatrick and his staff has documented that the state is a relative stronghold for the remaining populations of New England cottontails throughout the six state range (Connecticut, Rhode Island, New York, Massachusetts, New Hampshire, and Maine). New England



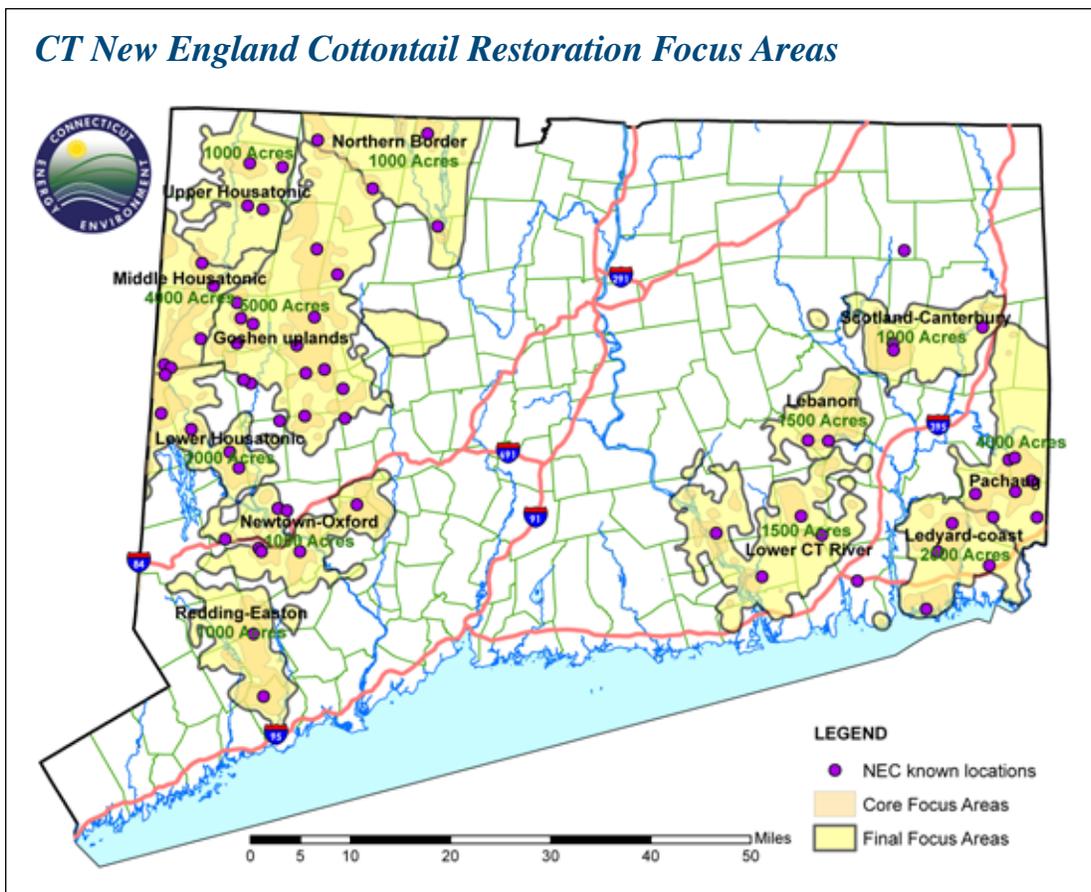
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Two cottontail species occur in Connecticut: the eastern cottontail is an introduced species while the New England cottontail is the only native rabbit.

cottontails are known to occur in over 40 Connecticut towns, and through continued region-wide efforts to manage habitats and research rabbit populations,

it is anticipated that the New England cottontail can be kept off the list of threatened and endangered species.



One Fish, Two Fish: How Do You Know How Many There Are?

Written by Penny Howell, DEEP Marine Fisheries Division

One of the first tasks given to fisheries biologists is to keep track of the numbers of fish, crabs, and other animals living in the state's waters, especially those that are favorites of sport anglers and commercial harvesters. In fact, recreational and commercial catches are one of the ways that biologists estimate the abundance of popular species. However, because there are many reasons why these catches can vary, a more dependable method is needed to measure fish abundance and health.

Marked vs.. Unmarked

The problem is much like the proverbial jar of jellybeans that you have to look at and guess how many are in the jar. Only, in this case you can't see very far into the jar! However, you can get an estimate of the total if you take out some of the jellybeans – or net out some fish – mark them so you can distinguish them from the rest, put them back into the jar and mix them around, and then take out a second sample and see how many have marks. The ratio of marked to unmarked jellybeans in the second sample multiplied by the total number originally marked is an estimate of the total in the jar. If you do this many times, the average value is a better estimate of the total. In addition to abundance trends, marking programs also shed light on migration patterns, growth schedules, and spawning cycles, as well as occurrences of disease and injury.

Biologists have devised many marking techniques so that the tags will not harm the animal while still being visible with all the necessary information, in some cases for many years.

Connecticut Projects

DEEP Marine and Inland Fisheries Division staff have carried out several marking programs, and have often asked for the public's help in releasing and then reporting recapture of the marked fish they catch. So, if you catch a tagged fish or see a tagged crab on the beach, report the tag information to the DEEP Marine or Inland Fisheries Divisions and help keep that species healthy and abundant.

One vital program is a long-term tagging study of the endangered shortnosed sturgeon in the Connecticut River (see



K. SPRANKLE, U.S. FISH & WILDLIFE SERVICE (2)

A Passive Integrated Transponder (PIT) tag, similar to those used by people to 'mark' their pets, is implanted in an American shad by U.S. Fish and Wildlife Service biologists during the fish's annual migration up the Connecticut River to spawn. 'Marked' shad are detected as they swim through the lift elevator at the Holyoke Dam. This information is used to estimate what percentage of the population successfully reaches habitat above the dam.

the March/April 2011 issue of *Connecticut Wildlife*). Results of this program have shown that the numbers of this struggling population have increased from about 850 fish in the early 1990s to more than 1,800 by 2002.

In addition to the shortnosed sturgeon program, the DEEP has undertaken or assisted with marking programs for the larger Atlantic sturgeon, Atlantic salmon, horseshoe crab, lobster, shad, white perch, striped bass, scup (porgy), and newly-hatched winter flounder. Each one of these species presented distinct challenges that required a different kind of mark or tag. For most species, an external tag attached through a peripheral part of the body works well. In the same way that people have their ears pierced for earrings, a plastic t-bar tag anchored to a dorsal fin is hardly noticed by the fish and ignored by predators because its not recognized as part of the fish. However, it is visible to anyone recapturing the animal miles away or years later. A unique number is printed on the tag,



along with instructions on how to report this number with the capture date and location to the tagging agency.

Larger, wide-ranging fish, such as Atlantic sturgeon, can be 'marked' with a small internally implanted radio transmitter. The Marine Fisheries Division maintains acoustic receivers buoyed throughout Long Island Sound to record marked fish movements without the stress of repeated handling. Other state and federal agencies do the same all along the Atlantic coast. Connecticut fish have been tracked as far south as Georgia while



A small Atlantic sturgeon is tagged externally with two yellow t-bar tags and an internal transponder is being read by a hand-held receiver.

we have detected fish from many other states. The receivers are clearly marked as important research tools, but unfortunately are vulnerable to vandalism.

Some animals are too delicate or too small for tags big enough to be seen. Tiny transponders placed under a fish's skin can be detected with an electronic receiver held over the fish. In the case of newly-hatched winter flounder, a small

amount of colored latex is injected just under the skin on the white (blind) underside of the animal. The color and position of the mark conveys where and when the fish was first captured. Recapture of the marked flounder by Marine Division staff shows that these young fish are abundant all summer in the harbors and



CT DEEP MARINE FISHERIES DIVISION (2)

A four-year cooperative tagging program between Marine Fisheries Division biologists and commercial lobstermen showed that lobsters in Long Island Sound have limited movement patterns and, therefore, strong local reproduction is necessary to sustain this fishery.

embayments where they were hatched. The health of these heavily impacted areas, therefore, plays an important role in sustaining the entire winter flounder population.

Managing DEEP Lands to Support Shrubland Birds

Written by Shannon Kearney, DEEP Wildlife Division

Shrub dominated habitats and the bird species that occupy them have declined from historic levels in the northeastern United States and continue to decline rapidly as the result of forest succession, changes in timber harvest practices,

disruption of natural disturbance regimes, and residential and industrial development. Because of these significant population declines, Connecticut's Comprehensive Wildlife Conservation Strategy stresses the need to conserve and increase breeding populations of early successional shrubland birds.



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It is estimated that DEEP land management for shrubland habitat supports less than 10% of the population goal for the blue-winged warbler.

Shrublands are ephemeral, and natural disturbances can no longer be depended upon for maintenance of this habitat type. Therefore, habitat suitable for shrubland birds can be expected to persist only on actively managed properties. Unfortunately, there are no good estimates of how much suitable shrubland habitat currently exists in Connecticut and what population size this habitat supports.

Recent research by the Wildlife Division has estimated the abundance and distribution of protected shrubland habitat managed by the DEEP and the population of four regionally important shrubland birds that are supported by these managed lands. It is estimated that DEEP land management supports less than 10% of the population goal for blue-winged warbler, eastern towhee, and field sparrow, and less than 20% of the population goal for prairie warbler. Efforts are underway to understand how private land management may contribute to habitat protection for these species of conservation concern.

Make Your Own Maple Syrup

Article and photography by Jerry Milne, DEEP Division of Forestry

Many Connecticut families enjoy making a few gallons of maple syrup from their backyards. Nothing is more satisfying (or tasty) than sitting down to breakfast and pouring your own homemade maple syrup over hot waffles. All you need are maple trees (sugar or red maples), some specialized equipment from local maple supply dealers, basic kitchen tools, and Yankee ingenuity.

When to Tap

Sap usually begins to flow in mid- to late February in Connecticut, when daytime temperatures reach 40 degrees and nighttime lows are in the 20s. After that, sap will flow whenever daytime thaws and freezing nights occur, usually until the end of March. Each year is different



(Top) Left arrow shows a closed taphole, but the spout was hammered too hard, causing the bark to split. Right arrow shows a one-year-old taphole beginning to heal. (Bottom) Plastic spouts are needed if tubing is used.

– sometimes sap begins to run in late January and sometimes not until early March.

How to Tap

You should only tap trees with healthy canopies, so start looking for candidates in summer when the leaves are in full growth. Numerous

dead branches or dieback in the crown indicate a declining tree that should not be tapped.

Trees should be at least 12 inches in diameter (38 inches in circumference) at chest height to receive one tap. Trees over 18 inches in diameter (56 inches in circumference) can get two taps. Do not put in more than two taps, no matter how big the tree.

New tapholes should be at least six inches to the right or left from old tapholes, and at least 12 inches above or below. A spiral or staggered pattern will spread the holes effectively.

The tap hole should be 1.5 inches deep, and slanted slightly upwards to allow the sap to flow out. Use a hammer to lightly tap the spout into the hole until snug. Don't hit too hard or you'll split the wood around the hole, injuring the tree.

Tapping, when done properly, will not hurt a healthy tree (it's similar to a person giving blood). At the end of the sugaring season, remove the taps. The hole should close within two years on a healthy tree.

How to Collect Sap

All equipment must be clean. Many people sanitize with a solution of one part bleach to 20 parts water, followed by a thorough rinsing with water. Make sure all equipment is approved for food processing. Do not use old antifreeze jugs or joint compound buckets! Used four-gallon buckets can be obtained cheaply from bakeries (they originally contained jelly for doughnuts). Try to get the cov-



ers as well. You also can get aluminum sap buckets from maple dealers. These buckets come with metal covers. Old galvanized buckets have lead solder in the seams and are not recommended.

Tap the spouts gently into the trees, hang the buckets from the taps, covering them to keep out twigs and rain. Another method is to run tubing from the spout into a plastic bucket with a hole drilled in the lid. This has the advantage of keeping out insects.

On a good day, one to two gallons of sap will drip from each tap. The ping-ping of dripping sap into a metal bucket is a classic New England sound. The sap will run faster than you can boil it, so you will need a clean plastic barrel for storage. Two gallons of storage are needed per taphole.

Sap is basically sugar water, and an ideal breeding ground for bacteria, so you must keep it cold (pile snow around the

Equipment List

- Drill and 5/16" bit
- 5/16" tapping spouts (also called spiles)
- Buckets (aluminum or plastic)
- 30-50 gallon plastic barrel
- Evaporator pan
- Candy thermometer (or specialized maple syrup thermometer)
- Syrup hydrometer and hydrometer cup
- Filter cloth
- Seasoned firewood (1 cord per 50 taps)

barrel and keep it in the shade) and boil it as soon as possible. You also can save milk jugs, fill them with water, freeze them, and float them in the barrel to keep the sap cold. If the sap turns cloudy, it has become infested with bacteria, and the syrup you make will be dark and have an off flavor. Do not mix clear with cloudy sap hoping to dilute it.

Sometimes a very cold night will cause some of the sap to freeze in the bucket. If you don't need the ice to keep the sap cold, or you are going to boil right away, you can throw out the ice (it's just water). This will make your sap more concentrated and take less time to turn into syrup.

How to Make Maple Syrup

Making maple syrup essentially involves evaporation on a large scale. Thirty-nine gallons of water need to be boiled off to produce one gallon of syrup, so this is not something you do in your kitchen unless you want to remove the wallpaper.

You can build a wood fire in an outdoor arch of brick or cinder blocks. There are also homemade evaporators made out of 55-gallon drums turned on their side or used oil tanks cut in half. Maple equipment dealers also sell hobbyist-sized evaporators, and there are even pans made to fit propane barbecue grills.

Use a large, flat pan to boil the sap, such as an industrial-sized lasagna pan. Continue to add sap at the same rate it evaporates, keeping track of how much sap you boil so you know about how much syrup you can expect to make (40:1 ratio). As the sap is boiling, do not let it get too low in the pan (keep it at least 1 to 2 inches deep). If the sap gets too low, the pan may burn, resulting in a coating of scorched carbon that is very difficult to remove. You'll also ruin the syrup.

Gradually, as the sap becomes more concentrated, it will darken. When the syrup is nearly ready, you can finish the process on the kitchen stove. In the kitchen, boil water in a separate pot and check the temperature of the water. The boiling point of water changes depending on barometric pressure. It can vary a few degrees from day to day, even during the same day if a weather front moves in.

Boil the syrup until it reaches 7 ½ degrees above the boiling point of water for that day. The syrup is ready at that point. It will be bubbling and foaming, rising in the pot, and can overflow. To control this foaming, turn down the heat or sprinkle

a few drops of cream or butter in the syrup. To get the exact density required for syrup, test it with a hydrometer. Fill the hydrometer cup to the top with syrup and insert the hydrometer. When the syrup is the correct density, the hydrometer will float at the red line.

Packaging and Storing

Pour the syrup through filters (I insert a paper cone filter inside a cloth one). These filters are available from maple equipment dealers. Collect the strained syrup, and reheat it to at least 180 degrees F. I use a coffee percolator that's never been used for coffee. Percolators heat the syrup to 190 degrees F, which will kill all bacteria. Draw the syrup directly from the percolator into clean canning jars or plastic jugs that are available from dealers. Lay the containers upside down for a few minutes to sterilize the lids. Then store the containers in a cool, dry place. The syrup should last indefinitely.

Sugar-on-Snow

Another fun family treat is sugar-on-snow. Heat the syrup to 25 degrees above the boiling point of water. Drizzle it into dishes of snow. Use a fork to wind the chewy taffy-like spaghetti. Between bites of sugar-on-snow, it is traditional to eat sour pickles and plain raised doughnuts to offset the sweet maple taffy.

Join the Maple Syrup Producers Association of CT

If you are thinking about making maple syrup, check out the Maple Syrup Producers Association of Connecticut (www.ctmaple.org). The Association encourages the production and handling of high-quality maple syrup products. Attend meetings, which are held in November and January, to ask questions of more experienced sugarmakers, listen to expert speakers, and buy supplies (equipment dealers are often at these events). The Association is also planning to hold a workshop for those interested in learning how to correctly tap maple trees and make maple syrup. Check the Web site regularly to find out when the next workshop will be held, and to download the Connecticut Maple Syrup Producers Manual.



The buckets, lids, and barrels needed to store sap for a 30 tap maple syrup operation.



(Top) The front two compartments of the evaporator are called syrup pans. The syrup in the left pan is ready to draw off. (Middle) When the syrup reaches the correct temperature, it is drawn off from the evaporator into the filter tank. (Bottom) Empty the filter tank into a big pot and finish boiling the syrup on the kitchen stove. Test the density with a hydrometer (left side of photo). Don't let it boil over!

Ole' Skunkhead - The Surf Scoter

Article and photography by Paul Fusco

Sometimes known by the descriptive but unflattering name of “skunkhead,” the surf scoter is the largest of the three scoter species that inhabit the waters of Long Island Sound during winter. Scoters are large, stocky sea ducks. Males are primarily black, while females are dark brown. The surf scoter gets its name from its habit of foraging in or just beyond breaking waves, where it can be seen diving for its favorite winter food, mussels and other shellfish. The black scoter and the white-winged scoter are the other two scoter species that are found in our area.

Description

Male surf scoters are striking and somewhat bizarre looking. Their massive, bulbous bill, which appears to be swollen at the base, is brightly patterned with red, orange, black, and white. The plumage is velvety black, with the exception of two conspicuous white patches, one on the forehead and one on the nape.

Females are dark brown and gray, with two pale smudgy patches on the head – one patch is at the base of the bill, the other on the cheek below and behind the eye. The female's bill is dark greenish black and not as large as the male's. The legs and feet of males are bright reddish orange, while females have duller brownish red legs and feet. Female surf scoters may be difficult to distinguish from female white-winged scoters.

Flocks tend to fly in large, irregular formations, seldom flying in lines like other sea ducks. In flight, a scoter's wings



The massive, bulbous bill of the drake surf scoter is unique among the sea ducks.

produce a whistling sound. Otherwise, surf scoters are generally silent, although at times they may make a low-pitched gurgling or croaking sound.

Range and Habitat

Of the three species, only the surf scoter breeds exclusively in North America. The other two, the black and white-winged, are



Surf scoters can be found wintering on Long Island Sound where they feed primarily on shellfish.



A flock of surf scoters flies in to a feeding location. This group is made up of females (left), an immature male (top), and three adult males.

holarctic breeders (of North America, Europe, and Asia).

Freshwater lakes in boreal and sparsely wooded tundra regions from Alaska through Canada are the prime breeding habitats for surf scoters. Females nest on the ground, where their well-concealed nests contain seven to nine eggs. Scoters are thought to be long-lived, with low reproductive recruitment.

In winter, flocks can be found in shallow coastal waters, including bays and estuaries, where large congregations may gather at sites with extensive shellfish beds. Their winter range in the west extends along the coast from the Aleutian Islands and southern Alaska south to Baja California. In the east, they can be found from Newfoundland south to Virginia, although the highest concentrations are in the mid-Atlantic region. Small numbers may reach as far south as Florida. Some may also overwinter on parts of the Great Lakes.

In Connecticut, surf scoters are considered to be uncommon to fairly common migrants and winter visitors. National Audubon Society Christmas Bird Counts have indicated erratic numbers with population spikes in some years, although the general trend seems to be low numbers with a long-term decline. Winter waterfowl surveys conducted by the DEEP Wildlife Division in recent years have shown that average numbers have been at historic lows. It should be noted that these trends and numbers are for wintering birds that may be using other areas in the region from year to year. Scoters are inconsistent in Connecticut waters and, at some times, may be using areas far offshore, making them difficult to survey.

From the 1800s to the early 1950s, surf scoters and other sea ducks concentrated at the mouth of the Housatonic River to take advantage of a bountiful supply of dwarf surf clams, which are small, thin-shelled bivalves. Gradually, the waters filled in and the clams disappeared, along with the scoters. For a time, there also was a similar phenomenon in the Thimble Islands off of Branford where large shoals of dwarf surf clams were found. Those disappeared by the early 1990s. The reasons for the disappearance of

this important food source are uncertain, but some theories suggest that it may be associated with the large amount of chlorine that is dumped into Long Island Sound by wastewater treatment plants, to the extent that the small clams could not survive.

Conservation

Population estimates for surf scoters are problematic because of difficulties with breeding surveys, stemming from secretive nesting habits, the difficulty of differentiating females from white-winged scoters, and incomplete survey coverage. Rough estimates put the entire North American surf scoter population between 500,000 and one million birds. All scoter populations are believed to have declined by approximately 50% since the 1950s. The causes are unknown and, because of imprecise population estimates and trends, comprehensive management is difficult. More research is needed into their general ecology, breeding biology, and population dynamics. Harvest data have shown that the number of immature birds per adult harvested has dropped significantly since the early 1960s, suggesting a decrease in productivity or an increase in female mortality. The importance of harvest data reported by waterfowl hunters is significant for conservation and management of the species.

Scoters are not alone – most North American sea duck populations are showing widespread declines. Some scientists fear that extensive ecological degradation may be causing the declines to the ducks directly or to their food sources. Other factors may include energy exploration and development in wintering areas, heavy metal contaminants, oil spills, and climate changes that are affecting their boreal forest breeding habitat.

Surf scoters are designated by the U.S. Fish and Wildlife Service as a Bird of Management Concern. It is hoped that further studies focusing on surf scoters will shed light on the reasons for the decline in the surf scoter population, as well as for other sea ducks.

Winter Drawdown Effects on Lake Ecosystems

Article and photography by Chris McDowell, DEEP Inland Fisheries Division

Winter drawdown is a common lake management tool capable of altering lake ecosystems in numerous ways. Drawdowns may have both beneficial and deleterious effects on lake ecosystems. Effective management of lakes requires extensive knowledge of the complexities and interconnections of the many different links within these ecosystems. Lowering water levels in lakes and ponds reduces water volume and surface area, impacting animal and plant communities and their aquatic habitats. When used improperly, drawdowns have the potential to cause irreversible harm.

What Is Winter Drawdown and Why Is it Done?

Winter drawdown involves lowering a lake's water level. This is done by means of water level control structures. Drawdowns typically start in mid-fall and are held at lowered levels throughout the winter. Drawdowns are most often performed on lakes that are high in nutrients and support extensive amounts of aquatic vegetation. Reasons for conducting drawdowns include: maintaining lake aesthetics and recreational use through nuisance/invasive aquatic vegetation control, prevention of ice damage to lake front property, and facilitation of shoreline property maintenance.

Connecticut Drawdown Policy

The DEEP currently regulates winter drawdowns on many lakes within Connecticut

where the State has property rights. Winter drawdown requests are coordinated through the Office of Environmental Review and typically come from State or town officials, lake front property owners, or lake associations. Current policy states that drawdowns cannot begin prior to September 10, and the duration must be minimal and cannot extend past completion of the stated purpose. If maintained all winter, refill must occur by April 15. Three feet below normal pool height is the typical maximum allowable drawdown, although deeper drawdown requests are evaluated on a case-by-case basis.

Effects of Winter Drawdowns

Winter drawdowns are a low cost lake management tool typically serving the short-term needs of lake residents. However, the list of scientifically proven negative effects, some of which are not

immediately perceptible to lake residents and which may take multiple years to become established, typically outweigh any positive benefits. As such, the DEEP often takes a conservative stance when approving drawdowns to ensure protection of natural resources. Attempts are made to lessen the depth/duration of the drawdown so as to minimize any negative impacts. The needs of the drawdown requestors, as well as the potential environmental impacts are weighed and a decision is made based upon the best available information. A winter drawdown can potentially affect the water quality, lake sediment, aquatic vegetation, food web, and fishery of a lake ecosystem.



The top photo is a view of a cove at Bigelow Pond in Union at full pool height in early fall, prior to commencement of a three-foot winter drawdown. The bottom photo is of the same area, but in February while the lake was down three feet. During this drawdown, a large majority of this cove was dewatered and left exposed to the elements. Approximately 30% of the lake's water volume was removed, consequently exposing 2.1 acres of lake bottom.



The photo on the left was taken from the dam area at Middle Bolton Lake in Vernon at full pool height in early fall, prior to commencement of a six-foot winter drawdown. The photo on the right was taken in the same general area, but in February when the lake was down six feet. During this drawdown, approximately 49.5% of the lake's water volume was removed, consequently exposing 13.4 acres of lake bottom.

Water Quality

Winter drawdown can change a lake's water quality by adding nutrients back into the system from organic matter found in aquatic vegetation and bottom soils. Because most of Connecticut's lakes are already nutrient rich, this addition can increase the potential for the occurrence of noxious and annoying algal blooms. These blooms may occur during the drawdown process and in subsequent summers. More organic waste results in increased decomposition, which consumes large quantities of oxygen found in the water column. If a lake is frozen while decomposition is occurring, oxygen levels can become dangerously low because there is no oxygen exchange between the lake surface and the atmosphere. This can cause lake-wide mollusk, snail, amphibian, turtle, and fish kills.

Lake Sediment

During a winter drawdown, large areas of sediment that would normally be under water are exposed to air, wind and wave action, and ice scour. Exposed materials become dry, compact, and chemically altered. Fine sediment particles are transported with the receding water to deeper areas, thus leaving larger material behind. Without this finer material, aquatic plants, insects, and fish habitats are degraded, ultimately leading to an unhealthy lake.

Aquatic Vegetation

Though winter drawdowns may effectively control aquatic vegetation through exposure and freezing of root systems,

it works best on certain species and only over the short term. A winter drawdown is not selective in the type of aquatic vegetation it controls, meaning beneficial native species can be eliminated just as easily as invasives, resulting in temporary or complete shifts in species composition, relative abundance, and diversity. If the type of vegetation in the lake is not completely known, a drawdown may extend the vegetation's occupied area through seed dispersal or vegetative part transport. If this vegetation is invasive, it will likely overrun the lake, out-competing native species and negatively altering the aquatic habitat, as well as potentially impacting recreational activities.

Food Web

Slow moving organisms, such as snails, insects, and crayfish, can become stranded, are eaten by birds or other vertebrates, or are forced to relocate as waters recede. Those that survive become concentrated and are exposed to new environmental conditions to which they are not adapted. Crayfish, an important food source for many fish species, may eventually burrow into the bottom in the near-shore area where they will likely perish when the exposed lake bottom freezes. These food web alterations result in impacts to higher level organisms, such as a decrease in fish to populations and fewer or no visits by waterfowl to the lake.

The Fishery

Receding water may strand small fish, particularly those living in the area of the lake containing rooted vegetation. As

The DEEP currently regulates winter drawdowns on many lakes within Connecticut where the State has property rights.

the water drops, mats of vegetation can trap fish in water pockets, which dry up or freeze. Small fish that are not stranded are forced to seek refuge in open water with little protective cover, making them susceptible to predation by larger fish, birds, and fish-eating mammals. The process can cull many smaller fish from the population without greatly reducing larger fish. This may benefit larger fish by increasing their growth rates over the short term. Selective culling may also benefit smaller fish and bait fish through numbers reduction, which decreases competition for food, thereby increasing overall fitness. In Connecticut, increased predation occurs for a brief period at the start of a winter drawdown in mid-fall when water temperatures are above 55 degrees Fahrenheit. Above this temperature, active feeding still occurs. Below this temperature, fish predation and digestion rates diminish due to their cold-blooded physiology.

At the end of the drawdown, if the lake does not refill soon enough, juvenile fish production may be disrupted due to the lack of suitable spawning habitats for adults. This impact will have a ripple effect on the production of future fish stocks.

New Contest to Select the 2013 Migratory Bird Conservation Stamp Image

To promote wetland conservation, the DEEP is initiating a contest where artists can enter an original piece of artwork that depicts a waterfowl species (duck, goose, or brant) that occurs in Connecticut. The winning entry will be featured on the 2013 Connecticut Migratory Bird Conservation Stamp.

Contest Details

The contest is open to all artists (including Junior Duck Stamp artists), regardless of residence, age, or experience. Artwork may be in any full-color medium, including acrylic, oil, colored pencil, and watercolor. Images that include a Connecticut scene or landmark are preferred. Entries will be judged on originality, artistic composition, anatomical accuracy, general rendering, and suitability for reproduction.

Entries must be received in person or postmarked on or before March 15, 2012, to be eligible. Full contest rules and information on where entries should be submitted are available on the DEEP Web site at www.ct.gov/deep/ctduckstamp or by calling the Wildlife Division's Franklin office at 860-642-7239.

History of CT's Duck Stamp Program

The Connecticut Migratory Bird Conservation Stamp Program is a great example of how conservation works – concerned citizens paying into a program that was formed to protect and enhance vital habitat. The Duck Stamp Program was initiated in the early 1990s when concerned sportsmen worked with the DEEP to develop legislation that would gener-

ate revenue for wetland conservation. Modeled after the federal Duck Stamp Program, the Connecticut program requires the purchase of a state Duck Stamp, along with a hunting license, to legally hunt waterfowl in the state. By state law, funds generated from the sale of Duck Stamps can only be used for the development, management, preservation, conservation, acquisition, purchase, and maintenance of waterfowl habitat and wetlands, as well as the purchase and acquisition of recreational rights or interests relating to migratory birds.

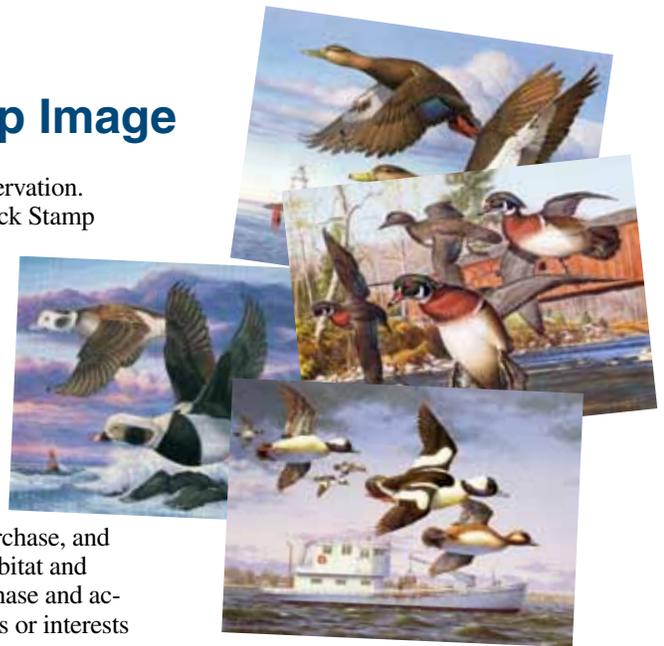
The first Connecticut Duck Stamp debuted in 1993 with a fee of \$5.00. From 1993-2002, the sale of Duck Stamps and prints generated over \$1.2 million in revenue. Print sales gradually declined over time and the print program was discontinued with the 2002 Duck Stamp. Hunters and conservationists have consistently expressed strong support for the Duck Stamp Program and associated conservation projects. The sale of stamps alone currently generates approximately \$50,000 per year.

With the return of full-color artistic Duck Stamps in 2013, art enthusiasts, stamp collectors, and conservationists are encouraged to purchase as many stamps as they wish to provide funds for wetland conservation projects. Full-color prints may also be available at the discretion of the winning artist.

Duck Stamp Dollars Deliver Results

The Connecticut Migratory Bird Conservation Stamp is more than just a "duck" stamp because the conservation work it funds provides habitat for a multitude of other wildlife species like herons, egrets, fish, and amphibians, along with several species of greatest conservation need that are identified in Connecticut's Comprehensive Wildlife Conservation Strategy.

- Funds generated through the program have been responsible for restoring and enhancing over 3,145 acres of critical wetlands. Projects have encompassed nearly 50 sites, mostly on state-owned wildlife management areas. In 2011, two more projects, one in Tolland and another

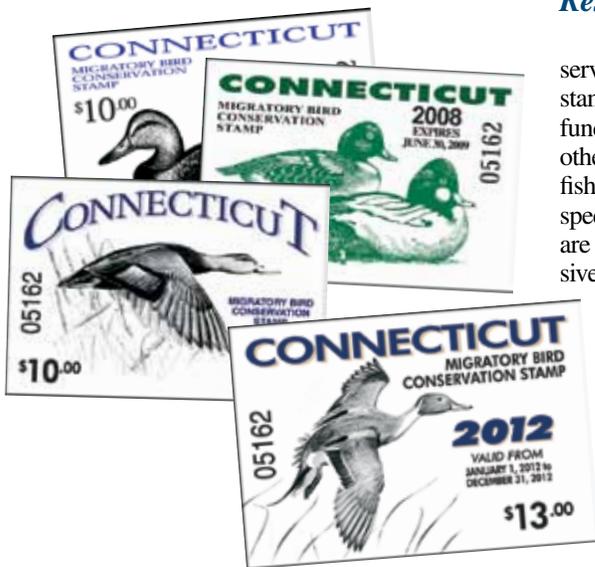


Buying a Connecticut Duck Stamp is the best investment a conservationist can make in the future of our state's wetlands. Duck Stamps can be purchased online at www.ct.gov/deep/sportsmenlicensing or at DEEP License and Revenue, 79 Elm Street, Hartford.

in Haddam, were completed using Duck Stamp funds.

- Specialized large equipment was purchased to conduct extensive marsh restoration work, particularly along the coast.
- Connecticut was the first state in the nation to establish a unit dedicated to wetland restoration. The DEEP's Wetland Restoration Unit receives no state funds and operates solely off of outside monies and Connecticut Duck Stamp funds.
- A 75-acre addition to the Wangunk Meadows Wildlife Management Area in Portland was purchased.
- Duck Stamp funds have generated additional monies for Connecticut through matching grants from federal conservation initiatives. By combining Duck Stamp funds with these additional monies, over \$4 million have been available to complete wildlife conservation projects. Thus, Connecticut has received a 4:1 return on Duck Stamp monies.

The Duck Stamp Program is a prime example of a user fee program that has greatly benefitted not only wildlife, but also the people of Connecticut by improving the health of our local environments.



Cottontail Rabbits

New England Cottontail (Sylvilagus transitionalis)

Eastern Cottontail (Sylvilagus floridanus)

Background

The eastern cottontail was introduced into New England in the late 1800s and early 1900s and has been expanding its range ever since. The New England cottontail is the only rabbit native to Connecticut. In the mid-1930s, New England cottontails were still considered abundant and more numerous than the eastern cottontail. However, as agricultural areas reverted to forest and these forests matured, populations of both species were reduced. The eastern cottontail is now the predominant species.

The DEEP has been conducting research on New England and eastern cottontails since 2000. Studies have been implemented to determine the distribution of each species, evaluate survival and causes of mortality, estimate home range size, and assess potential competition between the two species. The DEEP Wildlife Division also has assisted in the development of a captive breeding program designed to propagate New England cottontails in captivity for release in states throughout their range to augment or expand existing populations. Habitat enhancement projects have been implemented on several Connecticut state forests and wildlife management areas to expand existing populations.

Range

The New England cottontail occurs in New England west to the Hudson River. The eastern cottontail occurs in the eastern United States and southern Canada south to eastern Mexico and into Central America. Another population is in Texas, New Mexico, and Arizona. The eastern cottontail is more abundant than the New England cottontail. Also, its range is expanding, while the New England cottontail's range is diminishing.

Description

The cottontail rabbit is somewhat stocky, with large hind feet, long ears, and a short, fluffy tail that resembles a cotton ball. Its long, coarse coat varies in color from reddish-brown to grayish-brown. The underparts are white. The New England cottontail weighs between 1.64 and 2.94 pounds and measures from 14.2 to 18.8 inches. The eastern cottontail weighs between 1.8 and 2.95 pounds and measures from 14.8 to 18 inches.

New England and eastern cottontails are almost identical in appearance, except for a slight variation in color. About half of the eastern cottontail population shows a white, star-like shape on the forehead, while New England cottontails do not exhibit this trait. A comparison of skull characteristics or DNA analysis are the most reliable ways to distinguish the two species.

Habitat and Diet

Eastern cottontails tend to use open fields, meadows, yards, and other grassy areas. New England cottontails prefer early successional forests, often called thickets, with thick and tangled vegetation. These young forests are generally less than 25 years old. Once large trees grow in a stand, the shrub layer tends to become thin, creating habitat that the New England cottontail no longer finds suitable.

In summer, cottontails feed almost entirely on tender grasses and herbs. Crops, such as peas, beans, and lettuce, are also eat-



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en. In winter, bark, twigs, and buds of shrubs and young trees are eaten. Rabbits will also re-ingest their own fecal pellets, increasing their level of vitamins and minerals.

Life History

Breeding occurs from March through early fall. Females do not dig their own nest burrows but rather scratch out a slight depression in the ground in an area of dense grass for concealment. The nest is lined with fur and dry grass. The gestation period is about 28 days. Cottontails usually have 2 to 4 litters per year with about 3 to 8 young per litter. Young rabbits are born blind, naked, and helpless but grow rapidly, leaving the nest after only 2 to 3 weeks. They are weaned and totally independent at 4 to 5 weeks. On average, 15% of the young will survive their first year. Adults are usually solitary by nature, except when a female is caring for its young.

Interesting Facts

Cottontail rabbits are active all year long, foraging mainly at dusk or night. During the day, they remain concealed in dense brush, protected from predators and harsh weather. In times of

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extreme weather conditions or to escape predators, rabbits will readily use an abandoned woodchuck burrow, stone walls, brush piles, or other structures for protection. A rabbit's home range varies greatly with the quality of habitat, but generally averages 9 acres. Males have larger home ranges than females.

Cottontails have keen eyesight and hearing. When danger is sensed, a rabbit will usually freeze in place until danger has passed, but it will flush readily if approached too closely. Rabbits normally move slowly in short hops or jumps, but when frightened they can achieve speeds up to 18 miles per hour over a short distance. They often zig-zag to confuse a pursuing predator. Although they do not take to the water often, rabbits are good swimmers.

Rabbits will thump the ground with their hind feet regularly, probably as a means of communication. When playing, breeding, or fighting, they often make low purring, growling, or grunting sounds. If captured by a predator, the animal may produce a loud, shrill scream.

Because of its high productivity rate, the cottontail rabbit is an important link in the food chain and a principal prey item for many species. Depending on its availability, the cottontail can be considered a buffer prey species, meaning if rabbit numbers are high, predators will concentrate on them, thus reducing the pressure on other prey species.

The cottontail rabbit is a popular game species throughout its range. The regular hunting season in Connecticut occurs from fall into winter. Consult the current Connecticut Hunting and Trapping Guide for specific season dates and information. The guide is available at town halls, DEEP offices, and on the DEEP website (www.ct.gov/deep/hunting).

Conservation Concerns

A petition was submitted to the U.S. Fish and Wildlife Service (USFWS) in August 2000 to list the New England cottontail as a threatened or endangered species. The USFWS designated the New England cottontail as a candidate for threatened or endangered status in September 2006.

Historically, New England cottontails were distributed state-

wide in Connecticut, but limited research over the past 50 years has indicated that populations have declined in abundance and distribution in the state and throughout New England. Biologists believe the reduced extent of thicket habitat is the primary reason for the decline in numbers and range of New England cottontails. Prior to European settlement, New England cottontails were probably found along river valleys where floods and beavers created the disturbances needed to generate its preferred habitat. Forest insect outbreaks, large storms like hurricanes and ice storms, and wild fire also created disturbances in the forest that promoted thicket growth. During colonial times, much of the New England forest was cleared for agriculture and then subsequently abandoned during the early 1900s. This abandoned farmland allowed for a great deal of early successional habitats to develop. Today, these habitats are aging while others have been developed and are no longer suitable for New England cottontails.

The introduction of exotic invasive species, such as multiflora rose, honeysuckle bush, and autumn olive, in the last century has changed the type of habitat available to New England cottontails. These plants form the major component of many patches where cottontails can be found. It may be that stands dominated by non-native species do not provide rabbits with the food resources that native plant species do.

A research project was initiated in Connecticut in October 2000 by the Wildlife Division to document the historic and current distribution of New England and eastern cottontail rabbits. The project involves a statewide collection effort to obtain distribution information of cottontails throughout the state. Four common methods are used to collect data on cottontail distribution: hunter harvest, live trapping, and collection of roadkills and fecal pellets. Dead cottontail specimens are frozen to preserve tissue for future DNA analysis if needed for species identification. An ear sample is collected from all live-trapped rabbits for DNA analysis. Specimens are identified as eastern or New England cottontails by using skull morphology or DNA analysis. To confirm species identification, all intact skulls are skinned and skull morphology is examined.

Since October 2000, cottontails have been collected from 115 (67%) of Connecticut's 169 towns. New England cottontails were found in 26 of the 115 (23%) towns and eastern cottontails were found in 108 of the 115 (94%) towns. Twelve additional towns were documented as having New England cottontails by the University of New Hampshire between 2003 and 2006 through fecal DNA analysis.

Helping the New England Cottontail

The New England cottontail continues to be the subject of research and habitat management in Connecticut, New York, and the other New England states. Halting the decline of scrub and brushland habitat is paramount, as is identifying potential habitat free of competing eastern cottontails to which New England cottontails could be restored. Working together, state and federal agencies may help improve the chances of survival for the New England cottontail.

The U.S. Fish and Wildlife Service provided some of the information used to compile this fact sheet (www.fws.gov).

Chimney Swift Field Season Update, 2011

Written by Shannon Kearney-McGee, DEEP Wildlife Division

Chimney swifts have been the focus of increased research and monitoring by the Wildlife Division for the past six years. Since 2002, chimney swifts have been declining at one of the highest rates (7%) among passerine birds in the Northeast, placing them on Bird Life International's Red list as near threatened. Although chimney swifts are often observed in the Connecticut landscape, the cause of their decline is not understood.

In an effort to understand the needs and dynamics of chimney swifts in Connecticut, the Wildlife Division conducted research in 2011 that encompassed nesting site preference, chimney capping rates, nesting success, diet, and roost dynamics. Nesting site preference was investigated through field measurements of chimneys and interviews conducted by staff with homeowners to find out if they have swifts in their chimneys. Interviews were conducted at 274 homes in Thomaston and with homeowners surrounding 22 known nesting locations around the state for a total of approximately 350 chimneys.

Preliminary analyses of these data revealed that chimney swifts are not particularly "picky" about the chimneys in which they place their nests. They prefer chimneys that are larger than 2.5 bricks by 2.5 bricks, but they will also use smaller chimneys. Chimney swifts do not discriminate based on the location – north, south, east, or west – nor do they eliminate those chimneys with slate caps or clay liners. Because swifts are flexible in the chimneys that they will use, the biggest limitation to nesting is the installation of stainless steel liners and wire cage caps. A wire cage cap prevents birds from entering a chimney, making it impossible for them to nest. The installation of stainless steel liners creates a slippery surface to which the birds cannot attach their nests. Birds that enter steel chimneys may even become trapped. Steel-lined chimneys should always have a wire cage cap so that unknowing birds do not become trapped.

In an effort to track the rate at which chimneys are becoming unavailable for nesting swifts through wire cage capping, the Wildlife Division monitored 11 survey routes to determine if previously available chimneys were still available for

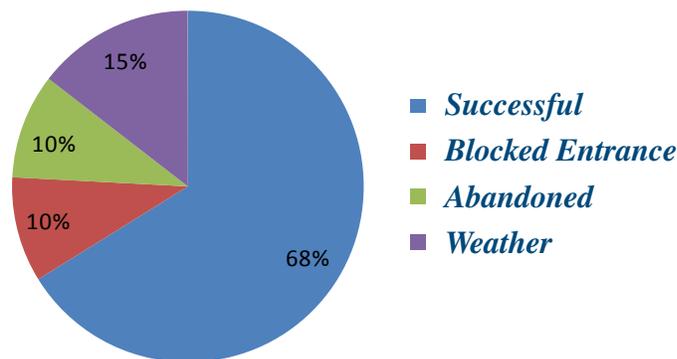
chimney swift use. In 2011, 23% of previously available chimneys were capped, which is similar to the past two years. Although past DEEP research indicates that chimneys are readily available in the landscape, this rate of chimney capping may start to become a problem in the future as chimneys become less available for swifts to use.

Building upon research results indicating that the availability of nesting chimneys is not limiting chimney swifts in Connecticut, the Division began to investigate swift nesting success in 2011. Nesting success was tracked with the help of homeowner "swiftlords" at 20 nests. Statistical analysis of nesting observations estimated that each nesting chimney had a 49% chance of fledging at least one swift. Raw data indicated that 68% of swift nests were successful. Nests failed because they were blocked by caps or other exclusion devices, abandoned, or knocked down by strong rainstorms.

Swiftlords also assisted research by allowing Wildlife Division staff to collect guano samples from nesting sites. Analysis of guano by cooperators at Trent University in Ontario, Canada, is planned. This analysis will identify which invertebrates are being consumed by chimney swifts in Connecticut. Preliminary analysis from guano collected in 2010 in Connecticut and Ontario indicated that the chimney swift diet may be associated with the population decline. Ongoing research will link the diet with nesting success to understand how diet may be affecting productivity in Connecticut.

Efforts were made to understand roost dynamics and explore the potential for using roost numbers as an index for productivity. Chimney swifts don't always roost in their nest chimney. In fact, there is rarely more than one nest per chimney. Despite this nest territoriality, chimney swifts regularly flock up in large numbers – as many as thousands of birds – and descend into a single chimney. These

Chimney Swift 2011 Nest Results



Percentage of chimneys capped per year, 2009-2011

Year	% Chimneys Capped
2009	20%
2010	27%
2011	23%

are roosting birds, and there are no nests in these chimneys when this roosting phenomenon occurs. The birds in these roosts in spring and fall are often migrating, but over the summer they consist of a combination of non-breeding birds and nesting birds that are not brooding over eggs. After birds fledge from their nests, they will join these roosts. By tracking these roosts properly, there may be a potential to determine how many chicks are fledged by the change in numbers of birds over the summer season.

In the pilot year of the study, volunteers and DEEP staff monitored 26 roosts. Observers were surprised by the variation in time when birds entered roosts and also by the number of birds, depending on the season. Roost numbers ranged from one to over 1,000. Certain roosts appeared to be more important in the breeding season, while others provided shelter to more birds during migration. More refined analysis is planned to understand how these numbers might be used to track chimney swift populations.

If you know of a chimney swift roosting or nesting site, please contact Shannon Kearney at the Wildlife Division's Sessions Woods office (860-675-8130), shannon.kearney@ct.gov.



Winter Bat Sightings Wanted

As part of the Wildlife Division's ongoing efforts to monitor white-nose syndrome (WNS) in Connecticut's bat population, the Wildlife Diversity Program is interested in obtaining information on any bats that are seen flying during January, February, and March. During winter, bats typically hibernate below ground—sleeping safely and soundly until insects are active and warm weather arrives in spring. Bats suffering from the fungal infection that causes WNS are often unable to hibernate properly and may be seen flying about searching for food and water in a frozen landscape. They may also cling to the sides of buildings or flop about on the snow as their energy reserves dwindle.

If you see a bat behaving unusually during winter, please let the Wildlife Division know. A digital photograph of the bat would be helpful if you are able to take one. Not all bats observed over the winter will display the white fuzzy noses or wings that are associated with WNS. The fungus responsible for the fuzzy appearance changes quickly in response to temperature and humidity fluctuations and is seldom noticeable with the naked eye outside of a cave environment. A bat reported to the Wildlife Division by a concerned state resident last February and saved for testing turned out to be the first confirmation of WNS in New London County, underscoring the importance of the public's assistance in tracking WNS. Bats can be reported via E-mail to dep.batprogram@ct.gov or by calling the Division's Sessions Woods office, at 860-675-8130 (Monday through Friday, from 8:30 AM-4:30 PM).

Jenny Dickson, DEEP Wildlife Division



According to the "23rd Biennial Report of the State Board of Fisheries and Game for 1938-1940," federal allotments from the Pittman-Robertson Program were as follows:

1938-1939	\$2,499.22
1939-1940	\$3,931.37
1940-1941	\$5,853.34

The first project submitted for Connecticut was approved in December 1939 and completed in June 1940. It was a development project on the Scoville Sanctuary, a tract of about 30 acres, given to the State in 1937. Development consisted of fencing to exclude livestock, and plantings and thinning for winter cover and game food (mainly for upland game and pheasants).

The second project, approved in December 1940, was a study of ruffed grouse and other wildlife on 3,000 acres of forest land on three State Forests. The results of this study recommended changes in existing forestry practices to create conditions beneficial to wildlife.

A third project involved a study of pheasant mortality and nesting success. Results of this work eventually influenced pheasant stocking policy in the state.

Midwinter Bald Eagle Survey

Nationwide counts of wintering eagles have been conducted every January since 1979. Initially coordinated by the National Wildlife Federation (1979 - 1992), the counts were a key focus of the Raptor Research and Technical Assistance Center (now the U.S. Geological Survey) for many years and are now coordinated at the national level by the Army Corps of Engineers. The survey was initiated to establish an index of the total wintering bald eagle population in the lower 48 states; determine eagle distribution during a standardized survey period; and identify important winter habitat.

Since 1984, participants in each state have been counting eagles along standard routes using the same method (e.g. stationary point, boat, vehicle) at approximately the same time of day each year. These counts are held during the first two weeks of January with two "target days" identified as the preferred survey dates. Survey participants range from employees of state or federal conservation agencies to conservation organizations to scores of hardy volunteers who help make the survey a success. Coordinators from each state organize local counts, line up participants, identify areas to be covered, and compile data to eliminate duplicate sightings and overlapping routes. Sizes of survey routes vary from single fixed points to 150 miles. Connecticut is one of 27 states that identified and began surveying standard routes in 1986 and has participated annually.

The annual midwinter survey is a unique source of long-term, baseline data on both breeding and non-breeding eagles during a time of year when survival is challenging. It also helps biologists monitor modifications or threats to important wintering areas. Volunteers and biologists have endured freezing, snowy, and often icy mornings to collect information that has helped document a steady increase in eagle numbers in Connecticut and confirmed the Northeast region as having the greatest population trend increase since standardized surveys began in 1986. Look for results from the 2012 Midwinter Eagle Survey (scheduled for January 14) in a future issue of *Connecticut Wildlife*.

Jenny Dickson, DEEP Wildlife Division



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Update on Summer Night Bird Monitoring, 2011

This past field season, the Wildlife Division organized volunteers and staff to conduct summer night bird surveys to determine the distribution of whip-poor-wills and northern saw-whet owls in Connecticut. This effort was in cooperation with the Northeast Regional Nightjar Survey for the seventh year.

In Connecticut, surveys are conducted each year along 14 standardized routes containing 10 roadside points each. A callback recording of a northern saw-whet owl is used during the surveys, which are conducted two times between May 1 and July 15 on nights when the moon is at least 50% illuminated and not obscured by clouds.

The weather this past summer made it difficult for volunteers to complete their routes during the designated survey windows. Only 12 routes were completed in 2011. Volunteers detected 13 individual whip-poor-wills on five different routes during the survey. Although raw numbers were down from last year, the whip-poor-will index for Connecticut remains similar to last year at 51% occupancy.

Other night birds observed during these surveys included three northern saw-whet owls, one eastern screech owl, one long-eared owl, 10 barred owls, and five great-horned owls. Observers also reported observations of bats, deer, gray fox, killdeer, American woodcock, porcupine, and many frog species.

Shannon Kearney-McGee, DEEP Wildlife Division

2012 – Year of the Lizard

The “2012 –Year of the Lizard” campaign is sponsored by Partners in Amphibian and Reptile Conservation (PARC) to raise awareness for lizard conservation. As 2012 unfolds, PARC and its Conservation Partners will shine a spotlight on amazing lizard fauna and highlight the work of researchers, land managers, and the public to develop conservation measures to identify threats and forestall losses at local levels.

Why lizards, and why now? The growth of human communities and our effects on natural habitats are taking a toll on lizards. Habitat loss and fragmentation are the main threats to lizards, but other factors are being raised as issues as well – overexploitation, predation, and climate variation. Throughout the year, PARC and Conservation Partners (including the DEEP Wildlife Division) will be raising awareness of the issues surrounding lizards. Look for more information to come on PARC’s Web site at www.yearofthelizard.org and the Wildlife section of the DEEP Web site (www.ct.gov/deep/wildlife). Can anyone name the lizard or lizards that are native to Connecticut? Find out in the next issue of *Connecticut Wildlife*.



DEEP and CCEA Study Highlights Economic Impact of CT State Parks and Forests

Connecticut’s state parks and forests offer numerous outdoor recreation activities that are part of what makes Connecticut a special place to live – and a new study concludes they are also good for the economy. An extensive analysis conducted by UConn’s Connecticut Center for Economic Analysis (CCEA) showed that outdoor activities on state lands have an economic impact of more than \$1 billion a year, representing the amount spent by state residents and visitors on a variety of outdoor activities, including camping, boating, fishing, and hunting. The study also concluded that for every dollar the state spends on the state park system, it receives an estimated \$38 in economic activity; and nearly 9,000 private sector jobs statewide result from the support of outdoor recreation pursuits.

The study is an economic impact analysis CCEA developed of the state’s recreational activities, including visits to state parks and forests, hunting, fishing, boating, and other sporting activities. Of the \$1 billion spent on recreation in the state in 2010, visitors to parks and forests spent \$544 million on general tourism activities, such as lodging, meals, groceries, and other activities and goods during their stay. In addition, individuals holding licenses and permits issued by DEEP spent the following amounts:

- Fishing accounted for \$264 million in expenditures
- Hunting accounted for \$100 million in expenditures
- Recreational boating accounted for nearly \$37 million in expenditures
- \$26.2 million came from skiing and attending educational and other venues

The study also shows that the nearly 9,000 private sector jobs credited to the state parks system and associated recreational activities resulted in \$343 million in personal income, estimated to grow to \$595 million in current dollars in 2020. Of that \$343 million, \$253 million is considered disposable income, increasing to \$471 million by 2020.

Along with the tangible benefits DEEP-managed outdoor recreation opportunities create in the state, the CCEA report also found that DEEP’s 250,000 acres of open space increases property values for those whose land borders or overlooks the state green spaces. In addition to the benefit to property owners, the increased property values generated an estimated \$3.1 to \$5.4 million to municipalities.



Previously published in
The Connecticut Wildlife Conservation Bulletin, March/April 1956

Federal Aid Programs Help Connecticut Wildlife: “During the last fiscal year (1954-1955), \$123,784.74 in federal funds were made available to the State of Connecticut for wildlife conservation work.

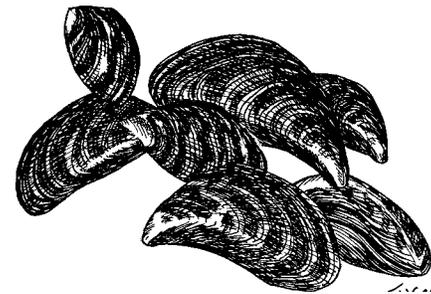
Fish (\$44,2888 in federal funds): Lake and pond survey, striped bass study, trout study on Wononskopomuc Lake, state-wide fish habitat improvement work, Willimantic River and Morey Pond acquisitions, establishment of the wall-eyed pike at Lake Lillinonah, Salter brown trout study, acquisition of water rights to Uncas Lake and Norwich Pond, and coordination work for these projects.

Game (\$79,496.74 in federal funds): Management studies on deer populations, tree and shrub plantings, furbearer populations, waterfowl brood surveys, waterfowl banding and grouse populations; purchase of land at Great Harbor, Guilford; development work for farm and forest game, waterfowl and furbearers; project planning, inspection, and coordination.

During the year ending June 30, 1955, more than 32,650,000 persons, or approximately one-fifth of the population of the United States, held various state hunting and/or fishing licenses and federal duck stamps. The money spent for these licenses and the tax paid on hunting and fishing equipment pays practically all the expense of developing better conditions for wildlife.”

Zebra Mussels Confirmed in Lake Housatonic

Adult zebra mussels have been found in Lake Housatonic by divers working for Biodrawiversity LLC, the consulting firm hired by the DEEP to survey for zebra mussels in the Housatonic River system and other nearby high calcium content waters. This survey was supported by Federal Aquatic Nuisance Species funding. Lake Housatonic, located in Derby, Monroe, Oxford, Seymour, and Shelton, is the most downstream of the three large impoundments of the Housatonic River. The mussels were found on the lake bottom in the southern end of the lake. The presence of zebra mussels is not unexpected as mussels were found in Lakes Zoar and Lillinonah, the two large impoundments located immediately upstream of Lake Housatonic, in November 2010. Zebra mussels were first found in the Housatonic River in 2009 when they were discovered in Laurel Lake in Lee, Massachusetts, and subsequent sampling found them in the lake's outflow into the mainstem river.



The non-native zebra mussel is a black-and-white-striped bivalve mollusk that was unintentionally introduced into North American waters through the discharge of ship ballast water. Since its discovery in Lake St. Clair (Michigan/Ontario) in 1988, the zebra mussel has spread throughout the Great Lakes, the Mississippi River system and most of New York State. Zebra mussels have fairly specific water chemistry requirements and are limited to waters with moderate to high calcium concentrations and pH. In Connecticut, suitable habitat is mostly limited to a number of waterbodies in western portions of the state. Under highly favorable conditions, the mussels can foul boat hulls and engine cooling water systems and clog power plant, industrial, and public drinking water intakes.

While zebra mussels can be spread by natural methods, such as birds and by drift of larval stages, boaters and anglers can also transport them unwittingly when they move from infected waters to clean waters. Outreach and education (properly checking and cleaning boats, gear, etc) are often the most effective tools to control the introduction and spread of zebra mussels and other invasive species. For well over 10 years, education appears to have prevented their spread from the Twin Lakes (Salisbury) to nearby waters suitable for zebra mussels. Since they were first found in East Twin Lake in 1998, information about the presence of zebra mussels has been posted at access points to the two lakes, in DEEP's annual Connecticut Angler's Guide, and included in the approved permit packets for fishing tournaments.

In 2011, the DEEP increased seasonal staff presence at Lakes Lillinonah and Zoar and the state's largest lake, Candlewood Lake, to educate boaters about what they can do to keep zebra mussels out of other waters. Staff also inspected boats at state boat launches on weekends and holidays throughout the summer. A new program was developed in which local residents were trained to educate boaters and inspect boats for the presence of aquatic plants and animals. The DEEP will continue to monitor for the presence of zebra mussels at these lakes and others throughout the state. Individuals wishing to report possible sightings of zebra mussels and other aquatic nuisance species can contact DEEP's Inland Fisheries Division at 860-424-3474. If you are interested in learning how you can educate boaters on ways to prevent the spread of invasive species, contact the Boating Division at 860-447-4339. More information on zebra mussels and other aquatic nuisance species can be found on the DEEP Web site at www.ct.gov/deep/invasivespecies.

Outdoor Safety



Do You Know Where Your Muzzle Is Pointing?

Muzzle direction is one of the most important safety rules in gun handling. The muzzle is the end of the gun where the bullet exits. When first picking up a gun, while keeping the muzzle

pointed in a safe direction, you should always visually inspect the gun's chamber and check to see if it is unloaded. Once you have determined that the gun is unloaded, you should continue to handle the gun as if it were loaded.

Point the muzzle in a safe direction. Think about where the bullet will go if the gun were fired. What will the bullet hit? Could someone be injured? Will it cause damage? All of these questions should be going through your mind when you are handling a gun.

Control the muzzle of your gun. While hunting and handling a loaded gun, the muzzle direction should be your first safety concern. Determine the safest direction in which to point the muzzle. Use your best judgment, depending on the situation. Remember the environment around you and that conditions can change quickly. Be prepared to adapt the muzzle direction and carrying position so that the muzzle continues to point safely.

James Warner, DEEP Wildlife Division

This is the muzzle of a 20 gauge double-barrel shotgun. The muzzle is the end of the gun where the bullet exits. When handling a gun, always point the muzzle in a safe direction.



Conservation Calendar

- Dec. 28-Mar. 14 **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 or go to www.shepaug eagles.info.
- Feb. 4..... **No Child Left Inside Winter Festival**, at Black Rock State Park in Watertown, from 9:00 AM to 3:00 PM. Activities for this FREE event include ice fishing, fish stocking, snowshoeing, marshmallow roasting, and much more! Visit the DEEP Web site (www.ct.gov/deep) for directions and more information.
- March 10..... **Wild Turkey Hunting Safety Seminar**, at Fairfield County Fish and Game, starting at 8:00 AM. Both experienced and first-time turkey hunters will benefit from this seminar, which emphasizes safe hunting practices, specialized equipment, calls, site setup, and other strategies for harvesting turkeys. The seminar is coordinated by volunteer instructors from the Wildlife Division's Conservation Education/Firearms Safety Program. Participants need to bring eye and ear protection; their own shotgun with a turkey choke; turkey ammunition; and lunch. Fairfield County Fish and Game is located at 310 Hammertown Road in Monroe. To register for this FREE seminar, call the Division's Sessions Woods office at 860-675-8130 (Mon.-Fri. from 8:30 AM-4:30 PM).

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. 22..... **Wildlife Tracks & Sign for Kids**, starting at 10:00 AM. Wildlife may not be readily seen in winter, but with good observation skills, evidence of their presence can be found. Learn about wildlife tracks indoors with Natural Resource Educator Laura Rogers-Castro and Master Wildlife Conservationist Shirley Sutton, and then head outside for a short walk to look for animal signs. Children also will make a wildlife track to take home. An adult must accompany all children.
- Feb. 26..... **Bluebirds with Master Wildlife Conservationist Fred Lowman**, starting at 1:30 PM. MWC Fred Lowman has been monitoring bluebird nest boxes on his property for several years. This indoor program will provide an informative discussion on bluebirds as Fred shares his success stories. He also will provide tips for getting bluebirds to nest in your backyard, too.

Hunting Season Dates

Jan. 16-Feb. 15 Special late Canada goose season in the south zone only

Audubon Connecticut to Sponsor a Master Bird Conservationist Program

Calling all birders! Want to improve your bird identification skills and gain knowledge on creating, restoring, and protecting bird habitat? Are you looking for opportunities to use your skills for the benefit of bird conservation? Consider participating in the Audubon Connecticut Master Bird Conservationist Program. Through this four-day workshop, participants will:

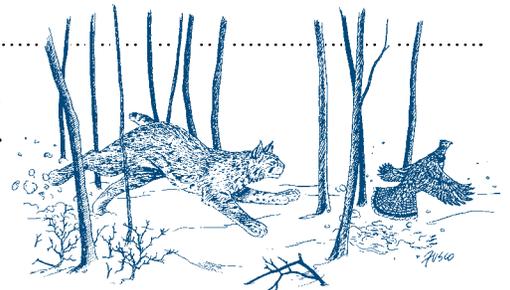
- Gain knowledge on bird species of conservation concern.
- Attend talks on conservation strategies that range from global to those you can apply in your own backyard.
- Receive training in field ornithology techniques, such as bird surveys, bird banding, ebird, etc.

When: February 22, March 7, March 21, and April 4, from 9:00 AM – 5:00 PM.

Where: The first three days of the workshop will be held at Bridgeport City Hall. The last day will involve field trips to Important Bird Areas.

To participate, contact Karen Dixon (203-869-5272, kdixon@audubon.org) or visit <http://ct.audubon.org/> for an application. The program is free, but participants will be required to commit to 20 hours of volunteer service by participating in citizen science programs, educational outreach activities, or conservation advocacy. This program was made possible through the generous support of the Leon Levy Foundation.

Connecticut Wildlife



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Connecticut Wildlife

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A small flock of common redpolls finds food and cover along the Connecticut shoreline while sentinels in the flock look out for danger.